

15-Commands for Routing Protocol

level
one

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1.Commands for RIP

accept-lifetime

| | |
|-------------|--|
| Command | accept-lifetime <start-time> {<end-time> duration <seconds> infinite } no accept-lifetime Use this command to specify a key accept on the key chain as a valid time period. The “no accept-lifetime” command deletes this configuration. |
| Parameter | <start-time> parameter specifies the start time of the time period, of which the form should be: <start-time>={<hh:mm:ss> <month> <day> <year> <hh:mm:ss> <day> <month> <year>} <hh:mm:ss> specify the concrete valid time of accept-lifetime in hours, minutes and second <day> specifies the date of valid, ranging between 1 -31 <month> specifies the month of valid shown with the first three letters of the month, such as Jan <year> specifies the year of valid start, ranging between 1993 - 2035 <end-time> specifies the due of the time period, of which the form should be: <end-time>={<hh:mm:ss> <month> <day> <year> <hh:mm:ss> <day> <month> <year>}<hh:mm:ss> specify the concrete valid time of accept-lifetime in hours, minutes and second <day> specifies the date of valid, ranging between 1 -31 <month> specifies the month of valid shown with the first three letters of the month, such as Jan <year> specifies the year of valid start, ranging between 1993 - 2035 <seconds> the valid period of the key in seconds, ranging between 1-2147483646 Infinite means the key will never be out of date. |
| Default | No default configuration. |
| Mode | keychain-key Mode。 |
| Usage Guide | If only the authentication mode is configured and the key chain or password used by the interface is not configured, authentication will not work at all. If the mode is not configured before configuring this command, the mode will be set to clear text authentication after configuring this command. The no operation of this command will cancel the authentication, but it does not mean that the mode will be set to the non-authentication type, only that the authentication processing will not be performed when sending or receiving packets. You can enter ip rip authentication key-chain my key to indicate that the key chain name is my key, which is 6 characters in total. |
| Example | The example below shows the accept-lifetime configuration of key 1 on the keychain named mychain. Switch# config terminal Switch(config)# key chain mychain Switch(config-keychain)# key 1 Switch(config-keychain-key)# accept-lifetime 03:03:01 Dec 3 2004 04:04:02 Oct 6 2006 |

clear ip rip route

| | |
|-------------|--|
| Command | clear ip rip route {<A.B.C.D/M> kernel static connected rip ospf isis bgp all} |
| | Clear specific route in the RIP route table. |
| Parameter | <A.B.C.D/M> Clear the routes which match the destination address from the RIP route table. Specifies the IP address prefix and its length of the destination address kernel delete kernel routes from the RIP route table static delete static routes from the RIP route table connected delete direct routes from the RIP route table rip only delete RIP routes from the RIP route table ospf only delete OSPF routes from the RIP route table isis only delete ISIS routes from the RIP route table bgp only delete BGP routes from the RIP route table all delete all routes from the RIP route table |
| Default | No default configuration |
| Mode | Admin mode |
| Usage Guide | Use this command with the all parameter will delete all learnt route in the RIP route which will be immediately recovered except for rip route. The dynamic learnt RIP route can only be recovered by studying one more time. |
| Example | Switch# clear ip rip route 10.0.0.0/8 Switch# clear ip rip route ospf |

default-information originate

| | |
|-------------|---|
| Command | default-information originate no default-information originate |
| | Allow the network 0.0.0.0 to be redistributed into the RIP. The “ no default-information originate ” disables this function. |
| Parameter | - |
| Default | Disabled |
| Mode | Router mode and address-family mode |
| Usage Guide | This command tells the router to insert the default route with the destination of 0.0.0.0 into the RIP routing database, and advertise the route as other routes. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# default-information originate |

default-metric

| | |
|-------------|--|
| Command | default-metric <value> no default-metric Set the default metric value of the introduced route. The “ no default-metric ” command restores the default value to 1. |
| Parameter | <value> is the metric value to be set, ranging between 1~16. |
| Default | Default route metric value is 1. |
| Mode | Router mode and address-family mode。 |
| Usage Guide | default-metric command is used for setting the default route metric value of the routes from other routing protocols when distributed into the RIP routes. When using the redistribute commands for introducing routes from other protocols, the default route metric value specified by default-metric will be adopted if no specific route metric value is set. |
| Example | Set the default route metric value to 3 for introducing routes from other routing protocols into the RIP routes. Switch(config-router)#default-metric 3 |

distance

| | |
|-------------|---|
| Command | distance <number> [<A.B.C.D/M>] [<access-list-name access-list-number >] no distance [<A.B.C.D/M>] Set the managing distance with this command. The “ no distance [<A.B.C.D/M>] ” command restores the default value to 120. |
| Parameter | <number> specifies the distance value, ranging from 1 to 255. <A.B.C.D/M> specifies the network prefix and its length. <access-list-name access-list-number > specifies the access-list number or name applied. |
| Default | The default managing distance of RIP is 120. |
| Mode | Router mode and address-family mode。 |
| Usage Guide | In case there are routes from two different routing protocols to the same destination, the managing distance is then used for selecting routes. The less the managing distance of the route protocol is, the more reliable will be the route acquired from the protocol. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# distance 8 10.0.0.0/8 mylist |

istribute-list

| | |
|-------------|---|
| Command | distribute-list {<access-list-number access-list-name> prefix<prefix-list-name>} {in out} [ifname >] no distribute-list {<access-list-number access-list-name> prefix<prefix-list-name>} {in out} [ifname >] This command uses access-list or prefix-list to filter the route update packets sent and received. The “ no distribute-list {<access-list-number access-list-name> prefix<prefix-list-name>} {in out} [<ifname>]} ” command cancels this route filter function. |
| Parameter | <access-list-number access-list-name> is the name or access-list number to be applied. <prefix-list-name> is the name of the prefix-list to be applied. <ifname> specifies the name of interface to be applied with route filtering. |
| Default | The function in default situation is disabled. |
| Mode | Router mode and address-family mode。 |
| Usage Guide | The filter will be applied to all the interfaces in case no specific interface is set. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# distribute-list prefix myfilter in vlan 1 |

ip rip aggregate-address

| | |
|-------------|--|
| Command | ip rip aggregate-address A.B.C.D/M no ip rip aggregate-address A.B.C.D/M To configure RIP aggregation route. The no form of this command will delete this configuration. |
| Parameter | A.B.C.D/M :IPv4 address and mask length. |
| Default | Disabled. |
| Mode | Router Mode or Interface Configuration Mode. |
| Usage Guide | If to configure aggregation route under router mode, RIP protocol must be enabled. If configured under interface configuration mode, RIP protocol may not be enabled, but the aggregation router can operation after the RIP protocol be enabled on interface. |
| Example | To configure aggregation route as 192.168.20.0/22 globally. Switch(config)#router rip Switch(config-router)#ip rip agg 192.168.20.0/22 |

ip rip authentication key-chain

| | |
|-------------|---|
| Command | ip rip authentication key-chain <name-of-chain> no ip rip authentication key-chain Use this command to enable RIPV2 authentication on an interface and further configures the adopted key chain. The “ no ip rip authentication key-chain ” command cancels the authentication. |
| Parameter | <name-of-chain> is the name of the adopted key chain. There may be spaces in the string. The input ends with an enter and the string should not be longer than 256 bytes. |
| Default | Not configured. |
| Mode | Interface Configuration Mode. |
| Usage Guide | If the authentication is only configured without configuring the key chain or password used by the interface, the authentication does no effect. If mode has not been configured prior to configuring this command, the mode will be set to plaintext authentication. The “no ip rip authentication key” command will cancel the authentication which only cancels the authentication process when sending or receiving data packet other than set non authentication mode. |
| Example | Switch#config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip authentication key-chain my key |

ip rip authentication mode

| | |
|-------------|--|
| Command | ip rip authentication mode {text md5} no ip rip authentication mode {text md5} Configure the authentication mode; the “ no ip rip authentication mode {ext md5} ” command restores the default authentication mode namely text authentication mode. |
| Parameter | text means text authentication; md5 means MD5 authentication. |
| Default | Not configured authentication. |
| Mode | Interface Configuration Mode. |
| Usage Guide | RIP-I do not support authentication which the RIP-II supports two authentication modes: text authentication (i.e. Simple authentication) and data packet authentication (i.e. MD5 authentication). This command should be used associating the ip rip authentication key or ip rip authentication string. Independently configuration will not lead to authentication process. |
| Example | Switch#config terminal Switch(config)# interface vlan 1 |

```
Switch(config-if-vlan1)# ip rip authentication mode md5
```

ip rip authentication string

| | |
|--------------------|--|
| Command | ip rip authentication string <text> no ip rip authentication string Set the password used in RIP authentication. The “ no ip rip authentication string ” cancels the authentication. |
| Parameter | <text> is the password used in authentication of which the length should be 1-16 characters with space available. The password should end with enter. |
| Default | - |
| Mode | Interface mode |
| Usage Guide | The ip rip authentication key will not be able to be configured when this command is configured, key id value is required in MD5 authentication which is 1 when use this command. The mode will be set to plaintext authentication in case no mode configuration is available. The “no ip rip authentication string” command will cancel the authentication which only cancels the authentication process when sending or receiving data packet other than set non authentication mode. Input ip rip authentication string aaa aaa to set the password as aaa aaa which is 7 characters. |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip authentication string guest |

ip rip authentication cisco-compatible

| | |
|--------------------|---|
| Command | ip rip authentication cisco-compatible no ip rip authentication cisco-compatible After configured this command, the cisco RIP packets will be receivable by configuring the plaintext authentication or MD5 authentication |
| Parameter | - |
| Default | Not configured |
| Mode | Interface mode |
| Usage Guide | After authentication is configured on the cisco router, the RIP packets will exceeds the length of the defined standard length of the protocol once the number of route items is greater than 25. By configuring this command the over-lengthen RIP packets will be receivable other than denied. |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip authentication cisco-compatible |

ip rip receive-packet

| | |
|-------------|---|
| Command | ip rip receive-packet no ip rip receive-packet Set the interface to be able to receiveable RIP packets; the “ no ip rip receive-packet ” command sets the interface to be unable to receiveable RIP packets. |
| Parameter | - |
| Default | Interface receives RIP packets. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip receive-packet |

ip rip receive version

| | |
|-------------|---|
| Command | ip rip receive version { 1 2 1 2 } no ip rip receive version Set the version information of the RIP packets the interface receives. The default version is 2; the “ no ip rip receive version ” command restores the value set by using the version command. |
| Parameter | 1 and 2 respectively stands for RIP version 1 and RIP version 2, 1 2 stands for the RIP versions 1, 2. |
| Default | Version 2。 |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip receive version 1 2 |

ip rip send-packet

| | |
|---------|---------------------------|
| Command | ip rip send-packet |
|---------|---------------------------|

| | |
|--------------------|---|
| | no ip rip send-packet |
| | Set the Interface to be able to receive the RIP packets; the “ no ip rip send-packet ” sets the interface to be unable to receive the RIP packets. |
| Parameter | - |
| Default | Interface sends RIP packets. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip send-packet |

ip rip send version

| | |
|--------------------|---|
| Command | ip rip send version { 1 2 1-compatible 1 2 } no ip rip send version |
| | Set the version information of the RIP packets the interface receives. The default version is 2; the “ no ip rip send version ” command restores the value set by using the version command. |
| Parameter | 1 and 2 respectively stands for RIP version 1 and RIP version 2, 1 2 stands for the RIP versions 1, 2. |
| Default | Version 2。 |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(config-if-vlan1)# ip rip send version 1 |

ip rip split-horizon

| | |
|----------------|--|
| Command | ip rip split-horizon [poisoned] no ip rip split-horizon |
|----------------|--|

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|--------------------|--|
| | Enable split horizon. The “ no ip rip split-horizon ” disables the split horizon. |
| Parameter | [poisoned] means configure the split horizon with poison reverse. |
| Default | Split Horizon with poison reverse by default. |
| Mode | Interface Configuration Mode. |
| Usage Guide | The split horizon is for preventing the Routing Loops, namely preventing the layer 3 switches from broadcasting the routes which is learnt from the same interface on which the route to be broadcasted. |
| Example | Switch# config terminal Switch(config)# interface vlan 1 Switch(Config-if-Vlan1)# ip rip split-horizon poisoned |

key

| | |
|--------------------|--|
| Command | key <keyid> no key <keyid> This command is for managing and adding keys in the key chain. The “ no key <keyid> ” command deletes one key. |
| Parameter | <keyid> is key ID, ranging between 0-2147483647. |
| Default | - |
| Mode | keychainMode and keychain-keyMode。 |
| Usage Guide | The command permits entering the keychain-key mode and set the passwords corresponding to the keys. |
| Example | Switch#config terminal Switch(config)#key chain mychain Switch(config-keychain)#key 1 Switch(config-keychain-key)# |

key chain

| | |
|----------------|---|
| Command | key chain <name-of-chain> no key chain < name-of-chain > |
|----------------|---|

| | |
|-------------|---|
| | This command is for entering a keychain manage mode and configure a keychain. The “ no key chain < name-of-chain > ” deletes one keychain. |
| Parameter | <name-of-chain>is the name string of the keychain the length of which is not specifically limited. |
| Default | - |
| Mode | Global Mode |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#key chain mychain Switch(config-keychain)# |

key-string

| | |
|-------------|---|
| Command | key-string <text> no key-string <text> |
| | Configure a password corresponding to a key. The “ no key-string <text> ”command deletes the corresponding password. |
| Parameter | <text> is a character string without length limit. However when referred by RIP authentication only the first 16 characters will be used. |
| Default | - |
| Mode | keychain-key Mode。 |
| Usage Guide | This command is for configure different passwords for keys with different ID. |
| Example | Switch# config terminal Switch(config)# key chain mychain Switch(config-keychain)# key 1 Switch(config-keychain-key)# key-string prime |

maximum-prefix

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|---------|--|
| Command | maximum-prefix <maximum-prefix> [<threshold>] no maximum-prefix |
| | Configure the maximum number of RIP routes in the route table. The “ nomaximum-prefix ” |

| | |
|--------------------|--|
| | command cancels the limit. |
| Parameter | <maximum-prefix> the maximum number of RIP route, ranging between 1-65535; a warning is given when the number rate of current route exceeds <threshold> ranging between 1-100, default at 75. |
| Default | - |
| Mode | router mode |
| Usage Guide | The maximum RIP route only limits the number of routes learnt through RIP but not includes direct route or the RIP static route configured by the route command. The base on which the comparison is performed is the number of route marked R in the show ip route database, and also the number of RIP routes displayed in the show ip route statistics command. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# maximum-prefix 150 |

neighbor

| | |
|--------------------|--|
| Command | neighbor <A.B.C.D> no neighbor <A.B.C.D> |
| | Specify the destination address requires targeted-peer sending. The “ no neighbor <A.B.C.D> ” command cancels the specified address and restores all gateways to trustable. |
| Parameter | <A.B.C.D> is the specified destination address for the sending, shown in dotted decimal notation. |
| Default | Not sending to any targeted-peer destination address. |
| Mode | router mode |
| Usage Guide | When used accompany with passive-interface command it can be configured to only sending routing messages to specific neighbor. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# neighbor 1.1.1.1 |

network

| | |
|------------------|---|
| Command | network <A.B.C.C/M ifname> no network <A.B.C.C/M ifname> |
| | Configure the RIP protocol network. |
| Parameter | <A.B.C.C/M > is the IP address prefix and its length in the network. |

| | |
|--------------------|--|
| | <ifname> is the name of a interface. |
| Default | Not running RIP protocol |
| Mode | Router mode and address-family mode。 |
| Usage Guide | Use this command to configure the network for sending or receiving RIP update packets. If the network is not configured, all interfaces of the network will not be able to send or receive data packets. |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# network 10.0.0.0/8 Switch(config-router)# network vlan 1 |

offset-list

| | |
|--------------------|---|
| Command | offset-list <access-list-number access-list-name> {in out }<number >[<ifname>] no offset-list <access-list-number access-list-name> {in out }<number >[<ifname>] |
| | Add an offset value to the metric value of the routes learnt by RIP. The “ no offset-list <access-list-number access-list-name> {in out} <number > [<ifname>] ” command disables this function. |
| Parameter | < access-list-number access-list-name> is the access-list or name to be applied <number > is the added offset value, ranging between 0-16; <ifname> is the specific interface name; |
| Default | Default offset value is the metric value defined by the system. |
| Mode | Router mode and address-family mode。 |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# offset-list 1 in 5 vlan 1 |

passive-interface

| | |
|------------------|---|
| Command | passive-interface <ifname> no passive-interface <ifname> |
| | Set the RIP layer 3 switch blocks RIP broadcast on specified interface, on which the RIP data packets will only be sent to layer 3 switches configured with neighbor. |
| Parameter | <ifname> is the name of specific interface. |

| | |
|--------------------|--|
| Default | Not configured |
| Mode | router mode |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# passive-interface vlan 1 |

recv-buffer-size

| | |
|--------------------|---|
| Command | recv-buffer-size<size> no recv-buffer-size |
| | This command configures the size of UDP receiving buffer zone of RIP; the “ no recv-buffer-size ” command restores the system default. |
| Parameter | <size> is the buffer zone size in bytes, ranging between 8192-2147483647. |
| Default | 8192 bytes. |
| Mode | router mode |
| Usage Guide | - |
| Example | Switch# config terminal Switch(config)# router rip Switch(config-router)# recv-buffer-size 23456789 |

redistribute

| | |
|------------------|---|
| Command | redistribute {kernel connected static ospf [<process-id>] isis bgp} [metric<value>] [route-map<word>] no redistribute {kernel connected static ospf [<process-id>] isis bgp} [metric<value>] [route-map<word>] |
| | Introduce the routes learnt from other routing protocols into RIP. |
| Parameter | kernel introduce from kernel routes; connected introduce from direct routes; |

| | |
|-------------|---|
| | <p>static introduce from static routes;</p> <p>ospf introduce from OSPF routes. process-id is OSPF process ID, if there is no parameter that means the process by default, range between 1 to 65535;</p> <p>isis introduce from ISIS routes;</p> <p>bgp introduce from BGP routes;</p> <p><value> is the metric value assigned to the introduced route, ranging between 0 to 16;</p> <p><word> is the probe pointing to the route map for introducing routes.</p> |
| Default | - |
| Mode | Router mode and address-family mode。 |
| Usage Guide | Under the address-family mode, the parameter kernel and ISIS is unavailable. |
| Example | <pre>Switch#config terminal Switch(config)#router rip Switch(config-router)#redistribute kernel route-map ipi To redistribute OSPFv2 routing information to RIP. Switch(config)#router rip Switch(config-router)#redistribute ospf 2</pre> |

route

| | |
|-------------|---|
| Command | <p>route <A.B.C.D/M></p> <p>no route <A.B.C.D/M></p> |
| | <p>This command configures a static RIP route. The “no route <A.B.C.D/M>”command deletes this route.</p> |
| Parameter | <A.B.C.D/M> Specifies this destination IP address prefix and its length. |
| Default | - |
| Mode | router mode |
| Usage Guide | The command adds a static RIP route, and is mainly used for debugging. Routes configured by this command will not appear in kernel route table but in the RIP route database. |
| Example | <pre>Switch# config terminal Switch(config)# router rip Switch(config-router)# route 1.0.0.0/8</pre> |

router rip

| | |
|---------|--|
| Command | <p>router rip</p> <p>no router rip</p> |
|---------|--|

| | |
|--------------------|---|
| | Enable the RIP routing process and enter the RIP mode; the “ no router rip ” command closes the RIP routing protocol. |
| Parameter | - |
| Default | Not running RIP route. |
| Mode | Global mode |
| Usage Guide | This command is the switch for starting the RIP routing protocol which is required to be open before configuring other RIP protocol commands. |
| Example | Enable the RIP protocol mode Switch(config)#router rip Switch(config-router)# |

send-lifetime

| | |
|--------------------|--|
| Command | send-lifetime <start-time> {<end-time> duration<seconds> infinite} no send-lifetime |
| | Use this command to specify a key on the keychain as the time period of sending keys. The “no send-lifetime” cancels this configuration. |
| Parameter | <p><start-time> parameter specifies the starting time of the time period, which is: <start-time>={<hh:mm:ss> <month> <day> <year> <hh:mm:ss> <day> <month> <year>}</p> <p><hh:mm:ss>Specify the concrete valid time of accept-lifetime in hours, minutes and second;</p> <p><day>Specifies the date of valid, ranging between 1 -31;</p> <p><month>Specifies the month of valid shown with the first three letters of the month, such as Jan;</p> <p><year>Specifies the year of valid start, ranging between 1993 - 2035;</p> <p><end-time>Specifies the due of the time period, of which the form should be: <end-time>={<hh:mm:ss> <month> <day> <year> <hh:mm:ss> <day> <month> <year>}</p> <p><hh:mm:ss>Specify the concrete valid time of send-lifetime in hours, minutes and second;</p> <p><seconds>is the valid period of the key in seconding and ranging between 1-2147483646;</p> <p>infinite means the key will never be out of date.</p> |
| Default | No default configuration. |
| Mode | keychain-key Mode。 |
| Usage Guide | If only the authentication mode is configured and the key chain or password used by the interface is not configured, authentication will not work at all. If the mode is not configured before configuring this command, the mode will be set to clear text authentication after configuring this command. The no operation of this command will cancel the authentication, |

but it does not mean that the mode will be set to the non-authentication type, only that the authentication processing will not be performed when sending or receiving packets. You can enter ip rip authentication key-chain my key to indicate that the key chain name is my key, which is 6 characters in total.

Example

The example below shows the send-lifetime configuration on the keychain named mychain for key 1.

```
Switch# config terminal
```

```
Switch(config)# key chain mychain
```

```
Switch(config-keychain)# key 1
```

```
Switch(config-keychain-key)# send-lifetime 03:03:01 Dec 3 2004 04:04:02 Oct 6 2006
```

timers basic

Command

timers basic <update> <invalid> <garbage>
no timers basic

Adjust the RIP timer update, timeout, and garbage collecting time. The “**no timers basic**” command restores each parameter to their default values.

Parameter

<update> time interval of sending update packet, shown in seconds and ranging between 5-2147483647;

<invalid> time period after which the RIP route is advertised dead, shown in seconds and ranging between 5-2147483647;

<garbage> is the hold time in which the a route remains in the routing table after advertised dead, shown in seconds and ranging between 5-2147483647.

Default

<update> defaulted at 30;

<invalid> defaulted at 180;

<garbage> defaulted at 120

Mode

router mode

Usage Guide

The system is defaulted broadcasting RIPv4 update packets every 30 seconds; and the route is considered invalid after 180 seconds but still exists for another 120 seconds before it is deleted from the routing table.

Example

Set the RIP update time to 20 seconds and the timeout period to 80 second, the garbage collecting time to 60 seconds.

```
Switch(Config-Router)#timers basic 20 80 60
```

version

Command

version {1| 2}
no version

Configure the version of all RIP data packets sent/received by router interfaces: the “**no version**” restores the default configuration.

Parameter

1 is version 1 rip;

| | |
|--------------------|---|
| | 2 is version 2 rip. |
| Default | Sent and received data packet is version 2 by default. |
| Mode | Router mode and address-family mode. |
| Usage Guide | 1 refers to that each interface of the layer 3 switch only sends/receives the RIP-I data packets. 2 refers to that each interface of the layer 3 switch only sends/receives the RIP-II data packets. The RIP-II data packet is the default version. |
| Example | Configure the version of all RIP data packets sent/received by router interfaces to version 2. Switch(config-router)#version 2 |

show ip protocols rip

| | |
|--------------------|--|
| Command | show ip protocols rip |
| | Show the RIP process parameter and statistics information. |
| Parameter | - |
| Default | - |
| Mode | Any mode. |
| Usage Guide | - |
| Example | show ip protocols rip Routing Protocol is "rip" Sending updates every 30 seconds with +/-50%, next due in 8 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 redistribution metric is 1 Redistributing: static Default version control: send version 2, receive version 2 Interface Send Recv Key-chain Vlan1 2 2 Routing for Networks: Vlan1 Vlan2 Routing Information Sources: Gateway Distance Last Update Bad Packets Bad Routes 20.1.1.1 120 00:00:31 0 0 |

| Displayed information | Explanation |
|---|--|
| Sending updates every 30 seconds with +/-50%, next due in 8 seconds | Sending update every 30 secs |
| Timeout after 180 seconds, garbage collect after 120 seconds | The route time-out event period is 180 secs, the garbage collect time is 120 seconds |

| | |
|---|--|
| Outgoing update filter list for all interface is not set | Outgoing update filter list for all interface is not set |
| Incoming update filter list for all interface is not set | Incoming update filter list for all interface is not set |
| Default redistribution metric is 1 | Default redistribution metric is 1 |
| Redistributing: static | Redistributing the static route into the RIP route |
| Default version control: send version 2, receive version 2 Interface Send Recv Key-chain Ethernet1/3 2 2 | The configuration of interface receiving and sending packets. Receive version is 2, keychain 1 not configured. |
| Routing for Networks: Vlan1 Vlan2 | The segment running RIP is the Vlan 1 and Vlan 2 |
| Routing Information Sources: Gateway Distance Last Update BadPackets Bad Routes 20.1.1.1 120 00:00:31 0 0 | Routing information sourcesThe badpacketand bad routes from the gateway 20.1.1.1 are all 0. 31 seconds have passed since the last route update. The manage distance is 120 |
| Distance: (default is 120) | Default manage distance is 120 |

show ip rip

| | |
|--------------------|---|
| Command | show ip rip |
| | Show the routes in the RIP route data base. |
| Parameter | - |
| Default | - |
| Mode | Any mode. |
| Usage Guide | - |
| Example | <p>show ip rip</p> <p>Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS, B - BGP</p> <p>Network Next Hop Metric From If Time</p> <p>R 12.1.1.0/24 20.1.1.1 2 20.1.1.1 Vlan1 02:51</p> <p>R 20.1.1.0/24 1 Vlan1</p> <p>Amongst R stands for RIP route, namely a RIP route with the destination network address 12.1.1.0, the network prefix length as 24, next-hop address at 20.1.1.1. It is learnt from the Ethernet port E1/3 with a metric value of 2, and still has 2 minutes 51 seconds before time</p> |

out.

show ip rip database

| | |
|--------------------|--|
| Command | show ip rip database |
| | show the routes in the RIP route database. |
| Parameter | - |
| Default | - |
| Mode | Any mode. |
| Usage Guide | - |
| Example | Switch# show ip rip database Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS, B - BGP Network Next Hop Metric From If Time R 10.1.1.0/24 1 Vlan1 R 20.1.1.0/24 1 Vlan2 |

show ip rip interface

| | |
|--------------------|--|
| Command | show ip rip interface [<ifname>] |
| | Show the RIP related messages. |
| Parameter | <ifname> is the name of the interface to show the messages. |
| Default | - |
| Mode | Any mode. |
| Usage Guide | - |
| Example | Switch# show ip rip interface vlan 1 Vlan1 is up, line protocol is up Routing Protocol: RIP Receive RIP packets Send RIP packets Passive interface: Disabled Split horizon: Enabled with Poisoned Reversed IP interface address: 10.1.1.1/24 |

show ip rip aggregate

| Command | show ip rip aggregate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--|---------|-------------------|----------|-------|----------|----------------|-------|---|---|---|----------------|------|---|---|---|----------------|------|---|---|---|--|-------|---|---|---|-----------------------|-------------|---------|---------------------------------|-------------------|--|--------|------------------------------|-------|--|----------|--|
| | To display the information of IPv4 aggregation route. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parameter | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Default | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mode | Admin and Configuration Mode. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Usage Guide | <p>This command is used to display which interface the aggregation route be configured, Metric, Count, Suppress and so on. If configured under global mode, then the interface display “----”, “Metric” is metric. “Count” is the number of learned aggregation routes. “Suppress” is the times of aggregation.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Example | <p>To display the information of IPv4 aggregation route.</p> <p>Switch(Config-if-Vlan1)#show ip rip agg</p> <p>Aggregate information of rip</p> <table><tr><th>Network</th><th>Aggregated Ifname</th><th>Metric</th><th>Count</th><th>Suppress</th></tr><tr><td>192.168.0.0/16</td><td>Vlan1</td><td>1</td><td>2</td><td>0</td></tr><tr><td>192.168.4.0/22</td><td>----</td><td>1</td><td>2</td><td>0</td></tr><tr><td>192.168.4.0/24</td><td>----</td><td>1</td><td>1</td><td>1</td></tr><tr><td></td><td>Vlan1</td><td>1</td><td>1</td><td>1</td></tr></table> <table><tr><th>Displayed information</th><th>Explanation</th></tr><tr><td>Network</td><td>Route prefix and prefix length.</td></tr><tr><td>Aggregated Ifname</td><td>To configure the interface name of the aggregation route. If the route aggregated globally, then display “----”.</td></tr><tr><td>Metric</td><td>Metric of aggregation route.</td></tr><tr><td>Count</td><td>The number of learned aggregation route.</td></tr><tr><td>Suppress</td><td>The times of aggregated for aggregation route.</td></tr></table> | Network | Aggregated Ifname | Metric | Count | Suppress | 192.168.0.0/16 | Vlan1 | 1 | 2 | 0 | 192.168.4.0/22 | ---- | 1 | 2 | 0 | 192.168.4.0/24 | ---- | 1 | 1 | 1 | | Vlan1 | 1 | 1 | 1 | Displayed information | Explanation | Network | Route prefix and prefix length. | Aggregated Ifname | To configure the interface name of the aggregation route. If the route aggregated globally, then display “----”. | Metric | Metric of aggregation route. | Count | The number of learned aggregation route. | Suppress | The times of aggregated for aggregation route. |
| Network | Aggregated Ifname | Metric | Count | Suppress | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 192.168.0.0/16 | Vlan1 | 1 | 2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 192.168.4.0/22 | ---- | 1 | 2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 192.168.4.0/24 | ---- | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Vlan1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Displayed information | Explanation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network | Route prefix and prefix length. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aggregated Ifname | To configure the interface name of the aggregation route. If the route aggregated globally, then display “----”. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Metric | Metric of aggregation route. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Count | The number of learned aggregation route. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Suppress | The times of aggregated for aggregation route. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

show ip rip redistribute

| | |
|--------------------|---|
| Command | show ip rip redistribute |
| | To display the routing information introduced from external process of RIP. |
| Parameter | - |
| Default | Not shown by default. |
| Mode | Admin Mode and Configuration Mode. |
| Usage Guide | - |

| | |
|--------------------|--|
| Example | Switch#show ip rip redistribute |
| debug rip | |
| Command | debug rip [events nsm packet[recv send]][detail] all] no debug rip [events nsm packet[recv send]][detail] all] |
| | Open various RIP adjustment switches and show various adjustment debugging messages. The “no debug rip [events nsm packet[recv send]][detail] all]” command closes corresponding debugging switch. |
| Parameter | events shows the debugging messages of RIP events nsm shows the communication messages between RIP and NSM packet shows the debugging messages of RIP data packets recv shows the messages of the received data packets send shows the messages of the sent data packets detail shows the messages of received or sent data packets |
| Default | Debug switch closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch# debug rip packet Switch#1970/01/01 01:01:43 IMI: SEND[Vlan1]: Send to 224.0.0.9:520 1970/01/01 01:01:43 IMI: SEND[Vlan1]: Send to 224.0.0.9:520 1970/01/01 01:01:47 IMI: RECV[Vlan1]: Receive from 20.1.1.2:520 |

debug rip redistribute route receive

| | |
|--------------------|--|
| Command | debug rip redistribute route receive no debug rip redistribute route receive |
| | To enable debugging of received messages from NSM for RIP. The no form of this command will disable debugging of received messages from NSM for RIP. |
| Parameter | - |
| Default | Close the debug by default. |
| Mode | Admin mode |
| Usage Guide | - |
| Example | Switch#debug rip redistribute route receive Switch#no debug rip redistribute route receive |

debug rip redistribute message send

| | |
|-------------|--|
| Command | debug rip redistribute message send no debug rip redistribute message send To enable the debugging of sending messages for routing redistribution messages from OSPF process or BGP protocol for RIP. The no form of this command will disable the debugging messages. |
| Parameter | - |
| Default | Close the debug by default. |
| Mode | Admin mode |
| Usage Guide | - |
| Example | Switch#debug rip redistribute message send Switch#no debug rip redistribute message send |

2. Commands for OSPF

area authentication

| | |
|-------------|---|
| Command | area <id> authentication [message-digest] no area <id> authentication Configure the authentication mode of the OSPF area; the “ no area <id> authentication ” command restores the default value. |
| Parameter | <id> is the area number which could be shown in digit, ranging from 0 to 4294967295, or in IP address message-digest is proved by MD5 authentication, or be proved by simple plaintext authentication if not choose this parameter. |
| Default | No authentication. |
| Mode | OSPF protocol mode |
| Usage Guide | Set the authentication mode to plaintext authentication or MD5 authentication. The authentication mode is also configurable under interface mode of which the priority is higher than those in the area. It is required to use ip ospf authentication-key to set the password while no authentication mode configured at the interface and the area is plaintext authentication, and use ip ospf message-digest key command to configure MD5 key if is MD5 authentication. The area authentication mode could not affect the authentication mode of the interface in this area. |
| Example | Set the authentication mode in area 0 to MD5. |

area default-cost

| | |
|--------------------|---|
| Command | area <id> default-cost <cost> no area <id> default-cost |
| Parameter | <p>Configure the cost of sending to the default summary route in stub or NSSA area; the “no area <id> default-cost” command restores the default value.</p> <p><id> is the area number which could be shown as digits 0~4294967295, or as an IP address; <cost> ranges between <0-16777215></p> |
| Default | Default OSPF cost is 1. |
| Mode | OSPF protocol mode |
| Usage Guide | The command is only adaptive to the ABR router connected to the stub area or NSSA area. |
| Example | <p>Set the default-cost of area 1 to 10.</p> <pre>Switch(config-router)#area 1 default-cost 10</pre> |

area filter-list

| | |
|--------------------|--|
| Command | [no] area <id> filter-list {access prefix} {in out} |
| Parameter | <p>Configure the filter broadcasting summary routing on the ABR; the “no area <id> filter-list {access prefix} {in out}” command restores the default value.</p> <p><id> is the area number which could be shown in digits ranging between 0~4294967295, or as an IP address; access-list is appointed for use in access, so is prefix-list for prefix; <name> is the name of the filter, the length of which is between 1-256; in means from other areas to this area, out means from this area to other areas.</p> |
| Default | No filter configured. |
| Mode | OSPF protocol mode |
| Usage Guide | This command is used for restraining routes from specific area from spreading between this area and other areas. |
| Example | <p>Set a filter on the area 1.</p> <pre>Switch(config)#access-list 1 deny 172.22.0.0 0.0.0.255 Switch(config)#access-list 1 permit any-source Switch(config)#router ospf 100 Switch(config-router)#area 1 filter-list access 1 in</pre> |

area nssa

| | |
|-------------|--|
| Command | <pre>area <id> nssa [TRANSLATOR] no-redistribution [DEFAULT-ORIGINATE no-summary] no area <id> nssa[TRANSLATOR] no-redistribution [DEFAULT-ORIGINATE no-summary]</pre> <p>Set the area to Not-So-Stubby-Area (NSSA) area.</p> |
| Parameter | <p><id> is the area number which could be digits ranging between 0~4294967295, and also as an IP address.</p> <p>TRANSLATOR = translator-role {candidate never always}, specifies the LSA translation mode for routes: candidate means if the router is elected translator, Type 7 LSA can be translated to Type-5 LSA, the default is candidate.</p> <p>never means the router will never translate Type 7 LSA to Type 5 LSA.</p> <p>always means the route always translate Type 7 LSA to Type 5 LSA.</p> <p>no-redistribution means never distribute external-LSA to NSSA.</p> <p>DEFAULT-ORIGINATE=default-information-originate [metric <0-16777214>] [metric-type <1-2>] , generate the Type-7 LSA.</p> <p>metric <0-16777214> specifies the metric value.</p> <p>metric-type <1-2> specifies the metric value type of external-LSA , default value is 2.</p> <p>no-summary shows not injecting area route to the NSSA.</p> |
| Default | No NSSA area defined by default. |
| Mode | OSPF protocol mode |
| Usage Guide | The same area can not be both NSSA and stub at the same time. |
| Example | <p>Set area 3 to NSSA.</p> <pre>Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#area 0.0.0.51 nssa Switch(config-router)#area 3 nssa default-information-originate metric 34 metric-type 2 translator-role candidate no-redistribution</pre> |

area range

| | |
|-----------|--|
| Command | <pre>area <id> range <address> [advertise not-advertise substitute] no area <id> range <address></pre> <p>Aggregate OSPF route on the area border. The “no area <id> range <address>” cancels this function.</p> |
| Parameter | <p><id> is the area number which could be digits ranging between 0~4294967295, and also as an IP address.;</p> <p><address>=<A.B.C.D/M>, specifies the area network prefix and its length.;</p> |

| | |
|--------------------|---|
| | advertise: Advertise this area, which is the default; not-advertise : Not advertise this area; substitute= substitute <A.B.C.D/M>: advertise this area as another prefix; <A.B.C.D/M>: Replace the network prefix to be advertised in this area. |
| Default | Not set. |
| Mode | OSPF protocol mode |
| Usage Guide | Use this command to aggregate routes inside an area. If the network IDs in this area are not configured continuously, a summary route can be advertised by configuring this command on ABR. This route consists of all single networks belong to specific range. |
| Example | Switch # config terminal Switch (config)# router ospf 100 Switch (config-router)# area 1 range 192.16.0.0/24 |

area stub

| | |
|--------------------|--|
| Command | area <id> stub [no-summary] no area <id> stub [no-summary] |
| | Define an area to a stub area. The “ no area <id> stub [no-summary] ” command cancels this function. |
| Parameter | <id> is the area number which could be digits ranging between 0~4294967295, and also as an IP address; no-summary: The area border routes stop sending link summary announcement to the stub area. |
| Default | Not defined. |
| Mode | OSPF protocol mode |
| Usage Guide | Configure area stub on all routes in the stub area. There are two configuration commands for the routers in the stub area: stub and default-cost. All routers connected to the stub area should be configured with area stub command. As for area border routers connected to the stub area, their introducing cost is defined with area default-cost command. |
| Example | Switch # config terminal Switch (config)# router ospf 100 Switch (config-router)# area 1 stub |

area virtual-link

| | |
|----------------|--|
| Command | area <id> virtual-link A.B.C.D {AUTHENTICATION AUTH_KEY INTERVAL} no area <id> virtual-link A.B.C.D [AUTHENTICATION AUTH_KEY INTERVAL] |
| | Configure a logical link between two backbone areas physically divided by non-backbone area. The “ no area <id> virtual-link A.B.C.D [AUTHENTICATION AUTH_KEY INTERVAL] ” |

| | |
|--------------------|---|
| | command removes this virtual-link. |
| Parameter | <p><id> is the area number which could be digits ranging between 0~4294967295, and also as an IP address.</p> <p>AUTHENTICATION = authentication [message-digest[message-digest-key <1-255> md5 <LINE>] null AUTH_KEY].</p> <p>authentication : Enable authentication on this virtual link.</p> <p>message-digest: Authentication with MD-5.</p> <p>null : Overwrite password or packet summary with null authentication.</p> <p>AUTH_KEY= authentication-key <key>.</p> <p><key>: A password consists of less than 8 characters.</p> <p>INTERVAL= [dead-interval hello-interval message-digest-key<1-255>md5<LINE> retransmit-interval transmit-delay] <value>.</p> <p><value>: The delay or interval seconds, ranging between 1~65535.</p> <p><dead-interval>: A neighbor is considered offline for certain dead interval without its group messages which the default is 40 seconds.</p> <p><hello-interval>: The time interval before the router sends a hello group message, default is 10 seconds.</p> <p><message-digest-key>: Authentication key with MD-5.</p> <p><retransmit-interval>: The time interval before a router retransmitting a group message, default is 5 seconds.</p> <p><transmit-delay>: The time delay before a router sending a group messages, default is 1 second.</p> |
| Default | No default configuration. |
| Mode | OSPF protocol mode |
| Usage Guide | In the OSPF all non-backbone areas will be connected to a backbone area. If the connection to the backbone area is lost, virtual link will repair this connection. You can configure virtual link between any two backbone area routers connected with the public non-backbone area. The protocol treat routers connected by virtual links as a point-to-point network. |
| Example | <pre>Switch#config terminal Switch(config) #router ospf 100 Switch(config-router) #area 1 virtual-link 10.10.11.50 hello 5 dead 20</pre> |

auto-cost reference-bandwidth

| | |
|------------------|---|
| Command | <p>auto-cost reference-bandwidth <bandwidth></p> <p>no auto-cost reference-bandwidth</p> <p>This command sets the way in which OSPF calculate the default metric value. The “no auto-cost reference-bandwidth” command only configures the cost to the interface by types.</p> |
| Parameter | <bandwidth> : reference bandwidth in Mbps, ranging between 1~4294967. |
| Default | Default bandwidth is 100Mbps. |

| | |
|--------------------|--|
| Mode | OSPF protocol mode |
| Usage Guide | The interface metric value is acquired by divide the interface bandwidth with reference bandwidth. This command is mainly for differentiate high bandwidth links. If several high bandwidth links exist, their cost can be assorted by configuring a larger reference bandwidth value. |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#auto-cost reference-bandwidth 50 |

compatible rfc1583

| | |
|--------------------|--|
| Command | compatible rfc1583 no compatible rfc1583 |
| | This command configures to rfc1583 compatible. The “ no compatible rfc1583 ” command close the compatibility. |
| Parameter | - |
| Default | Rfc 2328 compatible by default. |
| Mode | OSPF protocol mode |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#compatible rfc1583 |

clear ip ospf process

| | |
|--------------------|--|
| Command | clear ip ospf [<process-id>] process |
| | Use this command to clear and restart OSPF routing processes. One certain OSPF process will be cleared by specifying the process ID, or else all OSPF processes will be cleared. |
| Parameter | - |
| Default | No default configuration. |
| Mode | Admin mode。 |
| Usage Guide | - |

| | |
|--------------------------------------|---|
| | |
| Example | Switch#clear ip ospf process |
| | |
| default-information originate | |
| Command | default-information originate [always METRIC METRICTYPE ROUTEMAP] no default-information originate <p>This command create a default external route to OSPF route area; the “no default-information originate” closes this feature.</p> |
| Parameter | always: Whether default route exist in the software or not, the default route is always advertised. METRIC = metric <value>: Set the metric value for creating default route, <value> ranges between 0~16777214, default metric value is 0. METRICTYPE = metric-type {1 2} set the OSPF external link type of default route. 1 Set the OSPF external type 1 metric value. 2 Set the OSPF external type 2 metric value. ROUTEMAP = route-map <WORD> <WORD> specifies the route map name to be applied. |
| Default | Default metric value is 10; default OSPF external link type is 2. |
| Mode | OSPF protocol mode |
| Usage Guide | When introducing route into OSPF route area with this command, the system will behaves like an ASBR. |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#default-information originate always metric 23 metric-type 2 route-map myinfo |

default-metric

| | |
|---|--|
| Command | default-metric <value> no default-metric |
| The command set the default metric value of OSPF routing protocol; the “ no default-metric ” returns to the default state. | |
| Parameter | <value>, metric value, ranging between 0~16777214. |
| Default | Built-in, metric value auto translating. |
| Mode | OSPF protocol mode |
| Usage Guide | When the default metric value makes the metric value not compatible, the route introducing |

still goes through. If the metric value can not be translated, the default value provides alternative option to carry the route introducing on. This command will result in that all introduced route will use the same metric value. This command should be used associating redistribute.

Example

```
Switch#config terminal
Switch(config)#router ospf 100
Switch(config-router)#default-metric 100
```

distance

Command

distance {<value>|ROUTEPARAMETER}
no distance ospf

Configure OSPF manage distance base on route type. The “**no distance ospf**” command restores the default value.

Parameter

<value>, OSPF routing manage distance, ranging between 1~235
ROUTEPARAMETER= ospf {ROUTE1|ROUTE2|ROUTE3}
ROUTE1= external <external-distance>, Configure the distance learnt from other routing area.
<external-distance> distance value, ranging between 1~255.
ROUTE2= inter-area <inter-distance>, configure the distance value from one area to another area.
<inter-distance> manage distance value, ranging between 1~255.
ROUTE3= intra-area <intra-distance> Configure all distance values in one area.
<intra-distance> Manage distance value, ranging between 1~255.

Default

Default distance value is 110.

Mode

OSPF protocol mode

Usage Guide

Manage distance shows the reliability of the routing message source. The distance value may range between 1~255. The larger the manage distance value is, the lower is its reliability.

Example

```
Switch#config terminal
Switch(config)#router ospf 100
Switch(config-router)#distance ospf inter-area 20 intra-area 10 external 40
```

distribute-list

Command

distribute-list <access-list-name> out {kernel |connected| static| rip| isis| bgp}
no distribute-list out {kernel |connected| static| rip| isis| bgp}

Filter network in the routing update. The “**no distribute-list out {kernel |connected| static| rip| isis| bgp}**” command disables this function.

Parameter

< access-list-name> is the access-list name to be applied.
out: Filter the sent route update.
kernel Kernel route.

| | |
|--------------------|---|
| | connected Direct route; static Static route; rip RIP route; isis ISIS route; bgp BGP route. |
| Default | No default configuration. |
| Mode | OSPF protocol mode |
| Usage Guide | When distributing route from other routing protocols into the OSPF routing table, we can use this command. |
| Example | <p>Example below is the advertisement based on the access-list list 1 of the BGP route.</p> <pre>Switch#config terminal Switch(config)#access-list 11 permit 172.10.0.0 0.0.255.255 Switch(config)#router ospf 100 Switch(config-router)#redistribute rip Switch(config-router)#distribute-list 1 out rip</pre> |

filter-policy

| | |
|--------------------|--|
| Command | filter-policy <access-list-name> no filter-policy |
| | Use access list to filter the route obtained by OSPF, the no command cancels the route filtering. |
| Parameter | <access-list-name> Access list name will be applied, it can use numeric standard IP access list and naming standard IP access list to configure. |
| Default | No default configuration. |
| Mode | OSPF protocol mode |
| Usage Guide | This command is used to filter the route obtained by OSPF. Do not filter any routes when the specified access list is not exist, for the routes which do not match permit rule of access list, they will be filtered. One access list can be set for this command, only the last configuration takes effect when configuring many times. |
| Example | <p>Use access list 1 to filter the routes which do not belong to 172.10.0.0/16 segment.</p> <pre>Switch#config terminal Switch(config)#access-list 1 permit 172.10.0.0 0.0.255.255 Switch(config)#router ospf Switch(config-router)#filter-policy 1</pre> |

host area

| | |
|----------------|---|
| Command | host <host-address> area <area-id> [cost <cost>] |
|----------------|---|

| | |
|-------------|--|
| | no host <host-address> area <area-id> [cost <cost>] |
| | <p>Use this command to set a stub host entire belongs to certain area. The “[no] host <host-address> area <area-id> [cost <cost>]” command cancels this configuration.</p> |
| Parameter | <p><host-address> is host IP address show in dotted decimal notation.</p> <p><area-id> area ID shown in dotted decimal notation or integer ranging between 0~4294967295.</p> <p><cost> specifies the entire cost, which is a integer ranging between 0~65535 and defaulted at 0.</p> |
| Default | No entire set. |
| Mode | OSPF protocol mode |
| Usage Guide | With this command you can advertise certain specific host route out as stub link. Since the stub host belongs to special router in which setting host is not important. |
| Example | <pre>Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#host 172.16.10.100 area 1 Switch(config-router)#host 172.16.10.101 area 2 cost 10</pre> |

ip ospf authentication

| | |
|-------------|---|
| Command | ip ospf [<ip-address>] authentication [message-digest null] no ip ospf [<ip-address>] authentication |
| | <p>Specify the authentication mode required in sending and receiving OSPF packets on the interfaces; the “no ip ospf [<ip-address>] authentication” command cancels the authentication.</p> |
| Parameter | <p><ip-address> is the interface IP address, shown in dotted decimal notation.</p> <p>message-digest: Use MD5 authentication.</p> <p>null: no authentication applied, which resets the password or MD5 authentication applied on the interface.</p> |
| Default | Authentication not required in receiving OSPF packets on the interface. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf authentication message-digest</pre> |

ip ospf authentication-key

| | |
|-------------|---|
| Command | ip ospf [<ip-address>] authentication-key <0 LINE 7 WORD LINE> no ip ospf [<ip-address>] authentication Specify the authentication key required in sending and receiving OSPF packet on the interface; the no command cancels the authentication key. |
| Parameter | <ip-address> is the interface IP address shown in dotted decimal notation; <LINE> specifies authentication key. If key option is 0, specify plaintext key. If key option is 7, specify encrypted string. If no option, specify plaintext key by default. |
| Default | Authentication not required in receiving OSPF packets on the interface. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ip ospf authentication-key 0 password |

ip ospf cost

| | |
|-------------|---|
| Command | ip ospf [<ip-address>] cost <cost> no ip ospf [<ip-address>] cost Specify the cost required in running OSPF protocol on the interface; the “no ip ospf [<ip-address>] cost” command restores the default value. |
| Parameter | <ip-address> is the interface IP address shown in dotted decimal notation. <cost > is the cost of OSPF protocol ranging between 1~65535. |
| Default | Default OSPF cost on the interface is auto-figure out based bandwidth. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf cost 3 |

ip ospf database-filter

| | |
|---------|--|
| Command | ip ospf [<ip-address>] database-filter all out no ip ospf [<ip-address>] database-filter The command opens LSA database filter switch on specific interface; the “no ip ospf [<ip-address>] database-filter” command closes the filter switch. |
|---------|--|

| | |
|--------------------|--|
| Parameter | <p><ip-address> is the interface IP address shown in dotted decimal notation; all: All LSAs. out: Sent LSAs.</p> |
| Default | Filter switch Closed. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf database-filter all out</pre> |

ip ospf dead-interval

| | |
|--------------------|---|
| Command | <p>ip ospf [<ip-address>] dead-interval <time > no ip ospf [<ip-address>] dead-interval</p> <p>Specify the dead interval for neighboring layer 3 switch; the “no ip ospf [<ip-address>] dead-interval” command restores the default value.</p> |
| Parameter | <p><ip-address> is the interface IP address shown in dotted decimal notation; <time > is the dead interval length of the neighboring layer 3 switches, shown in seconds and ranging between 1~65535.</p> |
| Default | The default dead interval is 40 seconds (normally 4 times of the hello-interval). |
| Mode | Interface Configuration Mode. |
| Usage Guide | If no Hello data packet received after the dead-interval period then this layer 3 switch is considered inaccessible and invalid. This command modifies the deadinterval value of neighboring layer 3 switch according to the actual link state. The set dead-interval value is written into the Hello packet and transmitted. To ensure the normal operation of the OSPF protocol, the dead-interval between adjacent layer 3 switches should be in accordance or at least 4 times of the hello-interval value. |
| Example | <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf dead-interval 80</pre> |

ip ospf disable all

| | |
|------------------|---|
| Command | <p>ip ospf disable all no ip ospf disable all</p> <p>Stop OSPF group process on the interface.</p> |
| Parameter | - |

| | |
|--------------------|--|
| Default | - |
| Mode | Interface Configuration Mode. |
| Usage Guide | This command resets the network area command and stops group process on specific interface. |
| Example | Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf disable all |

ip ospf hello-interval

| | |
|--------------------|---|
| Command | ip ospf [<ip-address>] hello-interval <time> no ip ospf [<ip-address>] hello-interval |
| | Specify the hello-interval on the interface; the “no ip ospf [<ip-address>] hello-interval” restores the default value. |
| Parameter | <ip-address> is the interface IP address shown in dotted decimal notation; <time> is the interval sending HELLO packet, shown in seconds and ranging between 1 ~ 65535. |
| Default | The hello-interval on the interface is 10 seconds. |
| Mode | Interface Configuration Mode. |
| Usage Guide | HELLO data packet is the most common packet which is periodically sent to adjacent layer 3 switch to discover and maintain adjacent relationship, elect DR and BDR. The user set hello-interval value will be written into the HELLO packet and transmitted. The less the hello-interval value is, the sooner the network topological structure is discovered as well larger the cost. To ensure the normal operation of OSPF protocol the hello-interval parameter between the layer 3 switches adjacent to the interface must be in accordance. |
| Example | Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf hello-interval 20 |

ip ospf message-digest-key

| | |
|----------------|--|
| Command | ip ospf [<ip-address>] message-digest-key <key_id> MD5 <0 LINE 7 WORD LINE> no ip ospf [<ip-address>] message-digest-key <key_id> |
| | Specify the key id and value of MD5 authentication on the interface; the no command restores the default value. |

| | |
|--------------------|--|
| Parameter | <p><ip-address>is the interface IP address show in dotted decimal notation;</p> <p><key_id>ranges between 1-255;</p> <p><LINE>is OSPF key. If key option is 0, specify plaintext key. If key option is 7, specify encrypted string. If no option, specify plaintext key by default.</p> |
| Default | MD5 key is not configured. |
| Mode | Interface Configuration Mode. |
| Usage Guide | MD5 key encrypted authentication is used for ensure the safety between the OSPF routers on the network. Same key id and key should be configured between neighbors when using this command, or else no adjacent relationship will not be created. |
| Example | <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf message-digest-key 2 MD5 0 yourpassword</pre> |

ip ospf mtu

| | |
|--------------------|--|
| Command | <p>ip ospf mtu <mtu></p> <p>no ip ospf mtu</p> |
| | Specify the mtu value of the interface as the OSPF group structure according; the “no ip ospf mtu” command restores the default value. |
| Parameter | < mtu > is the interface mtu value ranging between 576~65535 |
| Default | Use the interface mtu acquired from the kernel. |
| Mode | Interface Configuration Mode. |
| Usage Guide | The interface value configured by this command is only used by OSPF protocol other than updated into kernel. |
| Example | <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf mtu 1480</pre> |

ip ospf mtu-ignore

| | |
|------------------|--|
| Command | <p>ip ospf <ip-address> mtu-ignore</p> <p>no ip ospf <ip-address> mtu-ignore</p> |
| | Use this command so that the mtu size is not checked when switching DD; the “no ip ospf <ip-address> mtu-ignore” will ensure the mtu size check when performing DD switch. |
| Parameter | < ip-address >is the interface IP address show in dotted decimal notation. |
| Default | Check mtu size in DD switch. |

| | |
|--------------------|---|
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf mtu-ignore |

ip ospf network

| | |
|--------------------|---|
| Command | ip ospf network {broadcast non-broadcast point-to-point point-to-multipoint} no ip ospf network |
| | This command configures the OSPF network type of the interface; the “ no ip ospf network ” command restores the default value. |
| Parameter | broadcast: Set the OSPF network type to broadcast. non-broadcast: Set the OSPF network type to NBMA. point-to-point: Set the OSPF network type to point-to-point. point-to-multipoint: Set the OSPF network type to point-to-multipoint. |
| Default | The default OSPF network type is broadcast. |
| Mode | Interface Configuration Mode. |
| Usage Guide | - |
| Example | The configuration below set the OSPF network type of the interface vlan 1 to point-to-point. Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf network point-to-point |

ip ospf priority

| | |
|------------------|--|
| Command | ip ospf [<ip-address>] priority <priority> no ip ospf [<ip-address>] priority |
| | Configure the priority when electing “Defined layer 3 switch” at the interface. The “ no ip ospf [<ip-address>] priority ” command restores the default value. |
| Parameter | <ip-address> is the interface IP address show in dotted decimal notation. <priority> is the priority of which the valid value ranges between 0~255. |
| Default | The default priority when electing DR is 1. |
| Mode | Interface Configuration Mode. |

| | |
|--------------------|--|
| Usage Guide | When two layer 3 switches connected to the same segments both want to be the “Defined layer 3 switch”, the priority will decide which one should be chosen. Normally the one with higher priority will be elected, or the one with larger router-id number if the priorities are the same. A layer 3 switch with a priority equal to 0 will not be elected as “Defined layer 3 switch” or “Backup Defined layer 3 switch”. |
| Example | <p>Configure the priority of DR electing. Configure the interface vlan 1 to no election right, namely set the priority to 0.</p> <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf priority 0</pre> |

ip ospf retransmit-interval

| | |
|--------------------|--|
| Command | <p>ip ospf [<ip-address>] retransmit-interval <time> no ip ospf [<ip-address>] retransmit-interval</p> <p>Specify the retransmit interval of link state announcements between the interface and adjacent layer 3 switches. The “no ip ospf [<ip-address>] retransmit-interval” command restores the default value.</p> |
| Parameter | <p><ip-address> is the interface IP address show in dotted decimal notation.</p> <p><time> is the retransmit interval of link state announcements between the interface and adjacent layer 3 switches, shown in seconds ranging between 1~65535.</p> |
| Default | Default retransmit interval is 5 seconds. |
| Mode | Interface Configuration Mode. |
| Usage Guide | When a layer 3 switch transmits LSA to its neighbor, it will maintain the link state announcements till confirm from the object side is received. If the confirm packet is not received within the interval, the LSA will be retransmitted. The retransmit interval must be larger than the time it takes to make a round between two layer 3 switches. |
| Example | <p>Configure the LSA retransmit interval of interface vlan 1 to 10 seconds.</p> <pre>Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf retransmit-interval 10</pre> |

ip ospf transmit-delay

| | |
|------------------|--|
| Command | <p>ip ospf [<ip-address>] transmit-delay <time> no ip ospf [<ip-address>] transmit-delay</p> <p>Set the transmit delay value of LSA transmitting; the “no ip ospf [<ip-address>] transmit-delay” restores the default value.</p> |
| Parameter | <p><ip-address> is the interface IP address show in dotted decimal notation.</p> <p><time> is the transmit delay value of link state announcements between the interface and</p> |

| | |
|--------------------|--|
| | adjacent layer 3 switches, shown in seconds and ranging between 1~65535. |
| Default | Default transmit delay value of link state announcements is 1 second. |
| Mode | Interface Configuration Mode. |
| Usage Guide | The LSA ages with time in the layer 3 switches, but not in the network transmitting process. By adding the transit-delay prior to sending the LSA, the LSA will be sent before aged. |
| Example | Set the LSA transmit delay of interface vlan1 to 3 seconds. Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf transmit-delay 3 |

key

| | |
|--------------------|--|
| Command | key <keyid> no key <keyid> This command is for managing and adding keys in the key chain. The “ no key <keyid> ” command deletes one key. |
| Parameter | <keyid> is key ID, ranging between 0-2147483647. |
| Default | -。 |
| Mode | keychainMode and keychain-keyMode。 |
| Usage Guide | The command permits entering the keychain-key mode and set the passwords corresponding to the keys. |
| Example | Switch#config terminal Switch(config)#key chain mychain Switch(config-keychain)#key 1 Switch(config-keychain-key)# |

key chain

| | |
|------------------|--|
| Command | key chain <name-of-chain> no key chain < name-of-chain > This command is for entering a keychain manage mode and configure a keychain. The “ no key chain < name-of-chain > ” command deletes one keychain. |
| Parameter | <name-of-chain> is the name string of the keychain the length of which is not specifically limited. |
| Default | -。 |

| | |
|--------------------|--|
| Mode | Global Mode and keychain Mode。 |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#key chain mychain Switch(config-keychain)# |

log-adjacency-changes detail

| | |
|--------------------|---|
| Command | log-adjacency-changes detail no log-adjacency-changes detail |
| | Configure to keep a log for OSPF adjacency changes or not. |
| Parameter | - |
| Default | Don't l keep a log for OSPF adjacency changes by default. |
| Mode | OSPF Protocol Configuration Mode |
| Usage Guide | When this command is configured, the OSPF adjacency changes information will be recorded into a log. |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)# log-adjacency-changes detail |

max-concurrent-dd

| | |
|--------------------|--|
| Command | max-concurrent-dd <value> no max-concurrent-dd |
| | This command set the maximum concurrent number of dd in the OSPF process; the “no max-concurrent-dd” command restores the default. |
| Parameter | <value>ranges between <1-65535>, which is the capacity of processing the concurrent dd data packet. |
| Default | Not set, no concurrent dd limit. |
| Mode | OSPF protocol mode |
| Usage Guide | Specify the max concurrent number of dd in the OSPF process. |
| Example | Set the max concurrent dd to 20. Switch#config terminal Switch(config)#router ospf 100 |

Switch(config-router)#max-concurrent-dd 20

neighbor

| | |
|-------------|--|
| Command | neighbor A.B.C.D [<cost> priority <value> poll-interval <value>] no neighbor A.B.C.D [<cost> priority <value> poll-interval <value>] |
| | This command configures the OSPF router connecting NBMA network. The “ no neighbor A.B.C.D [<cost> priority <value> poll-interval <value>] ” command removes this configuration. |
| Parameter | <cost> , OSPF neighbor cost value ranging between 1-65535; priority <value> , neighbor priority defaulted at 0 and ranges between 0-255; poll-interval <value> , 120s by default, which the polling time before neighbor relationship come into shape, ranging between 1-65535. |
| Default | No default configuration. |
| Mode | OSPF protocol mode |
| Usage Guide | Use this command on NBMA network to configure neighbor manually. Every known non-broadcasting neighbor router should be configured with a neighbor entry. The configured neighbor address should be the main address of the interface. The poll-interval should be much larger than the hello-interval. |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#neighbor 1.2.3.4 priority 1 poll-interval 90 Switch(config-router)#neighbor 1.2.3.4 cost 15 |

network area

| | |
|-------------|---|
| Command | network NETWORKADDRESS area <area-id> no network NETWORKADDRESS area <area-id> |
| | This command enables OSPF routing function on the interface with IP address matched with the network address. The “ no network NETWORKADDRESS area <area-id> ” command removes the configuration and stop OSPF on corresponding interface. |
| Parameter | NETWORKADDRESS = A.B.C.D/M A.B.C.D X.Y.Z.W , Shown with the network address prefix or the mask. Wildcast mask if shown in mask; <area-id> is the ip address or area number shown in point divided decimal system, if shown in decimal integer, it ranges between 0~4294967295. |
| Default | No default configuration |
| Mode | OSPF protocol mode |
| Usage Guide | When certain segment belongs to certain area, interface the segment belongs will be in this area, starting hello and database interaction with the connected neighbor. |

| | |
|----------------------|--|
| | |
| Example | Configuration 10.1.1.0/24 is in area 1. Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#network 10.1.1.0/24 area 1 |
| ospf abr-type | |
| Command | ospf abr-type {cisco ibm shortcut standard} no ospf abr-type Use this command to configure an OSPF ABR type. The “ no ospf abr-type ” command restores the default value. |
| Parameter | cisco , Realize through cisco ABR; ibm , Realize through ibm ABR; shortcut , Specify a shortcut-ABR; standard , Realize with standard(RFC2328)ABR. |
| Default | Cisco by default. |
| Mode | OSPF protocol mode |
| Usage Guide | For Specifying the realizing type of abr. This command is good for interactive operation among different OSPF realizing method and is especially useful in the multiple host environment. |
| Example | Configure abr as standard. Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#ospf abr-type standard |

ospf router-id

| | |
|--------------------|--|
| Command | ospf router-id <address> no ospf router-id Specify a router ID for the OSPF process. The “ no ospf router-id ” command cancels the ID number. |
| Parameter | <address> , IPv4 address format of router-id. |
| Default | No default configuration |
| Mode | OSPF protocol mode |
| Usage Guide | The new router-id takes effect immediately. |
| Example | Configure router-id of ospf 100 to 2.3.4.5. |

```
Switch#config terminal
Switch(config)#router ospf 100
Switch(config-router)#ospf router-id 2.3.4.5
```

overflow database

| | |
|--------------------|---|
| Command | overflow database <maxdbsize> [{hard soft}] no overflow database |
| | <p>This command is for configuring the max LSA number. The “no overflow database” command cancels the limit.</p> |
| Parameter | <p>< maxdbsize > Max LSA numbers, ranging between 0~4294967294.</p> <p>soft: Soft limit, warns when border exceeded.</p> <p>hard: Hard limit, directly close ospf instance when border exceeded.</p> <p>If there is not soft or hard configured, the configuration is taken as hard limit.</p> |
| Default | Not configured |
| Mode | OSPF protocol mode |
| Usage Guide | - |
| Example | <pre>Switch#config terminal Switch(config)#router ospf Switch(config-router)#overflow database 10000 soft</pre> |

overflow database external

| | |
|--------------------|--|
| Command | overflow database external [<maxdbsize> <maxtime>] no overflow database external [<maxdbsize> <maxtime>] |
| | <p>The command is for configuring the size of external link database and the waiting time before the route exits overflow state. The “no overflow database external [<maxdbsize> <maxtime>]” restores the default value.</p> |
| Parameter | <p>< maxdbsize > size of external link database, ranging between 0~4294967294, defaulted at 4294967294.</p> <p>< maxtime > the seconds the router has to wait before exiting the database overflow, ranging between 0~65535.</p> |
| Default | - |
| Mode | OSPF protocol mode |
| Usage Guide | - |
| Example | <pre>Switch#config terminal Switch(config)#router ospf Switch(config-router)#overflow database external 5 3</pre> |

passive-interface

| | |
|-------------|---|
| Command | passive-interface <ifname> [<ip-address>] no passive-interface <ifname> [<ip-address>] |
| | Configure that the hello group not sent on specific interfaces. The “ no passive-interface <ifname> [<ip-address>] ”command cancels this function. |
| Parameter | <ifname> is the specific name of interface. <ip-address> IP address of the interface in dotted decimal format. |
| Default | Not configured |
| Mode | OSPF protocol mode |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#router ospf Switch(config-router)#passive-interface vlan1 |

redistribute

| | |
|-------------|---|
| Command | redistribute {kernel connected static rip isis bgp} [metric<value>] [metric-type {1 2}][route-map<word>][tag<tag-value>] no redistribute {kernel connected static rip isis bgp} [metric<value>] [metric-type {1 2}][route-map<word>][tag<tag-value>] Introduce route learnt from other routing protocols into OSPF. |
| Parameter | kernel introduce from kernel route. connected introduce from direct route. static introduce from static route. rip introduce from the RIP route. isis introduce from ISIS route. bgp introduce from BGP route. metric <value> is the introduced metric value, ranging between 0-16777214. metric-type {1 2} is the metric value type of the introduced external route, which can be 1 or 2, and it is 2 by default. route-map <word> point to the probe of the route map for introducing route. tag<tag-value> external identification number of the external route, ranging between 0~4294967295, defaulted at 0. |
| Default | - |
| Mode | OSPF protocol mode |
| Usage Guide | Learn and introduce other routing protocol into OSPF area to generate AS-external_LSAs. |
| Example | Switch#config terminal |

```
Switch(config)#router ospf
Switch(config-router)#redistribute bgp metric 12
```

redistribute ospf

| | |
|-------------|--|
| Command | redistribute ospf [<process-id>] [metric<value>] [metric-type {1 2}][route-map<word>] no redistribute ospf [<process-id>] [metric<value>] [metric-type {1 2}][route-map<word>] |
| Parameter | <p>To redistribute of process ID routing to this process. The no form of command deletes the redistribution of process ID routing to this process. When input the optional parameters of metric, metric type and routemap, then restores default configuration.</p> <p>process-id is OSPF process ID, 0 by default.</p> <p>metric <value> is the metric for redistributed routing, range between 0 to 16777214.</p> <p>metric-type {1 2} is the metric type for redistributed routing, only can be 1 or 2, and 2 by default.</p> <p>route-map <word> is the pointer to the introduced routing map.</p> |
| Default | Not redistributed any OSPF routing by default. |
| Mode | OSPF protocol mode |
| Usage Guide | When process-id is not input, that means OSPF routing will be redistributed by default (Process-id is 0). |
| Example | Switch(config-router)#redistribute ospf |

router ospf

| | |
|-------------|--|
| Command | router ospf <process_id> no router ospf <process_id> |
| Parameter | <p>This command is for relating the OSPF process.</p> <p><process_id> specifies the ID of the OSPF process to be created, the ranging from 1 to 65535.</p> |
| Default | - |
| Mode | Global Mode。 |
| Usage Guide | - |
| Example | Switch#config terminal Switch(config)#router ospf 100 Switch(config-router)#network 10.1.1.0/24 area 0 |

summary-address

| | |
|-------------|---|
| Command | summary-address <A.B.C.D/M> [{not-advertise tag<tag-value>}] |
| | Summarize or restrain external route with specific address scope. |
| Parameter | <A.B.C.D/M> address scope, shown in dotted decimal notation IPv4 address plus mask length. not-advertised restrain the external routes. tag<tag-value> is the identification label of the external routes, which ranges between 0~4294967295, and is defaulted at 0. |
| Default | - |
| Mode | OSPF protocol mode |
| Usage Guide | When routes are introduced into OSPF from other routing protocols, it is required to advertise every route in a external LSA. This command is for advertise one summary route for those introduced routes contained in specific network address and masks, which could greatly reduces the size of the link state database. |
| Example | Switch#config terminal Switch(config)#router ospf Switch(config-router)#summary-address 172.16.0.0/16 tag 3 |

timers spf

| | |
|-------------|---|
| Command | timers spf <spf-delay> <spf-holdtime> no timers spf |
| | Adjust the value of the route calculating timer. The “ no timers spf ” command restores relevant values to default. |
| Parameter | <spf-delay> 5 seconds by default. <spf-holdtime> 10 seconds by default. |
| Default | - |
| Mode | OSPF protocol mode |
| Usage Guide | This command configures the delay time between receiving topology change and SPF calculation, further configured the hold item between two discontinuous SPF calculation. |
| Example | Switch#config terminal Switch(config)#router ospf Switch(config-router)#timers spf 5 10 |

show ip ospf

| | |
|-------------|---|
| Command | show ip ospf [<process-id>] |
| | Display OSPF main messages. |
| Parameter | <process-id> is the process ID, ranging between 0~65535. |
| Default | Not displayed |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | <pre>Switch#show ip ospf Routing Process "ospf 0" with ID 192.168.1.1 Process bound to VRF default Process uptime is 2 days 0 hour 30 minutes Conforms to RFC2328, and RFC1583Compatibility flag is disabled Supports only single TOS(TOS0) routes Supports opaque LSA SPF schedule delay 5 secs, Hold time between two SPFs 10 secs Refresh timer 10 secs Number of external LSA 0. Checksum Sum 0x000000 Number of opaque AS LSA 0. Checksum Sum 0x000000 Number of non-default external LSA 0 External LSA database is unlimited. Number of LSA originated 0 Number of LSA received 0 Number of areas attached to this router: 1 Area 0 (BACKBONE) (Inactive) Number of interfaces in this area is 0(0) Number of fully adjacent neighbors in this area is 0 Area has message digest authentication SPF algorithm executed 0 times Number of LSA 0. Checksum Sum 0x000000 Routing Process "ospf 10" with ID 0.0.0.0 Process bound to VRF test Process uptime is 4 days 23 hours 51 minutes Conforms to RFC2328, and RFC1583Compatibility flag is disabled Supports only single TOS(TOS0) routes Supports opaque LSA SPF schedule delay 5 secs, Hold time between two SPFs 10 secs Refresh timer 10 secs Number of external LSA 0. Checksum Sum 0x000000 Number of opaque AS LSA 0. Checksum Sum 0x000000 Number of non-default external LSA 0 External LSA database is unlimited.</pre> |

Number of LSA originated 0
 Number of LSA received 0
 Number of areas attached to this router: 1
 Area 0 (BACKBONE) (Inactive)
 Number of interfaces in this area is 0(0)
 Number of fully adjacent neighbors in this area is 0
 Area has no authentication
 SPF algorithm executed 0 times
 Number of LSA 0. Checksum Sum 0x000000

show ip ospf border-routers

| | |
|--------------------|---|
| Command | show ip ospf [<process-id>] border-routers |
| | Display the intra-domain route entries for the switch to reach ABR and ASBR of all instances. |
| Parameter | <process-id> is the process ID, ranging between 0~65535. |
| Default | Not displayed |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | Switch#show ip ospf border-routers OSPF process 0 internal Routing Table Codes: i - Intra-area route, I - Inter-area route i 10.15.0.1 [10] via 10.10.0.1, Vlan1, ASBR, Area 0.0.0.0 i 172.16.10.1 [10] via 10.10.11.50, Vlan2, ABR, ASBR, Area 0.0.0.0 |

show ip ospf database

| | |
|----------------|--|
| Command | show ip ospf [<process-id>] database [{<linkstate_id> self-originate adv-router <advertiser_router>}] asbr-summary[{<linkstate_id> self-originate adv-router <advertiser_router>}] external [{<linkstate_id> self-originate adv-router <advertiser_router>}] network [{<linkstate_id> self-originate adv-router <advertiser_router>}] nssa-external [{<linkstate_id> self-originate adv-router <advertiser_router>}] opaque-area [{<linkstate_id> self-originate adv-router <advertiser_router>}] opaque-as [{<linkstate_id> self-originate adv-router |
|----------------|--|

| | |
|-------------|--|
| | <pre> <advertiser_router>}} opaque-link [{<linkstate_id> self-originate adv-router <advertiser_router>}} router [{<linkstate_id> self-originate adv-router <advertiser_router>}} summary [{<linkstate_id> self-originate adv-router <advertiser_router>}} self-originate max-age }} </pre> |
| | Display the OSPF link state data base messages. |
| Parameter | <p><process-id> is the process ID, ranging between 0~65535</p> <p><linkstate_id> Link state ID, shown in point divided demical system</p> <p><advertiser_router> is the ID of Advertising router, shown in point divided demcial IP address forma</p> |
| Default | Not displayed |
| Mode | Admin and Configuration Mode. |
| Usage Guide | According to the output messages of this command, we can view the OSPF link state database messages. |
| Example | <pre> Switch#show ip ospf database Router Link States (Area 0.0.0.2) Link ID ADV Router Age Seq# CkSum Link count 192.168.1.2 192.168.1.2 254 0x80000031 0xec21 1 192.168.1.3 192.168.1.3 236 0x80000033 0x0521 2 Net Link States (Area 0.0.0.2) Link ID ADV Router Age Seq# CkSum 20.1.1.2 192.168.1.2 254 0x8000002b 0xece4 Summary Link States (Area 0.0.0.2) Link ID ADV Router Age Seq# CkSum Route 6.1.0.0 192.168.1.2 68 0x8000002b 0x5757 6.1.0.0/22 6.1.1.0 192.168.1.2 879 0x8000002a 0xf8bc 6.1.1.0/24 22.1.1.0 192.168.1.2 308 0x8000000c 0xc8f0 22.1.1.0/24 ASBR-Summary Link States (Area 0.0.0.2) Link ID ADV Router Age Seq# CkSum 192.168.1.1 192.168.1.2 1702 0x8000002a 0x89c7 AS External Link States Link ID ADV Router Age Seq# CkSum Route 2.2.2.0 192.168.1.1 1499 0x80000056 0x3a63 E2 2.2.2.0/24 [0x0] 2.2.3.0 192.168.1.1 1103 0x8000002b 0x0ec3 E2 2.2.3.0/24 [0x0] </pre> |

show ip ospf interface

| | |
|---------|------------------------------------|
| Command | show ip ospf interface <interface> |
|---------|------------------------------------|

| | |
|--------------------|---|
| | Display the OSPF interface messages. |
| Parameter | <interface> is the name of interface |
| Default | Not displayed |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | Switch#show ip ospf interface Loopback is up, line protocol is up OSPF not enabled on this interface Vlan1 is up, line protocol is up Internet Address 10.10.10.50/24, Area 0.0.0.0 Process ID 0, Router ID 10.10.11.50, Network Type BROADCAST, Cost: 10 Transmit Delay is 5 sec, State Waiting, Priority 1 No designated router on this network No backup designated router on this network Timer intervals configured, Hello 35, Dead 35, Wait 35, Retransmit 5 Hello due in 00:00:16 Neighbor Count is 0, Adjacent neighbor count is 0 |

show ip ospf neighbor

| | | |
|--------------------|---|----------------|
| Command | show ip ospf [<process-id>] neighbor [{<neighbor_id> all detail all] interface<ifaddress>}] | |
| | Display the OSPF adjacent point messages. | |
| Parameter | <process-id> is the process ID ranging between 0~65535 <neighbor_id> is the dotted decimal notation neighbor ID all: Display messages of all neighbors detail: Display detailed messages of all neighbors <ifaddress> Interface IP address | |
| Default | Not displayed | |
| Mode | Admin and Configuration Mode. | |
| Usage Guide | OSPF neighbor state can be checked by viewing the output of this command. | |
| Example | Switch#show ip ospf neighbor OSPF process 0: Neighbor ID Pri State Dead Time Address Interface 192.168.1.1 1 Full/Backup 00:00:32 6.1.1.1 Vlan1 192.168.1.3 1 Full/DR 00:00:36 20.1.1.3 Vlan2 192.168.1.3 1 Full/ - 00:00:30 20.1.1.3 VLINK2 | |
| | Displayed information | Explanation |
| | Neighbor ID | ID Neighbor ID |

| | |
|-----------|-------------------------|
| Priority | Priority |
| State | Neighbor relation state |
| Dead time | Neighbor dead time |
| Address | Interface Address |
| Interface | Interface name |

show ip ospf redistribute

| | |
|--------------------|--|
| Command | show ip ospf [<process-id>] redistribute |
| | To display the routing message redistributed from external process of OSPF. |
| Parameter | <process-id> is the process ID ranging between 0~65535. |
| Default | - |
| Mode | Admin Mode and Configuration Mode. |
| Usage Guide | - |
| Example | Switch#show ip ospf redistribute ospf process 1 redistribute information: ospf process 2 ospf process 3 bgp ospf process 2 redistribute information: ospf process 1 bgp ospf process 3 redistribute information: ospf process 1 bgp Switch#show ip ospf 2 redistribute ospf process 2 redistribute information: ospf process 1 bgp |

show ip ospf route

| | |
|--------------------|---|
| Command | show ip ospf [<process-id>] route |
| | Display the OSPF routing table messages. |
| Parameter | <process-id> is the process ID ranging between 0~65535 |
| Default | - |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |

| | |
|----------------|---|
| Example | <pre>Switch#show ip ospf route O 10.1.1.0/24 [10] is directly connected, Vlan1, Area 0.0.0.0 O 10.1.1.4/32 [10] via 10.1.1.4, Vlan1, Area 0.0.0.0 IA 11.1.1.0/24 [20] via 10.1.1.1, Vlan1, Area 0.0.0.0 IA 11.1.1.2/32 [20] via 10.1.1.1, Vlan1, Area 0.0.0.0 IA 12.1.1.0/24 [20] via 10.1.1.2, Vlan1, Area 0.0.0.0 IA 12.1.1.2/32 [20] via 10.1.1.2, Vlan1, Area 0.0.0.0 O 13.1.1.0/24 [10] is directly connected, Vlan4, Area 0.0.0.3 O 14.1.1.0/24 [10] is directly connected, Vlan5, Area 0.0.0.4 IA 15.1.1.0/24 [20] via 13.1.1.2, Vlan4, Area 0.0.0.3 IA 15.1.1.2/32 [20] via 13.1.1.2, Vlan4, Area 0.0.0.3 E1 100.1.0.0/16 [21] via 10.1.1.1, Vlan1 E1 100.2.0.0/16 [21] via 10.1.1.1, Vlan1</pre> |
|----------------|---|

show ip ospf virtual-links

| | |
|--------------------|--|
| Command | show ip ospf [<process-id>] virtual-links |
| | Display the OSPF virtual link message. |
| Parameter | <process-id> is the process ID ranging between 0~65535. |
| Default | - |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | <pre>Switch#show ip ospf virtual-links Virtual Link VLINK0 to router 10.10.0.9 is up Transit area 0.0.0.1 via interface Vlan1 Transmit Delay is 1 sec, State Point-To-Point, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:02 Adjacency state Full Virtual Link VLINK1 to router 10.10.0.123 is down Transit area 0.0.0.1 via interface Vlan1 Transmit Delay is 1 sec, State Down, Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in inactive Adjacency state Down</pre> |

show ip route process-detail

| | |
|-------------|--|
| Command | show ip route [database] process-detail |
| | Display the IP routing table with specific process ID or Tag. |
| Parameter | The parameter of database means displaying all the routers, no parameter means only displaying effective routers. |
| Default | Not importing any router of OSPF process by default. |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | Switch#show ip route database process-detail Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2 i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area > - selected route, * - FIB route, p - stale info C *> 127.0.0.0/8 is directly connected, Loopback O 192.168.2.0/24 [110/10] is directly connected, Vlan2, 00:06:13,process 12 C *> 192.168.2.0/24 is directly connected, Vlan2 |

show ip protocols

| | |
|-------------|--|
| Command | show ip protocols |
| | Display the running routing protocol messages. |
| Parameter | |
| Default | - |
| Mode | Admin and Configuration Mode. |
| Usage Guide | - |
| Example | Switch#show ip protocols Use "show ip protocols" command will show the messages of the routing protocol running on current layer 3 switch For example, the displayed messages are: Routing Protocol is "ospf 0" Invalid after 0 seconds, hold down 0, flushed after 0 Outgoing update filter list for all interfaces is Incoming update filter list for all interfaces is Redistributing: |

Routing for Networks:
 10.1.1.0/24
 12.1.1.0/24
 Routing Information Sources:
 Gateway Distance Last Update
 Distance: (default is 110)
 Address Mask Distance List
 Routing Protocol is "bgp 0"
 Outgoing update filter list for all interfaces is
 Incoming update filter list for all interfaces is
 IGP synchronization is disabled
 Automatic route summarization is disabled
 Neighbor(s):
 Address FiltIn FiltOut DistIn DistOut Weight RouteMap
 Incoming Route Filter:

debug ospf events

| | |
|--------------------|--|
| Command | debug ospf events [abr asbr lsa nssa os router vlink] no debug ospf events [abr asbr lsa nssa os router vlink] |
| | Open debugging switches showing various OSPF events messages; the “ no debug ospf events [abr asbr lsa nssa os router vlink] ” command closes the debugging switch. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf events router |

debug ospf ifsm

| | |
|------------------|--|
| Command | debug ospf ifsm [status events timers] no debug ospf ifsm [status events timers] |
| | To enable debugging of received messages from NSM for RIP. The no form of this command will disable debugging of received messages from NSM for RIP. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |

| | |
|--------------------|-------------------------------|
| | |
| Usage Guide | - |
| Example | Switch#debug ospf ifsm events |

debug ospf lsa

| | |
|--------------------|--|
| Command | debug ospf lsa [generate flooding install maxage refresh] no debug ospf lsa [generate flooding install maxage refresh] |
| | Open debugging switches showing showing link state announcements; the “ no debug ospf lsa [generate flooding install maxage refresh] ” closes the debugging switches. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf lsa generate |

debug ospf nfsm

| | |
|--------------------|---|
| Command | debug ospf nfsm [status events timers] no debug ospf nfsm [status events timers] |
| | Open debugging switches showing OSPF neighbor state machine; the “ no debug ospf nfsm [status events timers] ” command closes this debugging switch. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf nfsm events |

debug ospf nsm

| | |
|-------------|--|
| Command | debug ospf nsm [interface redistribute] no debug ospf nsm [interface redistribute] Open debugging switches showing OSPF NSM, the “ no debug ospf nsm [interface redistribute] ” command closes this debugging switch. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf nsm interface |

debug ospf packet

| | |
|-------------|---|
| Command | debug ospf packet [dd detail hello ls-ack ls-request ls-update rcv detail] no debug ospf packet [dd detail hello ls-ack ls-request ls-update rcv detail] Open debugging switches showing OSPF packet messages; the “ no debug ospf packet [dd detail hello ls-ack ls-request ls-update rcv detail] ” command closes this debugging switch. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf packet hello |

debug ospf route

| | |
|--------------------|---|
| Command | debug ospf route [ase ia install spf] no debug ospf route [ase ia install spf] Open debugging switches showing OSPF related routes; the “ no debug ospf route [ase ia install spf] ” command closes this debugging switch. |
| Parameter | - |
| Default | Closed. |
| Mode | Admin mode and global mode |
| Usage Guide | - |
| Example | Switch#debug ospf route spf |

debug ospf redistribute message send

| | |
|--------------------|--|
| Command | debug ospf redistribute message send no debug ospf redistribute message send To enable debugging of sending command from OSPF process redistributed to other OSPF process routing. The no form of command disables debugging of sending command from OSPF process redistributed to other OSPF process routing. |
| Parameter | - |
| Default | Disabled. |
| Mode | Admin Mode |
| Usage Guide | - |
| Example | To enable debugging of sending command from OSPF process redistributed to other OSPF process routing. Switch#debug ospf redistribute message send |

debug ospf redistribute route receive

| | |
|--------------------|--|
| Command | debug ospf redistribute route receive no debug ospf redistribute route receive To enable/disable debugging switch of received routing message from NSM for OSPF process. |
| Parameter | - |
| Default | Disabled. |
| Mode | Admin Mode |
| Usage Guide | - |
| Example | To enable debugging switch of received routing message from NSM for OSPF process. Switch# debug ospf redistribute route receive |

capability restart graceful

| | |
|--------------------|---|
| Command | capability restart graceful no capability restart Enable GR of specified OSPF process, no command disables this function. |
| Parameter | - |
| Default | Enable OSRF GR function. |
| Mode | OSPF protocol configuration mode |
| Usage Guide | When a switch is using OSPF GR, it will quit GR directly if disable GR. |
| Example | Enable OSPF GR function. Switch(config)#router ospf Switch(config-router)#capability restart graceful |

debug ospf events gr

| | |
|--------------------|--|
| Command | debug ospf events gr no debug ospf events gr Enable the debugging for displaying relevant event of OSPF GR, no command disables the debugging. |
| Parameter | - |
| Default | Disabled. |
| Mode | Admin Mode |
| Usage Guide | - |
| Example | Enable the debugging for displaying relevant event of OSPF GR. Switch#debug ospf events gr |

ospf graceful-restart grace-period

| | |
|--------------------|---|
| Command | ospf graceful-restart grace-period <integer> no ospf restart grace-period Configure grace period of GR restarter, no command restores grace period to default value. |
| Parameter | <integer>: value of grace period, unit is second and ranging from 1 to 1800. |
| Default | 60s. |
| Mode | Global configuration mode |
| Usage Guide | Configure grace period of GR restarter (The switch processes switchover or restart protocol). GR process should be completed during a grace period. If it does not complete GR process in time, it should quit GR forcibly and restart OSPF normally. |
| Example | Configure grace period of GR restarter to 100s. Switch(config)#ospf graceful-restart grace-period 100 |

ospf graceful-restart helper max-grace-period

| | |
|--------------------|---|
| Command | ospf graceful-restart helper max-grace-period <integer> no ospf graceful-restart helper One of GR helper policies. Configure the maximum grace period supported by helper. The no command deletes all configured helper policies. |
| Parameter | <integer>: value of grace period, unit is second and ranging from 1 to 1800. |
| Default | Do not limit grace period supported by helper. |
| Mode | Global configuration mode |
| Usage Guide | If grace period set by GR restarter is bigger than max-grace period configured by helper, helper will not help restarter to complete GR. The no command deletes all helper policies. |
| Example | Configure the maximum grace period allowed by GR helper to 100s. Switch(config)#ospf graceful-restart helper max-grace-period 100 |

ospf graceful-restart helper never

| | |
|--------------------|--|
| Command | ospf graceful-restart helper never no ospf graceful-restart helper One of GR helper policies. Configured the switch can not work as OSPF GR helper. The no command deletes all configured helper policies. |
| Parameter | - |
| Default | Switch can work as GR helper. |
| Mode | Global configuration mode |
| Usage Guide | After configure the policy, switch can only work as GR restarter (a switch processes switchover and restart protocol), not GR helper (a switch helps restarter to complete GR). |
| Example | Configure that switch cannot work as OSPF helper. Switch(config)#ospf graceful-restart helper never |

show ip ospf graceful-restart

| | |
|-------------|--|
| Command | show ip ospf [<process-id>] graceful-restart Show the state of OSPF GR, including whether it is processing GR at helper mode, GR remaining time. |
| Parameter | <process-id> : Process ID, ranging from 0 to 65535. It means that GR state of all processes shown when there is no parameter configured. |
| Default | - |
| Mode | Admin mode |
| Usage Guide | - |
| Example | Show GR state of all processes on GR restarter. Switch#show ip ospf graceful-restart OSPF process 0 graceful-restart information: GR status :GR in progress GR remaining time : 50 |

| Display | Description |
|---|--|
| OSPF process 0 graceful-restart information | OSPF GR state in process 0 |
| GR status | GR state of GR, GR in progress means switch is processing GR |
| GR remaining time | Remaining time of GR |

Show GR state of all processes on GR helper:
Switch#show ip ospf graceful-restart
OSPF process 0 graceful-restart information:
GR status :Helper
Neighbor ID Interface Remaining time
1.1.1.1 Vlan1 100
2.2.2.2 Vlan1 200

| Display | Description |
|---|---|
| OSPF process 0 graceful-restart information | OSPF GR state in process 0 |
| GR status | GR state, Helper means switch is in helper mode |
| Neighbor ID | The router-id of restarter helped |
| Interface | The layer 3 interface connected with restarted |
| Remaining time | Remaining time of GR |

3. Commands for BGP

aggregate-address

| | |
|--------------|--|
| Command | aggregate-address <ip-address/M> [summary-only] [as-set] no aggregate-address <ip-address/M> [summary-only] [as-set] Configure the aggregate-address. The “ no aggregate-address <ip-address/M> [summary-only] [as-set]” command deletes the aggregate-address. |
| Parameter | <ip-address/M> : IP address, length of mask. [summary-only] : Send summary only ignoring specific route. [as-set] : Show AS on the path in list, each AS is shown once. |
| Default | No aggregate configuration. |
| Command Mode | BGP route mode |
| Usage Guide | Address aggregation reduces spreading routing messages outside. Use summary-only option so to spread aggregate route to the neighbors without spreading specific route. as-set option will list AS from each route covered by the aggregation only once without repeat. |
| Example | Switch(config-router)# aggregate-address 100.1.0.0/16 summary-only Switch(config-router)# aggregate-address 100.2.0.0/16 summary-only as-set Switch(config-router)# aggregate-address 100.3.0.0/16 as-set |

bgp aggregate-nexthop-check

| | |
|--------------|--|
| Command | bgp aggregate-nexthop-check no bgp aggregate-nexthop-check Configures whether BGP checks all the route next-hop in aggregating. The “ no bgp aggregate-nexthop-check ” command cancels this configuration, namely not check the next-hop accordance of aggregate route. |
| Parameter | - |
| Default | No nexthop checked during aggregating. |
| Command Mode | Global mode |
| Usage Guide | When check is enabled, the aggregate will not be performed if the next-hop of the covered routes are not in accordance. When checking is disabled, all covered route will be aggregated into the aggregate route. |
| Example | Switch(config)#bgp aggregate-nexthop-check |

bgp always-compare-med

| | |
|---------------------|---|
| Command | bgp always-compare-med no bgp always-compare-med Configures If MED comparison is always performed. The “no bgp always-compare-med” command cancels this configuration. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Normally the BGP compares the MED only when the AS is the same. By using this configuration, MED of routes from different AS source will also be compared. |
| Example | The AS (200) receives the same route prefix form the two AS (100 and 300) carrying different MED, configure the MED comparison is always performed. Switch(config-router)#bgp always-compare-med |

bgp asnotation asdot

| | |
|---------------------|---|
| Command | bgp asnotation asdot no bgp asnotation asdot Show AS number and match the regular expression with ASDOT method. The no command cancels this method. |
| Parameter | - |
| Default | ASPLAIN method. |
| Command Mode | BGP route mode |
| Usage Guide | To change the method that show AS number and match the regular expression, it must configure “clear ip bgp *” to rebuild all BGP neighbor relationships after this command is configured. |
| Example | Show AS number and match the regular expression with ASDOT method. Switch(config)#router bgp 200 Switch(config-router)#bgp asnotation asdot |

bgp bestpath as-path ignore

| | |
|---------------------|--|
| Command | bgp bestpath as-path ignore no bgp bestpath as-path ignore Set to ignore the AS-PATH length. The “ no bgp bestpath as-path ignore ” command cancels this configuration. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Length of AS-PATH will be compared in BGP pathing, and its length can be ignored by using this configuration. |
| Example | Set to ignore the AS-PATH length: Switch(config)#router bgp 200 Switch(config-router)#bgp bestpath as-path ignore |

bgp bestpath compare-confed-aspath

| | |
|---------------------|--|
| Command | bgp bestpath compare-confed-aspath no bgp bestpath compare-confed-aspath Set to concern the confederation AS-PATH length. The “ no bgp bestpath compare-confed-aspath ” command cancels this configuration. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Normally only the length of external AS-PATH will be compared in BGP pathing. By using this configuration, lengths of AS inner confederation AS-PATH will be compared at the same time. |
| Example | Configure confederation AS-PATH length. Switch(config-router)#bgp bestpath compare-confed-aspath |

bgp bestpath compare-routerid

| | |
|---------------------|--|
| Command | bgp bestpath compare-routerid no bgp bestpath compare-routerid Compare route ID; the “ no bgp bestpath compare-routerid ” command cancels this configuration. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Normally the first arrived route from the same AS (with other conditions equal) will be chosen as the best route. By using this command, source router ID will also be compared. |
| Example | Device (10.1.1.66, AS200) receives the same route prefix from two devices (10.1.1.64 and 10.1.1.68) of the same AS (100), configure the device to compare route ID. Switch(config-router)#bgp bestpath compare-routerid |

bgp bestpath med

| | |
|---------------------|--|
| Command | bgp bestpath med {[confed] [missing-as-worst]} no bgp bestpath med {[confed] [missing-as-worst]} Configure to compare the MED attributes in the confederation path and to consider the value is the largest when MED is unavailable . The “ no bgp bestpath med {[confed] [missing-as-worst]} ” command cancels this configuration. |
| Parameter | [confed]: Compare MED in the confederation path. [missing-is-worst]: Consider as max MED value when missing. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Choose whether MED is compared among confederations by this command. If MED is missing, it is considered max when missing-is-worst or else 0. |
| Example | Configure to compare the MED attributes in the confederation path and to consider the value is the largest when MED is unavailable. Switch(config-router)#bgp bestpath med confed missing-as-worst |

bgp client-to-client reflection

| | |
|--------------|---|
| Command | bgp client-to-client reflection no bgp client-to-client reflection |
| | Configures whether the route reflection is performed. The “ no bgp client-to-client reflection ” cancels this configuration. |
| Parameter | - |
| Default | Reflection defaulted when client is configured. |
| Command Mode | BGP route mode |
| Usage Guide | After configured reflection client with neighbor {<ip-address> <TAG>} route-reflector-client, the router performs routing reflection in default condition. The NO form of this command cancels the route reflection among CLIENT, (reflection among Clients and non-CLIENT is not disturbed). |
| Example | Configure to cancel the route reflection. Switch(config-router)#no bgp client-to-client reflection |

bgp cluster-id

| | |
|--------------|--|
| Command | bgp cluster-id {<ip-address> <01-4294967295>} no bgp cluster-id {< <ip-address> <0-4294967295>} |
| | Configure the route reflection ID during the route reflection. The “ no bgp cluster-id {<ip-address> <0-4294967295>} ” command cancels this configuration. |
| Parameter | <ip-address> <1-4294967295>; cluster-id which is shown in dotted decimal notation or a 32 digit number. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | A cluster consists of one routing reflector and its clients in an area. However in order to increase the redundancy level, sometime more than one routing reflectors may be deployed in one area. Router-id is for identifying the router exclusively in an area, and cluster-id is required for two or more reflector identification. |
| Example | Configure the route reflection cluster-id is 1.1.1.1. Switch(config-router)#bgp cluster-id 1.1.1.1 |

bgp confederation identifier

| | |
|---------------------|---|
| Command | bgp confederation identifier <as-id> no bgp confederation identifier [<as-id>] Create a confederation configuration. The “no bgp confederation identifier [<as-id>]” command deletes a confederation. |
| Parameter | <as-id> : ID number of the confederation AS, ranging from 1 to 4294967295, it can be shown in decimal notation (such as 6553700) or delimiter method (such as 100.100). |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Confederation is for divide large AS into several smaller AS, while still identified as the large AS. Create large AS number with this command. |
| Example | Switch(config-router)# bgp confederation identifier 600 |

bgp confederation peers

| | |
|---------------------|--|
| Command | bgp confederation peers <as-id> [<as-id>..] no bgp confederation peers <as-id> [<as-id>..] Add/delete one or several AS to a confederation. |
| Parameter | <as-id> : ID numbers of the AS included in the confederation, ranging from 1 to 4294967295, it can be shown in decimal notation (such as 6553700) or delimiter method (such as 100.100), which could be multiple. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Confederation is for divide large AS into several smaller AS, while still identified as the large AS. Use this command to add/delete confederation members. |
| Example | Create a confederation, ID is 600, add 100, 200, 100.300 members. Switch(config-router)# bgp confederation identifier 600 Switch(config-router)#bgp confederation peers 100 200 100.300 |

bgp dampening

| | |
|--------------|--|
| Command | bgp dampening [<1-45>] [<1-20000> <1-20000> <1-255>] [<1-45>] no bgp dampening Configure the route dampening. The “no bgp dampening” command cancels the route dampening function |
| Parameter | <1-45>: Respectively the penalty half-lives of accessible and inaccessible route, namely the penalty value is reduced to half of the previous value, in minutes. <1-20000>: Respectively the penalty reuse border and restrain border. <1-255>: Maximum restrain route time, in minutes. |
| Default | Half-life of accessible route is 15 minutes, 15 minutes for inaccessible. The restrain border is 2000, reuse border is 750, and maximum restrain time is 60 minutes |
| Command Mode | BGP route mode |
| Usage Guide | Abundant route update due to unstable route could be reduced with route dampening technology, of which the algorithm is lay penalty on the route when the route fluctuates, and when penalty exceeds the restrain border this route will no longer be advertised. The penalty value will be reduced by time by the half-life index regulation if the route keeps stable and finally be advertised again when the penalty falls below the border or the restrain time exceeds the maximum restrain time. This command is for enabling/disabling the route dampening and configuring its parameters. |
| Example | Enable the route dampening and use the parameter configuration by default. Switch(config-router)# bgp dampening |

bgp default

| | |
|--------------|---|
| Command | bgp default {ipv4-unicast local-preference <0-4294967295>} no bgp default {ipv4-unicast local-preference [<0-4294967295>]} Set the BGP defaults, the “ no bgp default {ipv4-unicast local-preference [<0-4294967295>]} ” command cancels this configuration. |
| Parameter | ipv4-unicast: Configure the default using IPv4-unicast to set up neighbor connection. local-preference<0-4294967295>: Configure the default local priority. |
| Default | The IPv4 unicast is default enabled when BGP is enabled. The default priority is 100. |
| Command Mode | BGP route mode |
| Usage Guide | IPv4 unicast address-family is default enabled in BGP. Cancel this setting with no bgp default ipv4-unicast command so to not enable this address-family in default. Default local priority can be configured through bgp default local-preference command. |

| | |
|------------------------------|---|
| Example | <p>Configure the default local priority to be 500.</p> <p>Configure in 10.1.1.66:</p> <pre>Switch(config)#router bgp 200 Switch(config-router)# bgp default local-preference 500</pre> |
| bgp deterministic-med | |
| Command | <p>bgp deterministic-med</p> <p>no bgp deterministic-med</p> <p>Use the best MED for the same prefix in the AS to compare with other AS. The “no bgp deterministic-med” cancels this configuration.</p> |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Normally if same prefix routes from several paths, each path will be compared. With this configuration, the system will only use the path with the smallest MED in the AS (when other main attributes equal) to compare with other AS. After the best one is elected, select the path among AS with no regard to MED value. |
| Example | <p>Set BGP to use the best MED for the same prefix in the AS to compare with other AS.</p> <pre>Switch(config-router)#bgp deterministic-med</pre> |

bgp enforce-first-as

| | |
|---------------------|--|
| Command | <p>bgp enforce-first-as</p> <p>no bgp enforce-first-as</p> <p>Enforces the first AS position of the route AS-PATH contain the neighbor AS number or else disconnect this peer when the BGP is reviving the external routes. The “no bgp enforce-first-as” command cancels this configuration.</p> |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | This command is usually for avoiding unsafe or unauthenticated routes. |
| Example | <pre>Switch(config-router)#bgp enforce-first-as</pre> |

bgp fast-external-failover

| | |
|--------------|--|
| Command | bgp fast-external-failover no bgp fast-external-failover Fast reset when the BGP neighbor connection varies at the interface other than wait for TCP timeout. The “ no bgp fast-external-failover ” command cancels this configuration. |
| Parameter | - |
| Default | Configured |
| Command Mode | BGP route mode。 |
| Usage Guide | This command is for immediately cutting of the neighbor connection when the interface is down |
| Example | Switch(config-router)# bgp fast-external-failover |

bgp inbound-route-filter

| | |
|--------------|---|
| Command | bgp inbound-route-filter no bgp inbound-route-filter The bgp do not install the RD routing message which does not exist locally. The no command means the RD will be installed with no regard to the local existence of the RD. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Normally when the switch plays as PE, whether the route bgp acquired from VPN is saved in BGP depends on if the VRF configured in this PE has got matched information. With the no command the BGP will save the routing message with no regard to the matched information. |
| Example | Switch(config)#router bgp 100 Switch(config-router)#no bgp inbound-route-filter |

bgp inbound-max-route-num

| | |
|-----------|---|
| Command | bgp inbound-max-route-num <0-500000> no bgp inbound-max-route-num Set the number limit of routers learnt by the bgp process from its neighbors. |
| Parameter | The number limit of routers, ranging from 0 to 500000. |
| Default | The number limit is 50000 by default. |

| | |
|---------------------|--|
| Command Mode | BGP route mode |
| Usage Guide | Limit the number of routers learnt by the bgp process from its neighbors with this command. |
| Example | The following configuration will limit max number of routers that the bgp process receives from its neighbors as 20000. Switch(config-router)#bgp inbound-max-route-num 20000 |

bgp log-neighbor-changes

| | |
|---------------------|--|
| Command | bgp log-neighbor-changes no bgp log-neighbor-changes |
| | Output log message when BGP neighbor changes. The “ no bgp log-neighbor-changes ” command cancels this configuration. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Can display neighbor change messages on the monitor. |
| Example | Switch(config-router)# bgp log-neighbor-changes |

bgp network import-check

| | |
|---------------------|---|
| Command | bgp network import-check no bgp network import-check |
| | Set whether check the IGP accessibility of the BGP network route or not. The “ no bgp network import-check ” command sets to not checking the IGP accessibility. |
| Parameter | - |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Checking the IGP accessibility of the route advertised by BGP is to check the existence of next-hop and its IGP accessibility. |
| Example | Set to check the IGP accessibility of BGP network route. Switch(config-router)# bgp network import-check |

bgp rfc1771-path-select

| | |
|---------------------|---|
| Command | bgp rfc1771-path-select no bgp rfc1771-path-select After this attribute is set, path selecting will follow the way defined in rfc 1771, namely not checking the AS internal metric, or comparing the internal METRIC. |
| Parameter | - |
| Default | - |
| Command Mode | Global mode |
| Usage Guide | After this attribute is set, path selecting will follow the way defined in rfc 1771, namely not checking the AS internal metric, when different AS exist, which should be perform without this attribute set. |
| Example | Configure to follow the rfc1771 path selecting. Switch(config)# bgp rfc1771-path-select |

bgp rfc1771-strict

| | |
|---------------------|--|
| Command | bgp rfc1771-strict no bgp rfc1771-strict Set whether strictly follows the rfc1771 restrictions. The “ no bgp rfc1771-strict ” command set to not strictly following. |
| Parameter | - |
| Default | Not following rfc 1771 restrictions. |
| Command Mode | Global mode |
| Usage Guide | With this attribute set, generation types of routes from protocols such as RIP, OSPF, ISIS, etc will be regarded as IGP (internal generated), or else as incomplete.Example: Configure to stricly follow the rfc1771 restrictions. |
| Example | Configure to stricly follow the rfc1771 restrictions. Switch(config)#bgp rfc1771-strict |

bgp router-id

| | |
|--------------|---|
| Command | bgp router-id <A.B.C.D> no bgp router-id [<A.B.C.D>] |
| Parameter | Configure the router ID manually. The no operation cancels this configuration. <A.B.C.D>: Router ID. |
| Default | Automatically acquire router ID. |
| Command Mode | BGP route mode |
| Usage Guide | Manually set the router ID with this command. |
| Example | Set the Router ID to be 1.1.1.1. Switch(config-router)#bgp router-id 1.1.1.1 |

bgp scan-time

| | |
|--------------|--|
| Command | bgp scan-time <0-60> no bgp scan-time [<0-60>] |
| Parameter | Set the time interval of the periodical next-hop validation; the “no bgp scan-time [<0-60>]” command restores to the default value. <0-60>: Validation time interval. |
| Default | Default interval is 60s. |
| Command Mode | BGP route mode |
| Usage Guide | Validate the next-hop of BGP route, this command is for configuring the interval of this check. Set the parameter to 0 if you don't want to check. |
| Example | Set the time interval of periodical next-hop validation to be 30s. Switch(config-router)# bgp scan-time 30 |

clear ip bgp

| | |
|-----------|--|
| Command | clear ip bgp * [vrf <vrf-name>] [in out soft [in out]] |
| Parameter | Reboot the connection between BGP of vrf-name and all peers. <vrf-name>: Configure the instance name of VPN, the ranging from 1 to 64; in : The in soft configuration is updated; out : The out soft configuratin is updated; soft : The soft reboot. |
| Default | - |

| | |
|---------------------|--|
| Command Mode | Admin mode |
| Usage Guide | Reboot BGP when configuring clear ip bgp * command; send the requestment message to neighbor when configuring in parameter; sent the route to neighbor when configuring out parameter. If configure soft, BGP will not be reseted. |
| Example | Switch#clear ip bgp * vrf VRF-A Switch# |

clear ip bgp dampening

| | |
|---------------------|--|
| Command | clear ip bgp [<address-family>] dampening [<ip-address> <ip-address/M>] |
| | Used for resetting BGP routing dampening. |
| Parameter | <address-family>: address-family, such as “ipv4 unicast”. <ip-address>: IP address. <ip-address/M>: IP address and mask. |
| Default | - |
| Command Mode | Admin mode |
| Usage Guide | It is possible to clear BGP routing dampening messages and state by different parameters (such as address-family or IPv4 address). |
| Example | Clear BGP routing dampening and state of IPv4 unicast cluster. Switch# clear ip bgp ipv4 unicast dampening |

clear ip bgp flap-statistics

| | |
|---------------------|--|
| Command | clear ip bgp [<address-family>] flap-statistics [<ip-address> <ip-address/M>] |
| | For resetting BGP routing dampening statistics messages. |
| Parameter | <address-family>: address-family such as “ipv4 unicast”. <ip-address>: IP address. <ip-address/M>: IP address and mask. |
| Default | - |
| Command Mode | Admin mode |
| Usage Guide | It is possible to clear BGP routing dampening statistic messages and state by different parameters (such as address-family or IPv4 address). |
| Example | Clear the BGP dampening statistic messages of IPv4 unicast cluster. Switch#clear ip bgp ipv4 unicast flap-statistics |

distance

| | |
|--------------|---|
| Command | distance <1-255> <ip-address/M> [<WORD>] no distance <1-255> <ip-address/M> [<WORD>] |
| | Set the manage distance of the routing prefix. The “ no distance <1-255> <ip-address/M> [<WORD>]” command restores to the default value. |
| Parameter | <1-255>: Manage distance. <ip-address/M>: Routing prefix. <WORD>: Access-list name. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Set the manage distance for specified BGP route as the path selecting basis. |
| Example | Set the manage distance for route 90 10.1.1.64/32 to be 90. Switch(config-router)# distance 90 10.1.1.64/32 |

distance bgp

| | |
|--------------|--|
| Command | distance bgp <1-255> <1-255> <1-255> no distance bgp [<1-255> <1-255> <1-255>] |
| | Set the BGP protocol management distance. The “ no distance bgp [<1-255> <1-255> <1-255>]” command restores the manage distance to default value. |
| Parameter | <1-255>: Respectively the EBGp, IBGP and LOCAL manage distance of the BGP. |
| Default | Default EBGp is 20, others are 200. |
| Command Mode | BGP route mode |
| Usage Guide | : Set the manage distance for BGP routing as the NSM path selecting basis. |
| Example | Set the manage distance for BGP routing as 15, the manage distance for IBGP and local routing as 150. Switch(config-router)# distance bgp 15 150 150 |

ip as-path access-list

| | |
|-----------|--|
| Command | ip as-path access-list <.LINE> {<permit> <deny>} <LINE> no ip as-path access-list <.LINE> {<permit> <deny>} <LINE> |
| | Configure the AS-PATH access-list. The “ no ip as-path access-list <.LINE>{<permit> <deny>} <LINE>” command deletes this access-list. |
| Parameter | <.LINE>: name of access-list. <LINE>: matched strings in the AS-PATH. |

| | |
|---------------------|---|
| Default | - |
| Command Mode | Global mode |
| Usage Guide | Use this command to configure the access-list related to AS-PATH, so to supply the conditions for pass/filter. |
| Example | Configure the access-list named ASPF, filter the AS-PATH contained route 100. Switch(config)#ip as-path access-list ASPF deny ^100\$ |

ip community-list

| | |
|---------------------|---|
| Command | <p>ip community-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} {deny permit} <.COMMUNITY></p> <p>no ip community-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} [{deny permit} <.COMMUNITY>]</p> <p>Configure the community-list. The “no ip community-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} [{deny permit} <.COMMUNITY>}” command deletes the community list.</p> |
| Parameter | <p><LISTNAME>: name of community list.</p> <p><1-199>: Standard or extended community number.</p> <p><WORD>: Standard or extended community number.</p> <p><.COMMUNITY>: Members of the community list, which may be the combination of aa:nn, or internet, local-AS, no-advertise, and no-export. It can be shown in regular expressions under extended conditions.</p> |
| Default | - |
| Command Mode | Global mode |
| Usage Guide | With this command we can configure the community-list so to supply terms for the pass/filter/search. |
| Example | Configure the ip community-list named LN, permit community attribute as 100:10. Switch(config)# ip community-list LN permit 100:10 |

ip extcommunity-list

| | |
|------------------|--|
| Command | <p>ip extcommunity-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} {deny permit} <.COMMUNITY></p> <p>no ip extcommunity-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} {deny permit} <.COMMUNITY></p> <p>Configure the extended community-list. The “no ip extcommunity-list {<LISTNAME> <1-199> [expanded <WORD>] [standard <WORD>]} {deny permit} <.COMMUNITY>” command is for deleting the extended community list.</p> |
| Parameter | <LISTNAME>: name of community-list. |

| | |
|---------------------|---|
| | <p><1-199>: Standard or extended community number.</p> <p><WORD>: Standard or extended community number.</p> <p><.COMMUNITY >: Members of the community list, which may be the combination of aa:nn, or internet, local-AS, no-advertise, and no-export. It can be shown in regular expressions under extended conditions.</p> |
| Default | - |
| Command Mode | Global mode |
| Usage Guide | With this command we can configure the community-list so to supply terms for the pass/filter/search. |
| Example | <p>Configure the excommunity-list named LN, permit community attribute as 100:10.</p> <pre>Switch(config)#ip extcommunity-list LN permit 100:10</pre> |

neighbor activate

| | |
|---------------------|--|
| Command | <p>neighbor {<ip-address> <TAG>} activate</p> <p>no neighbor {<ip-address> <TAG>} activate</p> <p>Configure the address family routing which do or do not switch specific address-family with BGP neighbors. The “no neighbor {<ip-address> <TAG>} activate” command is for setting the route which do not switch the specified address family.</p> |
| Parameter | <p><ip-address>: IP address of the neighbor.</p> <p><TAG>: Name of peer group.</p> |
| Default | Enable the routing switch of IP unicast address-family, and disable other address-families. |
| Command Mode | BGP route mode |
| Usage Guide | IP unicast is configured under BGP route mode. Configure whether specific address-family is switched under address-family mode. If this option on any side between local side and partner is not enabled, the address-family route will not be acquired by the partner even if the corresponding address family routes acquired before will be cancelled after this option is disabled. |
| Example | <p>Configure to exchange the unicast route with neighbor 2002::2.</p> <pre>Switch(config-router)#neighbor 2002::2 activate</pre> |

neighbor advertisement-interval

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} advertisement-interval <0-600> no neighbor {<ip-address> <TAG>} advertisement-interval [<0-600>] Configure the update interval of specific neighbor route. The “ no neighbor {<ip-address> <TAG>} advertisement-interval [<0-600>] ” command restores to default. |
| Parameter | <ip-address> : IP address of the neighbor. <TAG> : Name of the peer group. <0-600> : Advertise interval, in seconds. |
| Default | Default IBGP is 5s, default EBGP is 30s. |
| Command Mode | BGP route mode |
| Usage Guide | Reduce this value will improve the route updating speed while also consumes more bandwidth. |
| Example | Set the route update interval as 20s with neighbor 10.1.1.64. Switch(config-router)#neighbor 10.1.1.64 advertisement-interval 20 |

neighbor allowas-in

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} allowas-in [<1-10>] no neighbor {<ip-address> <TAG>} allowas-in Configure the counts same AS is allowed to appear in the neighbor route AS table. The “ no neighbor {<ip-address> <TAG>} allowas-in ” restores to not allow any repeat. |
| Parameter | <ip-address> : IP address of the neighbor. <TAG> : Name of the peer group. <1-10> : Allowed count of same AS number. |
| Default | In default conditions AS is not allowed repeating in the same route, and when set the repeat count it is defaulted at 3 when <1-10> parameters not set. |
| Command Mode | BGP route mode |
| Usage Guide | Normally BGP will not allow same AS number appears in the route more than one time. The system will deny a route when its AS number appears in the AS-PATH. However to support some special needs, especially the VPN support, the extended BGP allows the AS re-appear counts by configuration. This command is for configure the re-appear counts. |
| Example | Allow the same AS to appear in the route three times for neighbor 10.1.1.66. Switch(config-router)#neighbor 10.1.1.66 allowas-in |

neighbor attribute-unchanged

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| Command | neighbor {<ip-address> <TAG>} attribute-unchanged [as-path][med][next-hop] no neighbor {<ip-address> <TAG>} attribute-unchanged [as-path] [med] [next-hop] Configure certain attributes which is kept unchanged for transmitting, namely the attribute transparent transmission. The “no neighbor {<ip-address> <TAG>} attribute-unchanged [as-path] [med] [next-hop]” command means the attribute transparent transmission is not performed. |
| Parameter | <ip-address>: IP address of the neighbor. <TAG>: Name of the peer group. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | With this configuration specified route attributes will not change when transmitted to the specified neighbor. The BGP route mode is the IPv4 unicast address mode configuration. No parameter refers to above three parameter are configured together. |
| Example | Set the attribute of route as-path, med, next-hop unchanged for neighbor 10.1.1.64. Switch(config-router)#neighbor 10.1.1.64 attribute-unchanged |

neighbor capability

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|---------------------|--|
| Command | neighbor {<ip-address> <TAG>} capability {dynamic route-refresh} no neighbor {<ip-address> <TAG>} capability {dynamic route-refresh} Configure dynamic update between neighbors and the route refresh capability negotiation. The “no neighbor {<ip-address> <TAG>} capability {dynamic route-refresh}” command do not enable the specific capability negotiation. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of peer group. |
| Default | Not configure the dynamic update capability but the route refresh capability. |
| Command Mode | BGP route mode |
| Usage Guide | This is an extended BGP capability. With this configuration supported capabilities by both side will be negotiated in the OPEN messages, and the partner will respond if this capability is supported by the partner and send NOTIFICATION if not. The originating side will then send an OPEN excluded the capability to reestablish the connection. The dynamic capability refers to when the address family negotiation changes, the connection don't have to be restarted. Route refresh refers to sending refresh request when configuring some soft reconfigurable attributes and the partner will retransmit the existing route to the originating side. With route refresh attribute, the connection will not have to be restarted but be refreshed with the clear ip bgp * soft in command. |

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| Example | Switch(config-router)#neighbor 10.1.1.64 capability dynamic Switch(config-router)# no neighbor 10.1.1.64 capability route-refresh |
| neighbor capability orf prefix-list | |
| Command | neighbor {<ip-address> <TAG>} capability orf prefix-list {<both> <send> <receive>} no neighbor {<ip-address> <TAG>} capability orf prefix-list {<both> <send> <receive>} |
| | Configure the out route filter capability negotiation between neighbors. The “ no neighbor {<ip-address> <TAG>} capability orf prefix-list {<both> <send> <receive>} ” command set to not perform the negotiation. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of peer group. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | This is an extended BGP capability. With this configuration supported capabilities by both side will be negotiated in the OPEN messages, and the partner will respond if this capability is supported by the partner and send NOTIFICATION if not. The originating side will then send an OPEN excluded the capability to reestablish the connection. With this capability, the side configured with in prefix-list filter rules will transmit its own filter rules to the peer, the peer group will apply this rule as its own out rules, so to avoid sending route which will be denied by the partner. |
| Example | Set to perform the out route filter capability negotiation with neighbor 10.1.1.66. Switch(config-router)#neighbor 10.1.1.66 capability orf prefix-list both |

neighbor collide-established

| | |
|---------------------|---|
| Command | neighbor {<ip-address> <TAG>} collide-established no neighbor {<ip-address> <TAG>} collide-established |
| | Enable the collision check and settlement in the TCP connection collision. The “ no neighbor {<ip-address> <TAG>} collide-established ” command disables the TCP connection collision settlement. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of the peer. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | This command is for settling the problem that multi-connection among peers due to TCP connection collision. Connections created with this option on will always be check even at established state. And it will be checked if local side IP is larger than partner IP when collides. If yes, the original connection will be deleted, and if not the option will be |

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| | configured to only checks when the connection originated from local side at open sent and open confirm state. |
| Example | Set to perform the TCP connection collision check and settlement with neighbor 10.1.1.64. Switch(config-router)#neighbor 10.1.1.64 collide-established |

neighbor default-originate

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|---------------------|--|
| Command | neighbor {<ip-address> <TAG>} default-originate [route-map <WORD>] no neighbor {<ip-address> <TAG>} default-originate [route-map <WORD>] |
| | Configures whether enables transmitting default route to the specific neighbor. The “ no neighbor {<ip-address> <TAG>} default-originate [route-map <WORD>] ” command configures not sending default route to neighbors. |
| Parameter | <ip-address> : IP address of the neighbor. <TAG> : Name of the peer. <WORD> : Name of route map. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | With this option, the default route of local side will be transmitted to partner, or else not. It supplies with options of which one to supply the default route. if several neighbors of the partner supply default route, the best one will be elected according to path selecting principles. According to route mirror, it can be chosen when to send the default route. |
| Example | Set to transmit the local default route to neighbor 10.1.1.64. Switch(config-router)#neighbor 10.1.1.64 default-originate Switch(config-router)# Then the default route from BGP will appear in partner route list. |

neighbor description

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| Command | neighbor {<ip-address> <TAG>} description <.LINE> no neighbor {<ip-address> <TAG>} description |
| | Configure the description string of the peer or peer group. The “ no neighbor {<ip-address> <TAG>} description ” command deletes the configurations of this string. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. <.LINE> : Description string consists of displayable characters less than 80. |
| Default | Description string is empty. |
| Command Mode | BGP route mode |

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| Usage Guide | Configure the introduction of the peer or peer group. |
| Example | Set the description string as tester with neighbor 10.1.1.64. Switch(config-router)#neighbor 10.1.1.64 description tester Switch(config-router)# |

neighbor distribute-list

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|---------------------|--|
| Command | neighbor {<ip-address> <TAG>} distribute-list {<1-199> <1300-2699> <WORD>} {in out} no neighbor {<ip-address> <TAG>} distribute-list {<1-199> <1300-2699> <WORD>} {in out} Configure the policy applied in partner route update transmission. The “no neighbor {<ip-address> <TAG>} distribute-list {<1-199> <1300-2699> <WORD>} {in out}” command cancels the policy configuration. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of peer group. <1-199> <1300-2699> <WORD>: Number or name of the access-list. |
| Default | Policy not applied. |
| Command Mode | BGP route mode |
| Usage Guide | Configure the policies with access-list command and apply this command on route sending and receiving. It will filter the update route from partner when use in mode, and will filter the route from local side to partner with out mode. |
| Example | Send into neighbor route 10.1.1.66, to filter the route with the aim 100.1.0.0. Switch(config)#access-list 101 deny ip 100.1.0.0 0.0.1.255 any Switch(config)#access-list 101 permit ip any any Switch(config)#router bgp 100 Switch(config-router)# neighbor 10.1.1.66 distribute-list 101 in |

neighbor dont-capability-negotiate

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| Command | neighbor {<ip-address> <TAG>} dont-capability-negotiate no neighbor {<ip-address> <TAG>} dont-capability-negotiate Set to not perform capability negotiate in creating connections. The “no neighbor {<ip-address> <TAG>} dont-capability-negotiate” command cancels this configuration. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of the peer group. |

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| Default | Capability negotiation performed. |
| Command Mode | BGP route mode |
| Usage Guide | As the negotiation is the default, it can be disabled with this configuration when it is known that the partner BGP version is old which don't support capability negotiation. |
| Example | <p>Last addition capability negotiation will not be realized in the connection by configuring as follows.</p> <pre>Switch(config-router)#neighbor 10.1.1.64 dont-capability-negotiate</pre> |

neighbor ebgp-multihop

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|---------------------|--|
| Command | <pre>neighbor {<ip-address> <TAG>} ebgp-multihop [<1-255>] no neighbor {<ip-address> <TAG>} ebgp-multihop [<1-255>]</pre> <p>Configures the EBGp neighbors can existing in different segment as well as its hop count (TTL). The “no neighbor {<ip-address> <TAG>} ebgp-multihop [<1-255>]” set that the EBGp neighbors must be in the same segment.</p> |
| Parameter | <p><ip-address>: Neighbor IP address.</p> <p><TAG>: Name of the peer group.</p> <p><1-255> : Allowed hop count.</p> |
| Default | Must be in the same segment. |
| Command Mode | BGP route mode |
| Usage Guide | Without this command, EBGp peers are required to be in the same segment and after this command is configured, peer addresses may from different segments. The allowed hop count can be configured and will be 255 if not. |
| Example | <p>Three device 10.1.1.64(AS100) and 11.1.1.120(AS300) connected respectively to the two interface 10.1.1.66 and 10.1.1.100 of another device. IGP accessibilities of 10.1.1.64 and 11.1.1.120 on both side routes are ensured through static configuration. The neighbor relationship is established only after both side are configured as follows:</p> <pre>on 10.1.1.64 Switch(config-router)#neighbor 11.1.1.120 ebgp-multihop on 11.1.1.120 Switch(config-router)#neighbor 10.1.1.64 ebgp-multihop</pre> <p>After this, switches in different segments will be able to create BGP neighbor relationship.</p> |

neighbor enforce-multihop

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| Command | neighbor {<ip-address> <TAG>} enforce-multihop no neighbor {<ip-address> <TAG>} enforce-multihop Enforce the multihop connection to the neighbor. The “ no neighbor {<ip-address> <TAG>} enforce-multihop ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group. |
| Default | Not enforced |
| Command Mode | BGP route mode |
| Usage Guide | In fact the direct route can not be enforced to multihop, however will be treated as a multihop connection with this configuration, namely the check originally only performed on IBGP and EBGP of non-direct routes will be performed on all after this attribute set. The nexthop direct connected check will not be performed at exit in enforce multihop conditions. |
| Example | Enforce neighbor 10.1.1.66 as multihop connection. Switch(config-router)#neighbor 10.1.1.66 enforce-multihop |

neighbor filter-list

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|--------------|---|
| Command | neighbor {<ip-address> <TAG>} filter-list <.LINE> {<in> <out>} no neighbor {<ip-address> <TAG>} filter-list <.LINE> {<in> <out>} Access-list control for AS-PATH. The “ no neighbor {<ip-address> <TAG>} filter-list <.LINE> {<in> <out>} ” cancels the AS-PATH access-list control. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. <.LINE> : AS-PATH access-list name configured through ip as-path access-list <.LINE> <permit deny> <.LINE>. |
| Default | Not configured |
| Command Mode | BGP route mode |
| Usage Guide | After first configured the IP AS-PATH access-list, apply this option to specified neighbor will be able to send/receive routes with specified AS numbers in the AS list. Accepting or denying depends on the configuration of the access-list, while sending and receiving are configured by this command. |
| Example | Configure the AS-PATH access control list, “ASPF” is the name of the access-list. The route with AS number of 100 will not be able to update to the partner due to the filter table control. Switch(config)#ip as-path access-list ASPF deny 100 Switch(config)#router bgp 100 Switch(config-router)# redistribute static |

Switch(config-router)neighbor 10.1.1.66 filter-list aspf out

neighbor interface

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|--------------|--|
| Command | neighbor <ip-address> interface <IFNAM> no neighbor <ip-address> interface <IFNAM> Specify the interface to the neighbor. The “ no neighbor <ip-address>interface <IFNAM> ”of the command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address. <IFNAME> : Interface name, e.g. “Vlan 2”. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Specifies the exit interface to the neighbor with this command. Interface destination accessibility should be ensured. |
| Example | Set the interface to neighbor 10.1.1.64 as interface vlan 2 Switch(config-router)# neighbor 10.1.1.64 interface vlan2 |

neighbor maximum-prefix

| | |
|--------------|---|
| Command | neighbor {<ip-address> <TAG>} maximum-prefix <1-4294967295> [<1-100> <warning-only>] no neighbor {<ip-address> <TAG>} maximum-prefix <1-4294967295> [<1-100> <warning-only>] Control the number of route prefix from the neighbor. The “ no neighbor {<ip-address> <TAG>} maximum-prefix <1-4294967295> [<1-100> <warning-only>] ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of the peer. <1-4294967295> : Max prefix value allowed. <1-100> : Percentage of the max value at which it warns. <warning-only> : Warning only or not. |
| Default | Not limited. |
| Command Mode | BGP route mode |
| Usage Guide | Due to concerns of too much route updates from neighbors (e.g. attack), the max number of prefix acquired from a neighbor is limited, and will warns when the number hits certain rate. If the warning-only option is set, then there will be warning only, if not, the connection to the neighbor will be cut till clear the records with clear ip bgp command. |
| Example | Configure the maximum number of route prefix from neighbor 10.1.1.64 is 12, and it warns |

when the number of route prefix reaches 6, and the connection will be cut when the number hit 13.

Switch(config-router)#neighbor 10.1.1.64 maximum-prefix 12 50

neighbor next-hop-self

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} next-hop-self no neighbor {<ip-address> <TAG>} next-hop-self |
| | Ask the neighbor to point the route nexthop sent by the local side to local side. The “ no neighbor {<ip-address> <TAG>} next-hop-self ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | In the EBGp environment, the nexthop will automatically point to the source neighbor. However in IBGP environment, the nexthop remains the same for route in the same segment. If it is not broadcast network, errors will be encountered. This command is for force self as the nexthop of the neighbor under IBGP. |
| Example | Switch(config-router)#neighbor 10.1.1.66 next-hop-self |

neighbor override-capability

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} override-capability no neighbor {<ip-address> <TAG>} override-capability |
| | Whether enable overriding capability negotiation. The “ no neighbor {<ip-address> <TAG>} override-capability ” command restores the capability negotiation. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of the peer group. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | With this attribute, error notify due to unsupported capability negotiation the neighbors required will not be sent. |
| Example | Switch(config-router)#neighbor 10.1.1.64 override-capability |

neighbor passive

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|---------------------|---|
| Command | neighbor {<ip-address> <TAG>} passive no neighbor {<ip-address> <TAG>} passive Configure whether the connecting request is positively sent in the connection with specified neighbor; the “ no neighbor {<ip-address> <TAG>} passive ” command restores to positively send the connecting request. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. |
| Default | Positively send the connecting request. |
| Command Mode | BGP route mode |
| Usage Guide | With this attribute set, the local side will not positively send the TCP connecting request after the neighbors are configured, but stays in listening mode waiting for the connecting request from partners. |
| Example | Switch(config-router)#neighbor 10.1.1.64 passive After configured with this attribute and reestablishing the connection , the local side do not attempt to create connection but stays in ACTIVE state waiting for the TCP connection request from the partner. |

neighbor peer-group (Creating)

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| Command | neighbor < TAG> peer-group no neighbor < TAG> peer-group Create/delete a peer group. The “ no neighbor < TAG> peer-group ” command deletes a peer group. |
| Parameter | <TAG> : Name of the peer group of which the largest length contains 256 characters. |
| Default | No peer group. |
| Command Mode | BGP route mode |
| Usage Guide | By configuring the peer group, a group of peers with the same attributes will be configured at the same time so to reduce the configuration staff labor. Assign members to the peer group with neighbor <ip-address> peer-group <TAG> command. |
| Example | Switch(config-router)#neighbor pg peer-group Switch(config-router)#neighbor 10.1.1.64 peer-group pg Switch(config-router)#neighbor pg remote-as 100 |

neighbor peer-group(Configuring group members)

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|--------------|--|
| Command | neighbor <ip-address> peer-group <TAG> no neighbor <ip-address> peer-group <TAG> Assign/delete peers in the group. The “ no neighbor <ip-address>peer-group <TAG> ”command deletes the peers from the peer group. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. |
| Default | No peer group. |
| Command Mode | BGP route mode |
| Usage Guide | By configuring the peer group, a group of peers with the same attributes will be configured at the same time so to reduce the configuration staff labor. Create peer group with above command and assign members into the group with this command. |
| Example | Refer to above examples. |

neighbor port

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|--------------|--|
| Command | neighbor <ip-address> port <0-65535> no neighbor <ip-address> port [<0-65535>] Specify the TCP port number of the partner through which the communication carries. The “ no neighbor <ip-address> port [<0-65535>] ” command restores the port number to default value. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of the peer group. <0-65535> : TCP port number. |
| Default | Default port number is 179. |
| Command Mode | BGP route mode |
| Usage Guide | This is a configuration when the partner may connect through ports not specified by BGP. |
| Example | Switch(config-router)#neighbor 10.1.1.64 port 1023 |

neighbor prefix-list

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|--------------|---|
| Command | neighbor {<ip-address> <TAG>} prefix-list <LISTNAME number> {<in out>} no neighbor {<ip-address> <TAG>} prefix-list <LISTNAME number>{<in> <out>} |
| | Configure the prefix restrictions applied in sending or receiving routes from specified neighbors. The “ no neighbor {<ip-address> <TAG>} prefix-list <LISTNAME number> {<in> <out>}” command cancels this configuration. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of the peer group. <LISTNAME number>: Name or sequence number of the prefix-list. <in out>: Direction on which the restrictions applied. |
| Default | No prefix restrictions applied. |
| Command Mode | BGP route mode |
| Usage Guide | Specify the prefix and its scope by configuring ip prefix-list and determines whether this scope is permitted or denied. Only the route with permitted prefix will be sent or received. |
| Example | Switch(config)#ip prefix-list prw permit 100.1.0.0/22 ge 23 le 25 Switch(config)#router bgp 200 Switch(config-router)#redistribute static Switch(config-router)neighbor 10.1.1.66 prefix-list prw out |

neighbor remote-as

| | |
|--------------|---|
| Command | neighbor {<ip-address> <TAG>} remote-as <as-id> no neighbor {<ip-address> <TAG>} [remote-as <as-id>] |
| | Configure the BGP neighbor. The no command is used for deleting BGP neighbors. |
| Parameter | <ip-address>: Neighbor IP address <TAG>: Name of peer group <as-id>: Neighbor AS number, ranging from 1 to 4294967295, it can be shown in decimal notation (such as 6553700) or delimiter method (such as 100.100). |
| Default | No neighbors |
| Command Mode | BGP route mode |
| Usage Guide | The BGP neighbors are completely generated through command configurations. A neighbor relationship can only be really established by mutual configuring. Partner AS number should be specified in configuration. The neighbor relationship can not be established when the AS number is incorrect. The partner AS number is the same with that of local side inside the AS. |
| Example | Configure 2 neighbor AS as 100 and 100.200. Switch(config)#router bgp 200 Switch(config-router)#neighbor 10.1.1.64 remote-as 100 |

```
Switch(config-router)# neighbor 10.2.1.64 remote-as 100.200
```

neighbor remove-private-AS

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|--------------|--|
| Command | neighbor {<ip-address> <TAG>} remove-private-AS no neighbor {<ip-address> <TAG>} remove-private-AS Configures whether remove the private AS number when sending to the neighbor. The “ no neighbor {<ip-address> <TAG>} remove-private-AS ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group |
| Default | Not configured |
| Command Mode | BGP route mode |
| Usage Guide | Configure this attribute to avoid assigning the internal AS number to the external AS sometimes. The internal AS number ranges between 64512-65535, which the AS number could not be sent to the INTERNET since it is not a valid external AS number. What removed here is private AS numbers of the totally private AS routes. Those who have private AS numbers while also have public AS numbers are not processed. |
| Example | Switch(config-router)#neighbor 10.1.1.64 remove-private-AS |

neighbor route-map

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|--------------|--|
| Command | neighbor {<ip-address> <TAG>} route-map <NAME> {<in out>} no neighbor {<ip-address> <TAG>} route-map <NAME> {<in out>} Configure the route mapping policy when sending or receiving route. The “ no neighbor {<ip-address> <TAG>} route-map <NAME> {<in out>} ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group <NAME> : Name of route mapping <in out> : Direction of route mapping |
| Default | Not set |
| Command Mode | BGP route mode |
| Usage Guide | First it has to configure route mapping under global mode by creating a route map with route-map command and configure the match condition and actions, then the command can be applied. |
| Example | Switch(config)#route-map test permit 5 Switch(config-route-map)#match interface Vlan1 |

```
Switch(config-route-map)#set as-path prepend 65532
Switch(config-route-map)#exit
Switch(config)#router bgp 200
Switch(config-router)#neighbor 10.1.1.64 route-map test out
```

neighbor route-reflector-client

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|---------------------|--|
| Command | neighbor {<ip-address> <TAG>} route-reflector-client no neighbor {<ip-address> <TAG>} route-reflector-client |
| | Configure the route reflector client. The “ no neighbor {<ip-address> <TAG>}route-reflector-client ” command cancels this configuration |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group |
| Default | Not configured. |
| Command Mode | BGP route mode |
| Usage Guide | <p>The route reflection is used for reducing the peers when the internal IBGP routers inside AS are too much. The client only exchanges messages with route reflector while the reflector deals with message exchange among each client and other IBGP, EBGP routers. This command configures itself as the route reflector, while specific peer group is as its client. Note: this configuration is only available inside AS.</p> |
| Example | <pre>Switch(config)#router bgp 100 Switch(config-router)#neighbor 10.1.1.66 remote 100 Switch(config-router)#neighbor 10.1.1.66 route-reflector-client Switch(config-router)#neighbor 10.1.1.68 remote 100 Switch(config-router)#neighbor 10.1.1.68 route-reflector-client</pre> |

neighbor route-server-client

| | |
|---------------------|--|
| Command | neighbor {<ip-address> <TAG>} route-server-client no neighbor {<ip-address> <TAG>} route-server-client |
| | Configure the route server client. The “ no neighbor {<ip-address> <TAG>} route-server-client ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group |
| Default | Not configured |
| Command Mode | BGP route mode |
| Usage Guide | <p>The route service is for reducing the peers when the router between AS is too much under EBGP environment. The server transparently transforms the routing messages to other clients with its client exchanges messages through route server.</p> |

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| Example | <p>Three routers : 10.1.1.64 (AS100) and 10.1.1.68 (AS300) respectively creates neighbor relationship with the connected 10.1.1.66 (AS200) , the configuration is as follows:</p> <pre>Switch(config)#router bgp 200 Switch(config-router)#neighbor 10.1.1.64 remote-as 100 Switch(config-router)#neighbor 10.1.1.64 route-server-client Switch(config-router)# neighbor 10.1.1.68 remote-as 300 Switch(config-router)# neighbor 10.1.1.68 route-server-clien</pre> |
|----------------|---|

neighbor send-community

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|---------------------|--|
| Command | <p>neighbor {<ip-address> <TAG>} send-community [both extended standard] no neighbor {<ip-address> <TAG>} send-community [both extended standard]</p> <p>Configures whether sending the community attribute to the neighbors. The “no neighbor {<ip-address> <TAG>} send-community [both extended standard]” command set to not sending.</p> |
| Parameter | <p><ip-address>: IP address of the neighbor</p> <p><TAG>: Name of peer group</p> <p>[both extended standard]: Standard community only, extended community or both.</p> |
| Default | Sending the community attributes. |
| Command Mode | BGP route mode |
| Usage Guide | The community attributes can be sent to the outside or not. By default of our company we set to sending while the default in standard protocol is not sending. By configuring this attribute community attributes will be carried when sending routing information’s to the neighbors, or else not. Omission of the following choice will be equal to standard. |
| Example | <pre>Switch(config-router)#no neighbor 10.1.1.66 send-community Switch(config-router)#neighbor 10.1.1.66 send-community</pre> |

neighbor shutdown

| | |
|---------------------|---|
| Command | <p>neighbor {<ip-address> <TAG>} shutdown no neighbor {<ip-address> <TAG>} shutdown</p> <p>Disconnect the neighbor connection. The “no neighbor {<ip-address> <TAG>} shutdown” cancels this configuration</p> |
| Parameter | <p><ip-address>: Neighbor IP address</p> <p><TAG>: Name of peer group</p> |
| Default | Not disconnecting. |
| Command Mode | BGP route mode |
| Usage Guide | Directly disconnect/connect to a peer (group) without canceling the neighbor configuration. |

| | |
|--|--|
| Example | Switch(config-router)#neighbor 10.1.1.64 shutdown |
| neighbor soft-reconfiguration inbound | |
| Command | neighbor {<ip-address> <TAG>} soft-reconfiguration inbound no neighbor {<ip-address> <TAG>} soft-reconfiguration inbound |
| | Configures whether perform inbound soft reconfiguration; the “ no neighbor {<ip-address> <TAG>} soft-reconfiguration inbound ” command set to not perform the inbound soft reconfiguration. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group |
| Default | Not perform inbound soft reconfiguration. |
| Command Mode | BGP route mode |
| Usage Guide | The system saves the inbound messages in the buffer after the soft reconfiguration is set, will applies as soon as it restarts so to reduce consumptions of switching with other routers. The command is only available when the route refresh capability is not enabled |
| Example | Switch(config-router)#neighbor 11.1.1.120 soft-reconfiguration inbound |

neighbor strict-capability-match

| | |
|---------------------|---|
| Command | neighbor {<ip-address> <TAG>} strict-capability-match no neighbor {<ip-address> <TAG>} strict-capability-match |
| | Configure whether strict capability match is required when establishing connections. The “ no neighbor {<ip-address> <TAG>} strict-capability-match ” command set to not requiring strict match. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group |
| Default | No strict capability match configured. |
| Command Mode | BGP route mode |
| Usage Guide | This command takes effect to MP-BGP only. With this command, neighbor can be established when MP-BGP capabilities of the both side are matched, or else it can not be established. However, whether other capabilities are matched will not affect to establish neighbor. |
| Example | Switch(config-router)#neighbor 10.1.1.64 strict-capability-match |

neighbor timers

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} timers <0-65535> <0-65535> no neighbor {<ip-address> <TAG>} timers <0-65535> <0-65535> Configure the KEEPALIVE interval and hold time; the “ no neighbor {<ip-address> <TAG>} timers <0-65535> <0-65535> ” command restores the defaults. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group <0-65535> : Respectively the KEEPALIVE and HOLD TIME |
| Default | Default KEEPALIVE time is 60s, while HOLD TIME is 240s |
| Command Mode | BGP route mode |
| Usage Guide | Send KEEPALIVE interval and HOLD TIME intervals sent in the peer connection. The hold time is the time period for maintain the connection when no message is received from the partner (such as KEEPALIVE). And the connection will be closed after this hold time. |
| Example | Switch(config-router)#neighbor 10.1.1.64 timers 50 200 |

neighbor timers connect

| | |
|--------------|---|
| Command | neighbor {<ip-address> <TAG>} timers connect <0-65535> no neighbor {<ip-address> <TAG>} timers connect [<0-65535>] Configure the connecting retry time interval. The “ no neighbor {<ip-address> <TAG>} timers connect [<0-65535>] ” command restores the default value. |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group <0-65535> : Retry interval |
| Default | 120s |
| Command Mode | BGP route mode |
| Usage Guide | Configure the connecting time interval when connecting a peer. The NO form restores the default value. |
| Example | Switch(config-router)#neighbor 10.1.1.64 timers connect 100 |

neighbor unsuppress-map

| | |
|--------------|---|
| Command | neighbor {<ip-address> <TAG>} unsuppress-map <WORD> no neighbor {<ip-address> <TAG>} unsuppress-map <WORD> Configure or cancel the unsurprising to conditions meet the specified route map. The “ no neighbor {<ip-address> <TAG>} unsuppress-map <WORD> ” command cancels this configuration. |
| Parameter | <ip-address> : Neighbor IP address. <TAG> : Name of peer group. <WORD> : Name of route-map. |
| Default | Not set. |
| Command Mode | BGP route mode |
| Usage Guide | This command is generally for route suppressed by the aggregated and summary-only conditions. Routes meet the route map conditions will still be send separately other than suppressed. |
| Example | Switch(config-router)#neighbor 10.1.1.66 unsuppress-map rmp Switch(config)#access-list 10 permit 10.1.1.100 0.0.0.255 Switch(config)#route-map rmp permit 5 Switch(config-route-map)#match ip next-hop 10 Route with nexthop as 10.1.1.100 will not be restrained. |

neighbor update-source

| | |
|--------------|--|
| Command | neighbor {<ip-address> <TAG>} update-source <IFNAME> no neighbor {<ip-address> <TAG>} update-source <IFNAME> Configure the update source. The “ no neighbor {<ip-address> <TAG>} update-source <IFNAME> ”cancels this configuration |
| Parameter | <ip-address> : Neighbor IP address <TAG> : Name of peer group <IFNAME> : Name or IP of the interface |
| Default | Not configured, namely use nearest interface. |
| Command Mode | BGP route mode |
| Usage Guide | Specified update source is allowed to connect with any available interface which normally is the loop back interface. The NO forms restores to the nearest interface update source. Improper update source use may lead to neighbor connection unavailable, while the invalid interface causes problem which is also the reasons we use loop back interfaces. Note: the loop back interface should be maintained with its address accessibility to be able to establish connections when as the update source. |

| | |
|---------------------------|--|
| Example | Switch(config-router)#neighbor 10.1.1.66 update-source 192.168.0.1 |
| neighbor version 4 | |
| Command | neighbor {<ip-address> <TAG>} version 4 |
| | Configure the BGP version of the partner. |
| Parameter | <ip-address>: Neighbor IP address <TAG>: Name of the peer group 4: Allowed BGP version, 4 only |
| Default | 4 |
| Command Mode | BGP route mode |
| Usage Guide | Only version 4 is supported so far, so whatever the configuration is the version remains at 4. |
| Example | Switch(config-router)#neighbor 10.1.1.66 version 4 Switch(config-router)# |

neighbor weight

| | |
|---------------------|---|
| Command | neighbor {<ip-address> <TAG>} weight <0-65535> no neighbor {<ip-address> <TAG>} weight [<0-65535>] |
| | Configure the route weight sent from the partner. The “no neighbor {<ip-address> <TAG>} weight [<0-65535>]” command restores the default value. |
| Parameter | <ip-address>: Neighbor IP address. <TAG>: Name of IP address. <0-65535>: Weight. |
| Default | The default weight acquired from other routers is 0. The default weight on the local static configuration is 32768. |
| Command Mode | BGP route mode |
| Usage Guide | The path selecting can be affected through the configuration of the weight. The weight is only relevant to the router which is not an attribute transmittable to outside. |
| Example | Switch(config-router)#neighbor 10.1.1.66 weight 500 |

network (BGP)

| | |
|--------------|---|
| Command | network <ip-address/M> [route-map <WORD>] [backdoor] no network <ip-address/M> [route-map <WORD>] [backdoor] Configure the BGP managed network, the route map specified in network application, or set the “back door” for the network. The “ no network <ip-address/M>[route-map <WORD>] [backdoor] ” command cancels this configuration. |
| Parameter | <ip-address/M> : Network prefix identifier <WORD> : Name of route-map |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | As for BGP routes, specify the route through which the BGP advertisements go. With the network defined by this command, the peer will be spreaded into the route map of the neighbor even if there is no route locally. Using the attribute specified in the network application through route map, when specifying the route comes from EBGp or inside the network through back door parameters, the inside route will be the optimized route even if the external route is of shorter distance. |
| Example | Switch(config-router)# network 172.16.0.0/16 |

redistribute (BGP)

| | |
|--------------|--|
| Command | redistribute <ROUTES> [route-map <WORD>] no redistribute <ROUTES> [route-map <WORD>] Set the BGP to redistribute route from other modes into BGP. The “ no redistribute <ROUTES> [route-map <WORD>] ” command cancels this configuration. |
| Parameter | <ROUTES> : Route source or protocol, including: connected, ISIS, kernel, OSPF, RIP, static, etc. <WORD> : Name of route map. |
| Default | - |
| Command Mode | BGP route mode |
| Usage Guide | Route from other ways will be distributed into the BGP route table with this command and transmitted to the neighbors. |
| Example | The static route is introduced into BGP with this configuration and advertised to the neighbors. Switch(config-router)# redistribute static |

redistribute ospf

| | |
|--------------|---|
| Command | redistribute ospf [<process-id>] [route-map<word>] no redistribute ospf [<process-id>] To redistribute routing information form OSPF to BGP. The no form of this command will remove the configuration. |
| Parameter | process-id is the process ID of the OSPF, limited between 1 and 65535. If no process id is specified, the default process id will be used. route-map <word> is the pointer to the introduced routing map. |
| Default | Not redistributed by default. |
| Command Mode | BGP route mode |
| Usage Guide | - |
| Example | To redistribute routing of OSPF v2 to BGP (as number is 1). Switch(config)#router bgp 1 Switch(config-router)#redistribute ospf 2 |

router bgp

| | |
|--------------|---|
| Command | router bgp <as-id> no router bgp <as-id> Enable BGP instance. The “ no router bgp <as-id> ” command deletes BGP instance. |
| Parameter | <as-id> : AS number, ranging from 1 to 4294967295, it can be shown in decimal notation (such as 6553700) or delimiter method (such as 100.100). |
| Default | BGP not enabled. |
| Command Mode | Global mode |
| Usage Guide | Enable BGP by specified AS, and then enter the config-router state, the protocol can be configured at this prompt. |
| Example | Enable BGP, AS number is 4294967295 in decimal notation. Switch(config)#router bgp 4294967295 Switch(config-router)#exit Enable BGP, AS number is 4294967295 in delimiter method. Switch(config)#router bgp 65535.65535 Switch(config-router)#exit |

timers bgp

| | |
|--------------|---|
| Command | timers bgp <0-65535> <0-65535> no timers bgp [<0-65535> <0-65535>] |
| | Configure all neighbor time in BGP. The “ no timers bgp [<0-65535> <0-65535>] ” command restores these times to default value. |
| Parameter | <0-65535> : Respectively the KEEPALIVE interval and the hold time. |
| Default | KEEPALIVE is 60s, HOLD TIME is 240s. |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Similar to neighbor time configuration which just performed on all neighbors |
| Example | Switch(config-router)# timers bgp 50 200 |

show ip bgp

| | |
|--------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] [<ip-address> <ip-address/M>] [longer-prefixes cidr-only] |
| | For displaying the routing messages permitted by BGP. |
| Parameter | <ADDRESS-FAMILY> : address-family such as “ipv4 unicast”; <ip-address> : IP address; <ip-address/M> : IP address and the mask |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | We can display BGP routing messages by different parameters (such as address-family or IPv4 address), or a route covered by a prefix, or only the routing message don't match the earliest IP address-family (namely the route is not A or B or C type address.) |
| Example | Switch#show ip bgp BGP table version is 147, local router ID is 10.1.1.64 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? – incomplete Network Next Hop Metric LocPrf Weight Path *> 12.0.0.0 10.1.1.121 0 32768 ? *> 100.1.1.0/24 10.1.1.200 0 32768 ? *> 100.1.2.0/24 10.1.1.200 0 32768 ? *> 172.0.0.0/8 0.0.0.0 32768 i Total number of prefixes 4 |

show ip bgp attribute-info

| | |
|--------------|--|
| Command | show ip bgp attribute-info |
| | Display the BGP attributes messages. |
| Parameter | - |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | For displaying the attribute messages permitted by BGP. |
| Example | Switch#show ip bgp attribute-info attr[1] nexthop 0.0.0.0 attr[1] nexthop 10.1.1.64 attr[3] nexthop 10.1.1.64 attr[1] nexthop 10.1.1.121 attr[2] nexthop 10.1.1.200 |

show ip bgp community

| | |
|--------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] community <TYPE> [exact-match] |
| | For displaying route permitted by BGP with community information. |
| Parameter | <ADDRESS-FAMILY>: Address-family, such as “ipv4 unicast” <TYPE>: Community attributes number show in AA:NN form or combination of local-AS, no-advertise, and no-export. |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | We can choose several communities at a time, exact-match shows only the perfect match entries will be displayed. |
| Example | Switch#show ip bgp community BGP table version is 10, local router ID is 10.1.1.64 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 0.0.0.0 32768 700 800 i *> 172.0.0.0/8 0.0.0.0 32768 700 800 i Total number of prefixes 2 |

show ip bgp community-info

| | |
|--------------|---|
| Command | show ip bgp community-info |
| | For displaying the community messages permitted by BGP. |
| Parameter | |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Messages in the same community multiply closable at the same time. |
| Example | Switch#show ip bgp community-info Address Refcnt Community [0x3312558] (3) 100:50 |

show ip bgp community-list

| | |
|--------------|---|
| Command | show ip bgp [<ADDRESS-FAMILY>] community-list <NAME> [exact-match] |
| | For displaying the routes containing the community list messages and permitted by BGP |
| Parameter | <ADDRESS-FAMILY>: Address-family such as “ipv4 unicast” <NAME>: Community list |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Configure the community list with ip community-list command and the contained community as well. When displayed with its name, communities included in all the lists are contained. |
| Example | Switch(config)#ip community-list commu per 100:50 Switch#show ip bgp community-list commu BGP table version is 25, local router ID is 10.1.1.64 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? – incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 0.0.0.0 32768 700 800 i *> 172.0.0.0/8 0.0.0.0 32768 700 800 i |

show ip bgp dampening

| | |
|---------------------|---|
| Command | <code>show ip bgp [<ADDRESS-FAMILY>] dampening {<dampened-paths> <flap-statistics> <parameters>}</code> |
| | Display the routes permitted by BGP and relevant to the route dampening. |
| Parameter | <code><ADDRESS-FAMILY></code> : Address-family, such as “ipv4 unicast”. |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Only the surged routes will be displayed. The Parameters shows the display configuration other than specific routes. The other two options will respectively show the restrained route and the dampening (recently recovered from invalid) routing messages. |
| Example | <pre>Switch#show ip bgp dampening dampened-paths BGP table version is 12, local router ID is 10.1.1.66 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network From Reuse Path *d 100.1.3.0/24 10.1.1.64 00:27:40 100 ? Total number of prefixes 1 Switch#show ip bgp dampening flap-statistics BGP table version is 13, local router ID is 10.1.1.66 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network From Flaps Duration Reuse Path *d 100.1.3.0/24 10.1.1.64 3 00:06:05 00:27:00 100 ? Switch#show ip bgp dampening parameters dampening 15 750 2000 60 15 (route-map rmp) Reachability Half-Life time : 15 min Reuse penalty : 750 Suppress penalty : 2000 Max suppress time : 60 min Un-reachability Half-Life time : 15 min Max penalty (ceil) : 11999 Min penalty (floor) : 375 Total number of prefixes 1</pre> |

show ip bgp filter-list

| | |
|--------------|---|
| Command | show ip bgp [<ADDRESS-FAMILY>]filter-list [<WORD >] |
| | For displaying the routes in BGP meeting the specific AS filter list. |
| Parameter | <ADDRESS-FAMILY>: address-family such as “ipv4 unicast” < WORD >: AS-PATH access-list name |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Configure AS access-list with ip as-path access-list command. This command can show the routes passed the access-list. |
| Example | Switch#show ip bgp filter-list FL BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path *> 100.1.1.0/24 10.1.1.64 0 0 100 ? Total number of prefixes 1 |

show ip bgp inconsistent-as

| | |
|--------------|---|
| Command | show ip bgp [<ADDRESS-FAMILY>] inconsistent-as |
| | For displaying routes with inconsistent BGP AS. |
| Parameter | <ADDRESS-FAMILY>: address family such as “ipv4 unicast”. |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | If same prefix comes from different origin AS, the AS will be regarded as inconsistent. This command is for displaying this kind of routes. |
| Example | Switch#show ip bgp inconsistent-as BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 10.1.1.68 0 0 300 ? *> 10.1.1.64 0 0 100 ? Total number of prefixes 1 |

show ip bgp neighbors

| | |
|---------------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] neighbors [IP-ADDRESS] [advertised-routes received {prefix-filter routes} routes] For displaying the BGP neighbor related messages. |
| Parameter | <ADDRESS-FAMILY>: Address-family, such as “ipv4 unicast” <ip-address>: Neighbor IP address |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Display detailed messages of all neighbors by this command without parameters. Specifying IP address will show the detailed information of the neighbors with specified IP address. The advertised-routes、received prefix-filter、received routes、routes parameters will respectively displays the routes broadcast on local side, the received prefix filter, received routes (soft reconfiguration enabled) and the routing message from specific neighbor. |
| Example | <pre>Switch#show ip bgp neighbor BGP neighbor is 10.1.1.66, remote AS 200, local AS 100, external link BGP version 4, remote router ID 11.1.1.100 BGP state = Established, up for 00:13:43 Last read 00:13:43, hold time is 240, keepalive interval is 60 seconds Neighbor capabilities: Route refresh: advertised and received (old and new) Address family IPv4 Unicast: advertised and received Received 17 messages, 0 notifications, 0 in queue Sent 17 messages, 0 notifications, 0 in queue Route refresh request: received 0, sent 0 Minimum time between advertisement runs is 30 seconds For address family: IPv4 Unicast BGP table version 2, neighbor version 2 Index 1, Offset 0, Mask 0x2 Community attribute sent to this neighbor (both) 0 accepted prefixes 1 announced prefixes Connections established 7; dropped 6</pre> |

show ip bgp paths

| | |
|---------------------|---|
| Command | show ip bgp [<ADDRESS-FAMILY>] paths |
| | Display the path message permitted by BGP. |
| Parameter | <ADDRESS-FAMILY>: Address-family such as “ipv4 unicast”. |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Display the BGP path message includes the utilization state. |
| Example | Switch#show ip bgp paths Address Refcnt Path [0x331dad0:0] (1) [0x331d850:93] (1) 600 [0x331d8d8:249] (2) 200 300 |

show ip bgp prefix-list

| | | | | | | | | | | | | | | | | | | | |
|----------------|---|---------|----------|--------|--------|--------|------|----------------|-----------|---|-----|-----|---|----|------------|---|-------|--|---|
| Command | show ip bgp [<ADDRESS-FAMILY>] prefix-list [<NAME>] | | | | | | | | | | | | | | | | | | |
| | For displaying the route meet the specific prefix-list in BGP. | | | | | | | | | | | | | | | | | | |
| Parameter | <ADDRESS-FAMILY>: Address family such as “ipv4 unicast” <NAME>: Name of prefix-list | | | | | | | | | | | | | | | | | | |
| Default | - | | | | | | | | | | | | | | | | | | |
| Command Mode | Admin and Configuration Mode. | | | | | | | | | | | | | | | | | | |
| Usage Guide | We can select the required BGP route by regular expression. | | | | | | | | | | | | | | | | | | |
| Example | Switch(config)#ip prefix-list PL permit any Switch(config)# Switch#show ip bgp prefix-list PL BGP table version is 1, local router ID is 10.1.1.64 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? – incomplete <table><tr><td>Network</td><td>Next Hop</td><td>Metric</td><td>LocPrf</td><td>Weight</td><td>Path</td></tr><tr><td>* 100.1.1.0/24</td><td>10.1.1.66</td><td>0</td><td>200</td><td>300</td><td>?</td></tr><tr><td>*></td><td>10.1.1.100</td><td>0</td><td>32768</td><td></td><td>?</td></tr></table> Total number of prefixes 1 | Network | Next Hop | Metric | LocPrf | Weight | Path | * 100.1.1.0/24 | 10.1.1.66 | 0 | 200 | 300 | ? | *> | 10.1.1.100 | 0 | 32768 | | ? |
| Network | Next Hop | Metric | LocPrf | Weight | Path | | | | | | | | | | | | | | |
| * 100.1.1.0/24 | 10.1.1.66 | 0 | 200 | 300 | ? | | | | | | | | | | | | | | |
| *> | 10.1.1.100 | 0 | 32768 | | ? | | | | | | | | | | | | | | |

show ip bgp quote-regexp

| | |
|---------------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] quote-regexp [<WORD>] |
| | For displaying the BGP route meets the specific AS related regular expression. |
| Parameter | <ADDRESS-FAMILY>: address-family such as “ipv4 unicast” <WORD>: Regular expression |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Selecting the required route through regular expressions. |
| Example | Switch#show ip bgp quote-regexp ^300\$ BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path *> 100.1.1.0/24 10.1.1.68 0 0 300 ? Total number of prefixes 1 Switch#sh ip bgp quote-regexp 100 BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 10.1.1.64 0 0 500 100 600 ? Total number of prefixes 1 |

show ip bgp redistribute

| | |
|---------------------|---|
| Command | show ip bgp redistribute |
| | To display redistributed routing information from external processes to BGP |
| Parameter | - |
| Default | - |
| Command Mode | Admin mode and Command Mode。 |
| Usage Guide | -。 |
| Example | Switch#show ip bgp redistribute |

show ip bgp neighbors

| | |
|---------------------|--|
| Command | show ip bgp neighbors |
| | Show neighbor information of specified BGP or total BGP processes. |
| Parameter | |
| Default | - |
| Command Mode | Admin mode and Command Mode。 |
| Usage Guide | -。 |
| Example | Switch#show ip bgp neighbors |

show ip bgp regexp

| | |
|---------------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] regexp [<LINE>] |
| | For displaying the BGP routes meets specific AS related normal expressions. |
| Parameter | <ADDRESS-FAMILY>: address-family such as “ipv4 unicast” <LINE>: Regular expression |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | We can select BGP route of the required AS with normal expression. |
| Example | Switch#show ip bgp regexp 100 BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 10.1.1.64 0 0 500 100 600 ? Total number of prefixes 1 |

show ip bgp route-map

| | |
|---------------------|---|
| Command | show ip bgp [<ADDRESS-FAMILY>] route-map [<NAME>] |
| | For displaying the BGP routes meets the specific related route map. |
| Parameter | <ADDRESS-FAMILY>: such as “ipv4 unicast” <NAME>: Name of route map |
| Default | - |
| Command Mode | Admin and Configuration Mode. |

| | |
|--------------------|--|
| Usage Guide | Configure the route map with the route-map command, through which it can be displayed that process routes with route map. The command will display the routes meet specific route map. |
| Example | <pre>Switch#show ip bgp route-map rmp BGP table version is 2, local router ID is 11.1.1.100 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, S Stale Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Weight Path * 100.1.1.0/24 10.1.1.64 0 0 500 100 600 ? *> 10.1.1.68 0 0 300 ? Total number of prefixes 1</pre> |

show ip bgp scan

| | |
|---------------------|--|
| Command | show ip bgp scan |
| | For displaying BGP scan messages. |
| Parameter | |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Scan regularly the nexthop messages. The command can show the current interval and related routes. |
| Example | <pre>Switch#show ip bgp scan BGP Instance: (Default) AS 200, router-id 11.1.1.100 BGP scan interval is 60 Current BGP nexthop cache:</pre> |

show ip bgp summary

| | |
|---------------------|--|
| Command | show ip bgp [<ADDRESS-FAMILY>] summary |
| | For displaying the BGP summary information. |
| Parameter | <ADDRESS-FAMILY>: Address-family such as “ipv4 unicast”. |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Display some basic summary information of BGP |

Example

```
Switch#show ip bgp summary
BGP router identifier 10.1.1.66, local AS number 200
BGP table version is 1
1 BGP AS-PATH entries
0 BGP community entries
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down
State/PfxRcd
10.1.1.68 4 300 0 0 0 0 never Active
Total number of neighbors 1
```

| Display Contents | Explanation |
|-------------------|--|
| identifier | Local identifier |
| local AS number | The number of AS of local router |
| table version | the version number of BGP interior database |
| AS-PATH entries | The tabulation of the AS-PATH entries |
| community entries | The property of the community entries |
| Neighbor | Neighbor address |
| V | The BGP version of neighbor running |
| AS | The AS number of neighbor what is affiliated with |
| MsgRcvd | The amount of message received from neighbor |
| MsgSent | The amount of message sent to the neighbor |
| TblVer | the version of route table |
| Up/Down | It will display the conversation time length if the state with neighbor was established, otherwise display the present status. |
| State/PfxRcd | If the state is established, display the amount of the prefix received of the router.otherwise,display the state of the neighbor at present. |

show ip bgp view

| | |
|---------------------|--|
| Command | show ip bgp view [<NAME>] [<ip-address> <ip-address/M>][<ADDRESS-FAMILY> summary] For displaying the messages of specified BGP instance. |
| Parameter | <NAME>: Name of BGP instance <ip-address>: IP address <ip-address/M>: IP address and mask <ADDRESS-FAMILY>: Address-family such as “ipv4 unicast” |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Display messages of specified BGP instance. |
| Example | Switch#show ip bgp view as300 100.1.1.0/24 |

show ip bgp view neighbors

| | |
|---------------------|---|
| Command | show ip bgp view [<NAME>] neighbors [<ip-address>] Display neighbor messages of specified BGP instance. |
| Parameter | <NAME>: Name of BGP instance <ip-address>: neighbor IP address |
| Default | - |
| Command Mode | Admin and Configuration Mode. |
| Usage Guide | Display neighbor messages of specified BGP instance. |
| Example | Switch#show ip bgp view as300 neighbors |

debug bgp

| | |
|------------------|--|
| Command | debug bgp [<MODULE> all] no debug bgp [<MODULE> all] For BGP debugging. The “ no debug bgp [<MODULE> all] ” command closes the BGP debugging messages |
| Parameter | <MODULE>: BGP module names, including dampening、events、filters、fsm、keepalives、nsm、updates, etc. |
| Default | None. |

| | |
|--------------------|--|
| Mode | Admin Mode |
| Usage Guide | For monitoring BGP events and the encountered errors, warning messages. |
| Example | Display the debugging messages of all bgp modules. Switch#debug bgp all |

debug bgp redistribute message send

| | |
|--------------------|---|
| Command | debug bgp redistribute message send no debug bgp redistribute message send |
| | To enable debugging switch of sending messages for redistribution of routing information from external process such as OSPF and RIP to BGP. The no command will disable the debugging switch. |
| Parameter | - |
| Default | Close the debug by default. |
| Mode | Admin Mode |
| Usage Guide | - |
| Example | Switch# debug bgp redistribute message send Switch# no debug bgp redistribute message send |

debug bgp redistribute route receive

| | |
|--------------------|--|
| Command | debug bgp redistribute route receive no debug bgp redistribute route receive |
| | To enable debugging switch of received messages from NSM for BGP. The no form of this command will disable debugging switch of received messages from NSM for BGP. |
| Parameter | - |
| Default | Close the debug by default. |
| Mode | Admin Mode |
| Usage Guide | - |
| Example | Switch#debug bgp redistribute route receive Switch#no debug bgp redistribute route receive |

bgp graceful-restart

| | |
|--------------------|--|
| Command | bgp graceful-restart no bgp graceful-restart |
| | Enable BGP to support GR and set restart-time and stale-path-time as the default value, no command disables GR. |
| Parameter | - |
| Default | Do not enable BGP to support GR. |
| Mode | BGP router configuration mode |
| Usage Guide | - |
| Example | Configure GR. Switch(config-router)# bgp graceful-restart |

bgp graceful-restart restart-time

| | |
|--------------------|---|
| Command | bgp graceful-restart restart-time <1-3600> no bgp graceful-restart restart-time <1-3600> |
| | Configure BGP GR's restart-time (Receiving Speaker enables a timeout timer for a neighbor, it uses the restart-time as the timeout). A restart-time specifies the longest waiting time from Receiving Speaker finds restarting to the received OPEN messages. If Receiving Speaker does not receive OPEN messages after exceed the time, it can delete SATLE route saved by neighbor. No command restores restart-time as the default value of 120 seconds. |
| Parameter | <1-3600>: time in seconds. |
| Default | restart-time uses the default value of 120s. |
| Mode | BGP router configuration mode |
| Usage Guide | - |
| Example | Configure restart-time as 60s for BGP GR Switch(config-router)# bgp graceful-restart restart-time 60 |

bgp graceful-restart stale-path-time

| | |
|----------------|--|
| Command | bgp graceful-restart stale-path-time <1-3600> |
|----------------|--|

| | |
|--------------------|--|
| | no bgp graceful-restart stale-path-time <1-3600> |
| | Configure stale-path-time for BGP GR. Specify the longest waiting time that delete stale route from the received OPEN messages to the received EOR for Receiving Speaker. No command restores stale-path-time as the default value of 360 seconds. |
| Parameter | <1-3600> : time in seconds |
| Default | stale-path-time uses the default value of 360s. |
| Mode | BGP router configuration mode |
| Usage Guide | - |
| Example | Configure stale-path-time as 460s for BGP GR. Switch(config-router)# bgp graceful-restart stale-path-time 460 |

bgp selection-deferral-time

| | |
|--------------------|---|
| Command | bgp selection-deferral-time <1-3600> no bgp selection-deferral-time <1-3600> |
| | Configure selection-deferral-time for BGP GR. Specify the longest waiting time that start to count selection route from the received OPEN messages to the received EOR for Restarting Speaker. If Restarting Speaker does not receive EOR after exceed the time, it can count selection route. No command restores selection-deferral-time as the default value of 120 seconds. |
| Parameter | <1-3600> : time in seconds |
| Default | selection-deferral-time uses the default value of 120s. |
| Mode | BGP router configuration mode |
| Usage Guide | - |
| Example | Configure selection-deferral-time as 240s for BGP GR. Switch(config-router)# bgp selection-deferral-time 240 |

neighbor capability graceful-restart

| | |
|----------------|---|
| Command | neighbor (A.B.C.D X:X::X:X WORD) capability graceful-restart |
|----------------|---|

| | |
|--------------------|---|
| | no neighbor (A.B.C.D X:X::X:X WORD) capability graceful-restart |
| | Configure whether neighbor supports GR capability, no command does not support GR capability. |
| Parameter | (A.B.C.D X:X::X:X WORD): name of neighbor address or neighbor group for BGP |
| Default | Do not configure GR. |
| Mode | BGP protocol unicast address family mode |
| Usage Guide | - |
| Example | Configure that GR capability is sent to neighbor 1.1.1.1. Switch(config-router)#neighbor 1.1.1.1 capability graceful-restart |

neighbor restart-time

| | |
|--------------------|---|
| Command | neighbor (A.B.C.D X:X::X:X WORD) restart-time <1-3600> no neighbor (A.B.C.D X:X::X:X WORD) restart-time <1-3600> |
| | Configure restart-time for neighbors, no command restores the default time. |
| Parameter | (A.B.C.D X:X::X:X WORD): name of neighbor address or neighbor group for BGP <1-3600>: time in seconds. |
| Default | The default restart-time is 120s for neighbor. |
| Mode | BGP protocol unicast address family mode |
| Usage Guide | - |
| Example | Configure restart-time as 60s for neighbor 1.1.1.1. Switch(config-router)# neighbor restart-time 60 |