16-Commands for Routing Protocol

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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** the valid period of the key in seconds, ranging between 1-2147483646 **Infinite** means the key will never be out of date.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

distribute-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 receivable RIP packets; the "**no ip rip receive-packet**" command sets the interface to be unable to receivable 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**

	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

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;

	static introduce from static routes; **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; **isis** introduce from ISIS routes; **bgp** introduce from BGP routes; **<value>** is the metric value assigned to the introduced route, ranging between 0 to 16; **<word>** is the probe pointing to the route map for introducing routes.
Default	-
Mode	Router mode and address-family mode。
Usage Guide	Under the address-family mode, the parameter kernel and ISIS is unavailable.
Example	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

route

Command	**route <A.B.C.D/M>** **no route <A.B.C.D/M>** This command configures a static RIP route. The "**no route <A.B.C.D/M>**"command deletes this route.
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	Switch# config terminal Switch(config)# router rip Switch(config-router)# route 1.0.0.0/8

router rip

Command	**router rip** **no router rip**

	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	**<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>}** **<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 **send-lifetime** in hours, minutes and secon; **<seconds>**is the valid period of the key in seconding and 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 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 RIPng 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

show ip rip
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
B - BGP
Network Next Hop Metric From If Time
R 12.1.1.0/24 20.1.1.1 2 20.1.1.1 Vlan1 02:51
R 20.1.1.0/24 1 Vlan1
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

	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	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.
Example	To display the information of IPv4 aggregation route. Switch(Config-if-Vlan1)#show ip rip agg Aggregate information of rip 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	Explaination
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.

	Switch(config-router)#area 0 authentication message-digest

area default-cost

Command	**area <id> default-cost <cost>** **no area <id> default-cost** 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.
Parameter	**<id>** is the area number which could be shown as digits 0～4294967295, or as an IP address; **<cost>** ranges between <0-16777215>
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	Set the default-cost of area 1 to 10. Switch(config-router)#area 1 default-cost 10

area filter-list

Command	**[no] area <id> filter-list {access|prefix} {in|out}** Configure the filter broadcasting summary routing on the ABR; the "**no area <id> filter-list {access|prefix} {in|out}**" command restores the default value.
Parameter	**<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.
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	Set a filter on the area 1. 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

area nssa

Command	**area <id> nssa [TRANSLATOR| no-redistribution |DEFAULT-ORIGINATE |no-summary]** **no area <id> nssa[TRANSLATOR| no-redistribution |DEFAULT-ORIGINATE |no-summary]** Set the area to Not-So-Stubby-Area (NSSA) area.
Parameter	**<id>** is the area number which could be digits ranging between 0~4294967295, and also as an IP address. **TRANLATOR = 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**. **never** means the router will never translate Type 7 LSA to Type 5 LSA. **always** means the route always translate Type 7 LSA to Type 5 LSA. **no-redistribution** means never distribute external-LSA to NSSA. **DEFAULT-ORIGINATE=default-information-originate [metric <0-16777214>] [metric-type <1-2>]** , generate the Type-7 LSA. **metric <0-16777214>** specifies the metric value. **metric-type <1-2>** specifies the metric value type of external-LSA , default value is 2. **no-summary** shows not injecting area route to the NSSA.
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	Set area 3 to NSSA. 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

area range

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

	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	**<id>** is the area number which could be digits ranging between 0～4294967295, and also as an IP address. **AUTHENTICATION** = authentication [message-digest[message-digest-key <1-255> md5 <LINE>] |null|AUTH_KEY]. **authentication** : Enable authentication on this virtual link. **message-digest**： Authentication with MD-5. **null** : Overwrite password or packet summary with null authentication. AUTH_KEY= authentication-key <key>. **<key>**: A password consists of less than 8 characters. INTERVAL= [dead-interval | hello-interval | message-digest-key<1-255>md5<LINE> | retransmit-interval | transmit-delay] <value>. **<value>**:>: The delay or interval seconds, ranging between 1~65535. **<dead-interval>**: A neighbor is considered offline for certain dead interval without its group messages which the default is 40 seconds. **<hello-interval>**: The time interval before the router sends a hello group message, default is 10 seconds. **<message-digest-key>**: Authentication key with MD-5. **<retransmit-interval>**: The time interval before a router retransmitting a group message, default is 5 seconds. **<transmit-delay>**: The time delay before a router sending a group messages, default is 1 second.
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	Switch#config terminal Switch(config) #router ospf 100 Switch(config-router) #area 1 virtual-link 10.10.11.50 hello 5 dead 20

auto-cost reference-bandwidth

Command	**auto-cost reference-bandwidth <bandwith>** **no auto-cost reference-bandwidth** 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.
Parameter	**<bandwith>**： 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 bandwith 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** This command create a default external route to OSPF route area; the "**no default-information originate**" closes this feature.
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 <exernal-distance>, Configure the distance learnt from other routing area.
<exernal-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	Example below is the advertisement based on the access-list list 1 of the BGP route. Switch#config terminal Switch(config)#access-list l1 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

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	Use access list 1 to filter the routes which do not belong to 172.10.0.0/16 segment. 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

host area

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

	no host <host-address> area <area-id> [cost <cost>] 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.
Parameter	**<host-address>** is host IP address show in dotted decimal notation. **<area-id>** area ID shown in dotted decimal notation or integer ranging between 0~4294967295. **<cost>** specifies the entire cost, which is a integer ranging between 0~65535 and defaulted at 0.
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	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

ip ospf authentication

Command	**ip ospf [<ip-address>] authentication [message-digest|null]** **no ip ospf [<ip-address>] authentication** 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.
Parameter	**<ip-address>** is the interface IP address, shown in dotted decimal notation. **message-digest**：Use MD5 authentication. **null**：no authentication applied, which resets the password or MD5 authentication applied on the interface.
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 message-digest

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

ip ospf dead-interval

Command	**ip ospf [<ip-address>] dead-interval <time >** **no ip ospf [<ip-address>] dead-interval** Specify the dead interval for neighboring layer 3 switch; the "**no ip ospf [<ip-address>] dead-interval**" command restores the default value.
Parameter	**<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.
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	Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf dead-interval 80

ip ospf disable all

Command	**ip ospf disable all** **no ip ospf disable all** Stop OSPF group process on the interface.
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. The 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	**<ip-address>**is the interface IP address show in dotted decimal notation; **<key_id>**ranges between 1-255; **<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.
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	Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf message-digest-key 2 MD5 0 yourpassword

ip ospf mtu

Command	**ip ospf mtu <mtu>** **no ip ospf mtu** 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	Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf mtu 1480

ip ospf mtu-ignore

Command	**ip ospf <ip-address> mtu-ignore** **no ip ospf <ip-address> mtu-ignore** 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	Configure the priority of DR electing. Configure the interface vlan 1 to no election right, namely set the priority to 0. Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf priority 0

ip ospf retransmit-interval

Command	**ip ospf [<ip-address>] retransmit-interval <time>** **no ip ospf [<ip-address>] retransmit-interval** 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.
Parameter	**<ip-address>**is the interface IP address show in dotted decimal notation. **<time>**is the retransmit interveral of link state announcements between the interface and adjacent layer 3 switches, shown in seconds ang raning between 1～65535.
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	Configure the LSA retransmit interval of interface vlan 1 to 10 seconds. Switch#config terminal Switch(config)#interface vlan 1 Switch(config-if-vlan1)#ip ospf retransmit-interval 10

ip ospf transmit-delay

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

	adjacent layer 3 switches, shown in seconds ang raning 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 one 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 demical system, if shown in demcial 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** This command is for configuring the max LSA number. The "no overflow database" command cancels the limit.
Parameter	**< maxdbsize >** Max LSA numbers, ranging between 0~4294967294. **soft:** Soft limit, warns when border exceeded. **hard:** Hard limit, directly close ospf instance when border exceeded. If there is not soft or hard configured, the configuration is taken as hard limit.
Default	Not configured
Mode	OSPF protocol mode
Usage Guide	-
Example	Switch#config terminal Switch(config)#router ospf Switch(config-router)#overflow database 10000 soft

overflow database external

Command	**overflow database external [<maxdbsize > <maxtime>]** **no overflow database external [<maxdbsize > <maxtime>]** 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.
Parameter	**< maxdbsize >** size of external link database, ranging between 0~4294967294, defaulted at 4294967294. **< maxtime >** the seconds the router has to wait before exiting the database overflow, ranging between 0~65535.
Default	-
Mode	OSPF protocol mode
Usage Guide	-
Example	Switch#config terminal Switch(config)#router ospf Switch(config-router)#overflow database external 5 3

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>]** 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 routermap, then restores default configuration.
Parameter	**process-id** is OSPF process ID, 0 by default. **metric <value>** is the metric for redistributed routing, range between 0 to 16777214. **metric-type {1|2}** is the metric type for redistributed routing, only can be 1 or 2, and 2 by default. **route-map <word>** is the pointer to the introduced routing map.
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>** This command is for relating the OSPF process.
Parameter	<process_id> specifies the ID of the OSPF process to be created, the ranging from 1 to 65535.
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	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.

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[{adv-router [{<linkstate_id>|self-originate |adv-router <advertiser_router>}]|asbr-summary[{<linkstate_id> |self-originate |adv-router <advertiser_router>}] |externel [{<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**

	<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 }] Display the OSPF link state data base messages.
Parameter	**<process-id>** is the process ID, ranging between 0~65535 **<linkstate_id>** Link state ID, shown in point divided demical system **<advertiser_router>** is the ID of Advertising router, shown in point divided demcial IP address forma
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	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]

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	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

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	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

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 | recv | detail]** **no debug ospf packet [dd | detail | hello | ls-ack | ls-request | ls-update | recv | detail]** Open debugging switches showing OSPF packet messages; the "**no debug ospf packet [dd | detail | hello | ls-ack | ls-request | ls-update | recv | 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 comparation 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	Configure the default local priority to be 500. Configure in 10.1.1.66: Switch(config)#router bgp 200 Switch(config-router)# bgp default local-preference 500

bgp deterministic-med

Command	**bgp deterministic-med** **no bgp deterministic-med** Use the best MED for the same prefix in the AS to compare with other AS. The "**no bgp deterministic-med**" cancels this configuration.
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	Set BGP to use the best MED for the same prefix in the AS to compare with other AS. Switch(config-router)#bgp deterministic-med

bgp enforce-first-as

Command	**bgp enforce-first-as** **no bgp enforce-first-as** 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.
Parameter	-
Default	-
Command Mode	BGP route mode
Usage Guide	This command is usually for avoiding unsafe or unauthenticated routes.
Example	Switch(config-router)#bgp enforce-first-as

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>]** Configure the router ID manually. The no operation cancels this configuration.
Parameter	**<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>]** Set the time interval of the periodical next-hop validation; the "**no bgp scan-time [<0-60>]**" command restores to the default value.
Parameter	**<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]]** Reboot the connection between BGP of vrf-name and all peers.
Parameter	**<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	**ip community-list {<LISTNAME>|<1-199>|[expanded <WORD>]|[standard <WORD>]} {deny|permit} <.COMMUNITY>** **no ip community-list {<LISTNAME>|<1-199>|[expanded <WORD>]|[standard <WORD>]} [{deny|permit} <.COMMUNITY>|** Configure the community-list. The "**no ip community-list {<LISTNAME>|<1-199>|[expanded <WORD>]|[standard <WORD>]} [{deny|permit} <.COMMUNITY>]**" command deletes the community list.
Parameter	**<LISTNAME>:** name of community list. **<1-199>**: Standard or extended community number. **<WORD>**:Standard or extended community number. **<.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.
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	**ip extcommunity-list {<LISTNAME>|<1-199>|[expanded <WORD>]|[standard <WORD>]} {deny|permit} <.COMMUNITY>** **no ip extcommunity-list {<LISTNAME>|<1-199>|[expanded <WORD>]|[standard <WORD>]} {deny|permit} <.COMMUNITY>** 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.
Parameter	**<LISTNAME>:** name of community-list.

	<1-199>： Standard or extended community number. **<WORD>：** Standard or extended community number. **<.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.
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 excommunity-list named LN, permit community attribute as 100:10. Switch(config)#ip extcommunity-list LN permit 100:10

neighbor activate

Command	**neighbor {<ip-address>|<TAG>} activate** **no neighbor {<ip-address>|<TAG>} activate** 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.
Parameter	**<ip-address>：** IP address of the neighbor. **<TAG>：** Name of peer group.
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	Configure to exchange the unicast route with neighbor 2002::2. Switch(config-router)#neighbor 2002::2 activate

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

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

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.

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

	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

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

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

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

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

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.

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 capabilitynegotiation.
Example	Last addition capability negotiation will not be realized in the connection by configuring as follows. Switch(config-router)#neighbor 10.1.1.64 dont-capability-negotiate

neighbor ebgp-multihop

Command	**neighbor {<ip-address>|<TAG>} ebgp-multihop [<1-255>]** **no neighbor {<ip-address>|<TAG>} ebgp-multihop [<1-255>]** 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.
Parameter	**<ip-address>**: Neighbor IP address. **<TAG>**: Name of the peer group. **<1-255>** : Allowed hop count.
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	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: 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 After this, switches in different segments will be able to create BGP neighbor relationship.

neighbor enforce-multihop

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

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)#irouter bgp 100 Switch(config-router)# redistribute static

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

neighbor interface

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

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)

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)

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

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

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

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

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

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	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.
Example	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

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	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.

Example	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: 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

neighbor send-community

Command	**neighbor {<ip-address>|<TAG>} send-community [both|extended|standard]** **no neighbor {<ip-address>|<TAG>} send-community [both|extended|standard]** 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.
Parameter	**<ip-address>：** IP address of the neighbor **<TAG>：** Name of peer group **[both|extended|standard]：** Standard community only, extended community or both.
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	Switch(config-router)#no neighbor 10.1.1.66 send-community Switch(config-router)#neighbor 10.1.1.66 send-community

neighbor shutdown

Command	**neighbor {<ip-address>|<TAG>} shutdown** **no neighbor {<ip-address>|<TAG>} shutdown** Disconnect the neighbor connection. The "**no neighbor {<ip-address>|<TAG>} shutdown**" cancels this configuration
Parameter	**<ip-address>：** Neighbor IP address **<TAG>：** Name of peer group
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, neighborcan be established when MP-BGP capablilities of the both side are matched, or else it can not be establised. However, whether other capablilities 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	**show ip bgp [<ADDRESS-FAMILY>] dampening {<dampened-paths> | <flap-statistics> | <parameters>}** Display the routes permitted by BGP and relevant to the route dampening.
Parameter	**<ADDRESS-FAMILY>:** 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	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

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	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

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 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 ? Total number of prefixes 1

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	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

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	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:

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 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

4.Commands for RIPng

clear ipv6 rip route

Command	**clear ipv6 rip route { <ipv6-address > | kernel |static | connected |rip |ospf | isis | bgp |all }** Clear specific route from the RIPng route table.
Parameter	Clears the route exactly match with the destination address from the RIP route table. **<ipv6-address >** is the destination address shown in hex notation with prefix length. **kernel** delete kernel route from the RIPng route table **static** delete static route from the RIPng route table **connected** delete direct route from the RIPng route table **rip** delete RIPng route from the RIPng route table only **ospf** delete IPv6 OSPF route from the RIPng route table only **bgp** delete IPv6 BGP route from the RIPng route table only **ISIS** delete ivp6 isis route from the RIPng route table only **all** delete all routes from the RIPng route table
Default	No default configuration
Mode	Admin mode
Usage Guide	All routes in the RIPng route table will be deleted by using this command with all parameters.
Example	Switch#clear ipv6 rip route 2001:1:1::/64 Switch#clear ipv6 rip route ospf

default-information originate

Command	**default-information originate** **no default-information originate** Permit redistributing the network 0:: into RIPng. The "**no default-information originate**" disables this function.
Parameter	-
Default	Disabled
Mode	Router mode
Usage Guide	-
Example	Switch# config terminal Switch(config)# router ipv6 rip Switch(config-router)# default-information originate

default-metric

Command	**default-metric <value>** **no default-metric** Set the default metric route value of the introduced route; the "**no default-metric**" restores the default value.
Parameter	**<value>** is the route metric value to be set, ranging between 1～16.
Default	Default route metric value is 1.
Mode	Router 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 RIPng 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 of the routes from other routing protocols when distributed into the RIPng routes as 3. Switch(config)# router ipv6 rip Switch(config-router)#default-metric 3

distance

Command	**distance <number> [<ipv6-address>] [<access-list-name|access-list-number >]** **no distance [<ipv6-address >]** 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 between 1-255. **< ipv6-address >** is the local link address or its prefix. **<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 ipv6 rip Switch(config-router)# distance 8 fe80:1111::4200:21ff:fe00:11 mylist

distribute-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 renews messages sent and received. The "**no distribute-list {access-list-name> |prefix<prefix-list-name>} {in|out} [<ifname>|vlan <vlan-id>]**" command cancels this 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	Function disabled by RIPng by default.
Mode	Router mode
Usage Guide	The filter will be applied to all interfaces if no specific interface is set.
Example	Switch# config terminal Switch(config)# router ipv6 rip Switch(config-router)# distribute-list prefix myfilter in vlan 1

debug ipv6 rip

Command	**debug ipv6 rip [events| nsm| packet[recv|send][detail]| all]** **no debug ipv6 rip [events| nsm| packet[recv|send][detail]| all]** For opening various debugging switches of RIPng, showing various debugging messages. The "**no debug ipv6 rip [events| nsm| packet [recv|send][detail]| all]**" command closes the corresponding debugging switch.
Parameter	**events** shows the debugging message of RIPng events **nsm** shows the communication messages between RIPng and NSM. **packet** shows the debugging messages of RIPng 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 the data packets received or sent.
Default	Not enabled
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 rip packet Switch#1970/01/01 21:15:08 IMI: SEND[Ethernet1/4]: Send to [ff02::9]:521 1970/01/01 21:15:08 IMI: SEND[Ethernet1/2]: Send to [ff02::9]:521 1970/01/01 21:15:09 IMI: RECV[Ethernet1/4]: Receive from [fe80::20b:46ff:fe57:8e60]:521

1970/01/01 21:15:09 IMI: RECV[Ethernet1/4]: 3000:1:1::/64 is filtered by access-list dclist
1970/01/01 21:15:09 IMI: RECV[Ethernet1/4]: 3ffe:1:1::/64 is filtered by access-list dclist
1970/01/01 21:15:15 IMI: RECV[Ethernet1/2]: Receive from [fe80::203:fff:fe01:257c]:521

debug ipv6 rip redistribute message send

Command	**debug ipv6 rip redistribute message send** **no debug ipv6 rip redistribute message send** To enable the debugging of sending messages for routing redistribution messages from OSPFv3 or other external process for RIPng. The no form of this command will disable the debugging messages.
Parameter	None.
Default	Close the debug by default.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 rip redistribute message send Switch#no debug ipv6 rip redistribute message send

debug ipv6 rip redistribute route receive

Command	**debug ipv6 rip redistribute route receive** **no debug ipv6 rip redistribute route receive** To enable the debugging switch received from NSM for redistribution of routing information for RIPng. The no form of this command will disable the debugging switch.
Parameter	None.
Default	Close the debug by default.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 rip redistribute route receive Switch#no debug ipv6 rip redistribute route receive

ipv6 rip aggregate-address

Command	**ipv6 rip aggregate-address X:X::X:X/M**

	no ipv6 rip aggregate-address X:X::X:X/M To configure IPv6 aggregation route. The no form of this command deletes the IPv6 aggregation route.
Parameter	**X:X::X:X/M**: IPv6 address and prefix length.
Default	No aggregation route configured.
Mode	Router mode or Interface Configuration Mode.
Usage Guide	If to configure aggregation route under router mode, RIPng protocol must be enabled. If configured under interface configuration mode, RIPng protocol may not be enabled, but the aggregation route can operation after the RIPng protocol be enabled on interface.
Example	Switch(config)#router ipv6 rip Switch(config-router)#ipv6 rip agg 2001:3f:ed8::99/64

ipv6 rip split-horizon

Command	**ipv6 rip split-horizon [poisoned]** **no ipv6 rip split-horizon** Permit the split horizon. The "**no ipv6 rip split-horizon**" disables the split horizon.
Parameter	**[poisoned]** configures split horizon with poison reverse.
Default	Split horizon with poison reverse.
Mode	Interface Configuration Mode.
Usage Guide	The split horizon is for preventing the routing loops, namely preventing the layer 3 switch from broadcasting a route at the interface from which the very route is learnt. The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Switch#config terminal Switch(config)#interface Vlan1 Switch(Config-if-Vlan1)#ipv6 rip split-horizon poisoned

ipv6 router rip

Command	**ipv6 router rip**

	no ipv6 router rip Enable RIPng on the interface. The “no ipv6 router rip” command disables RIPng on the interface.
Parameter	-
Default	Not configured
Mode	Interface Configuration Mode.
Usage Guide	The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Switch#config terminal Switch(config)#interface Vlan1 Switch(Config-if-Vlan1)#ipv6 router rip

neighbor

Command	**neighbor <ipv6-address> {<ifname> | vlan <vlan-id>}** **no neighbor <ipv6-address> {<ifname> | vlan <vlan-id>}** Specify the destination address for fixed sending. The “**no neighbor <ipv6-address> <ifname> vlan <vlan-id>**” cancels the specified address defined and restores all trusted gateways.
Parameter	**<ipv6-address>** is the IPv6 Link-local address specified for sending and shown in colon hex notation without the prefix length. **<ifname>** is the name of interface.
Default	Not sending to any fixed destination address.
Mode	Router mode
Usage Guide	When used associating passive-interface command it would be able to send routing messages to specified neighbor only.
Example	Switch#config terminal Switch(config)#router ipv6 rip Switch(config-router)#neighbor FE80:506::2 Vlan1

offset-list

Command	**offset-list <access-list-number |access-list-name> {in|out }<number >[<ifname>| vlan**

	<vlan-id>] **no offset-list <access-list-number |access-list-name> {in|out }<number >[<ifname>| vlan <vlan-id>]** Add an offset value on the routing metric value learnt by RIPng. The "**no offset-list <access-list-number|access-list-name> {in|out} <number >[<ifname>|vlan <vlan-id>]**" command disables this function.
Parameter	**< access-list-number |access-list-name>** is the access-list or name to be applied. **<number >** is the additional offset value, ranging between 0-16; **<ifname>** is the name of specific interface.
Default	The default offset value is the metric value of the interface defined by the system.
Mode	Router mode。
Usage Guide	-
Example	Switch#config terminal Switch(config)#router ipv6 rip Switch(config-router)#offset-list 1 in 5 Vlan1

passive-interface

Command	**passive-interface[<ifname>| vlan <vlan-id>]** **no passive-interface[<ifname>| vlan <vlan-id>]** Set the RIPng layers 3 switches to block RIPng broadcast on the specified interfaces, and only send the RIPng data packet to the layer 3 switch which is configured with neighbor
Parameter	**<ifname>** is the specific interface name.
Default	Not configured
Mode	Router mode。
Usage Guide	-
Example	Switch#config terminal Switch(config)#router ipv6 rip Switch(config-router)#passive-interface Vlan1

redistribute

Command	**redistribute {kernel | connected | static | ospf | isis | bgp} [metric<value>] [route-map<word>]**

	no redistribute {kernel | connected | static | ospf | isis | bgp} [metric<value>] [route-map<word>] Introduce the routes learnt from other routing protocols into RIPng.
Parameter	**kernel** introduce from kernel routes **connected** introduce from direct routes **static** introduce from static routes **ospf** introduce from IPv6 OSPF routes **isis** introduce from IPv6 ISIS routes **bgp** introduce from IPv6 BGP routes **<value>** is the metric value assigned to the introduced route, ranging between 0-16 **<word>** is the probe poining to the route map for introducing routes
Default	-
Mode	Router mode。
Usage Guide	-
Example	Switch#config terminal Switch(config)#router ipv6 rip Switch(config-router)#redistribute kernel route-map ipi

redistribute ospf

Command	**redistribute ospf [<process-tag>] [metric<value>] [route-map<word>]** **no redistribute ospf [<process-tag>]** To redistribute routing information from external OSPFv3 processes to RIPng process. The no form of this command will remove the introduced OSPFv3 routing entries.
Parameter	**process-tag** is the string tag for OSPFv3 process with maximum length limited within 15 characters. If not specified, the default process will be used. **metric <value>** is the metric for the introduced routing entries, limited between 0 and 16. **route-map <word>** is the pointer to the introduced routing map.
Default	Not redistributed by default.
Mode	RIPng Configuration Mode.
Usage Guide	-
Example	To redistribute OSPFv3 ABC routing ro RIPng. Switch(config)#router ipv6 rip Switch(config-router)#redistribute ospf abc

route

Command	**route <ipv6-address>**

	no route <ipv6-address> This command configures a static RIPng route. The "**no route <ipv6-address>**" command deletes this route.
Parameter	**<ipv6-address>** Specifies this destination IPv6 address prefix and its length show in colon hex notation.
Default	-
Mode	Router mode。
Usage Guide	The command adds a static RIPng route, and is mainly used for debugging. Routes configured by this command will not appear in kernel route table but in the RIPng route database, however it could be located by using the show ipv6 rip command.
Example	Switch#config terminal Switch(config)#router ipv6 rip Switch(config-router)#route 3ffe:1234:5678::1/64

router ipv6 rip

Command	**router ipv6 rip** **no router ipv6 rip** Enable RIPng routing process and entering RIPng mode; the "**no router ipv6 rip**" of this command disables the RIPng routing protocol.
Parameter	
Default	RIPng routing not running.
Mode	Global mode
Usage Guide	This command is for enabling the RIPng routing protocol, this command should be enabled before performing other global configuration of the RIPng protocol.
Example	Enable the RIPng protocol mode. Switch(config)#router ipv6 rip

show debugging ipv6 rip

Command	**show debugging ipv6 rip**

	Show RIPng debugging status for following debugging options: nsm debugging, RIPng event debugging, RIPng packet debugging and RIPng nsm debugging.
Parameter	
Default	-
Mode	Admin mode
Usage Guide	-
Example	Switch#show debugging ipv6 rip RIPng debugging status: RIPng event debugging is on RIPng packet send detail debugging is on RIPng NSM debugging is on

show ipv6 rip interface

Command	**show ipv6 rip interface**
	Make sure the interface and line protocols is up.
Parameter	
Default	-
Mode	Admin mode
Usage Guide	-
Example	Switch(config)#show ipv6 rip interface Loopback is up, line protocol is up RIPng is not enabled on this interface Vlan1 is up, line protocol is up Routing Protocol: RIPng Passive interface: Disabled Split horizon: Enabled with Poisoned Reversed IPv6 interface address: 3000:1:1::1/64 fe80::203:fff:fe0c:cda/64

Displayed information	Explanations
Vlan1 is up, line protocol is up	Interface is Up
Routing Protocol: RIP	The routing protocol running on the interface is RIPng
Passive interface: Disabled	Passive-interface disabled
Split horizon: Enabled with Poisoned Reversed	The split horizon is enabled with poisoned reversed on the interface.
IP interface address: 3000:1:1::1/64 fe80::203:fff:fe01:429e/64	IPv6 address of the interface

show ipv6 rip redistribute

Command	**show ipv6 rip redistribute** Show the configuration information of redistributed other out routing to RIPng.
Parameter	-
Default	Not shown by default.
Mode	Admin mode
Usage Guide	-
Example	Switch#show ipv6 rip redistribute

show ipv6 protocols rip

Command	**show ipv6 protocols rip** Show the RIPng process parameters and statistic messages.
Parameter	-
Default	-
Mode	Admin mode
Usage Guide	-
Example	Switch(config)#show ipv6 protocols rip Routing Protocol is "ripng" Sending updates every 30 seconds with +/-50%, next due in 1 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 Ethernet1/4 filtered by dclist Default redistribute metric is 1 Redistributing: static Interface Vlan10 Vlan2 Routing for Networks:

Displayed information	Explanations
Sending updates every 30 seconds with +/-50%, next due in 1 seconds	Sending updates every 30 seconds
Timeout after 180 seconds, garbage collect after 120 seconds	The route timeout time is 180 seconds, 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	Redistricting the static route into the RIP routes
Interface Vlan10 Vlan2	The interfaces running RIP is Vlan 10 and Vlan 2

show ipv6 rip

Command

show ipv6 rip

Show RIPng Routing.

Parameter

-

Default

-

Mode

Admin mode

Usage Guide

-

Example

```
Switch#show ipv6 rip
Codes: R - RIP, K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-IS,
  B - BGP, a - aggregate, s - suppressed
  Network              Next Hop                  If        Met Tag        Time
R 2000:1:1::/64        ::                        Vlan2       1              0
R 2001:1:1::/64        fe80::203:fff:fe01:257c Vlan2         2       0 02:40
R 3000:1:1::/64        ::                        Vlan10      1            0
R 3010:1:1::/64        ::                        --            1            0
```

Amongst R stands for RIP route, namely a RIP route with the destination network address 2001:1:1::/64, next-hop address at fe80::203:fff:fe01:257c. It is learnt from the Ethernet port VLAN2 with a metric value of 2, and still has 2 minutes 40 seconds before time out.

show ipv6 rip database

Command

show ipv6 rip database

Show messages related to RIPng database.

Parameter	-
Default	-
Mode	Admin mode
Usage Guide	-
Example	Switch#show ipv6 rip database

show ipv6 rip aggregate

Command	**show ipv6 rip aggregate** To display the information of IPv6 aggregation route.
Parameter	-
Default	-
Mode	Admin mode
Usage Guide	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.
Example	To display the information of IPv6 aggregation route. Switch(config-router)#show ipv6 rip agg Aggregate information of ripng

Network	Aggregated Ifname	Metric	Count	Suppress
2001::/16	Vlan1	1	2	0
2001:1::/32	----	1	2	0
2001:1:2::/60	Vlan1	1	1	1
	----	1	1	1

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 RIPng 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 seconds, the garbage collecting time to 60 seconds. Switch(config-router)#timers basic 20 80 60

5. Commands for OSPFv3

area default-cost

Command	**area <id> default-cost <cost>**

	no area <id> default-cost 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.
Parameter	**<id>**is the area number which could be shown as digits 0～4294967295, or as an IP address; **<cost>**ranges between <0-16777215>
Default	Default OSPFv3 cost is 1.
Mode	OSPFv3 Configuration Mode.
Usage Guide	The command is only adaptive to the ABR router connected to the stub area.
Example	Set the default-cost of area 1 to 10 Switch(config)#router ipv6 ospf Switch(config-router)#area 1 default-cost 10

area range

Command	**area <id> range <ipv6address> [advertise| not-advertise]** **no area <id> range < ipv6address>** Aggregate OSPF route on the area border. The "**no area <id> range <address>**" cancels this function.
Parameter	**<id>**is the area number which could be digits ranging between 0～4294967295, and also as an IP address. **<ipv6address>=<X:X::X:X/M>**,Specifies the area ipv6 network prefix and its length; **advertise**: Advertise this area **not-advertise**: Not advertise this area If both are not set, this area is defaulted for advertising
Default	Function not configured.
Mode	OSPFv3 Configuration 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 ipv6 ospf Switch (config-router)# area 1 range 2000::/3

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 IPv4 address. **no-summary**: The area border routes stop sending link summary announcement to the stub area
Default	Not defined
Mode	OSPFv3 Configuration 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 ipv6 ospf Switch (config-router)# area 1 stub

area virtual-link

Command	**area <id> virtual-link A.B.C.D [instance-id <instance-id> | INTERVAL <value>]** **no area <id> virtual-link A.B.C.D [instance-id <instance-id> | |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 [instance-id <instance-id> | INTERVAL]**" command removes this virtual-link.
Parameter	**<id>**is the area number which could be digits ranging between 0～4294967295, and also as an IP address. **<instance-id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **INTERVAL= [dead-interval|hello-interval|retransmit-interval|transmit-delay]** **<value>:**The delay or interval seconds, ranging between 1~65535 **<dead-interval>：** A neighbor is considered offline for certain dead interval without its group messages which the default is 40 seconds. **<hello-interval>：** The time interval before the router sends a hello group message, default is 10 seconds **<retransmit-interval>：** The time interval before a router retransmitting a group message, default is 5 seconds **<transmit-delay>：** The time delay before a router sending a group messages, 1 second by default
Default	No default configuration
Mode	OSPFv3 Configuration 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 areas routers connected with the public non-backbone area. The protocol treat routers connected by virtual links as a point-to-point network.
Example	Switch#config terminal Switch(config) #router ipv6 ospf Switch(config-router) #area 1 virtual-link 10.10.11.50 hello 5 dead 20 Switch(config-router) #area 1 virtual-link 10.10.11.50 instance-id 1

abr-type

Command	**abr-type {cisco|ibm| standard}** **no abr-type [cisco|ibm| standard]** Configure an OSPF ABR type with this command. The "**no abr-type [cisco|ibm| standard]**" command restores the default.
Parameter	**cisco**o, realize by cisco ABR; **ibm**, realize by ibm ABR; **shortcut**t, specify a shortcut-ABR; **standard**, realize with standard（RFC2328）ABR.
Default	Cisco configured by default
Mode	OSPFv3 Configuration 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 ipv6 ospf Switch(config-router)#abr-type standard

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 1~16777214.
Default	Built-in, metric value auto translating.
Mode	OSPFv3 Configuration 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 ipv6 ospf Switch(config-router)#default-metric 100

debug ipv6 ospf events

Command	**[no]debug ipv6 ospf events [abr|asbr|os|router|vlink]** Open debugging switches showing OSPF events. The "**no debug ipv6 ospf events [abr|asbr|os|router|vlink]**" command closes this debugging switch.
Parameter	
Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 ospf events 1970/01/01 01:10:35 IMI: ROUTER[Process:(null)]: GC timer expire

debug ipv6 ospf ifsm

Command	**[no]debug ipv6 ospf ifsm [status|events|timers]** Open debugging switches showing the OSPF interface states; the "**[no] debug ospf ifsm [status|events|timers]**" command closes this debugging switches.
Parameter	

Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 ospf ifsm 1970/01/01 01:11:44 IMI: IFSM[Vlan1]: Hello timer expire 1970/01/01 01:11:44 IMI: IFSM[Vlan2]: Hello timer expire

debug ipv6 ospf lsa

Command	**[no]debug ipv6 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	Closed.
Default	-
Mode	Admin mode
Usage Guide	-
Example	-

debug ipv6 ospf nfsm

Command	**[no]debug ipv6 ospf nfsm [status|events|timers]** Open debugging switches showing showing OSPF neighbor state machine; the "**no debug ipv6 ospf nfsm [status|events|timers]**" command closes this debugging switch.
Parameter	Closed.

Default	-
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 ospf nfsm 1970/01/01 01:14:07 IMI: NFSM[192.168.2.3-000007d4]: LS update timer expire 1970/01/01 01:14:07 IMI: NFSM[192.168.2.1-000007d3]: LS update timer expire 1970/01/01 01:14:08 IMI: NFSM[192.168.2.1-000007d3]: Full (HelloReceived) 1970/01/01 01:14:08 IMI: NFSM[192.168.2.1-000007d3]: nfsm_ignore called 1970/01/01 01:14:08 IMI: NFSM[192.168.2.1-000007d3]: Full (2-WayReceived)

debug ipv6 ospf nsm

Command	**[no]debug ipv6 ospf nsm [interface|redistribute]** Open debugging switches showing showing OSPF NSM, the "**no debug ipv6 ospf nsm [interface|redistribute]**" command closes this debugging switch.
Parameter	
Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	

debug ipv6 ospf packet

Command	**[no]debug ipv6 ospf packet [dd|detail|hello|ls-ack|ls-request|ls-update|recv|send]** Open debugging switches showing OSPF packet messages; the "**no debug ipv6 ospf packet [dd | detail | hello | ls-ack | ls-request | ls-update | recv | send]**" command closes this debugging switch.
Parameter	

Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	

debug ipv6 ospf redistribute message send

Command	**debug ipv6 ospf redistribute message send** **no debug ipv6 ospf redistribute message send** To enable/disable debugging of sending command from IPv6 OSPF process redistributed to other IPv6 OSPF process routing.
Parameter	-
Default	Disabled.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 ospf redistribute message send

debug ipv6 ospf redistribute route receive

Command	**debug ipv6 ospf redistribute route receive** **no debug ipv6 ospf redistribute route receive** To enable/disable debugging of received routing message from NSM for IPv6 OSPF process.
Parameter	-
Default	Disabled.

Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 ospf redistribute route receive

debug ipv6 ospf route

Command	**[no]debug ipv6 ospf route [ase|ia|install|spf]** Open debugging switches showing OSPF related routes; the "**[no]debug ipv6 ospf route [ase|ia|install|spf]**" command closes this debugging switch.
Parameter	-
Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	

ipv6 ospf cost

Command	**ipv6 ospf cost <cost> [instance-id <id>]** **no ipv6 ospf cost [instance-id <id>]** Specify the cost required in running OSPF protocol on the interface; the "**no ipv6 ospf cost [instance-id <id>]**" command restores the default value.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<cost >**is the cost of OSPF protocol ranging between 1~65535.

Default	Default OSPF cost on the interface is 10.
Mode	Interface Configuration Mode.
Usage Guide	The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf cost 3

ipv6 ospf dead-interval

Command	**ipv6 ospf dead-interval <time > [instance-id <id>]** **no ipv6 ospf dead-interval [instance-id <id>]** Specify the dead interval for neighboring layer 3 switch; the "**no ipv6 ospf dead-interval [instance-id <id>]**" command restores the default value.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<time >**is the length of the adjacent layer 3 switch, in seconds, ranging between 1～65535
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 dead interval 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. The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf dead-interval 80

ipv6 ospf display route single-line

Command	**[no] ipv6 ospf display route single-line** **show ipv6 ospf route** change the display results of show ipv6 ospf route command. The "**no ipv6 ospf display route single-line**" restores to default display mode.
Parameter	-
Default	Not configured

Mode	Global Mode
Usage Guide	The show ipv6 ospf route command displays the same route in several lines. This command will strict that one route will be displayed in one line.
Example	Switch#config terminal Switch(config)#ipv6 ospf display route single-line

ipv6 ospf hello-interval

Command	**ipv6 ospf hello-interval <time> [instance-id <id>]** **no ipv6 ospf hello-interval [instance-id <id>]** Specify the hello-interval on the interface; the "**no ipv6 ospf hello-interval [instance-id <id>]**" restores the default value.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<time>**is the length of the adjacent layer 3 switch, in seconds, ranging between 1～65535
Default	Default HELLO packet sending interval 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. The ensure the normal operation of OSPF protocol the hello-interval parameter between the layer 3 switches adjacent to the interface must be in accordance. The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf hello-interval 20

ipv6 ospf priority

Command	**ipv6 ospf priority <priority> [instance-id <id>]** **no ipv6 ospf priority[instance-id <id>]** Configure the priority when electing "**Defined layer 3 switch**" at the interface. The "**no ipv6 ospf [<ip-address>] priority**" command restores the default value.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<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". The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Configure the priority of DR electing. Configure the interface vlan 1 to no election right, namely set the priority to 0. Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf priority 0

ipv6 ospf retransmit-interval

Command	**ipv6 ospf retransmit-interval <time> [instance-id <id>]** **no ipv6 ospf retransmit-interval [instance-id <id>]** Specify the retransmit interval of link state announcements between the interface and adjacent layer 3 switches. The "**no ipv6 ospf retransmit-interval [instance-id <id>]**" command restores the default value.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<time>**is the retransmit interval of link state announcements between the interface and adjacent layer 3 switches, shown in seconds and ranging between 1～65535.
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. The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Configure the LSA retransmit interval of interface vlan 1 to 10 seconds. Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf retransmit-interval 10

ipv6 ospf transmit-delay

Command	**ipv6 ospf transmit-delay <time> [instance-id <id>]** **no ipv6 ospf transmit-delay [instance-id <id>]** Configure the LSA sending delay time on the interface. The "**no ipv6 ospf transmit-delay [instance-id <id>]**" command restores to the default.
Parameter	**<id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<time>**is the delay time of sending LSA on the interface, which is shown in seconds and ranged between 1～65535.
Default	The default delay time of send LSA on the interface is 1 second by default.
Mode	Interface Configuration Mode.
Usage Guide	The LSA ages by time in the layer 3 switches but not in the transmission process. So by increasing the transmit-delay before sending LSA so that it will be sent out. The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.
Example	Set the interface vlan 1 LSA sending delay to 3 seconds. Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 ospf transmit-delay 3

ipv6 router ospf

Command	**[no] ipv6 router ospf {area <area-id> [instance-id <instance-id>|tag <tag> [instance-id <instance-id>]]| tag <tag> aea <area-id> [instance-id <instance-id>]}** Enable ospf route on the interface; the "**no ipv6 router ospf {area <area-id>[instance-id <instance-id>]| tag <tag>[instance-id <instance-id>]}| tag <tag> area <area-id> [instance-id <instance-id>]}**" command cancels this configuration.
Parameter	**<area-id>**is an area ID which could be shown in digits ranging between 0～4294967295, or an IPv4 address **<instance-id>** is the interface instance ID ranging between 0~255 and defaulted at 0 **<tag>** ospfv3 process identifier
Default	Not configured
Mode	Interface Configuration Mode.
Usage Guide	To enable this command on the interface, the area id must be configured. The instance ID and instance tag are optional. The ospfv3 process allows one routing instance for each instance ID. The route can be enabled on a interface with a instance ID. If the instance IDs are different, several OSPF process can be run on one interface. However different OSPF process should not use the same instance ID The command can configure on IPv6 tunnel interface, but it is successful configuration to only configure tunnel carefully.

Example	Switch#config terminal Switch(config)#interface vlan 1 Switch(Config-if-Vlan1)#ipv6 router ospf area 1 tag IPI instance-id 1

max-concurrent-dd

Command	**max-concurrent-dd <value>** **no max-concurrent-dd** Configure with this command the current dd max concurrent number in the OSPF processing. The "**no max-concurrent-dd**" command restores the default.
Parameter	**<value>**ranges between <1-65535>, the capacity of concurrent dd data packet processing.
Default	No default configuration. No dd concurrent limit.
Mode	OSPFv3 Configuration Mode.
Usage Guide	Specify the current dd max concurrent number in the OSPF processing.
Example	Set the max concurrent dd to 20. Switch#config terminal Switch(config)#router ipv6 ospf Switch(config-router)#max-concurrent-dd 20

passive-interface

Command	**[no] passive-interface<ifname>|vlan <vlan-id>** Configure that the hello group not sent on specific interfaces. The "**no passive-interface{<ifname>|vlan <vlan-id>}**" command cancels this function.
Parameter	**<ifname>**is the specific name of interface.
Default	Not configured
Mode	OSPFv3 Configuration Mode.

Usage Guide	-
Example	Switch#config terminal Switch(config)#router ipv6 ospf Switch(config-router)#passive-interface vlan1

redistribute

Command	**[no]redistribute {kernel |connected| static| rip| isis| bgp} [metric<value>] [metric-type {1|2}][route-map<word>]** Introduce route learnt from other routing protocols into OSPFv3.
Parameter	**kernel** Introduct 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>** targets to the probe of the route map for introducing route
Default	-
Mode	OSPFv3 Configuration Mode.
Usage Guide	Learn and introduce other routing protocol into OSPFv3 area to generate AS-external_LSAs.
Example	Switch#config terminal Switch(config)#router ipv6 ospf Switch(config-router)#redistribute bgp metric 12 metric-type 1

redistribute ospf

Command	**redistribute ospf [<process-tag>] [metric<value>] [metric-type{1|2}] [route-map<word>]** **no redistribute ospf [<process-tag>] [metric<value>] [metric-type{1|2}] [route-map<word>]** To redistribute routing information form process-tag to this command. The no form of command cancels the redistribution of process-tag routing to this process. When input the optional parameters of metric, metric type and routermap, then restores default configuration.
Parameter	**process-tag** is the process ID of IPv6 OSPF process, NULL by default. **metric <value>**is the metric for redistributed routing, range between 0 to 16777214.

	metric-type {1|2}is the metric type for redistributed routing, only can be 1 or 2, and 2 by default. **route-map <word>** is the pointer to the introduced routing map.
Default	Not redistributed any OSPFfv3 routing by default.
Mode	Router IPv6 OSPF Configuration Mode.
Usage Guide	When process-id is not input, that means OSPFv3 routing will be redistributed by default (Process-tag is NULL). The no form of command input the optionalparameters of metric, metric-type and routermap, then restores default configuration. When not input any optional parameters that mean to delete the router of redistributed process.
Example	Switch(config)#router ipv6 ospf Switch(config-router)#redistribute ospf

router-id

Command	**router-id<router-id>** **no router-id** Configure router ID for ospfv3 process. The "**no router-id**"restores ID to 0.0.0.0.
Parameter	**<router-id>** is the router ID shown in IPv4 format.
Default	0.0.0.0 by default.
Mode	OSPFv3 Configuration Mode.
Usage Guide	If the router-id is 0.0.0.0, the ospfv3 process can not be normally enabled. It is required to configure a router-id for ospfv3.
Example	Switch(config)#router ipv6 ospf Switch(config-router)#redistribute ospf

router ipv6 ospf

Command	**[no] router ipv6 ospf [<tag>]** This command initializes the ospfv3 routing process and enters ospfv3 mode for configuring the ospfv3 routing process. The "**no router ipv6 ospf [<tag>]**" command stops relevant process.
Parameter	**<tag>** ospfv3 is the process mark which could be random strings made up of characters and digits
Default	-

Mode	Global Mode
Usage Guide	To let he ospfv3 routing process work properly, this command must be configured and ospfv3 must at least be enabled on one interface. When the tag configured by the ipv6 router ospf area command under interface mode matches with the tag of ospf process, the ospfv3 process is enabled on this interface.
Example	Switch#config terminal Switch(config)#router ipv6 ospf IPI

show ipv6 ospf

Command	**show ipv6 ospf [<tag>]** Display OSPF global and area messages.
Parameter	**<tag>**is the process tag which is a character string.
Default	Not displayed.
Mode	All modes
Usage Guide	-
Example	Switch#show ipv6 ospf Routing Process "OSPFv3 (*null*)" with ID 192.168.2.2 SPF schedule delay 5 secs, Hold time between SPFs 10 secs Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs Number of external LSA 0. Checksum Sum 0x0000 Number of AS-Scoped Unknown LSA 0 Number of LSA originated 6 Number of LSA received 14 Number of areas in this router is 1 Area BACKBONE(0) Number of interfaces in this area is 2 SPF algorithm executed 6 times Number of LSA 8. Checksum Sum 0x43D52 Number of Unknown LSA 0

show ipv6 ospf database

Command	**show ipv6 ospf [<tag>] database[router [adv-router <advertiser_router>]|network [adv-router <advertiser_router>]| intra-prefix [adv-router <advertiser_router>]| link [adv-router <advertiser_router>] | external [adv-router <advertiser_router>]| inter-prefix [adv-router <advertiser_router>]| inter-router [adv-router <advertiser_router>]]**

	Display the OSPF link state data base message.
Parameter	**<tag>**is the process tag which is a character string. **<advertiser_router>**is the ID of Advertising router, shown in IPv4 address format
Default	Not displayed
Mode	All modes
Usage Guide	According to the output messages of this command, we can view the OSPF link state database messages.
Example	Use show ipv6 ospf database command will be able to show LSA messages of the OSPF routing protocol For Example, the displayed messages are:

OSPFv3 Router with ID (192.168.2.2) (Process *null*)

Link-LSA (Interface Vlan1)

Link State ID	ADV Router	Age	Seq#	CkSum	Prefix
0.0.7.211	192.168.2.2	1409	0x80000001	0x6dda	1
0.0.7.212	192.168.2.3	1357	0x80000001	0x248e	1

Link-LSA (Interface Vlan2)

Link State ID	ADV Router	Age	Seq#	CkSum	Prefix
0.0.7.211	192.168.2.1	1450	0x80000001	0xa565	1
0.0.7.212	192.168.2.2	1399	0x80000001	0x4305	1

Router-LSA (Area 0.0.0.0)

Link State ID	ADV Router	Age	Seq#	CkSum	Link
0.0.0.0	192.168.2.1	1390	0x80000006	0x9fe2	1
0.0.0.0	192.168.2.2	1354	0x80000007	0x4af5	2
0.0.0.0	192.168.2.3	1308	0x80000004	0xbbc4	1

Network-LSA (Area 0.0.0.0)

Link State ID	ADV Router	Age	Seq#	CkSum
0.0.7.211	192.168.2.1	1390	0x80000001	0x897e
0.0.7.211	192.168.2.2	1354	0x80000001	0x9b69

Intra-Area-Prefix-LSA (Area 0.0.0.0)

Link State ID	ADV Router	Age	Seq#	CkSum	Prefix	Reference
0.0.0.1	192.168.2.1	1389	0x80000005	0x7e2e	1	Router-LSA
0.0.0.2	192.168.2.1	1389	0x80000001	0x22cb	1	Network-LSA
0.0.0.1	192.168.2.3	1306	0x80000002	0xd0d7	1	Router-LSA

Displayed information's	Explanations
Link-LSA (Interface Vlan1)	Link LSA messages of interface Vlan1
Router-LSA (Area 0.0.0.0)	Router LSA messages in Area 0
Network-LSA (Area 0.0.0.0)	Network LSA in Area 0
Intra-Area-Prefix-LSA (Area 0.0.0.0)	Intra-domain Prefix LSA in Area 0

show ipv6 ospf interface

Command	**show ipv6 ospf interface <ifname>|vlan <vlan-id>** Display the OSPF interface messages.
Parameter	**< ifname >**is the name of the interface.
Default	Not displayed
Mode	All modes
Usage Guide	-

Example

```
Switch#show ipv6 ospf interface
Loopback is up, line protocol is up
  OSPFv3 not enabled on this interface
Vlan1 is up, line protocol is up
  Interface ID 2003
IPv6 Prefixes
  fe80::203:fff:fe01:257c/64 (Link-Local Address)
  2001:1:1::1/64
  OSPFv3 Process (*null*), Area 0.0.0.0, Instance ID 0
  Router ID 192.168.2.2, Network Type BROADCAST, Cost: 10
  Transmit Delay is 1 sec, State DR, Priority 1
  Designated Router (ID) 192.168.2.2
  Interface Address fe80::203:fff:fe01:257c
  Backup Designated Router (ID) 192.168.2.3
  Interface Address fe80::203:fff:fe01:d28
  Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:10
  Neighbor Count is 1, Adjacent neighbor count is 1
Vlan2 is up, line protocol is up
  Interface ID 2004
  IPv6 Prefixes
  fe80::203:fff:fe01:257c/64 (Link-Local Address)
  2000:1:1::1/64
  OSPFv3 Process (*null*), Area 0.0.0.0, Instance ID 0
  Router ID 192.168.2.2, Network Type BROADCAST, Cost: 10
  Transmit Delay is 1 sec, State Backup, Priority 1
  Designated Router (ID) 192.168.2.1
  Interface Address fe80::203:fff:fe01:429e
  Backup Designated Router (ID) 192.168.2.2
  Interface Address fe80::203:fff:fe01:257c
  Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:10
  Neighbor Count is 1, Adjacent neighbor count is 1
```

Displayed information	Explanations
Vlan1 is up, line protocol is up	Let the interface up both logically and

	physically
IPv6 Prefixes fe80::203:fff:fe01:257c/64 (Link-Local Address) 2001:1:1::1/64	IPv6 address of the interface and the length of the prefix
OSPFv3 Process (*null*)	Ospfv3 process the interface belongs
Area 0.0.0.1	Area the interface belongs
Instance ID 0	Instance ID is 0
Router ID 192.168.2.2, Network Type BROADCAST, Cost: 10	Process ID; Router ID; Network Type; Cost
Transmit Delay is 1 sec, State DR, Priority 1	LAS transmission delay on the interface; state; electing the priority of the layer 3 switch.
Designated Router (ID) 192.168.2.2 Interface Address fe80::203:fff:fe01:257c	Specifying layer 3 switch
Backup Designated Router (ID) 192.168.2.3 Interface Address fe80::203:fff:fe01:d28	Back up designated layer 3 switch
Timer interval configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:10	OSPF protocol timer; including hello packet, poll interval packets, router dead, router retransmission.
Neighbor Count is 1, Adjacent neighbor count is 1	Numbers of the adjacent layer 3 switch; number of the layer 3 switches established with neighbor relation

show ipv6 ospf neighbor

Command

show ipv6 ospf [<tag>] neighbor [<neighbor_id> | <ifname> detail | detail]

Show OSPF adjacent point messages.

Parameter

<tag>is process tag, which is a character string
<neighbor_id> is the neighbor ID shown in IPv4 address format
detail: Show neighbor details
<ifname> name of the interface

Default

Not displayed

Mode

All modes

Usage Guide

OSPF neighbor state can be checked by viewing the output of this command.

Example

```
Switch#show ipv6 ospf neighbor
OSPFv3 Process (*null*)
Neighbor ID     Pri     State           Dead Time       Interface       Instance ID
192.168.2.3     1       Full/Backup     00:00:29        Vlan1           0
192.168.2.1     1       Full/DR         00:00:38        Vlan2           0       Vlan1
```

Displayed information	Explanations
Neighbor ID	Neighbor ID
Instance ID	Instance ID
Address	IP address of neighboring layer 3 switch
Interface	Interface the neighbor belongs
state	Neighbor relationship state
pri	Priority

show ipv6 ospf route

Command

show ipv6 ospf [<tag>] route

Show the OSPF route table messages.

Parameter

<tag> is the processes tag, which is a character string.

Default

Not displayed

Mode

All modes

Usage Guide

-

Example

```
Switch#show ipv6 ospf route
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area
       E1 - OSPF external type 1, E2 - OSPF external type 2
  Destination                                   Metric
  Next-hop
O 2000:1:1::/64                                 10
  directly connected, Vlan2
O 2001:1:1::/64                                 10
  directly connected, Vlan1
O 3000:1:1::/64                                 20
  via fe80::203:fff:fe01:429e, Vlan2
O 3003:1:1::/64                                 20
  via fe80::203:fff:fe01:d28, Vlan1
```

show ipv6 ospf redistribute

Command	**show ipv6 ospf [<process-tag>] redistribute** To display the routing message redistributed from external process of OSPF.
Parameter	IPv6 OSPF is the tag ID, to display all routing messages redistributed from external process of IPv6 OSPF if there is no parameter.
Default	None.
Mode	Admin Mode and Configuration Mode.
Usage Guide	None.
Example	Switch#show ipv6 ospf redistribute ospf process abc redistribute information: ospf process def bgp ospf process def redistribute information: ospf process abc Switch#show ipv6 ospf abc redistribute ospf process abc redistribute information: ospf process def bgp

show ipv6 ospf topology

Command	**show ipv6 ospf [<tag>] topology [area <area-id>]** Show messages of OSPF topology.
Parameter	**<tag>** is the processes tag, which is a character string. **<area-id>** is an area ID which could be shown in digits ranging between 0～4294967295, or an IPv4 address.
Default	Not displayed
Mode	All modes
Usage Guide	None.

Example

Switch#show ipv6 ospf topology
OSPFv3 Process (*null*)
OSPFv3 paths to Area (0.0.0.0) routers

Router ID	Bits Metric	Next-Hop	Interface
192.168.2.1	10	192.168.2.1	Vlan2
192.168.2.2	--		
192.168.2.3	10	192.168.2.3	Vlan1

show ipv6 ospf virtual-links

Command

show ipv6 ospf [<tag>] virtual-links

Show OSPF virtual link messages.

Parameter

<tag> is the processes tag, which is a character string.

Default

Not displayed

Mode

All modes

Usage Guide

None.

Example

Switch#show ipv6 ospf virtual-links
Virtual Link VLINK1 to router 5.6.7.8 is up
Transit area 0.0.0.1 via interface Vlan1, instance ID 0
Local address 3ffe:1234:1::1/128
Remote address 3ffe:5678:3::1/128
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:01
Adjacency state Up

show ipv6 route process-detail

Command

show ipv6 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

-

Mode

Admin mode

Usage Guide

None.

Example

Switch#show ipv6 route database process-detail

IPv6 Routing Table
Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF,
I - IS-IS, B - BGP
> - selected route, * - FIB route, p - stale info
Timers: Uptime
C*> ::1/128 via ::, Loopback, 00:29:53
O 2001::/64 [110/10] via ::, Vlan1, 00:01:07 ,process aaa
C*> 2001::/64 via ::, Vlan1, 00:02:54
O*> 2006::/64 [110/10] via ::, Vlan1, 00:01:07, process aaa
O*> 2008::/64 [110/20] via fe80::203:fff:fe01:2542, Vlan1, 00:00:54, process bbb

timers spf

Command	**timers spf <spf-delay> <spf-holdtime>** **no timers spf** Adjust route calculation timer value. The "no timers spf" restores the relevant value to default.
Parameter	**<spf-delay>** 5 seconds by default **<spf-holdtime>** 10 seconds by default
Default	-
Mode	OSPFv3 Configuration Mode.
Usage Guide	In this command the delay time between receiving topology change and SPF calculation, and further configured the hold time between two discontinuous SPF calculations.
Example	Switch#config terminal Switch(config)#router ipv6 ospf Switch(config-router)#timers spf 5 10

6. Commands for MBGP4+

debug ipv6 bgp redistribute message send

Command	**debug ipv6 bgp redistribute message send** **no debug ipv6 bgp redistribute message send** To enable debugging switch of sending messages for redistribution of routing information from external process such as OSPFv3 and others to MBGP4+. The no command will disable the debugging switch.
Parameter	-
Default	Closed.

Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 bgp redistribute message send

debug ipv6 bgp redistribute route receive

Command	**debug ipv6 bgp redistribute route receive** **no debug ipv6 bgp redistribute route receive** To enable debugging switch of received messages from NSM for MBGP4+. The no form of this command will disable debugging switch of received messages from NSM for MBGP4+.
Parameter	-
Default	Closed.
Mode	Admin mode
Usage Guide	-
Example	Switch#debug ipv6 bgp redistribute route receive Switch#no debug ipv6 bgp redistribute route receive

redistribute ospf (MBGP4+)

Command	**redistribute ospf [<process-tag>] [route-map<word>]** **no redistribute ospf [<process-tag>]** To redistribute routing information form OSPFv3 to MBGP4+. The no form of this command will remove the configuration.
Parameter	**process-tag** is the process character string of the OSPFv3, the length is less than 15. If no process id is specified, the default process will be used. **route-map <word>** is the pointer to the introduced routing map.
Default	Not redistributed by default.
Mode	BGP IPv6 Configuration Mode.

Usage Guide	-
Example	To redistribute routing information from OSPFv3 process with the tag as ABC to MBGP4+ (as number as 1). Switch(config)#router bgp 1 Switch(config-router)#address-family ipv6 unicast Switch (config-router-af)#redistribute ospf abc

show ipv6 bgp redistribute

Command	**show ipv6 bgp redistribute** Show the configuration information of redistribution other out routing to MBGP4+.
Parameter	-
Default	Not shown by default.
Mode	Admin mode
Usage Guide	-
Example	Switch#show ipv6 bgp redistribute

7. Commands for VRRP Configuration

advertisement-interval

Command	**advertisement-interval <*adver_interval*>** The VRRP timer time was set.
Parameter	ADVER-INTERVAL Interval for sending VRRP packets. The value ranges from 1 to 10, in seconds.
default	<adver_interval> The default value is 1 second.
Mode	VRRP configuration mode.
Usage Guide	Every once in a while, the Master of a VRRP backup group sends VRRP packets to the routes in the VRRP backup group adver_interval is the interval at which the server (or Layer 3 Ethernet switch) notifies itself that it is working properly.
Example	Set the VRRP timer to 3 seconds. Switch(config-router)# advertisement-interval 3

circuit-failover

Command	**circuit-failover {IFNAME | Vlan <ID>} <value_reduced>** **no circuit-failover** Configure VRRP monitoring interfaces.
Parameter	**< *IFNAME* >** Name of the Layer 3 interface to be monitored. **<*value_reduced*>** The value ranges from 1 to 253.
default	Do not configure.
Mode	VRRP configuration mode.
Usage Guide	When a router or Layer-3 Ethernet switch fails, VRRP can provide backup. In addition, when the status of a network interface is down, the priority of the current router (or Layer 3 Ethernet switch) can be lowered to ensure the smooth implementation of the backup function.
Example	Set the VRRP monitoring interface to vlan 2, and set the priority reduction to 10. Switch(config-router)# circuit-failover vlan 2 10

debug vrrp

Command	**debug vrrp [all | events | packet [recv| send]]** **no debug vrrp [all | events | packet [recv| send]]** Displays the status changes and messages sent and received by the VRRP backup group. In no mode, the debugging is disabled.
Parameter	-
default	The debugging is disabled.
Mode	Privileged user configuration mode.
Usage Guide	-
Example	Switch#debug vrrp 2001/01/01 00:50:28 : IMI: VRRP SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[10.1.1.1] 2001/01/01 00:50:30 : IMI: VRRP SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[10.1.1.1] 2001/01/01 00:50:31 : IMI: VRRP SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[10.1.1.1] 2001/01/01 00:50:32 : IMI: VRRP SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[10.1.1.1] 2001/01/01 00:50:33 : IMI: VRRP SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[10.1.1.1]

disable

Command	**disable** Disable VRRP.
Parameter	-
default	Do not configure.
Mode	VRRP configuration mode.
Usage Guide	VRRP configurations can be modified only after VRRP is disabled on a virtual router.
Example	Disable virtual router 10. Switch(config)#router vrrp 10 Switch(config-router)#disable

enable

Command	**enable** Enable VRRP.
Parameter	-
default	Do not configure.
Mode	VRRP configuration mode.
Usage Guide	To start a virtual router, only the interfaces of the router (or Layer-3 Ethernet switch) enabled by enable are added to the backup group. Before starting a virtual router, you must configure a VRRP virtual IP address and an interface, and the corresponding interface is configured with an IP address.
Example	Start the configuration of virtual router 10. Switch(config)#router vrrp 10 Switch(config-router)#enable

interface

Command	**interface {*IFNAME* | Vlan <*ID*>}** **no interface** Configure VRRP interfaces.
Parameter	***IFNAME*:** Interface name, for example, VLAN1. **Vlan <*ID*>:** ID of a VLAN.
default	Do not configure.
Mode	VRRP configuration mode.
Usage Guide	This command is used to add a Layer-3 interface to an existing backup group. The no form of this command is used to delete the Layer-3 interface of the specified backup group.
Example	Add interface vlan 1 to backup group 10. Switch(config)# router vrrp 10 Switch(config-router)#interface vlan 1

preempt-mode

Command	**preempt-mode {true | false}** The preemption mode of VRRP is configured.
Parameter	-
default	Preemption mode.
Mode	VRRP configuration mode.
Usage Guide	If a high-priority router (or Layer-3 Ethernet switch) is required to actively preempt to become an active router (or Layer-3 Ethernet switch), set the preemption mode.
Example	Set VRRP to non-preemption mode. Switch(config-router)#preempt-mode false

priority

Command	**priority <*value*>** Configure the VRRP priority.
Parameter	<value> indicates the priority. The value ranges from 1 to 254.
default	The backup router (or Layer 3 Ethernet switch) has a priority of 100 across all backup groups.
Mode	VRRP configuration mode.
Usage Guide	Priority determines the status of the router (or Layer 3 Ethernet switch) in the backup group, and the higher the priority, the more likely it is to become the Master. If two or more routers (or Layer-3 Ethernet switches) in a backup group have the same priority values, the router (or Layer-3 Ethernet switch) with the largest VLAN interface IP address becomes the Master. A larger value indicates a higher priority.
Example	Set the VRRP priority to 150. Switch(config-router)#priority 150

router vrrp

Command	**router vrrp <*vrid*>** **no router vrrp <*vrid*>** Creating or deleting a virtual router.
Parameter	< vrid > Indicates the serial number of the virtual router. The value ranges from 1 to 255.
default	Not configure.
Mode	Global configuration mode.
Usage Guide	This command is used to create or delete a virtual router. A virtual router is uniquely identified by its serial number. You can configure a virtual router only after it is created. For stability, a maximum of 192 virtual routers can be configured.
Example	Configure the virtual router numbered 10. Switch(config)#router vrrp 10

show vrrp

Command	**show vrrp [<*vrid*>]** The status and configuration of the VRRP backup group are displayed.
Parameter	< vrid > Indicates the serial number of the virtual router. The value ranges from 1 to 255.
default	-
Mode	Privilege and configuration patterns.
Usage Guide	This command is used to display the configuration and current status of a virtual router. If no virtual router serial number is specified, information about all virtual routers is displayed.
Example	Switch#show vrrp VrId <1> State is Master Virtual IP is 10.1.1.1 (Not IP owner) Interface is Vlan1 Priority not configured, Current priority is 254 Advertisement interval is 1 sec Preempt mode is TRUE Circuit failover interface Vlan1, Priority Delta 1, Status UP VrId <10> State is Initialize Virtual IP is 1.1.1.1 (Not IP owner) Interface is unset Priority is unset

Advertisement interval is unset
Preempt mode is TRUE
Switch#

display information	explain
State	State
Virtual IP	Virtual IP address.
Interface	Interface name.
priority	priority
Advertisement interval	Cycle time of the timer.
Preempt	Preemption mode.
Circuit failover interface	Monitors interface information.

virtual-ip

Command

virtual-ip <*A.B.C.D*><master/backup>
no virtual-ip
Configure the virtual IP address of VRRP.

Parameter

<*A.B.C.D*> The virtual IP address is in dotted decimal notation.
master：Primary gateway
backup：Standby gateway

default

Not configure

Mode

VRRP configuration mode.

Usage Guide

This command adds a virtual IP address to an existing backup group. The no form of this command is used to delete the virtual IP address of the specified backup group. A backup group has only one virtual IP address. The VRRP priority is 255. The virtual IP address must be in the same network segment as the interface IP address.

Example

If the virtual IP address is 10.1.1.1, it must be the IP address of the switch interface. If it is the standby gateway, it must be the IP address of the switch interface on the same network segment.
Switch(config-router)#virtual-ip 10.1.1.1 master

8. Commands for IPv6 VRRPv3 Configuration

advertisement-interval

Command	**advertisement-interval <*adver_interval*>** The VRRPv3 notification interval was set.
Parameter	ADVER-INTERVAL Interval for sending VRRPv3 notification packets. The unit is centiseconds. The value ranges from 100 to 1000 and must be an integer multiple of 100.
default	**<*adver_interval*>** The default value is 100 centiseconds (1 second).
Mode	VRRPv3 protocol configuration mode.
Usage Guide	At adver_interval, the Master in the VRRPv3 backup group will adver_interval by sending VRRPv3 packets to the router (or Layer 3 Ethernet switch) in the VRRPv3 backup group to notify it that it is working properly. If the Backup does not receive VRRPv3 packets from the Master within a specified period (master_down_interval), it considers that the backup cannot work properly and changes its status to Master.
Example	Set the VRRPv3 notification interval to 300 centiseconds. Switch(config-router)# advertisement-interval 300

circuit-failover

Command	**circuit-failover {IFNAME | Vlan <ID>} <value_reduced>** **no circuit-failover** Configure VRRPv3 monitoring interfaces.
Parameter	**{vlan <*ID*>| *IFNAME*}** Indicates the name of the Layer 3 interface to be monitored. **<*value_reduced*>** The value ranges from 1 to 253.
default	Do not configure.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	When a router or Layer-3 Ethernet switch fails, VRRP can provide backup. In addition, when the status of a network interface is down, the priority of the current router (or Layer 3 Ethernet switch) can be lowered to ensure the smooth implementation of the backup function.
Example	Set the VRRPv3 monitoring interface to vlan 2 and set the priority reduction to 10. Switch(config-router)# circuit-failover vlan 2 10

debug ipv6 vrrp

Command	**debug ipv6 vrrp [all | events | packet [recv| send]]** **no debug ipv6 vrrp [all | events | packet [recv| send]]** Displays status changes and incoming and outgoing messages of VRRPv3 backup groups. In no mode, this command disables the debugging display.
Parameter	-
default	The debugging is disabled.
Mode	Privileged user configuration mode.
Usage Guide	-
Example	Switch#debug ipv6 vrrp Jan 01 01:03:13 2006 NSM: VRRP6 SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[fe80::2] Jan 01 01:03:14 2006 NSM: VRRP6 SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[fe80::2] Jan 01 01:03:15 2006 NSM: VRRP6 SEND[Hello]: Advertisement sent for vrid=[1], virtual-ip=[fe80::2]

disable

Command	**disable** Disable the VRRPv3 virtual router.
Parameter	-
default	Do not configure.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	Close the corresponding virtual router session. You can modify the related configuration parameters only after shutting down the virtual router.
Example	Example Disable VRRPv3 virtual router 10. Switch(config)#router ipv6 vrrp 10 Switch(config-router)#disable

enable

Command	**enable** Example Start a VRRPv3 virtual router.
Parameter	-
default	Do not configure.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	Start the corresponding virtual router session. Only the interfaces of the booted router (or Layer 3 Ethernet switch) are added to the backup group. Before starting a virtual router, configure the virtual IPv6 address and interface of VRRPv3.
Example	Example Start VRRPv3 virtual router 10. Switch(config)#router ipv6 vrrp 10 Switch(config-router)#enable

preempt-mode

Command	**preempt-mode {true | false}** The preemption mode of VRRPv3 is configured.
Parameter	-
default	Preemption mode.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	If a high-priority router (or Layer-3 Ethernet switch) is required to actively preempt to become an active router (or Layer-3 Ethernet switch), set the preemption mode.
Example	Set VRRPv3 to non-preemption mode. Switch(config-router)#preempt-mode false

priority

Command	**priority <*value*>** Configure the priority of VRRPv3.
Parameter	<value> indicates the priority. The value ranges from 1 to 254.
default	The backup router (or Layer 3 Ethernet switch) has a priority of 100 across all backup groups.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	Priority determines the status of the router (or Layer 3 Ethernet switch) in the backup group, and the higher the priority, the more likely it is to become the Master. The configurable priority ranges from 1 to 254. Priority 255 is reserved for the owner of an IP address. Priority 0 is used for special purposes. After receiving this notification message, Backup starts a new round of Master election. If two or more routers (or Layer-3 Ethernet switches) in a backup group have the same priority, the router (or Layer-3 Ethernet switch) with the largest link-local IPv6 address has the higher priority.
Example	Example Set the priority of VRRPv3 to 150. Switch(config-router)#priority 150

router ipv6 vrrp

Command	**router ipv6 vrrp <*vrid*>** **no router ipv6 vrrp <*vrid*>** A VRRPv3 virtual router was created or deleted.
Parameter	< vrid > Indicates the serial number of the virtual router. The value ranges from 1 to 255.
default	Not configure.
Mode	Global configuration mode.
Usage Guide	This command is used to create or delete a VRRPv3 virtual router. A virtual router is uniquely identified by its virtual router ID and associated virtual IPv6 address. You can configure a virtual router only after it is created. For stability, a maximum of 64 virtual routers can be configured.
Example	Configure VRRPv3 virtual router 10. Switch(config)#router ipv6 vrrp 10

show ipv6 vrrp

Command	**Show ipv6 vrrp [<*vrid*>]** The status and configuration of the VRRPv3 backup group are displayed.
Parameter	< vrid > Indicates the serial number of the virtual router. The value ranges from 1 to 255.
default	-
Mode	Privilege and configuration patterns.
Usage Guide	This command is used to display the configuration and current status of a virtual router. If no virtual router serial number is specified, information about all virtual routers is displayed.
Example	Switch#show ipv6 vrrp VrId 1 State is Master Virtual IPv6 is fe80::2 (Not IPv6 owner) Interface is Vlan1 Configured priority is 150, Current priority is 150 Advertisement interval is 100 centisec Preempt mode is TRUE Circuit failover interface Vlan1, Priority Delta 3, Status UP VrId 10 State is Initialize Virtual IPv6 is fe80::3 (Not IPv6 owner) Interface is Vlan2 Priority is 100 Advertisement interval is 300 centisec Preempt mode is TRUE Circuit failover interface Vlan2, Priority Delta 10, Status UP

display information	explain
State	State
Virtual IPv6	Virtual IPv6 address.
Interface	Interface name.
priority	priority
Advertisement interval	Interval for sending VRRPv3 notification packets.
Preempt	Preemption mode.
Circuit failover interface	Monitors interface information.

virtual-ipv6 interface

Command	**virtual-ipv6 <*ipv6-address*> interface {Vlan <*ID*>| *IFNAM*E}** **no virtual-ipv6 interface** Configure a virtual IPv6 address and interface for VRRPv3.
Parameter	<*ipv6-address*> Virtual IPv6 address. The value must be an IPv6 link-local address. {Vlan <*ID*>| *IFNAM*E} Interface name.
default	Not configure.
Mode	VRRPv3 protocol configuration mode.
Usage Guide	This command is used to add a virtual IPv6 address and interface to an existing backup group. The no command is used to delete the virtual IPv6 address and interface of the specified backup group. The virtual IPv6 address here is a link-local unicast address. A backup group has only one virtual IPv6 address. To avoid the error that a physical MAC address is returned when a virtual IPv6 address is pinged, the virtual IPv6 address cannot be the real IPv6 address of the interface. In this way, the default interface of all VRRPv3 Backup groups is backup. You need to elect a Master in the backup group.
Example	Set the virtual IPv6 address of the backup group to fe80::2 and interface to vlan1. Switch(config-router)#virtual-ipv6 fe80::2 interface vlan 1