FSOS

IPv6 Routing Command Line Reference

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1 OSPFv3 Commands

1.1 area default-cost

To specify a cost for the default summary route sent into a stub, use the area default-cost command in router configuration mode. To remove the assigned default route cost, use the no form of this command.

Command Syntax

area *AREA-ID* **default-cost** *COST*

no area *AREA-ID* **default-cost**

AREA-ID	Identifier of the area for which authentication is to be enabled. The identifier can be specified as either a decimal value or an IP address
COST	Cost for the default summary route used for a stub. The acceptable value is a 24-bit number

Command Mode

Router Configuration

Default

COST: 1

Usage

The command is used only on an Area Border Router (ABR) attached to a stub.

There are two stub area router configuration commands: the stub and default-cost options of the area command. In all routers and access servers attached to the stub area, the area should be

configured as a stub area using the stub option of the area command. Use the default-cost option only on an ABR attached to the stub area. The default-cost option provides the metric for the summary default route generated by the ABR into the stub area.

Examples

The following example assigns a default cost of 20 to stub network 10.0.0.0:

Switch(config)#router ipv6 ospf 201

Switch(config-router)#area 10.0.0.0 stub

Switch(config-router)#area 10.0.0.0 default-cost 20

Related Commands

None

1.2 area range

To consolidate and summarize routes at an area boundary, use the area range command in router configuration mode. To disable this function, use the no form of this command.

Command Syntax

area *AREA-ID* **range** *ADDRESS*/*PREFIX-LENGTH* (**advertise** | **not-advertise**|)

no area *AREA-ID* **range** *ADDRESS*/*PREFIX-LENGTH*

AREA-ID	Identifier of the area for which authentication is to be enabled. The identifier can be specified as either a decimal value or an IP address
ADDRESS	IPv4 address
PREFIX-LENGTH	Prefix length of the address
advertise	Advertise this range (default)
not-advertise	DoNotAdvertise this range

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

The area range command is used only with Area Border Routers (ABRs). It is used to consolidate or summarize routes for an area. The result is that a single summary route is advertised to other areas by the ABR. Routing information is condensed at area boundaries. External to the area, a single route is advertised for each address range. This behavior is called route summarization.

Multiple area router configuration commands specifying the range option can be configured. Thus, OSPF can summarize addresses for many different sets of address ranges.

Examples

The following example specifies one summary route to be advertised by the ABR to other areas for all subnets on area 10:

Switch(config)# router ipv6 ospf 201

Switch(config-router)#area 10 range 2004::1/16

Related Commands

None

1.3 area stub

To define an area as a stub area, use the area stub command in router configuration mode. To disable this function, use the no form of this command.

Command Syntax

area *AREA-ID* **stub** (**no-summary**|)

no area *AREA-ID* **stub** (**no-summary**|)

AREA-ID	Identifier of the area for which authentication is to be enabled. The identifier can be specified as either a decimal value or an IP address
no-summary	(Optional) Prevents an Area Border Router (ABR) from sending summary link advertisements into the stub area

Command Mode

Router Configuration

Default

No stub area is defined.

Usage

You must configure the area stub command on all routers and access servers in the stub area. Use the area router configuration command with the default-cost keyword to specify the cost of a default internal router sent into a stub area by an ABR.

There are two stub area router configuration commands: the stub and default-cost options of the area router configuration command. In all routers attached to the stub area, the area should be configured as a stub area using the stub keyword of the area command. Use the default-cost keyword only on an ABR attached to the stub area. The default-cost keyword provides the metric for the summary default route generated by the ABR into the stub area.

To further reduce the number of link-state advertisements (LSAs) sent into a stub area, you can configure the no-summary keyword on the ABR to prevent it from sending summary LSAs (LSA type 3) into the stub area.

Examples

The following example assigns a default cost of 20 to stub network 10.0.0.0:

Switch(config)# router ipv6 ospf 201

Switch(config-router)#area 10.0.0.0 stub

Switch(config-router)#area 10.0.0.0 default-cost 20

Related Commands

None

1.4 auto-cost

To control how Open Shortest Path First Version3 (OSPFv3) calculates default metrics for the interface; use the auto-cost command in router configuration mode. To assign cost based only on the interface type, use the no form of this command.

Command Syntax

auto-cost reference-bandwidth *RATE*

no auto-cost reference-bandwidth

reference-bandwidth *RATE*	Rate in Mbps (bandwidth). The range is from 1 to 4294967; the default is 100

Command Mode

Router Configuration

Default

100 Mbps

Usage

The value set by the ipv6 ospf cost command overrides the cost resulting from the auto-cost command.

Examples

The following example changes the cost of the cost link to 1GBps.

Switch(config)# router ipv6 ospf 1

Switch(config-router)#auto-cost reference-bandwidth 1000

Related Commands

ipv6 ospf cost

1.5 clear ipv6 ospf

To clear routing information based on the Open Shortest Path First (OSPF) routing process ID, use the clear ipv6 ospf command in privileged EXEC mode.

Command Syntax

clear ipv6 ospf (*PID* |) **process**

PID	(Optional) Process ID

Command Mode

Privileged EXEC

Default

None

Usage

Use the *PID* argument to clear only one OSPFv3 process. If the *PID* argument is not specified, all OSPFv3 processes are cleared.

Examples

The following example clears all OSPFv3 processes:

Switch# clear ipv6 ospf process

Related Commands

None

1.6 default-information originate (OSPFv3)

To generate a default external route into an Open Shortest Path First Version3 (OSPFv3) routing domain, use the default-information originate command in router configuration mode. To disable this feature, use the no form of this command.

Command Syntax

default-information originate [**route-map** *WORD*] | [**always**] | [**metric** *METRIC-VALUE*] [**metric-type** *TYPE-VALUE*]

no default-information originate [always] [metric] [metric-type] [route-map]

always	(Optional) Always advertises the default route regardless of whether the system has a default route
metric	metric-value (Optional) Metric used for generating the default route. If you omit a value and do not specify a value using the default-metric router configuration command, the default metric value is 10. The value used is specific to the protocol
metric-type	(Optional) External link type associated with the default route advertised into the OSPF routing domain. It can be one of the following values
route-map	Route map reference

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

Whenever you use the redistribute or the default-information router configuration command to redistribute routes into an OSPFv3 routing domain, the switch automatically becomes an autonomous System Boundary Router (ASBR). However, an ASBR does not, by default, generate a default route into the OSPFv3 routing domain. The system still must have a default route for itself before it generates one, except when you have specified the always keyword.

Examples

The following example specifies a metric of 100 for the default route redistributed into the OSPFv3 routing domain and an external metric type of Type 1:

Switch(config)# router ipv6 ospf 109

Switch(config-router)# redistribute ripng metric 100

Switch(config-router)#default-information originate metric 100 metric-type 1

Related Commands

redistribute (OSPFv3)

1.7 default-metric (OSPFv3)

To set default metric values for the Open Shortest Path First Version3 (OSPFv3) routing protocol, use the default-metric command in router configuration mode. To return to the default state, use the no form of this command.

Command Syntax

default-metric *METRIC-VALUE*

no default-metric (*METRIC-VALUE*)

METRIC-VALUE	Default metric value appropriate for the specified routing protocol. Built-in, automatic metric translations, as appropriate for each routing protocol. The metric of redistributed connected and static routes is set to 0

Command Mode

Router Configuration

Default

None

Usage

The default-metric command is used in conjunction with the redistribute 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.

Examples

The following example shows a router in autonomous system using both the Routing Information Protocol (RIPng) and the OSPFv3 routing protocols. The example advertises OSPFv3-derived routes using RIPng and assigns the Internal Gateway Protocol (IGP)-derived routes a RIPng metric of 10.

Switch(config)# router ipv6 ospf

Switch(config-router)#default-metric 10

Switch(config-router)# redistribute ripng

Related Commands

redistribute (OSPFv3)

1.8 distance (OSPFv3)

To define Open Shortest Path First Version3 (OSPFv3) route administrative distances based on route type, use the distance command in router configuration mode. To restore the default value, use the no form of this command.

Command Syntax

distance {*DISTANCE* | **ospfv3** [**external** *DIST1*] [**inter-area** *DIST2*] | [**intra-area** *DIST3*]}

no distance {*DISTANCE* | **ospfv3**}

DISTANCE	Administrative distance. An integer from 1 to 255. (Routes with a distance value of 255 are not installed in the routing table.)
external *DIST1*	(Optional) Sets the distance for routes from other routing domains, learned by redistribution. Range is 1 to 255. The default value is 110
inter-area *DIST2*	(Optional) Sets the distance for all routes from one area to another area. Range is 1 to 255. The default value is 110
intra-area *DIST3*	(Optional) Sets the distance for all routes within an area. Range is 1 to 255. The default value is 110

Command Mode

Router Configuration

Default

DIST1: 110

DIST2: 110

DIST3: 110

Usage

You may specify one of the keywords or use distance only to apply to all types of routes.

The distance command allows you to set a distance for an entire group of routes, rather than a specific route that passes an access list.

A common reason to use the distance command is when you have multiple OSPFv3 processes with mutual redistribution, and you want to prefer internal routes from one over external routes from the other.

Examples

The following example shows a router in autonomous system using both the Routing Information Protocol (RIPng) and the OSPFv3 routing protocols. The example advertises OSPFv3-derived routes using RIPng and assigns the Internal Gateway Protocol (IGP)-derived routes a RIPng distance of 90..

Switch(config)# router ipv6 ospf

Switch(config-router)#distance 90

Switch(config-router)# redistribute ripng

Related Commands

None

1.9 distribute-list (OSPFv3)

To filter networks received in updates or suppress networks from being advertised in updates, use the distribute-list command in router configuration mode. To cancel this function, use the no form of this command.

Command Syntax

distribute-list *ACCESSS-LIST-NAME* (**in** | **out** (**bgp** | **connected** | **ospfv3** | **ripng** | **static**))

no distribute-list *ACCESSS-LIST-NAME* (**in** | **out** (**bgp** | **connected** | **ospfv3** | **ripng** | **static**))

ACCESSS-LIST-NAME	Name of an access list to be applied
in	Filter networks received in updates
out	Suppress networks from being advertised in updates

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

This command must specify an access list.

Examples

In the following example, OSPFv3 process 1 is configured to accept two prefixes, prefix 2001:1:1::1/32 and prefix 3001:1:1::1/32:

Switch(config)# ipv6 access-list fiter-as-router

Switch(config-ip-acl)# permit any 2001:1:1::1/32 any

Switch(config-ip-acl)# permit any 3001:1:1::1/32 any

Switch(config-ip-acl)#deny any any any

Switch(config)# router ipv6 ospf 1

Switch(config-router)#distribute-list acl1 in

Related Commands

ipv6 access-list

1.10 enable db-summary-opt

Use this command to enable optimize the process when building ospfv3 neighborship.

Command Syntax

enable db-summary-opt

no enable db-summary-opt

Command Mode

Router Configuration

Default

Disable

Usage

None.

Examples

The following example enables this optimization:

Switch(config)# router ipv6 ospf 1

Switch(config-if)# enable db-summary-opt

Related Commands

None

1.11 ipv6 ospf cost

To explicitly specify the cost of sending a packet on an interface, use the ipv6 ospf cost command in interface configuration mode. To reset the path cost to the default value, use the no form of this command.

Command Syntax

ipv6 ospf cost *INTERFACE-COST*

no ipv6 ospf cost

INTERFACE-COST	Unsigned integer value expressed as the link-state metric. It can be a value in the range from 1 to 65535

Command Mode

Interface Configuration

Default

No default cost is predefined.

Usage

You can set the metric manually using this command, if you need to change the default. Using the bandwidth command changes the link cost as long as this command is not used.

The link-state metric is advertised as the link cost in the router link advertisement.

In general, the path cost is calculated using the following formula:

Reference Bandwidth / bandwidth

Examples

The following example sets the interface cost value to 65:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf cost 65

Related Commands

auto-cost reference bandwidth

1.12 ipv6 ospf dead-interval

To set the interval during which at least one hello packet must be received from a neighbor before the router declares that neighbor down, use the ipv6 ospf dead-interval command in interface configuration mode. To restore the default value, use the no form of this command.

Command Syntax

ipv6 ospf dead-interval *SECONDS* *(***instance** *ID |)*

no ipv6 ospf dead-interval *(***instance** *ID |)*

SECONDS	Interval (in seconds) during which the router must receive at least one hello packet from a neighbor or else that neighbor is removed from the peer list and does not participate in routing. The range is 1 to 65535. The value must be the same for all nodes on the network

ID	Instance ID

Command Mode

Interface Configuration

Default

SECONDS: The neighbor is considered as dead in 40s by default.

Usage

The dead interval is advertised in OSPFv3 hello packets. This value must be the same for all networking devices on a specific network.

Specifying a smaller dead interval (seconds) will give faster detection of a neighbor being down and improve convergence, but might cause more routing instability.

Examples

The following example sets the OSPFv3 dead interval to 20 seconds:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf dead-interval 20

Related Commands

ipv6 ospf hello-interval

show ipv6s ospf interface

1.13 ipv6 ospf hello-interval

To specify the interval between hello packets that the switch sends on the interface, use the ip ospf hello-interval command in interface configuration mode. To return to the default time, use the no form of this command.

Command Syntax

ip ospf hello-interval *SECONDS (***instance** *ID |)*

no ip ospf hello-interval *(***instance** *ID |)*

SECONDS	Interval (in seconds) during which the router must receive at least one hello packet from a neighbor or else that neighbor is removed from the peer list and does not participate in routing. The range is 1 to 65535. The value must be the same for all nodes on the network
ID	Instance ID

Command Mode

Interface Configuration

Default

10 seconds (Ethernet)

30 seconds (non-broadcast)

Usage

This value is advertised in the hello packets. The smaller the hello interval, the faster topological changes will be detected, but more routing traffic will ensue. This value must be the same for all routers and access servers on a specific network.

Examples

The following example sets the interval between hello packets to 15 seconds:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf hello-interval 15

Related Commands

ipv6 ospf dead-interval

1.14 ipv6 ospf mtu-ignore

To disable Open Shortest Path First Version3 (OSPFv3) maximum transmission unit (MTU) mismatch detection on receiving Database Descriptor (DBD) packets, use the ipv6 ospf

mtu-ignore command in interface configuration mode. To reset to default, use the no form of this command.

Command Syntax

ipv6 ospf mtu-ignore

no ipv6 ospf mtu-ignore

Command Mode

Interface Configuration

Default

OSPFv3 MTU mismatch detection is enabled.

Usage

OSPFv3 checks whether neighbors are using the same MTU on a common interface. This check is performed when neighbors exchange DBD packets. If the receiving MTU in the DBD packet is higher than the IP MTU configured on the incoming interface, OSPFv3 adjacency will not be established.

Examples

The following example disables MTU mismatch detection on receiving DBD packets:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf mtu-ignore

Related Commands

None

1.15 ipv6 ospf priority

To set the router priority, which helps determine the designated router for this network, use the ip ospf priority command in interface configuration mode. To return to the default value, use the no form of this command.

Command Syntax

ipv6 ospf priority *NUMBER-VALUE*

no ipv6 ospf priority

NUMBER-VALUE	A number value that specifies the priority of the router. The range is from 0 to 255

Command Mode

Interface Configuration

Default

Priority of 1

Usage

When two routers attached to a network both attempt to become the designated router, the one with the higher router priority takes precedence. If there is a tie, the router with the higher router ID takes precedence. A router with a router priority set to zero is ineligible to become the designated router or backup designated router. Router priority is configured only for interfaces to multi-access networks (in other words, not to point-to-point networks).

This priority value is used when you configure Open Shortest Path First Version3 (OSPFv3) for non-broadcast networks using the neighbor router configuration command for OSPFv3.

Examples

The following example sets the router priority value to 4:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf priority 4

Related Commands

None

1.16 Ipv6 ospf retransmit-interval

To specify the time between link-state advertisement (LSA) retransmissions for adjacencies belonging to the interface, use the ipv6 ospf retransmit-interval command in interface configuration mode. To return to the default value, use the no form of this command.

Command Syntax

ipv6 ospf retransmit-interval *SECONDS*

no ipv6 ospf retransmit-interval

SECONDS	Time (in seconds) between retransmissions. It must be greater than the expected round-trip delay between any two routers on the attached network. The range is from 1 to 65535 seconds. The default is 5 seconds

Command Mode

Interface Configuration

Default

5 seconds

Usage

When a router sends an LSA to its neighbor, it keeps the LSA until it receives back the acknowledgment message. If the router receives no acknowledgment, it will resend the LSA. The setting of this parameter should be conservative, or needless retransmission will result. The value should be larger for serial lines and virtual links.

Examples

The following example sets the retransmit interval value to 8 seconds:

Switch(config)# interface eth-0-1

Switch(config-if)# no switchport

Switch(config-if)# ipv6 ospf retransmit-interval 8

Related Commands

None

1.17 ipv6 ospf transmit-delay

To set the estimated time required to send a link-state update packet on the interface, use the ipv6 ospf transmit-delay command in interface configuration mode. To return to the default value, use the no form of this command.

Command Syntax

ipv6 ospf transmit-delay *SECONDS*

no ipv6 ospf transmit-delay

SECONDS	Time (in seconds) between retransmissions. It must be greater than the expected round-trip delay between any two routers on the attached network. The range is from 1 to 65535 seconds. The default is 5 seconds

Command Mode

Interface Configuration

Default

1 second

Usage

Link-state advertisements (LSAs) in the update packet must have their ages incremented by the amount specified in the seconds argument before transmission. The value assigned should take into account the transmission and propagation delays for the interface.

If the delay is not added before transmission over a link, the time in which the LSA propagates over the link is not considered. This setting has more significance on very low-speed links.

Examples

The following example sets the retransmit delay value to 3 seconds:

```
Switch(config)# interface eth-0-1
Switch(config-if)# no switchport
Switch(config-if)# ipv6 ospf transmit-delay 3
```

Related Commands

None

1.18 passive-interface (OSPF)

To disable sending routing updates for the Open Shortest Path First Version3 (OSPFv3) on an interface, use the passive-interface command in router configuration mode. To re-enable the sending of routing updates, use the no form of this command.

Command Syntax

passive-interface *INTERFACE-ID*

no passive-interface *INTERFACE-ID*

INTERFACE-ID	The interface name

Command Mode

Router Configuration

Default

Routing updates are sent on the interface.

Usage

If you disable the sending of routing updates on an interface, the particular subnet will continue to be advertised to other interfaces, and updates from other switches on that interface continue to be received and processed.

Examples

The following example sets the interface eth-0-1 as passive:

Switch(config)# router ipv6 ospf 200

Switch(config-router)# passive-interface eth-0-1

Related Commands

router ipv6 ospf

1.19 redistribute (OSPFv3)

To redistribute routes from one routing domain into Open Shortest Path First Version3 (OSPFv3) routing domain, use the redistribute command in router configuration mode. To disable redistribution, use the no form of this command.

Command Syntax

redistribute *PROTOCOL* [**route-map** *WORD*] **[tag** *TAG-VALUE*] **[metric** *METRIC-VALUE*] **[metric-type** *TYPE-VALUE*]

no redistribute *PROTOCOL* [**metric** *METRIC -VALUE*] [**metric-type** *TYPE-VALUE*]

route-map *WORD*	Route map reference. WORD :Pointer to route-map entries tag tag-value Set tag for routes redistributed into OSPF.tag-value: <0-4294967295> 32-bit tag value
PROTOCOL	(Optional) The name of a routing protocol, or the keyword connected, or static. If you specify a routing protocol, use one of the following keywords: bgp, and ripng
tag *TAG-VALUE*	Set tag for routes redistributed into OSPF.tag-value: <0-4294967295> 32-bit tag value
metric *METRIC-VALUE*	(Optional) When redistributing other processes to an OSPF process, the default metric is 20 when no metric value is specified
metric-type *TYPE-VALUE*	For OSPF, the external link type associated with the default route advertised into the OSPF routing domain. It can be one of two values

Command Mode

Router Configuration

Default

Route redistribution is disabled.

metric metric-value: 20

metric-type *TYPE-VALUE*: Type 2 external route

Usage

The metric value specified in the redistribute command supersedes the metric value specified using the default-metric command.

Examples

The following example redistribute the static routes into OSPFv3 with metric 10:

Switch(config)# router ospf 119

Switch(config-router)# redistribute static metric 10

Related Commands

default-metric

1.20 router-id (OSPF)

To use a fixed router ID, use the router-id command in router configuration mode. To force Open Shortest Path First Version3 (OSPFv3) to use the previous OSPF router ID behavior, use the no form of this command.

Command Syntax

router-id *IP-ADDRESS*

no router-id

IP-ADDRESS	Router ID in IP address format

Command Mode

Router Configuration

Default

No OSPF routing process is defined.

Usage

You can configure an arbitrary value in the IP address format for each router. However, each router ID must be unique.

If this command is used on an OSPFv3 router process which is already active (has neighbors), the new router-ID is used at the next reload or at a manual OSPFv3 process restart. To manually restart the OSPFv3 process, use the clear ip ospf command.

Examples

The following example specifies a fixed router-id:

Switch(config)# router ipv6 ospf 119

Switch(config-router)# router-id 10.1.1.1

Related Commands

clear ipv6 ospf

router ipv6 ospf

1.21 router ipv6 ospf

To configure an Open Shortest Path First Version3 (OSPFv3) routing process, use the router ipv6 ospf command in global configuration mode. To terminate an OSPFv3s routing process, use the no form of this command.

Command Syntax

router ipv6 ospf [*PROCESS-ID*]

no router ipv6 ospf [*PROCESS-ID*]

PROCESS-ID	Internally used identification parameter for an OSPF routing process. It is locally assigned and can be any positive integer. A unique value is assigned for each OSPF routing process

Command Mode

Global Configuration

Default

No OSPF routing process is defined.

Usage

You can specify multiple OSPFv3 routing processes in each router. If you do not specify the process-id, the process-id will be the default 0.

Examples

The following example configures an OSPFv3 routing process and assigns a process number of 109:

Switch(config)# router ipv6 ospf 109

Related Commands

None

1.22 summary-address (OSPFv3)

To create aggregate addresses for Open Shortest Path First Version3 (OSPFv3), use the summary-address command in router configuration mode. To restore the default, use the no form of this command.

Command Syntax

summary-address *PREFIX* / *PREFIX-LENGTH* [**not-advertise**] [**tag** *TAG-VALUE*]

no summary-address *PREFIX* / *PREFIX-LENGTH* [**not-advertise**] [**tag** *TAG-VALUE*]

PREFIX	IP route prefix for the destination
PREFIX-LENGTH	Prefix length for the network
not-advertise	(Optional) Suppress routes that match the specified prefix/mask pair. This keyword applies to OSPFv3 only
tag *TAG- VALUE*	<0-4294967295> Set tag**.** tag-value:32-bit tag value

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

Routes learned from other routing protocols can be summarized. The metric used to advertise the summary is the largest metric of all the more specific routes. This command helps reduce the size of the routing table.

Using this command for OSPFv3 causes 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. For OSPFv3, this command summarizes only routes from other routing protocols that are being redistributed into OSPFv3. Use the area range command for route summarization between OSPF areas.

OSPFv3 does not support the summary-address 0.0.0.0/0 command.

Examples

In the following example, the summary address 2001:1:1::/48 includes address 2001:1:1:1::/64, 2001:1:1:2::/64, and so on. Only the address 2001:1:1::/48 is advertised in an external link-state advertisement.

Switch(config)# router ipv6 ospf

Switch(config-router)# summary-address 2001:1:1::/48

Related Commands

area range

1.23 show ipv6 ospf

To display general information about Open Shortest Path First Version3 (OSPFv3) routing processes, use the show ipv6 ospf command in user EXEC or privileged EXEC mode.

Command Syntax

show ipv6 ospf (*PROCESS-ID*|)

PROCESS-ID	Internally used identification parameter for an OSPFv3 routing process. It is locally assigned and can be any positive integer. A unique value is assigned for each OSPFv3 routing process

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ipv6 ospf command when entered without a specific OSPFv3 process ID:

Switch# show ipv6 ospf

```
Routing Process "OSPFv3 (65535)" with ID 1.1.1.1
 Process uptime is 1 hour 52 minutes
 SPF schedule delay min 0.500 secs, SPF schedule delay max 50.0 secs
 Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs
 Number of incomming current DD exchange neighbors 0/5
 Number of outgoing current DD exchange neighbors 0/5
 Number of external LSA 0. Checksum Sum 0x0000
 Number of AS-Scoped Unknown LSA 0
 Number of LSA originated 3
 Number of LSA received 19
 Number of areas in this router is 1
    Area BACKBONE(0)
        Number of interfaces in this area is 1(1)
        SPF algorithm executed 6 times
        Number of LSA 4.  Checksum Sum 0x16569
        Number of Unknown LSA 0
```

Related Commands

None

1.24 show ipv6 ospf database

To display lists of information related to the Open Shortest Path First Version3 (OSPFv3) database for a specific router, use the show ip ospf database command in EXEC mode.

Command Syntax

show ipv6 ospf *(PROCESS-ID|)* **database**

show ipv6 ospf (*PROCESS-ID*|) **database adv-router** *ROUTER-ID*

show ipv6 ospf (*PROCESS-ID*|) **database (external | inter-prefix | inter-router | intra-prefix | link | network | router)** *[LINK-STATE-ID]* **(adv-router** *ROUTER-ID* | **self-originate)**

show ipv6 ospf *(PROCESS-ID|)* **database max-age**

show ipv6 ospf (*PROCESS-ID***|) database self-originate**

PROCESS-ID	Internally used identification parameter for an OSPFv3 routing process. It is locally assigned and can be any positive integer. A unique value is assigned for each OSPFv3 routing process
adv-router [*IP-ADDRESS*]	(Optional) Displays all the LSAs of the specified router. If no IP address is included, the information is about the local router itself (in this case, the same as self-originate)
LINK-STATE-ID	(Optional) Portion of the Internet environment that is being described by the advertisement. The value entered depends on the advertisement's LS type. It must be entered in the form of an IP address

Command Mode

Privileged EXEC

Default

None

Usage

The various forms of this command deliver information about different OSPFv3 link state advertisements.

Examples

The following is sample output from the show ipv6 ospf database command when no arguments or keywords are used:

Switch# show ip ospf database

```
          OSPFv3 Router with ID (1.1.1.1) (Process 65535)

              Link-LSA (Interface vlan1000)

Link State ID   ADV Router      Age  Seq#       CkSum  Prefix
0.0.19.232      1.1.1.1         1492 0x80000002 0x27e3     1
0.0.19.232      2.2.2.2         1488 0x80000002 0xcc94     1

              Router-LSA (Area 0.0.0.0)

Link State ID   ADV Router      Age  Seq#       CkSum    Link
0.0.0.0         1.1.1.1         1452 0x80000003 0x42d6     1
0.0.0.0         2.2.2.2         1449 0x80000003 0x24f0     1

              Network-LSA (Area 0.0.0.0)

Link State ID   ADV Router      Age  Seq#       CkSum
0.0.19.232      2.2.2.2         1453 0x80000001 0x7f99

              Intra-Area-Prefix-LSA (Area 0.0.0.0)

Link State ID   ADV Router      Age  Seq#       CkSum  Prefix  Reference
0.0.0.2         2.2.2.2         1448 0x80000001 0x96fd     2  Network-LSA
```

Related Commands

None

1.25 show ipv6 ospf interface

To display Open Shortest Path First Version3 (OSPFv3)-related interface information; use the show ipv6 ospf interface command in EXEC mode.

Command Syntax

show ipv6 ospf interface [*INTERFACE-NAME*]

INTERFACE-NAME	(Optional) Interface name. If the interface-name argument is included, only information for the specified interface is included

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output of the show ipv6 ospf interface command when vlan12 is specified:

Switch# show ipv6 ospf interface vlan12

```
vlan12 is up, line protocol is up
  Interface ID 4108
  IPv6 Prefixes
    fe80::8eb5:d5ff:fed9:ff00/10 (Link-Local Address)
    2004:12:0:12::1/96
  OSPFv3 Process (0), Area 0.0.0.0, Instance ID 0
    Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
    Transmit Delay is 1 sec, State Backup, Priority 1
    Designated Router (ID) 2.2.2.2
      Interface Address fe80::188f:beff:fe99:9800
    Backup Designated Router (ID) 1.1.1.1
      Interface Address fe80::8eb5:d5ff:fed9:ff00
    Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5
      Hello due in 00:00:06
    Neighbor Count is 1, Adjacent neighbor count is 1
```

Related Commands

None

1.26 show ipv6 ospf neighbor

To display Open Shortest Path First Version3 (OSPFv3)-neighbor information on a per-interface basis, use the show ipv6 ospf neighbor command in privileged EXEC mode.

Command Syntax

show ipv6 ospf neighbor [*INTERFACE-NAME*] [*NEIGHBOR-ID*] [**detail**]

INTERFACE-NAME	(Optional) Interface name. If the interface-name argument is included, only information for the specified interface is included
NEIGHBOR-ID	(Optional) Neighbor ID
detail	(Optional) Displays all neighbors given in detail (lists all neighbors)

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ipv6 ospf neighbor command showing a single line of summary information for each neighbor:

Switch# show ipv6 ospf neighbor

```
OSPFv3 Process (0)
Neighbor ID     Pri   State           Dead Time   Interface  Instance ID
2.2.2.2           1   Full/DR         00:00:31    vlan12     0
```

```
2.2.2.2          1   Full/DR         00:00:33    vlan1212   0
OSPFv3 Process (65535)
Neighbor ID     Pri   State           Dead Time   Interface  Instance ID
2.2.2.2          1   Full/DR         00:00:31    vlan1000   0
```

Related Commands

None

1.27 show ipv6 ospf database database-summary

To display the summary of database used by OSPFv3, use the show ip ospf database database-summary command in privileged EXEC mode.

Command Syntax

show ipv6 ospf (*PROCESS-ID*|)**database database-summary**

PROCESS-ID	(Optional) Internal identification. It is locally assigned and can be any positive integer. The number used here is the number assigned administratively when enabling the OSPF routing process

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to use show ipv6 ospf database database-summary command.

Switch# show ipv6 ospf 65535 database database-summary

```
          OSPFv3 Router with ID (1.1.1.1) (Process ID 65535)
```

```
Area (0.0.0.0) database summary
  LSA Type              Count         MaxAge
  Router                 2             0
  Network                1             0
  Inter-Prefix           0             0
  Inter-Router           0             0
  Intra-Prefix           1             0
  Subtotal               4             0

Process 65535 database summary
  LSA Type              Count         MaxAge
  Router                 2             0
  Network                1             0
  Inter-Prefix           0             0
  Inter-Router           0             0
  Type-5 Ext             0             0
  Link                   2             0
  Intra-Prefix           1             0
  Total                  6             0
```

Related Commands

None

1.28 show ipv6 ospf route

To display the summary of routes used by OSPFv3, use the show ipv6 ospf route summary command in privileged EXEC mode.

Command Syntax

show ipv6 ospf (*PROCESS-ID*|) **route**

PROCESS-ID	(Optional) Internal identification. It is locally assigned and can be any positive integer. The number used here is the number assigned administratively when enabling the OSPFv3 routing process

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to use show ipv6 ospf route command.

Switch# show ipv6 ospf route

```
OSPFv3 Process (0)
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area
     E1 - OSPF external type 1, E2 - OSPF external type 2

   Destination                              Metric
    Next-hop
C  2004:1:0:10::/96                            1
    directly connected, vlan10, Area 0.0.0.0
C  2004:1:0:20::/96                            1
    directly connected, vlan20, Area 0.0.0.14
C  2004:1:0:100::/96                           1
    directly connected, vlan100, Area 0.0.0.0
C  2004:1:0:200::/96                           1
    directly connected, vlan200, Area 0.0.0.14
O  2004:2:0:10::/96                            2
    via fe80::188f:beff:fe99:9800, vlan1212, Area 0.0.0.0
    via fe80::188f:beff:fe99:9800, vlan12, Area 0.0.0.0
IA 2004:2:0:20::/96                            2
    via fe80::188f:beff:fe99:9800, vlan1212, Area 0.0.0.0
    via fe80::188f:beff:fe99:9800, vlan12, Area 0.0.0.0
```

Related Commands

None

1.29 show ipv6 ospf route summary

To display the summary of routes used by OSPFv3, use the show ipv6 ospf route summary command in privileged EXEC mode.

Command Syntax

show ipv6 ospf (*PROCESS-ID*|) **route summary**

PROCESS-ID	(Optional) Internal identification. It is locally assigned and can be any positive integer. The number used here is the number assigned administratively when enabling the OSPFv3 routing process

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to use show ipv6 ospf route summary command.

Switch# show ipv6 ospf route summary

```
          OSPFv3 Router with ID (1.1.1.1) (Process ID 0)
 Route Type                    Count
 (C)Connected                    8
 (D)Discard                      0
 (O)Intra area                   2
 (IA)Inter area                  4
 (E1)Ext type 1                  0
 (E2)Ext type 2                  0
 (N1)NSSA Ext type 1             0
 (N2)NSSA Ext type 2             0
 Total                          14


          OSPFv3 Router with ID (1.1.1.1) (Process ID 65535)
 Route Type                    Count
 (C)Connected                    1
 (D)Discard                      0
 (O)Intra area                   1
```

```
  (IA)Inter area                  0
  (E1)Ext type 1                  0
  (E2)Ext type 2                  0
  (N1)NSSA Ext type 1             0
  (N2)NSSA Ext type 2             0
  Total                         2
```

Related Commands

None

1.30 show ipv6 protocols ospf

To display IPv6 routing protocol process parameters and statistics of Open Shortest Path First Version3 (OSPFv3).use the show ipv6 ospf protocols ospf command in privileged EXEC mode.

Command Syntax

show ipv6 protocols ospf

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following example shows how to use show ipv6 protocols ospf command.

Switch # show ipv6 protocols ospf

```
Routing Protocol is "OSPFv3 (0)" with ID 1.1.1.1
  Redistributing:
  Distance: (default is 110)


 Routing Protocol is "OSPFv3 (65535)" with ID 1.1.1.1
```

```
 Redistributing:
 Distance: (default is 110)
```

Related Commands

None

1.31 timers spf

To turn on Open Shortest Path First Version3 (OSPFv3) shortest path first (SPF) throttling, use the timers spf command in router configuration mode. To turn off SPF throttling, use the no form of this command.

Command Syntax

timers spf exp *SPF-HOLD_MIN SPF-HOLD_MAX*

no timers spf exp

SPF-HOLD_MIN	Indicates the maximum hold time between two consecutive SPF calculations. Value range is 0 to 2147483647 milliseconds
SPF-HOLD_MAX	Indicates the minimum hold time between two consecutive SPF calculations. Value range is 0 to 2147483647 milliseconds

Command Mode

Router Configuration

Default

None

Usage

None

Examples

The following example shows how to configure SPF calculation parameters.

Switch(config)# router ipv6 ospf 1

Switch(config-router)# router-id 10.10.10.2

Switch(config-router)# timers spf exp 20 50

Related Commands

None

1.32 max-concurrent-dd

To specify Maximum number allowed to process DD concurrently, use the max-concurrent-dd command in router configuration mode. To restore default value, use the no form of this command

Command Syntax

max-concurrent-dd *NUMBER-VALUE*

no max-concurrent-dd

NUMBER-VALUE	<1-65535>Number of DD process

Command Mode

Router Configuration

Default

None

Usage

This command used to specify Maximum number allowed to process DD concurrently.

Examples

The following example shows how to use max-concurrent-dd command.

Switch(config)# router ipv6 ospf 100

Switch(config-router)# router-id 10.10.10.2

Switch(config-router)# max-concurrent-dd 10

Related Commands

None

1.33 debug ipv6 ospf

Use this command to specify all debugging options for OSPFv3. Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf (**all**|)

no debug ipv6 ospf (**all**|)

all	enable all debugging

Command Mode

Privileged Exec

Default

None

Usage

The debug ospf all command enables the display of all debug information.

Examples

Switch# debug ipv6 ospf all

Related Commands

None

1.34 debug ipv6 ospf events

Use this command to specify debugging options for OSPFv3 event troubleshooting. Use this command without parameters to turn on all the options. Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf events (abr|asbr|nssa|os|router|vlink)

no debug ipv6 ospf events (abr|asbr|nssa|os|router|vlink)

abr	shows ABR events
asbr	shows ASBR events
nssa	shows NSSA events
os	shows OS interaction events
router	shows others router events
vlink	shows virtual link events

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf event command enables the display of debug information related to OSPFv3 internal events.

Examples

Switch# debug ipv6 ospf events nssa

Related Commands

None

1.35 debug ipv6 ospf ifsm

Use this command to specify debugging options for OSPFv3 Interface Finite State Machine (IFSM) troubleshooting.

Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf ifsm (status|events|timers)

no debug ipv6 ospf ifsm (status|events|timers)

status	Displays IFSM status information
events	Displays IFSM event information
timers	Displays IFSM TIMER information

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf ifsm command enables the display of debug information related to the Interface Finite State Machine (IFSM).

Examples

Switch# debug ipv6 ospf ifsm timers

Related Commands

None

1.36 debug ipv6 ospf nfsm

Use this command to specify debugging options for OSPFv3 Neighbor Finite State Machine (NFSM) troubleshooting.

Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf nfsm (status|events|timers)

no debug ipv6 ospf nfsm (status|events|timers)

status	Displays NFSM status information
events	Displays NFSM event information
timers	Displays NFSM TIMER information

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf nfsm command enables the display of debug information related to the Neighbor Finite State Machine (NFSM).

Examples

Switch# debug ipv6 ospf nfsm timers

Related Commands

None

1.37 debug ipv6 ospf lsa

Use this command to specify debugging options for OSPFv3 Link State Advertisements (LSA) troubleshooting.

Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf lsa (flooding|generate|install|maxage|refresh)

no debug ipv6 ospf lsa (flooding|generate|install|maxage|refresh)

flooding	Displays LSA flooding
generate	Displays LSA generate
install	Displays LSA installation
maxage	Displays the maximum age of LSA in seconds
refresh	Displays LSA refresh

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf lsa command enables the display of debug information related to internal operations of LSAs.

Examples

Switch# debug ipv6 ospf lsa install

Related Commands

None

1.38 debug ipv6 ospf packet

Use this command to specify debugging options for OSPFv3 packets.

Use the no parameter with this command to disable this function..

Command Syntax

debug ipv6 ospf packet *PARAMETERS*

no debug ipv6 ospf packet *PARAMETERS*

PARAMETERS = dd|detail|hello|ls-ack|ls-request|ls-update|recv|send

dd	Specifies debugging for OSPF database descriptions
detail	Sets the debug option to detailed information
hello	Specifies debugging for OSPF hello packets
ls-ack	Specifies debugging for OSPF link state acknowledgments
ls-request	Specifies debugging for OSPF link state requests
ls-update	Specifies debugging for OSPF link state updates
recv	Specifies the debug option set for received packets
send	Specifies the debug option set for sent packets

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf packet command enables the display of debug information related to the sending and receiving of packets.

Examples

Switch# debug ipv6 ospf packet dd send detail

Related Commands

None

1.39 debug ipv6 ospf route

Use this command to specify which route calculation to debug. Use this command without parameters to turn on all the options.

Use the no parameter with this command to disable this function.

Command Syntax

debug ipv6 ospf route (ase|ia|install|spf)

no debug ipv6 ospf route (ase|ia|install|spf)

ase	Specifies the debugging of external route calculation
ia	Specifies the debugging of Inter-Area route calculation
install	Specifies the debugging of route installation
spf	Specifies the debugging of SPF calculation

Command Mode

Privileged EXEC

Default

None

Usage

The debug ospf route command enables the display of debug information related to route-calculation

Examples

Switch# debug ipv6 ospf route install

Related Commands

None

1.40 show debugging ipv6 ospf

Use this command to display the set OSPFv3 debugging option..

Command Syntax

show debugging ipv6 ospf

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

This is a sample output from the show debugging ipv6 ospf command. Some lines in this output wrap around, they might not wrap around in the actual display.

Switch# show debugging ipv6 ospf

```
OSPFv3 debugging status:
  OSPFv3 all packet detail debugging is on
  OSPFv3 all IFSM debugging is on
  OSPFv3 all NFSM debugging is on
  OSPFv3 all LSA debugging is on
  OSPFv3 all route calculation debugging is on
  OSPFv3 all event debugging is on
```

Related Commands

None

1.41 show resource ipv6 ospf

Use this command to display the route resources used by OSPFv3 protocol.

Command Syntax

show resource ipov6 ospf

Command Mode

Privileged EXEC

Default

None

Usage

None.

Examples

The following is sample output from the show resource ipv6 ospf command:

Switch# show resource ipv6 ospf

```
OSPFv3

Resource                      Used        Capability
============================================================
```

```
Routes                          16          1913
```

Related Commands

show ipv6 ospf route summary

2 RIPng Commands

2.1 router ipv6 rip

To enable or configure the Routing Information Protocol next generation (RIPng) routing process, use the router ipv6 rip command in global configuration mode. To disable the RIPng routing process, use the no form of this command.

Command Syntax

router ipv6 rip

no router ipv6 rip

Command Mode

Global Configuration

Default

No RIPng routing process is defined.

Usage

None

Examples

The following example shows how to begin the RIPng routing process:

Switch(config)# router ipv6 rip

Related Commands

None

2.2 ipv6 router rip

To enable RIPng routing process on specifical interface, use the command ipv6 router rip in interface configuration mode. Use the no parameter with this command to disable RIPng routing process on interface.

Command Syntax

ipv6 router rip

no ipv6 router rip

Command Mode

Interface configuration

Default

None.

Usage

Use this command to enable RIPng routing on the interface.

Examples

In the following example, enable RIPng routing on the interface eth-0-1.

Switch (config)# interface eth-0-1

Switch (config-if)# no switchport

Switch (config-if)# ipv6 router rip

Related Commands

None

2.3 ipv6 rip metric-offset

Use this command to set RIP metric offset in interface mode. To restore the default metric, use the no form of this command.

Command Syntax

ipv6 rip metric-offset *NUMBER-VALUE*

no ipv6 rip metric-offset *NUMBER-VALUE*

NUMBER-VALUE	Default metric value is 1, the number range is 1 to 16

Command Mode

Interface configuration

Default

Metric offset value is 1.

Usage

Metric offset value is used to add the metric of the network on which the message arrived (as the RFC describes)..

Examples

In the following example, RIPng specify the adding metric value 2 when the RIPng message arrives

Switch(config)#interface eth-0-1

Switch (config-if)# ipv6 rip metric-offset 2

Related Commands

None

2.4 ipv6 rip split-horizon

To enable the split horizon mechanism for Routing Information Protocol next generation (RIPng), use the ipv6 rip split-horizon command in interface configuration mode. To disable the split horizon mechanism, use the no form of this command.

Command Syntax

ipv6 rip split-horizon (**poisoned**|)

no ipv6 rip split-horizon

poisoned	Split horizon with poisoned reverse

Command Mode

Interface Configuration

Default

This command is enabled with poisoned reverse by default.

Usage

In general, changing the default state for the ipv6 rip split-horizon command is not recommended, unless you are certain that your application requires a change in order to properly advertise routes.

Examples

The following example enables split horizon without poisoned reverse:

Switch(config)# interface eth-0-1

Switch(config-if)# ipv6 rip split- horizon

Related Commands

None

2.5 default-information originate (RIPng)

To generate a default route into Routing Information Protocol next generation (RIPng), use the default-information originate command in router configuration mode. To disable this feature, use the no form of this command.

Command Syntax

default-information originate (**route-map** *name*|)

no default-information originate

route-map	Route map reference

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

The default route can be learned by neighbor, but can’t be stored in FIB.

Examples

The following example originates a default route (0::0/0) into RIPng.

Switch(config)# router ipv6 rip

Switch(config-router)# default-information originate

Related Commands

None

2.6 default-metric (RIPng)

To specify the metrics to be assigned to redistributed routers for Routing Information Protocol next generation (RIPng), use the default-metric command in router configuration mode. To return to the default state, use the no form of this command.

Command Syntax

default-metric *NUMBER-VALUE*

no default-metric

NUMBER-VALUE	Default metric value is 1, the number range is 1 to 16

Command Mode

Router Configuration

Default

By default, the metric is set to 1.

Usage

The default-metric command is used in conjunction with the redistribute 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.

Examples

The following example shows a switch using both the RIPng and the Open Shortest Path First (OSPFv3) routing protocols. The example advertises OSPFv3-derived routes using RIPng and assigns the OSPFv3-derived routes a RIPng metric of 10.

Switch(config)# router ipv6 rip

Switch(config-router)#default-metric 10

Switch(config-router)#redistribute `ospfv3`

Related Commands

redistribute (RIPng)

2.7 distance (RIPng)

To define an administrative distance for routes that are inserted into the routing table, use the distance command in router configuration mode. To return the administrative distance to its default distance definition, use the no form of this command.

Command Syntax

distance *DISTANCE*

no distance

DISTANCE	Administrative distance, an integer from 1 to 255 (routes with a distance value of 255 are not installed in the routing table)

Command Mode

Router Configuration

Default

By default, the distance is 120.

Usage

Route Source	Default Distance
Connected interface	0
Static route	1
External Border Gateway Protocol (eBGP)	20
Open Shortest Path First (OSPF)	110
Routing Information Protocol (RIP)/ Routing Information Protocol next generation (RIPng)	120
Internal BGP	200
Unknown	255

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

Examples

The following is sample output from the distance command:

Switch(config)#router ipv6 rip

Switch(config-router)#distance 200

Related Commands

None

2.8 neighbor (RIPng)

To specify a neighboring router to which to notify routing updating information, use the neighbor command in router configuration mode. To remove the neighbor, use the no form of this command.

Command Syntax

neighbor *IP-ADDRESS INTERFACE-NAME*

no neighbor *IP-ADDRESS INTERFACE-NAME*

IP-ADDRESS	Link-local IP address of a peer switch with which routing information will be notified
INTERFACE-NAME	Interface name to which the neighbor is specified

Command Mode

Router Configuration

Default

No neighboring switches are defined.

Usage

Especially use the neighbor command in conjunction with the passive-interface command to send routing updates to specific neighbors. This command permits the point-to-point (non-multicast) notification of routing update information. Multiple neighbors can be configured

Examples

In the following example, RIPng updates are sent to all interfaces which have been enabled RIPng routing except eth-0-1. However, in this case a neighbor switch configuration command is included. This command permits the sending of routing updates to specific neighbors.

Switch(config)#router ipv6 rip

Switch(config-router)# passive-interface eth-0-1

Switch(config-router)# neighbor fe80:db8::1 eth-0-1

Related Commands

router rip

2.9 offset-list (RIPng)

To add an offset to incoming and outgoing metrics to routes exchangion via Routing Information Protocol next generation (RIPng), use the offset-list command in router configuration mode. To remove an offset list, use the no form of this command.

Command Syntax

offset-list *ACCESSS-LIST-NAME* (**in** | **out**) *METRIC-OFFSET* (*INTERFACE-NAME* |)

no offset-list (**in** | **out**) (*INTERFACE-NAME*|)

ACCESSS-LIST-NAME	Named access list to be applied
in	Applies the access list to incoming metrics
out	Applies the access list to outgoing metrics

METRIC- OFFSET	Positive offset to be applied to metrics for networks matching the access list. The meric-offset range is 0 to 16
INTERFACE-NAME	Interface name to which the offset list is applied

Command Mode

Router Configuration

Default

This command is disabled by default.

Usage

Especially if the offset value is added to the routing metric by offset-list, the default action where the metric updates when RIPng messag arrives (as RFC defined) is ignored, but outputs will be added.

The offset value is added to the routing metric. An offset list with an interface is considered extended and takes precedence over an offset list that is not extended. Therefore, if an entry passes the extended offset list and the normal offset list, the offset of the extended offset list is added to the metric.

Examples

In the following example, the switch applies an offset of 10 if access list 21 permits:

Switch(config)# router ipv6 rip

Switch(config-router)# offset-list 21 out 10

Related Commands

None

2.10 passive-interface (RIPng)

To disable sending routing updates for the Routing Information Protocol next generation (RIPng) on an interface, use the passive-interface command in router configuration mode. To re-enable the sending of routing updates, use the no form of this command.

Command Syntax

passive-interface *INTERFACE-NAME*

no passive-interface *INTERFACE-NAME*

INTERFACE-NAME	The interface name

Command Mode

Router Configuration

Default

Interface is active by default.

Usage

The command disable the sending of routing updates and ignore the request message from neighbor on an interface, but updates from other routers on that interface should be received and processed.

Examples

The following example sets the interface eth-0-1 as passive:

Switch(config)#router ipv6 rip

Switch(config-router)# passive-interface eth-0-1

Related Commands

router ipv6 rip

2.11 redistribute (RIPng)

To redistribute routes from one routing domain into RIPng routing domain, use the redistribute command in router configuration mode. To disable redistribution, use the no form of this command.

Command Syntax

redistribute *PROTOCOL* {[**metric** *VALUE*] | **route-map** *name*}

no redistribute *PROTOCOL*

PROTOCOL	*The name of a routing protocol, or the keyword connected, or static. If you specify a routing protocol, use one of the following keywords: bgp, and ospfv3, static, connected*
metric *VALUE*	*(Optional) When redistributing other routing process to the RIP process, the default metric is 1 if no metric value is specified*
route-map name	*Route map reference, name of route-map entry*

Command Mode

Router Configuration

Default

Route redistribution is disabled.

Metric-value: 1

Usage

The metric value specified in the redistribute command supersedes the metric value specified using the default-metric command.

Examples

The following example redistributesthe static routes into RIPng with metric 10:

Switch(config)#router ipv6 rip

Switch(config-router)#redistribute static metric 10

Related Commands

default-metric

2.12 timers basic (RIPng)

To adjust Routing Information Protocol next generation (RIPng) network timers, use the timers basic command in router configuration mode. To restore the default timers, use the no form of this command.

Command Syntax

timers basic *UPDATE TIMEOUT INVALID*

no timers basic

UPDATE	Rate (in seconds) at which updates are sent. This is the fundamental timing parameter of the routing protocol
TIMEOUT	Time (in seconds) after which a route is declared invalid without updates that refresh the route. The route then enters into an invalid state and is not used for forwarding packets. It is marked inaccessible and advertised as unreachable
INVALID	Time after which an invalid route is removed from RIPng routing database

Command Mode

Router Configuration

Default

Update timer: 30 seconds

Timeout timer: 180 seconds

Invalid timer: 120 seconds

Usage

The basic timing parameters for RIPng are adjustable. Because RIPng is executing a distributed, asynchronous routing algorithm, these timers must be the same for all switches and access servers in the network.

Examples

The following example sets updates to every 5 seconds. If a switch is not learned from in 15 seconds, the route is declared unusable. And after 15 seconds the invalid route will be removed from RIPng routing database.

Switch(config)#router ipv6 rip

Switch(config-router)#timers basic 5 15 15

Related Commands

None

2.13 distribute-list(RIPng)

To filter networks in routing updates, use the distribute-list command in router configuration mode. To restore the default value, use the no form of this command.

Command Syntax

distribute-list (**prefix** *name* | *ACCESSS-LIST-NAME*) (**in**|**out**) (*INTERFACE-NAME* |)

no distribute-list (**prefix** *name* | *ACCESSS-LIST-NAME*) (**in**|**out**) (*INTERFACE-NAME* |)

prefix *name*	Filter prefixes in routing update
ACCESSS-LIST-NAME	Access-list name
in	Filter incoming routing updates
out	Filter outgoing routing updates
INTERFACE-NAME	The interface name

Command Mode

Router Configuration

Default

None

Usage

None

Examples

The following is sample to filter all inputting packets:

Switch(config)#router ipv6 rip

Switch(config-router)# distribute-list prefix 1 in

Related Commands

ipv6 prefix-list

2.14 aggregate-address (RIPng)

To specify an aggregate RIPng route announcement, use the aggregate-address command in router configuration mode. To disable this feature, use the no form of this command.

Command Syntax

aggregate-address *IP-ADDRESS* (**avoid-feedback**|) *INTERFACE-NAME*

no aggregate-address *IP-ADDRESS INTERFACE-NAME*

IP-ADDRESS	Specify an aggregate network (IPv6 address prefix and length).
avoid-feedback	Forbid to learn the address which is the same to aggregate address from the interface
INTERFACE-NAME	The interface name

Command Mode

Router Configuration

Default

No aggregate address is defined.

Usage

If the routing info is suppressed by aggregate-address, it is still stored in RIPng database, but willn't be notified to nerghbor. On the other hand the aggregate-address will be notified to neighbor..

Examples

In the following example, RIPng specify an aggregate address into RIPng database.

Switch(config)#router ipv6 rip

Switch(config-router)# aggregate-address 2001:db8::/32

Related Commands

None

2.15 route map(RIPng)

Use this command to set a route map for input or output filtering on a specified interface. Use the no parameter with this command to disable this function.

Command Syntax

route-map *name* **(in|out)** *INTERFACE-NAME*

no route-map *name* **(in|out)** *INTERFACE-NAME*

name	route map name
in	route map for input filterings
out	route map for output filtering
INTERFACE-NAME	Specify an interface name to which to associate the route map

Command Mode

Router configuration

Default

None.

Usage

Use this command to set a route map for input or output filtering on a specified interface.

Examples

In the following example, set a route map for input filtering interface eth-0-1.

Switch (config)# router ipv6 rip

Switch (config-router)# route-map routemap10 in eth-0-1

Related Commands

None

2.16 maximum-prefix(RIPng)

Use this command to configure the maximum prefix. Use the no parameter with this command to disable the limiting of the number of RIPng routes in the routing table.

Command Syntax

maximum-prefix *NUMBER-VALUE* (*PERCENTAGE-VALUE* |)

no maximum-prefix

NUMBER-VALUE	maximum number of RIPng routes allowed,the range is 1 to 65535
PERCENTAGE-VALUE	Percentage of maximum routes to generate a warning, the range is 1 to 100. The default threshold is 75%.

Command Mode

Router configuration

Default

None.

Usage

Use this command to configure the maximum prefix.

Examples

In the following example, set maximum prefix 700 and warning percentage is 70%.

Switch (config)# router ipv6 rip

Switch (config-router)# maximum-prefix 700 70

Related Commands

None

2.17 show ipv6 rip database

Use this command to display RIPng information database.

Command Syntax

show ipv6 rip database

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ip rip database command.

Switch# show ipv6 rip database

```
Codes: R - RIP, Rc - RIP connected, Rs - RIP static, Ra - RIP aggregated,
       Rcx - RIP connect suppressed, Rsx - RIP static suppressed,
       K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS, B - BGP

   Network                  Next Hop                If     Met Tag  Time
Rc 2001:db8:0:6::/64          ::                     eth-0-9   1   0
Rc 2001:db8:0:49::/64         ::                     eth-0-48   1   0
```

Related Commands

show ipv6 rip interface

2.18 show ipv6 rip interface

To display summary information of Routing Information Protocol next generation (RIPng) for a specific interface, use the show ip rip interface command in privileged EXEC mode.

Command Syntax

show ipv6 rip interface (*INTERFACE-NAME* |)

INTERFACE-NAME	*The interface name*

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ip rip interface command.

Switch# show ipv6 rip interface eth-0-9

```
eth-0-9 is up, line protocol is up
  Routing Protocol: RIPng
    Passive interface: Disabled
    Split horizon: Enabled with Poisoned Reversed
    IPv6 interface address:
      2001:db8:0:6::2/64
      fe80::b4df:82ff:fe70:ec00/10
```

Related Commands

show ipv6 rip database

2.19 show ipv6 rip database database-summary

Use this command to display the summary statistics for RIPng database.

Command Syntax

show ipv6 rip database database-summary

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ip rip database database-summary command.

Switch# show ipv6 rip database database-summary

```
Type                Count
RIPng connected       2
Total                 2
```

Related Commands

show ipv6 rip database

2.20 show ipv6 protocols rip

To show Routing Information Protocol next generation (RIPng), use the show ipv6 protocol rip command in privileged EXEC mode.

Command Syntax

show ipv6 protocols rip

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show ipv6 rip interface command.

Switch# show ipv6 protocols rip

```
Routing Protocol is "ripng"
  Sending updates every 30 seconds with +/-50%, next due in 2949331570 seconds
  Timeout after 180 seconds, garbage collect after 120 seconds
  Outgoing update filter list for all interface is not set
  Incoming update filter list for all interface is not set
  Default redistribute metric is 1
  Redistributing:
  Interface
    eth-0-9
```

```
  eth-0-48
 Routing for Networks:
 Number of routes (including connected): 2
 Distance: (default is 120)
```

Related Commands

None

2.21 debug ipv6 rip

Use this command to specify the options for the displayed debugging information for RIPng events, RIPng packets. Use the no parameter with this command to disable all debugging.

Command Syntax

debug ipv6 rip (**all**|**events**|**packet** |)

no debug ripv6 (**all**|**events**|**packet** |)

no debug all ipv6 (**rip** |)

all	All RIPng debug information
events	RIPng events debug information is displayed
packet	packet (recv|send) (detail) Specifies RIPng packets only

Command Mode

Privileged EXEC

Default

Disabled

Usage

None

Examples

The following example displays information about the ripng packets that are received and sent out from the connected router.

Switch# debug ipv6 rip packet

Related Commands

show debugging rip

2.22 show debugging ipv6 rip

Use this command to display the RIP debugging status for these debugging options: nsm debugging, RIP event debugging, RIP packet debugging.

Command Syntax

show debugging ipv6 rip

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to display the debug status of RIPng.

Examples

The following is sample output from the show debugging ripng command.

Switch# show debugging ipv6 rip

```
RIPng debugging status:
  RIPng event debugging is on
```

Related Commands

debug ipv6 rip

2.23 show resource ipv6 rip

Use this command to display the route resources used by RIPng protocol.

Command Syntax

show resource ipv6 rip

Command Mode

Privileged EXEC

Default

None

Usage

None

Examples

The following is sample output from the show resource ipv6 rip command.

Switch# show resource ipv6 rip

RIPng

```
Resource                        Used         Capability
============================================================
Routes                          2            728
```

Related Commands

show ipv6 rip database

2.24 clear ipv6 rip route

To clear the specifical route in RIPng routing table, use the command clear ipv6 rip router in privileged exec mode.

Command Syntax

clear ipv6 rip route (*IP-ADDRESS*|*connected*|*static*|*ospfv3*|*bgp*|*all*)

IP-ADDRESS	Removes entries which exactly match this destination address from the RIPng routing table.
connected	Removes entries for connected routes from the RIPng routing table.
static	Removes static entries from the RIPng routing table
ospfv3	Removes only OSPF routes from the RIPng routing table
bgp	Removes only BGP routes from the RIPng routing table
all	Removes the entire RIPng routing table

Command Mode

Privileged EXEC

Default

None.

Usage

Use this command to clear specific data from the RIPng routing table.

Examples

In the following example, clear the entire RIPng routing table.

Switch# clear ipv6 rip route all

Related Commands

None

3 IPv6UC Commands

3.1 ipv6 enable

Use this command to enable ipv6 function. Use the no form of this command to disable ipv6 function.

Command Syntax

ipv6 enable

no ipv6 enable

Command Mode

Global Configuration

Default

Ipv6 function is disabled by default.

Usage

This command is used to enable the ipv6 function globally. Ipv6 packet should be processed as a L2 packet when ipv6 function is disabled.

Examples

Switch (config)# ipv6 enable

Related Commands

None

3.2 max-static-v6routes

To configure the maximum ipv6 static routes in system, use the max-static-v6routes command in global configuration mode. To configure the maximum static routes to default value, use the no form of this command.

Command Syntax

max-static-v6routes *count*

no max-static-v6routes

Count	the range is <1-65535>

Command Mode

Global Configuration

Default

Please reference the current TCAM profile.

Usage

Users should not configure the maximum ipv6 static routes more than system profile of FIB. Also, users should not configure the maximum ipv6 static routes less than the current static routes count.

Examples

The following example displays how to change maximum ipv6 static routes to 10.

Switch (config)# max-static-v6routes 10

Related Commands

show ipv6 route

3.3 ipv6 route

To establish ipv6 static routes, use the ipv6 route command in global configuration mode. To remove ipv6 static routes, use the no form of this command.

Command Syntax

ipv6 route *DEST_PREFIX* (*NEXTHOP* |*IFTUNNEL*)

i**pv6 route** *DEST_PREFIX* (*NEXTHOP* |*IFTUNNEL*) *ADMIN_DISTANCE*

ipv6 route *DEST_PREFIX NEXTHOP INTERFACE*

ipv6 route *DEST_PREFIX NEXTHOP INTERFACE ADMIN_DISTANCE*

no ipv6 route *DEST_PREFIX NEXTHOP INTERFACE*

no ipv6 route *DEST_PREFIX NEXTHOP*

no ipv6 route *DEST_PREFIX*

DEST_PREFIX	IPv6 route prefix (in format X:X::X:X/M) for the destination
NEXTHOP	IPv6 route address (in format X:X::X:X) for the nexthop
IFTUNNEL	Tunnel interface name for the ipv6 route
INTERFACE	Out going interface for the ipv6 route
ADMIN_DISTANCE	(Optional) An administrative distance. Between 1 - 255. The default administrative distance for a static route is 1. This configuration is optional.

Command Mode

Global Configuration

Default

There is not any static IPv6 route configured by default.

Usage

None

Examples

Switch (config)# ipv6 route 3001::1/64 fe80::1234 eth-0-2

Switch (config)# ipv6 route 3002::1/64 3001::1

Related Commands

show ipv6 route

3.4 ipv6 address

To set an IPv6 address for an interface, use the ipv6 address command in interface configuration mode. To remove an IPv6 address, use the no form of this command.

Command Syntax

ipv6 address *GOLBAL_FREFIX* (**eui-64**|**anycast**|)

no ipv6 address *GOLBAL_FREFIX* (**eui-64**|)

ipv6 address *LINK-LOCAL* **link-local**

no ipv6 address *LINK-LOCAL* **link-local**

ipv6 address auto link-local

no ipv6 address auto link-local

no ipv6 address

GOLBAL_FREFIX	Global IPv6 address and prefix length. In X:X::X:X/M format
LINK-LOCAL	Link-local IPv6 address. In X:X::X:X format

Command Mode

Interface Configuration

Default

There is not any ipv6 address on the interface by default.

Usage

Use this command to configure ipv6 address on the interface. Use the no form of this command to remove the ipv6 address. This configuration should not affect the ipv4 functions and other ipv6 configuration on the interface.

The maximum count of the Link-local address is 1; the maximum count of the global address and anycast address is 8.

Use this command with the keyword "auto link-local " to automatically generate a link-local address, if there is no link-local address on this interface. Use the no form of this command with the keyword "auto link-local" to remove the automatically generated link-local address, if there is only that automatically generated link-local address left on this interface.

Use this command with a specified ipv6 address (e.g. 3ffe:506::1/48) to configure a global unicast or anycast ipv6 address. Use this command with the keyword "eui-64" to generate interface id automatically by the eui-64 algorithm. Use this command with the keyword "anycast" to point out this specified ipv6 address is an anycast address. The global address and the anycast should not be same. Use the no form of this command the remove the specified ipv6 global unicast or anycast address.

If there is no link-local address on the interface, system should automatically generate one when configure a global unicast or anycast ipv6 address.

Use this command with a specified ipv6 address (e.g. fe80::1) and a keyword "link-local" to configure a link-local address. Use the no form of this command with the specified ipv6 address and the keyword "link-local" to remove the specified ipv6 link-local address. The specified link-local address has a higher priority than the automatically generated the link-local address, that can overwrite the automatically generated one.

Use the no form of this command without any parameters or keywords to remove all ipv6 addresses on the interface, include ipv6 global addresses, anycast addresses and link-local addresses.

Examples

Switch (config-if)# ipv6 address fe80::1233 link-local

Switch (config-if)# ipv6 address 3001:1::1234/64

Related Commands

show ipv6 interface

3.5 show ipv6 route

Use this command to show the ipv6 routes.

Command Syntax

show ipv6 route (**database**|)

show ipv6 route (**database**|) (**bgp**|**connected**|**ospf**|**rip**|**static**)

show ipv6 route *IPV6_ADDRESS*

show ipv6 route *IPV6_PREFIX*

show ipv6 route

show ipv6 route summary

IPV6_ADDRESS	IPv6 prefix in X:X::X:X/M format
IPV6_PREFIX	IPv6 address in X:X::X:X format

Command Mode

Privileged EXEC

Default

None

Usage

Use this command to show the ipv6 routes

Examples

Switch # show ipv6 route

```
IPv6 Routing Table
Codes: C - connected, S - static, R - RIP, O - OSPF, I - IS-IS, B - BGP
       [*] - [AD/Metric]
Timers: Uptime
```

```
S       3001::/64 [1/0]
        via fe80::1234, eth-0-2, 04:09:56
C       3001:1::/64
        via ::, eth-0-1, 01:39:07
C       3001:1::1234/128
        via ::1, eth-0-1, 01:39:07
S       3002::/64 [1/0]
        via 3001::1 (recursive via fe80::1234), eth-0-2, 04:09:19
C       3ffe:2::/64
        via ::, eth-0-2, 1d19h37m
C       3ffe:2::10/128
        via ::1, eth-0-2, 1d19h37m
C       fe80::/10
        via ::, Null0, 1d19h53m
```

Switch # show ipv6 route database

```
IPv6 Routing Table
Codes: C - connected, S - static, R - RIP, O - OSPF, I - IS-IS, B - BGP
       [*] - [AD/Metric]
       > - selected route, * - FIB route, p - stale info
Timers: Uptime

S    >  3001::/64 [1/0]
     * via fe80::1234, eth-0-2, 04:10:45
C    >  3001:1::/64
     * via ::, eth-0-1, 01:39:56
C     >  3001:1::1234/128
      * via ::1, eth-0-1, 01:39:56
S    >  3002::/64 [1/0]
     * via 3001::1 (recursive via fe80::1234), eth-0-2, 04:10:08
C    >  3ffe:2::/64
     * via ::, eth-0-2, 1d19h37m
C     >  3ffe:2::10/128
      * via ::1, eth-0-2, 1d19h37m
C    >  fe80::/10
     * via ::, Null0, 1d19h54m
```

Switch # show ipv6 route static

```
IPv6 Routing Table
Codes: C - connected, S - static, R - RIP, O - OSPF, I - IS-IS, B - BGP
       [*] - [AD/Metric]
Timers: Uptime

S       3001::/64 [1/0]
        via fe80::1234, eth-0-2, 04:11:42
S       3002::/64 [1/0]
        via 3001::1 (recursive via fe80::1234), eth-0-2, 04:11:05
```

Switch # show ipv6 route 3001::64

```
Routing entry for 3001::/64
```

```
  Known via "static", distance 1, metric 0, best
  Last update 04:12:32 ago
  * via fe80::1234, eth-0-2
```

Switch # show ipv6 route 3001::64/64

```
Routing entry for 3001::/64
  Known via "static", distance 1, metric 0, best
  Last update 04:13:03 ago
  * via fe80::1234, eth-0-2
```

Switch # show ipv6 route summary

```
IPv6 routing table name is Default-IPv6-Routing-Table(0)
IPv6 routing table maximum-paths is 8
Route source networks
connected       5
static          2
Total           7
Related Commands
ipv6 route
```

Related Commands

ipv6 route

3.6 show ipv6 interface

Use this command to show the ipv6 ipv6 statues on the interface.

Command Syntax

show ipv6 interface (*IFNAME*|) (**brief**|)

IFNAME	IPv6 interface status and configuration
brief	Brief summary of IPv6 status and configuration

Command Mode

EXEC

Default

None

Usage

None

Examples

Switch # show ipv6 interface eth-0-1

```
Interface eth-0-1
  Interface current state: UP
  The maximum transmit unit is 1500 bytes
  IPv6 is enabled, link-local address is fe80::1233
  Global unicast address(es):
    3001:1::1234, subnet is 3001:1::/64
  Joined group address(es):
    ff02::1:ff00:1234
    ff02::1:ff00:0
    ff02::1:ff00:1233
    ff02::2
    ff02::1
  ICMP error messages limited to one every 2000 milliseconds
  ICMP redirects are always sent
  ND DAD is enabled, number of DAD attempts: 1
  ND router advertisement is disabled
  ND reachable time is 30000 milliseconds
  ND advertised reachable time is 0 milliseconds
  ND retransmit interval is 1000 milliseconds
  ND advertised retransmit interval is 0 milliseconds
  ND router advertisements max interval: 600 secs
  ND router advertisements min interval: 198 secs
  ND router advertisements live for 1800 seconds
  ND router advertisements hop-limit is 0
  Hosts use stateless autoconfig for addresses.
```

Switch # show ipv6 interface eth-0-1 brief

```
*down: administratively down
Interface          Status  Protocol  IPv6 address
eth-0-1            up      up        3001:1::1234
                                     fe80::1233
```

Related Commands

ipv6 enable

ipv6 address

3.7 ipv6 verify unicast reverse-path

Use this command to enable urpf (unicast reverse path forwarding) on the interface. Use the no form of this command to disable urpf on the interface.

Command Syntax

ipv6 verify unicast reverse-path

no ipv6 verify unicast reverse-path

Command Mode

Interface Configuration

Default

Urpf is disable on the interface by default.

Usage

Use this command to enable urpf (unicast reverse path forwarding) on the interface. Use the no form of this command to disable urpf on the interface.

Examples

Switch (config-if)# ipv6 verify unicast reverse-path

Related Commands

show ipv6 interface

3.8 ipv6 icmp error-interval

Use this command to set the ipv6 icmp error-interval. Use the no form of this command to set the ipv6 icmp error-interval to default.

Command Syntax

ipv6 icmp error-interval *ERROR_INTERVAL*

no ipv6 icmp error-interval

error-interval *ERROR_INTERVAL*	ICMPv6 Error message interval. Between 0 – 2147483647.

Command Mode

Global Configuration

Default

1000 milliseconds.

Usage

None

Examples

Switch (config)# ipv6 icmp error-interval 2000

Related Commands

None

4 Ipv6 Prefix-list Commands

4.1 ipv6 prefix-list

To create a ipv6 prefix list or add a prefix-list entry, use the ipv6 prefix-list command in global configuration mode. To delete a prefix-list or an entry, use the no form of this command.

Command Syntax

ipv6 prefix-list *WORD* [**seq** *SEQUENCE-NUMBER*] (**deny** | **permit**)

(**any** | *IPv6-ADDRESS/M* [**ge** *GE-LENGTH*] [**le** *LE-LENGTH*])

no ipv6 prefix-list *WORD* [**seq** *SEQUENCE-NUMBER*] (**deny** | **permit**)

(**any** | *IPv6-ADDRESS/M* [**ge** *GE-LENGTH*] [**le** *LE-LENGTH*])

no ipv6 prefix-list *WORD* [**seq** *SEQUENCE-NUMBER*]

WORD	Config a name to identify the prefix list
seq SEQUENCE-NUMBER	Applies a sequence number to a prefix-list entry. The range of sequence number that can be entered is from 1 to 65535. If a sequence number is not entered when configuring this command, a default sequence numbering is applied to the prefix list. The number 5 is applied to the first prefix entry, and subsequent unnumbered entries are incremented by 5
deny	Denies access for a matching condition
permit	Permits access for a matching condition
IPv6-ADDRESS /M	Configures the network address, and the length of the network mask in bits. The network number can be any valid IPv6 address or prefix. The bit mask can be a number from 0 to 128
ge GE-LENGTH	(Optional)Specifies the lesser value of a range (the “from” portion of the range description) by applying the ge-length argument to the range specified. The ge-length argument represents the minimum prefix length to be matched

le LE-LENGTH	(Optional)Specifies the greater value of a range (the “to” portion of the range description) by applying the le-length argument to the range specified. The le-length argument represents the maximum prefix length to be matched

Command Mode

Global Configuration

Default

No prefix lists are created.

Usage

The ipv6 prefix-list command is used to configure IPv6 prefix filtering. Prefix lists are configured with permit or deny keywords to either permit or deny the prefix based on the matching condition. A prefix list consists of an IPv6 address and a bit mask. The IPv6 address can be global address, or a link-local address. The bit mask is entered as a number from 1 to 128. An implicit deny is applied to traffic that does not match any prefix-list entry. Prefix lists are configured to match an exact prefix length or a prefix range. The ge and le keywords are used to specify a range of the prefix lengths to match, providing more flexible configuration than can be configured with just the network/length argument. The prefix list is processed using an exact match when neither the ge nor le keyword is entered. If only the ge value is entered, the range is the value entered for the ge ge-length argument to a full 128-bit length. If only the le value is entered, the range is from value entered for the network/length argument to the le le-length argument. If both the ge ge-length and le le-length keywords and arguments are entered, the range falls between the values used for the ge-length and le-length arguments. The following formula shows this behavior:

network/length < ge ge-length < le le-length <= 128 .

A prefix list is configured with a name and/or sequence number. One or the other must be entered when configuring this command. If a sequence number is not entered, a default sequence number of 5 is applied to the prefix list. And subsequent prefix list entries will be increment by 5 (for example, 5, 10, 15, and onwards). If a sequence number is entered for the first prefix list entry but not subsequent entries, then the subsequent entries will also be incremented by 5 (For example, if the first configured sequence number is 3, then subsequent entries will be 8, 13, 18, and onwards). Default sequence numbers can be suppressed by entering the no form of this command with the seq keyword. Prefix lists are evaluated starting with the lowest sequence number and continues down the list until a match is made. Once a match is made that covers the network the permit or deny statement is applied to that network and the rest of the list is not evaluated.

Examples

The following example shows how to configure ipv6 prefix-list:

To deny the default route ::/0:

Switch(config)# ipv6 prefix-list abc deny ::/0

To permit the prefix 2001:db8::/64:

Switch(config)# ipv6 prefix-list abc permit 2001:db8::/64

To accept a mask length of up to 64 bits in routes with the prefix 2001:db8::/32:

Switch(config)# ipv6 prefix-list abc permit 2001:db8::/32 le 64

To deny mask lengths greater than 64 bits in routes with the prefix 2001:db8::/32:

Switch(config)# ipv6 prefix-list abc deny 2001:db8::/32 ge 64

Related Commands

ipv6 prefix-list description

ipv6 prefix-list sequence

show ipv6 prefix-list

clear ipv6 prefix-list

4.2 ipv6 prefix-list description

To add a text description of a ipv6 prefix list, use the ipv6 prefix-list description command in global

configuration mode. To remove the text description, use the no form of this command

Command Syntax

ipv6 prefix-list *WORD* **description** *LINE*

no ipv6 prefix-list *WORD* **description** [*LINE*]

WORD	Name of prefix list
LINE	Up to 80 characters describing this prefix-list

Command Mode

Global Configuration

Default

There is no description for prefix-list.

Usage

The ipv6 prefix list will be created if it didn't exist.

Examples

The following example shows how to add description:

Switch(config)# ipv6 prefix-list abc description Permit routes from customer A

Related Commands

ipv6 prefix-list

ipv6 prefix-list sequence

show ipv6 prefix-list

clear ipv6 prefix-list

4.3 ipv6 prefix-list sequence-number

To enable the generation of sequence numbers for entries in a ipv6 prefix list, use the ipv6 prefix-list sequence-number command in global configuration mode. To disable this function, use the no form of this command.

Command Syntax

ipv6 prefix-list sequence-number

no ipv6 prefix-list sequence-numbe

Command Mode

Global Configuration

Default

This command has no default behavior.

Usage

This command is used to enable sequence-number display.

Examples

The following example shows how to enable ipv6 prefix-list sequence-number:

Switch(config-if)# ipv6 prefix-list sequence-number

Related Commands

ipv6 prefix-list

show ipv6 prefix-list

clear ipv6 prefix-list

4.4 show ipv6 prefix-list

To show ipv6 prefix list information, use the show ipv6 prefix-list command.

Command Syntax

show ipv6 prefix-list (**summary** | **detail**|) (*WORD*|)

show ipv6 prefix-list *WORD* (**seq** SEQUENCE-NUMBER| *IPv6-ADDRESS /M* (**longer** | **first-match**|) |)

summary	Summary of prefix lists
detail	Detail of prefix lists
WORD	Name of the prefix list
seq SEQUENCE-NUMBER	sequence number of the entry in the ipv6 prefix list
IPv6-ADDRESS /M	IPv6 prefix <network>/<length>, e.g., 2001:db8::/32
longer	Lookup longer prefix
first-match	First matched prefix

Command Mode

Privileged EXEC

Default

This command has no default behavior.

Usage

None

Examples

The following example shows how to display ip prefix-list:

```
Switch# show ipv6 prefix-list
ipv6 prefix-list ripng_pre: 5 entries
    seq 1 deny 2001:db8:9::/64
    seq 2 deny 2001:db8:10::/64
    seq 3 deny 2001:db8:11::/64
    seq 4 deny 2001:db8:12::/64
    seq 5 permit any
```

Related Commands

ipv6 prefix-list

clear ipv6 prefix-list

4.5 clear ipv6 prefix-list

To Resets the hit count of the prefix list entries, use the clear ipv6 prefix-list command.

Command Syntax

clear ipv6 prefix-list (*WORD* (*IPv6-ADDRESS /M*)|)

WORD	Name of the prefix list
IPv6-ADDRESS /M	IPv6 prefix <network>/<length>, e.g., 2001:db8::/32

Command Mode

Privileged EXEC

Default

This command has no default behavior.

Usage

None

Examples

The following example shows how to clear ipv6 prefix-list:

Switch(config)# clear ipv6 prefix-list test

Related Commands

ipv6 prefix-list

5 Route Map Commands

5.1 route-map

To define the conditions for redistributing routes from one routing protocol into another, or to enable policy routing in bgp, use the route-map command in global configuration mode and the match and set command in route-map configuration modes. To delete an entry, use the no form of this command.

Command Syntax

route-map *map-TAG* [**permit** | **deny**] [*sequence-NUMBER*]

no route-map *map-TAG* [**permit** | **deny**] [*sequence-NUMBER*]

map-TAG	A meaningful name for the route map. The redistribute router configuration command uses this name to reference this route map. Multiple route maps may share the same map tag name. The length of route-map name should not greater than 20 and the first character should be 'a'-'z', 'A'-'Z' or '0'-'9'
permit	(Optional) If the match criteria are met for this route map, and the permit keyword is specified, the route is redistributed as controlled by the set actions. If the match criteria are not met, and the permit keyword is specified, the next route map with the same map tag is tested. If a route passes none of the match criteria for the set of route maps sharing the same name, it is not redistributed by that set.
deny	(Optional) If the match criteria are met for the route map and the deny keyword is specified, the route is not redistributed
sequence-NUMBER	(Optional) Number that indicates the position a new route map will have in the list of route maps already configured with the same name. If given with the no form of this command, the position of the route map should be deleted

Command Mode

Global Configuration

Defaults

The permit keyword is the default.

Usage

None

Examples

The following example shows how to create a route-map and enter route-map configuration mode:

Switch(config)# route-map rip-to-ospf permit

Switch(config-route-map)# match metric 1

Switch(config-route-map)# set metric 2

Related Commands

match as-path

match community

match interface

match ip address

match local-preference

match metric

match origin

match route-type

match tag

set aggregator

set as-path

set atomic-aggregate

set comm-list

set community

set dampening

set extcommunity

set ip address

set local-preference

set metric

set metric-type

set origin

set originator-id

set tag

set vpnv4

set weight

5.2 match as-path

Use this command to match an autonomous system path access list.

Use the no parameter with this command to remove a path list entry.

The match as-path command specifies the autonomous system path to be matched. If there is a match for the specified AS path, and permit is specified, the route is redistributed or controlled, as specified by the set action. If the match criteria are met, and deny is specified, the route is not redistributed or controlled. If the match criteria are not met then the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes, depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid only for BGP.

Command Syntax

match as-path *LISTNAME*

no match as-path

LISTNAME	Specifies as autonomous system path access list name

Command Mode

Route-map

Defaults

No match as-path is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute deny 34

Switch(config-route-map)# match as-path myaccesslist

Related Commands

match metric

match ip address

match community

set as-path

set community

5.3 match community

Use this command to specify the community to be matched.

Use the no parameter with this command to remove the community list entry.

Communities are used to group and filter routes. They are designed to provide the ability to apply policies to large numbers of routes by using match and set commands. Community lists are used to identify and filter routes by their common attributes.

Use the match community command to allow matching based on community lists.

The values set by the match community command overrides the global values. The route that does not match at least one match clause is ignored.

NOTE

This command is valid only for BGP.

Command Syntax

match community *WORD*

no match community

WORD	Specifies the Community-list name

Command Mode

Route-map

Defaults

No match community is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute permit 3

Switch(config-route-map)# match community mylist

Related Commands

match ip address

match as-path

set as-path

set community

match metric

5.4 match interface

Use this command to define the interface match criterion.

Use the no parameter with this command to remove the specified match criterion..

The match interface command specifies the next-hop interface name of a route to be matched.

This command is valid only for OSPF.

Command Syntax

match interface *IFNAME*

no match interface

IFNAME	A string that specifies the interface for matching

Command Mode

Route-map

Defaults

No match interface is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap1 permit 10

Switch(config-route-map)# match interface eth-0-1

Related Commands

match tag

match route-type external

5.5 match ipv6 address

Use this command to specify the match address of route.

Use the no parameter with this command to remove the match ipv6 address entry.

The match ipv6 address command specifies the IPv6 address to be matched. If there is a match for the specified IPv6 address, and permit is specified, the route is redistributed or controlled, as specified by the set action. If the match criteria are met, and deny is specified then the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes, depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid for BGP, OSPFv3 and RIPng only.

Command Syntax

match ipv6 address *ACCESSSLISTID*

no match ipv6 address

ACCESSSLISTID	Specify a IPv6 access-list name, up to 20 characters

Command Mode

Route-map

Defaults

No match ipv6 address is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute permit 3

Switch(config-route-map)# match ipv6 address List1

Related Commands

match community

match as-path

set as-path

set community

match metric

5.6 match ipv6 address prefix-list

Use this command to match entries of ipv6 prefix-lists.

Use the no parameter with this command to disable this function

This command specifies the entries of prefix-lists to be matched. If there is a match for the specified ipv6 prefix-list entries, and permit is specified, the route is redistributed or controlled, as specified by the set action. If the match criteria are met, and deny is specified, the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid for BGP, OSPFv3 and RIPng only.

Command Syntax

match ipv6 address prefix-list *LISTNAME*

no match ipv6 address prefix-list [*LISTNAME* **]**

LISTNAME	Specifies the IPv6 prefix list name

Command Mode

Route-map

Defaults

No match ipv6 address prefix-list is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)#match ipv6 address prefix-list mylist

Related Commands

match community

match as-path

set as-path

set community

match metric

5.7 match ipv6 next-hop

Use this command to specify a ipv6 next-hop address to be matched in a route-map.

Use the no parameter with this command to disable this function.

The match ipv6 next-hop command specifies the next-hop address to be matched. If there is a match for the specified next-hop address, and permit is specified, the route is redistributed or controlled as specified by the set action. If the match criteria are met, and deny is specified, the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid for BGP, OSPFv3 and RIPng only.

Command Syntax

match ipv6 next-hop (IPv6-ADDRESS | *ACCESSSLISTID)*

no match ipv6 next-hop [IPv6-ADDRESS | *ACCESSSLISTID*]

IPv6-ADDRESS	Specify a IPv6 address, e.g., 2001:db8::1
ACCESSSLISTID	Specify a IPv6 access-list name, up to 20 characters

Command Mode

Route-map

Defaults

No match ipv6 next-hop is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# match ipv6 next-hop mylist

Related Commands

match community

match as-path

set as-path

set community

match metric

5.8 match ipv6 next-hop prefix-list

Use this command to specify the next-hop IPv6 address match criterion, using the prefix-list.

Use the no parameter with this command to remove the specified match criterion.

Use the match ipv6 next-hop prefix-list command to match the next-hop IPv6 address of a route.

This command is valid for BGP and RIPng only.

Command Syntax

match ipv6 next-hop prefix-list *LISTNAME*

no match ipv6 next-hop prefix-list [*LISTNAME*]

LISTNAME	A string specifying the ipv6 prefix-list name

Command Mode

Route-map

Defaults

No match ipv6 next-hop prefix-list is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap permit 3

Switch(config-route-map)# match ipv6 next-hop prefix-list list1

Related Commands

match metric

match interface

match ip next-hop

5.9 match local-preference

Use this command to specify the local-preference match criterion.

Use the no parameter with this command to remove the specified match criterion.

Use the match local-preference command to match the local preference of a route.

This command is valid for BGP only.

Command Syntax

match local-preference *LOCAL-PREFERENCE*

no match local-preference

LOCAL-PREFERENCE	<0-4294967295> Species the preference value

Command Mode

Route-map

Defaults

No match local-preference is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap permit 3

Switch(config-route-map)# match local-preference 100

Related Commands

match community

match as-path

set as-path

set community

match ip next-hop

5.10 match metric

Use this command to match a metric of a route.

Use the no parameter with this command to disable this function.

The match metric command specifies the metric to be matched. If there is a match for the specified metric, and permit is specified, the route is redistributed or controlled as specified by the set action. If the match criteria are met, and deny is specified, the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid for BGP, OSPF and RIP only.

Command Syntax

match metric *METRICVAL*

no match metric

METRICVAL	<+/-metric>|<0-4294967295> The metric value

Command Mode

Route-map

Defaults

No match metric is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute permit 3

Switch(config-route-map)# no match metric

Related Commands

match community

match as-path

set as-path

set community

match ip next-hop

5.11 match origin

Use this command to match origin code.

Use the no parameter with this command to disable this matching.

The origin attribute defines the origin of the path information. The egp parameter is indicated as an e in the routing table, and it indicates that the origin of the information is learned via Exterior Gateway Protocol. The igp parameter is indicated as an i in the routing table, and it indicates the origin of the path information is interior to the originating AS.

The incomplete parameter is indicated as a ? in the routing table, and indicates that the origin of the path information is unknown or learned through other means. If a static route is redistributed into BGP, the origin of the route is incomplete.

The match origin command specifies the origin to be matched. If there is a match for the specified origin, and permit is specified, the route is redistributed or controlled as specified by the set action. If the match criteria are met, and deny is specified, the route is not redistributed or controlled. If the match criteria are not met, the route is neither accepted nor forwarded, irrespective of permit or deny specifications.

The route specified by the policies might not be the same as specified by the routing protocols. Setting policies enable packets to take different routes depending on their length or content. Packet forwarding based on configured policies overrides packet forwarding specified in routing tables.

This command is valid for BGP only.

Command Syntax

match origin { egp | igp | incomplete }

no match origin

egp	learned from EGP
igp	Local IGP
incomplete	Unknown heritage

Command Mode

Route-map

Defaults

No match origin is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute deny 34

Switch(config-route-map)# match origin egp

Related Commands

None

5.12 match route-type

Use this command to match specified external route type.

Use the no parameter with this command to turn off the matching.

Use the match route-type external command to match specific external route types. AS-external LSA is either Type-1 or Type-2. External type-1 matches only Type 1 external routes, and external type-2 matches only Type 2 external routes.

This command is valid for OSPF only.

Command Syntax

match route-type external { type-1 | type-2 }

no match route-type external

type-1	Match OSPF External Type 1 metrics
type-2	Match OSPF External Type 1 metrics

Command Mode

Route-map

Defaults

No match route-type is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap1 permit 10

Switch(config-route-map)# match route-type external type-1

Related Commands

match tag

5.13 match tag

Use this command to match the specified tag value.

Use the no parameter with this command to turn off the declaration.

Use the match tag command to match the specified tag value.

This command is valid for OSPF RIP only.

Command Syntax

match tag *TAG*

no match tag

TAG	<0-4294967295> Specifies the tag value

Command Mode

Route-map

Defaults

No match tag is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap1 permit 10

Switch(config-route-map)# match tag 100

Related Commands

match metric

match route-type external

5.14 set ipv6 aggregator

Use this command to set the AS number for the route map and router ID.

Use the no parameter with this command to disable this function.

An Autonomous System (AS) is a collection of networks under a common administration sharing a common routing strategy. It is subdivided by areas, and is assigned a unique 16-bit number. Use the set aggregator command to

assign an AS number for the aggregator.

To use the set aggregator command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set ipv6 aggregator as *ASNUM IPv6-ADDRESS*

no set ipv6 aggregator

ASNUM	<1-65535>Specifies the AS number of aggregator
IPv6-ADDRESS	Specifies the IPv6 address of aggregator

Command Mode

Route-map

Defaults

No set aggregator is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute permit 3

Switch(config-route-map)# set aggregator as 43 2001:db8::1

Related Commands

None

5.15 set as-path

Use this command to modify an autonomous system path for a route.

Use the no parameter with this command to disable this function.

Use the set as-path command to specify an autonomous system path. By specifying the length of the AS-Path, the router influences the best path selection by a neighbor. Use the prepend parameter with this command to prepend an AS path string to routes increasing the AS path length.

To use the set as-path command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set as-path prepend *ASN* [*…ASN*]

no set as-path

ASN	System prepends this number to the AS path
prepend	Prepends the autonomous system path

Command Mode

Route-map

Defaults

No set as-path is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map myroute permit 3

Switch(config-route-map)# set as-path prepend 8 24

Related Commands

None

5.16 set atomic-aggregate

Use this command to set an atomic aggregate attribute.

Use the no parameter with this command to disable this function

To use the set atomic aggregate command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set atomic-aggregate

no set atomic-aggregate

Command Mode

Route-map

Defaults

No set atomic-aggregate is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set atomic-aggregate

Related Commands

None

5.17 set comm-list delete

Use this command to delete the matched communities from the community attribute of an inbound or outbound update when applying route-map.

Use the no parameter with this command to disable this feature.

This command is valid for BGP only.

Command Syntax

set comm-list { *<1-199>*|*<100-199>*|*WORD* } **delete**

no set comm-list

<1-199>	Standard community-list number
<100-199>	Expanded community-list number
WORD	Name of the Community-list
delete	Delete matching communities

Command Mode

Route-map

Defaults

No set comm-list is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set comm-list 34 delete

Related Commands

None

5.18 set community

Use this command to set the communities attribute.

Use the no parameter with this command to delete the entry.

Use this command to set the community attribute and group destinations in a certain community, as well as, apply routing decisions according to those communities.

To use the set community command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set community [*AA:NN* | **internet | local-AS | no-advertise | no-export**]

set community none

no set community

AA:NN	AA:NN: Specifies the community number in this format AA = The AS number NN = The number assigned to community
internet	Specifies the Internet (well-known community)

local-AS	Specifies no sending outside the local AS (well-known community)
no-advertise	Specifies no advertisement of this route to any peer (well-known community)
no-export	Specifies no advertisement of this route to next AS (well-known community)
none	Removes the community attribute from the prefixes that pass the route-map

Command Mode

Route-map

Defaults

No set community is specified by default.

Usage

None

Examples

The following examples show the use of the set community command with different parameters.

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set community no-export no-advertise

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set community no-advertise

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set community 10:01 23:34 12:14 no-export

Related Commands

None

5.19 set dampening

Use this command to enable route-flap dampening and set parameters.

Use the no parameter with this command to disable it.

Set the unreachability half-life time to be equal to, or greater than, reachability half-life time. The suppress-limit value must be greater than or equal to the reuse limit value.

This command is valid for BGP only.

Command Syntax

set dampening *REACHTIME REUSE SUPPRESS MAXSUPPRESS* [*UNREACHTIME*]

no set dampening

REACHTIME	<1-45> Specifies the reachability half-life time in minutes. The time for the penalty to decrease to one-half of its current value. The default is 15 minutes
REUSE	<1-20000> Specifies the reuse-limit value. When the penalty for a suppressed route decays below the reuse value, the routes become unsuppressed. The default reuse limit is 750
SUPPRESS	<1-20000> Specifies the suppress-limit value. When the penalty for a route exceeds the suppress value, the route is suppressed. The default suppress limit is 2000
MAXSUPPRESS	<1-255> Specifies the max-suppress-time. Maximum time that a dampened route is suppressed. The default max-suppress value is 4 times the half-life time (60 minutes)
UNREACHTIME	<1-45> Specifies the un-reachability half-life time for penalty, in minutes. The default value is 15 minutes

Command Mode

Route-map

Defaults

Reference to the syntax description above.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map R1 permit 24

Switch(config-route-map)# set dampening 20 333 534 30

Related Commands

None

5.20 set extcommunity

Use this command to set an extended community attribute.

Use the no parameter with this command to disable this function

To use the set extcommunity command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set extcommunity { *rt* | *soo*} *EXTCOMMNUMBER* [*…EXTCOMMNUMBER*]

no set extcommunity { *rt* | *soo*}

rt	Specifies the route target of the extended community
soo	Specifies the site-of-origin of the extended community
EXTCOMMNUMBER	ASN:NN_or_IP-address:nn VPN extended community

ASN:NN	the AS number
IPADDRESS	the AS number in IP address form

Command Mode

Route-map

Defaults

No set extcommunity is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch (config)# route-map rmap1 permit 3

Switch (config-route-map)# set extcommunity rt 06:01

Switch # configure terminal

Switch (config)# route-map rmap1 permit 3

Switch (config-route-map)# set extcommunity rt 0.0.0.6:01

Switch # configure terminal

Switch (config)# route-map rmap1 permit 3

Switch (config-route-map)# set extcommunity soo 06:01

Switch # configure terminal

Switch (config-route-map)# route-map rmap1 permit 3

Switch (config-route-map)# set extcommunity soo 0.0.0.6:01

Related Commands

None

5.21 set ipv6 next-hop

Use this command to set the specified next-hop ipv6 address value.

Use the no parameter with this command to turn off the setting.

Use this command to set the next-hop IPv6 address to the routes.

This command is valid for BGP, OSPFv3, and RIPng only.

Command Syntax

set ipv6 next-hop [local] *IPv6-ADDRESS*

no set ipv6 next-hop [local]

local	Link-local address
IPv6-ADDRESS	Specifies the IPv6 address of the next-hop

Command Mode

Route-map

Defaults

No set ipv6 next-hop is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap permit 3

Switch(config-route-map)# set ipv6 next-hop 2001:db8::1

Related Commands

None

5.22 set local-preference

Use this command to set the specified local-preference value.

Use the no parameter with this command to turn off the setting.

Use this command to set the local-preference value of the routes

This command is valid for BGP only.

Command Syntax

set local-preference *LOCAL-PREFERENCE*

no set local-preference

LOCAL-PREFERENCE	<0-4294967295> Species the preference value

Command Mode

Route-map

Defaults

No set local-preference is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map mymap permit 3

```
Switch(config-route-map)# set local-preference 100
```

Related Commands

None

5.23 set metric

Use this command to set a metric value for a route.

Use the no parameter with this command to disable this function.

This command sets the metric value for a route, and influences external neighbors about the preferred path into an Autonomous System (AS). The preferred path is the one with a lower metric value. A router compares metrics for paths from neighbors in the same ASs. To compare metrics from neighbors coming from different ASs, use the bgp always-compare-med command.

To use the set metric command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP, OSPF and RIP.

Command Syntax

set metric *METRICVAL*

no set metric

METRICVAL	<+/-metric>|<0-4294967295> The metric value

Command Mode

Route-map

Defaults

No set metric is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set metric 600

Related Commands

None

5.24 set metric-type

Use this command to set the metric type for the destination routing protocol.

Use the no parameter with this command to return to the default.

This command sets the type to either Type-1 or Type-2 in the AS-external-LSA when the route-map matches the condition.

This command is valid for OSPF only.

Command Syntax

set metric-type {*TYPE1* | *TYPE2*}

no set metric-type

TYPE1	Select to set external type 1 metric
TYPE2	Select to set external type 2 metric

Command Mode

Route-map

Defaults

No set metric-type is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set metric-type 1

Related Commands

None

5.25 set origin

Use this command to set the BGP origin code.

Use the no parameter with this command to delete an entry.

The origin attribute defines the origin of the path information. The three parameters with this command indicate three different values. IGP is interior to the originating AS. This happens if IGP is redistributed into the BGP. EGP is learned through an Exterior Gateway Protocol. Incomplete is unknown or learned through some other means. This happens when static route is redistributed in BGP and the origin of the route is incomplete.

To use the set origin command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set origin { **egp | igp | incomplete** }

no set origin

egp	Specifies a remote EGP system
igp	A local IGP system
incomplete	Specifies a system of unknown heritage

Command Mode

Route-map

Defaults

No set origin is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set origin egp

Related Commands

None

5.26 set ipv6 originator-id

Use this command to set the originator ID attribute.

Use the no parameter with this command to disable this function

To use the set originator-id command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set ipv6 originator-id *IPv6-ADDRESS*

no set ipv6 originator-id

IPv6-ADDRESS	Specifies the IPv6 address of originator

Command Mode

Route-map

Defaults

No set originator-id is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set ipv6 originator-id 2001:db8::1

Related Commands

None

5.27 set tag

Use this command to set a specified tag value.

Use the no parameter with this command to return to the default.

Tag in this command is the route tag which is labeled by another routing protocol (BGP or other IGP when redistributing), because AS-external-LSA has a route-tag field in its LSAs. Also, with using route-map, ZebOS can tag the LSAs with the appropriate tag value. Sometimes, the tag matches with using route-map, and sometimes, the value

may be used by another application.

This command is valid for OSPF and RIP only.

Command Syntax

set tag *TAGVALUE*

no set tag

TAGVALUE	<0-4294967295> Tag value for destination routing protocol.

Command Mode

Route-map

Defaults

No set tag is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set tag 6

Related Commands

redistribute

default-information

5.28 set vpnv6 next-hop

Use this command to set a VPNv6 next-hop address.

Use the no parameter with this command to disable this function

To use the set vpn6-hext-hop command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set vpnv6 next-hop *IPv6-ADDRESS*

no set vpnv6 next-hop

IPv6-ADDRESS	Specifies the IPv6 address of originator

Command Mode

Route-map

Defaults

No set vpnv6 next-hop is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set vpnv6 next-hop 2001:db8::1

Related Commands

None

5.29 set weight

Use this command to set weights for the routing table.

Use the no parameter with this command to delete an entry.

The weight value is used to assist in best path selection. It is assigned locally to a router. When there are several routes with a common destination, the routes with a higher weight value are preferred.

To use the set weight command, you must first have a match clause. Match and set commands set the conditions for redistributing routes from one routing protocol to another. The match command specifies the match criteria under which redistribution is allowed for the current route-map. The set command specifies the set redistribution actions to be performed, if the match criteria are met

match as-path 10

set weight 400

In the above configuration, all routes that apply to access-list 10 will have the weight set at 400.

If the packets do not match any of the defined criteria, they are routed through the normal routing process.

This command is valid for BGP only.

Command Syntax

set weight *WEIGHT*

no set weight

WEIGHT	<0-4294967295> Specifies the weight value

Command Mode

Route-map

Defaults

No set weight is specified by default.

Usage

None

Examples

Switch# configure terminal

Switch(config)# route-map rmap1 permit 3

Switch(config-route-map)# set weight 60

Related Commands

match as-path

5.30 show route-map

Use this command to display user readable route-map information.

Command Syntax

show route-map [*NAME*]

NAME	route-map name

Command Mode

Privileged EXEC

Usage

None

Examples

Switch1# show route-map

```
route-map abc, permit, sequence 10
  Match clauses:
    ip address acl1
  Set clauses:
    local-preference 200
route-map abc, permit, sequence 20
  Match clauses:
  Set clauses:
```

Related Commands

route-map