Routing Configuration Command

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1. Static routing configuration command.

1.1. Static routing configuration command.

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1.1.1. iproute A.B.C.D

Using ip route to configure static routing, you can set the appropriate managed distance.
Use the no command to cancel the corresponding configuration.

ip route *A.B.C.D mask* **{** *interface* [*next-hop* **[no-bfd**]]
                    |*next-hop* **[no-bfd | vrf<***vrf-name***>]**
                    }
                    [*distance***]**
                    [tag<*tag-value*>**]**
                    [global]
                    [description<*word*>**]**

no **ip route** *A.B.C.Dmask* [*interface* [*next-hop*]
                    | *next-hop* [**global**]]

Parameter

A.B.C.D	Purpose Address IP routing prefix.
mask	Target address prefix mask.

next-hop	Use to reach the next hop IP address of the network, and the following optional no-bfd can be configured only after the gateway address value is specified.
interface	Network interface name to use.
distance	(Optional) Management Distance (1-255).
tag	Set a tag to match for match and control the route.
tag-value	Routing markers, value range <1-4294967295>.
no-bfd	This next hop is not used for the BFD link detection mechanism.
global	The next hop address depends on the route in the global routing table and is valid only for the static route in the vrf table.
description	Description of this static route entry.
word	Description content string of this static routing entry.

Default

None

Command mode

Routing configuration.

Instruction

1. Configure static route to port or next hop. To avoid routing loop, we do not support the next jump of static routing, the next jump configuration must be the next hop device address directly connected to the local port.

2. Static routing or default routing also supports configured equivalent routing.

3. The global parameter is only used for VPN and the next jump depends on the global routing table.

4. If the routing device is configured with the default route, once the message target address cannot match to the specific subnetwork route or the host route, it will be forwarded through the default route.

5. If you configure a route pointing to the loopback or Null 0 port, it will generally become a black hole route.

6. The maximum number of static routes allowed by the main route table is 2K. The maximum number of routes allowed is 64K.

Example

Configure a static route pointing to the next jump of 192.168.1.133.

```
R-CE_config# interface g0/0
R-CE_config_g0/0# ip address192.168.1.132255.255.255.0
R-CE_config_g0/0# exit
R-CE_config# iproute 10.1.1.0255.255.255.0192.168.1.133
R-CE_config#
```

Related commands

ip route default
ip route vrf

1.1.2. iproute bfd

Configure to enable the static route bidirectional link detection function.

ip route bfd { static{ next-hop|*A.B.C.D***[***a.b.c.d*** |echo-udp] |vrf***<vrf-name>A.B.C.D***[***a.b.c.d*** |echo-udp] }| query interval <***value***>| reply interval <***value***>}**

no ip route bfd { static{ next-hop|*A.B.C.D*** |vrf***<vrf-name>A.B.C.D*** } | queryinterval| reply interval}**

Parameter

Parameter	Parameter Declaration
static	Start the bidirectional link query function for the static route
next-hop	Enable the ping mode based on static routing to detect the bidirectional link detection function of the next jump gateway of static routing
A.B.C.D	(Pending) to query the gateway address
a.b.c.d	The distal address to be tested is selected according to the situation. It indicates the remote address, only used in multi-hop BFD detection across the network segment. If the neighbor of the same network segment is detected, this parameter can be omitted
echo-udp	The standard BFD protocol is used to do the static routing next jump link accessibility detection, and if this item is not configured, the next jump link accessibility detection cannot be performed based on the standard BFD
vrf	Static routing the next jump belongs to some vpn
vrf-name	The static route belongs to vpn name
query	Configure the query time interval
reply	Maximum time interval between sending of the query message and receipt of the response message

interval	Configuration time interval
value	Specific time interval value <1-65535> (in 100 ms)

Default

Bidirectional link detection for static routing is not enabled.

Command mode

Routing configuration.

Instruction

At present, only the non-VPN domains support the bfd function of static routing, and temporarily do not support the remote link detection based on the standard BFD protocol. Remote link accessibility detection based on the ping mode can be supported.

Example

Detect the accessibility of the static routing gateway address 1.1.1.1：
R-CE_config#ip route 10.0.0.0 255.0.0.0 1.1.1.1
R-CE_config#ip route bfd static next-hop
R-CE_config#ip route bfd static 1.1.1.1

Related commands

None

1.1.3. iproute cache

When query routes, allow to create a routing cache for found routes by streams. If you do not allow creating a routing cache, use the no ip route cache configuration command.

ip route cache [age_time*value***]**
　　　　　　[load-balance | acl**]**
　　　　　　[hash_bit*value***]**
　　　　　　[link_cnt*value***]**

no ip route cache

Parameter

Parameter	Parameter Declaration

age_time	Cache aging time, the value of 2~8 seconds, the default of 5 seconds
Load-balance	Establish and find cache with bigroup of source and destination address
acl	The cache, characterized by the source, destination address, protocol type, source, and destination port number, is mainly used for acl processing.
hash_bit	The size of the hash array is 1 <<hash _ bit, with values ranging from 1 to 16 and the default to 12
link_cnt	The length of the hash clash chain, with values ranging from 1 to 16, is given by default to 4

Default

Allows building and finding a cache characterized by the destination address.

Default hash _ bit 16, link _ cnt 4.

Command mode

Global configuration state.

Instruction

If you want to ban the found routing is cache, display the configuration no ip route cache. The number of routing cache entries that can be created is: link _ cnt * hash _ size.

Example

This example configuration prohibits the routing of the cache：

R-CE_config#noip route cache

Related commands

ip route burst-cache-aging-limit

1.1.4. iproute default

Using ip route to configure static routing, you can set the appropriate managed distance. Use the no command to cancel the corresponding configuration.

iproute default{ *interface* [*next-hop* **[no-bfd**]]
                  |*next-hop* **[no-bfd | vrf**<*vrf-name*>]
                  }
                   [*distance*]
                  [**tag**<*tag-value*>]
                  [**global**]
                   [**description**<*word*>]

no **iproute default**[*interface* [*next-hop*]

|*next-hop* [**global**]]

Parameter

A.B.C.D	Purpose Address IP routing prefix
mask	Target address prefix mask
next-hop	Use to reach the next hop IP address of the network, and the following optional no-bfd can be configured only after the gateway address value is specified
interface	Network interface name to use
distance	(Optional) Management Distance (1-255)
tag	Set a tag to match for match and control the route.
tag-value	Routing markers, value range <1-4294967295>
no-bfd	This next hop is not used for the BFD link detection mechanism
global	The next hop address depends on the route in the global routing table and is valid only for the static route in the vrf table.
description	Description of this static route entry
word	Description content string of this static routing entry

Default

The default state is to turn off this function.

Command mode

Routing configuration.

Instruction

1. Conconfigureuring static route to the port or the next hop. To avoid the routing loop, we do not support the default routing next hop recursive search, and the next jump configured must be the next hop device address directly connected to the local port.

2. Default routing also supports configuration equivalent routing.

3. The globa l parameter is only used for VPN and the next jump depends on the global routing table.

4. If the routing device is configured with the default route, once the message target

address cannot match to the specific subnetwork route or the host route, it will be forwarded through the default route.

5. If you configure a route pointing to the loopback or Null 0 port, it will generally become a black hole route.

6. The maximum number of static routes allowed by the main route table is 2K.

Example

Configure a default route with 192.168.1.133.

```
R-CE_config# interface g0/0
R-CE_config_g0/0# ip address192.168.1.132255.255.255.0
R-CE_config_g0/0# exit
R-CE_config# ip route default 192.168.1.133
R-CE_config#
```

Related commands

ip route *A.B.C.D*
ip route vrf

1.1.5. iproute load-balance

For configuration weight routing equalization, use ip route load-balance; if you only need to poll the equivalent route, then no drop the configuration.

ip route load-balance

no ip route load-balance

Parameter

None

Default

Without open weight routing equilibrium, routing search will be conducted in the equivalent route equilibrium.

Command mode

Global configuration state.

Instruction

If the weight routing needs to be balanced according to the flow, iprouteload-balance needs to be configured in the global configuration state. Moreover, in addition, the routing weight needs to be set at the corresponding outgoing port.

Example

S   1.1.1.0/24   is directly connected,GigaEthernet0/0

is directlyconnected, GigaEthernet0/1

Assuming that the above equivalent route exists, and the flow equalization ratio is 2:3, the configuration is as follows：

```
R1_config#ip routeload-balance
R1_config#intg0/0
R1_config_g0/0#ip route-weight 2
R1_config_g0/0#int g0/1
R1_config_g0/1#ip route-weight 3
R1_config_g0/1#
```

Related commands

ip route-weight

1.1.6. iproute burst-cache-aging-limit

Used to configure each route cache aging, you can specify how many aging route cache are deleted each time; if the default value is decided, no drops the configuration.

iproute burst-cache-aging-limit<*value*>

no ip route burst-cache-aging-limit

Parameter

Range <200-10000>.

Default

Defdefault 1000 aged routes cache each time.

Command mode

Global configuration state.

Instruction

The default requires no configuration. Considering the busy degree of cpu in the current network, the number of routing cache that was once used for forwarding but was aged can be adjusted within the parameter range.

Example

None

Related commands

ip route cache

1.1.7. iproute protect

Used to configure routing protocol enhanced protection; no is dropped if the default value is decided.

ip route protect

no ip route protect

Parameter

None.

Default

Enhanced routing protocol protection is not enabled.

Command mode

Global configuration state

Instruction

The default requires no configuration, configuration this command cannot feel the change to the user. It is mainly the strict degree of re-entry within multi-core systems and when accessing critical resources.

Example

None

Related commands

None

1.1.8. iproute vrf

Configure static or default routing in vpn and set the maximum routing capacity of the VPN table. Use the no command to cancel the configured static or default routing and restore the default maximum routing capacity.

iproute **vrf** *vpn_name* **{{ default|***networkmask*} **{***interface* [*next-hop* **[no-bfd**]]|*next-hop* **[no-bfd | vrf**<*vrf-name*>] **}** [*distance*] [**tag**<*tag-value*>] [**global**] [**description**<*word*>] | **max-number** *value* **}**

no **ip routevrf***vpn_name***{** {[*interface* [*next-hop*] **|***next-hop* [**global**]] |**max-number**}

Parameter

vrf	Specifies that the default routing is configured in the corresponding VPN
vpn_name	The name of the corresponding vpn
default	Configuration default routing
network	Purpose Address IP routing prefix
mask	Target address prefix mask
next-hop	Use to reach the next hop IP address of that network, and the following optional no-bfd can be configured only after the gateway address value is specified
interface	Network interface name to use
distance	(Optional) Management Distance (1-255)
tag	Set a tag to match for match and control the route.
tag-value	Routing markers, value range <1-4294967295>
no-bfd	This next hop is not used for the BFD link detection mechanism
vrf	Specifies the exit vpn to which the gateway address belongs
vrf-name	Specifies the exit vpn name to which the gateway address belongs
global	The next hop address depends on the route in the global routing table and is valid only for the static route in the vrf table.
description	Description of this static route entry
word	Description content string of this static routing entry
max-number	Configure the maximum number of routing numbers for VPN routing tables
value	Maximum number of routes allowed in this VPN routing table

Default

The default state has no static and default routes and the maximum number of routes default is.

Command mode

Routing configuration.

Instruction

1. Configure static route to port or next hop. To avoid routing loops, we do not support the next jump of static routing, the next jump configuration must be the next hop device address directly connected to the local port.

2. Static routing or default routing can also support configured equivalent routing.

3. The globa l parameter is only used for VPN and the next jump depends on the global routing table.

4. If the routing device is configured with the default route, once the message target address cannot match to the specific subnetwork route or the host route, it will be forwarded through the default route.

5. If you configure a route pointing to the loopback or Null 0 port, it will generally become a black hole route.

6. The maximum number of routes in the VPN table is 10K.

Example

Configure a static route with 192.168.1.133 in vpn _ 1.

```
R-CE_config#interfaceGigaEthernet0/0
R-CE_config_g0/0#ipvrf forward vpn_1
R-CE_config_g0/0#ipaddress192.168.1.132255.255.255.0
R-CE_config_g0/0#exit
R-CE_config#iproute vrf vpn_1 10.1.1.0255.255.255.0192.168.1.133
R-CE_config#
```

Related commands

ip route default
ip route *A.B.C.D*

1.1.9. iproute-weight

Configure data stream-based routing weights at the outgoing port.

ip route-weight *value*

no ip route-weight *value*

Parameter

Parameter	Parameter Declaration
value	Specifies the weight value

Default

No routing weight is configured. If there is equivalent routing, the exit port is selected in the routing equilibrium way.

Command mode

Interface configuration.

Instruction

If ip route load-balance is not configured, the command does not take effect on unicast traffic forwarding, even if routing weights are configured on the interface.

Example

S   1.1.1.0/24   is directly connected,GigaEthernet0/0

                                          is directlyconnected, GigaEthernet0/1

Assuming that the above equivalent route exists, and the flow equalization ratio is 2:3, the configuration is as follows：

R1_config#ip routeload-balance
R1_config#intg0/0
R1_config_g0/0#ip route-weight 2
R1_config_g0/0#int g0/1
R1_config_g0/1#ip route-weight 3
R1_config_g0/1#

Related commands

ip route load-balance

1.1.10. showip route

Display the contents of the routing table as requested by the user.

showiproute[*A.B.C.D*| all|cache| detail| *protocol*| **bfd |summary**
|vrf*vrf_name*| **max | next-hop | nh-group | information]**

Parameter

A.B.C.D	Displays the specific routes. Displays all accessible addresses (or network) A.B.C. Routing of the D.
all	All route entries, including non-activated route entries, are shown
cache	Show the routing cache condition
detail	Displays the details of the routing
protocol	Route the protocol name or keyword： connect Just show the direct connection route. static Just show the static routing. bgp Just shows the bgp routing. isis Just show the isis routing. ospf Just show the ospf routing. beigrp Just show the beigrp route. rip Just shows the rip routing. The default is not specified, displaying all types of routes
summary	Displays the summary information for all of the active routes.
bfd	Static route next jump two-directional detection.
vrf	Show the VPN routing.
vrf_name	The instance name corresponding to the VPN route is shown.
max	Configure the maximum number of routing entries displayed through the show ip route command;
next-hop	Displays the next hop information, including the current corresponding hash value, port diid and aid, said vrf,
nh-group	Displays the next jump group information, including the gateway address, the corresponding exit port tape, the
information	Displays the routing global statistics.

Default

None

Command mode

Use in all states other than management.

Instruction

None.

Example

This example shows the VPN _ 1 routing：

show iproute vrf vpn_1

Related commands

1.1.11.　　debug ip routing

Debug command **:**

debug iprouting [bfd | memory | message | search | timer | cache | vrf<vrf_name>]

Parameter

Parameter	Parameter Declaration
bfd	Static routing of bfd link detection and debugging information
memeory	Memory allocation and debugging information
messasge	Routing adds delete debug information
search	Routing to query the debugging information
timer	Timer timeout debugging information
cache	Trace the vrf configuration information
vrf	The specific VPN name or the vrf table name
Vrf-name	appoint vrf
vrf-sync	Cache change debugging information

Default

Does not output any debugging information.

Command mode

Routing configuration.

Instruction

If you want to close the debugging information, use the corresponding no command.

Example

None

Related commands

None

2. The RIP configuration command.

2.1. The RIP configuration command.

The RIP configuration command includes the：

＊auto-summary

＊default-information originate

＊default-metric

＊ip rip authentication

＊ip rip md5-key

＊ip rip dynamic-key

＊ip rip authenticationcommit

＊ip rip passive

＊ip rip deaf

＊ip rip password

＊ip rip receiveversion

＊ip rip send version

＊ip rip v1demand

＊ip rip v2demand

＊ip rip split-horizon

＊ip rip process-id enable

＊neighbor

＊offset

＊router rip

＊timersexpire

＊timersholddown

＊timersupdate

＊validate-update-source

＊version

＊distance

＊filter

＊maximum-nexthop

＊input-queue

＊showiprip

＊showip rip process-id database

＊showip rip process-id interface

＊showip rip process-id summary

＊showip rip process-id protocol

＊debugip rip database

＊debugip rip protocol

＊debugip rip message

2.1.1. auto-summary

Use the auto-summary command, and the no auto-summary command turns off the automatic routing summary function.

auto-summary

no auto-summary

Parameter

The command has no parameters or keywords.

Default

Valid, the default state is using the automatic routing summary feature.

Command mode

Routing configuration.

Instruction

Routing summary reduces the amount of routing information in routing tables and also reduces the amount of information exchanged. RIP-1 does not support a subnet mask, which may cause ambiguity if forwarding subnet routing. Therefore, RIP-1 always enables routing aggregation function. If you use RIP-2, you can turn off the routing summary function by using the no auto-summary command. When you need to broadcast the subnet route out, you can turn off the routing aggregation function.

Example

Set the RIP version on the interface GigaEthernet0 / 0 to RIP-2 and turn off the routing summary function：

router rip 1
version 2
no auto-summary

Related commands

version

2.1.2. default-information originate

Using the default-information originate command to generate a default route, no default-information originate turns this feature off.

default-information originate

no default-information

Parameter

None

Default

The default state is to turn off this function.

Command mode

Routing configuration.

Instruction

After default-information originate activation, carry 0.0.0.0/0 routing information when sending routing updates. The command takes effect provided that the main route table must have a default route with a management distance of less than 120.

Example

When sending the route update information, carry a default route (0.0.0.0/0).

```
!
router rip 1
   Version2
   default-information originate
!
ip route default g0/0
!
```

2.1.3. default-metric

Set the default routing cost of imported routes, and no default-metric restores the default settings.

default-metric number

no default-metric

Parameter

Parameter	Parameter Declaration
Number	Routing weights to be set are ranging from 1 to 16.

Default

For each route protocol, automatic conversion with the corresponding routing cost.

Command mode

Routing configuration

Instruction

The default-metric command is used to set the default routing cost used when importing other routing protocols into a RIP message. When importing other protocol routes using the redistribute command, without no specific routing cost, import with the default routing cost specified by default-metric.

Example

In the following example, a router using the RIP and OSPF routing protocol in the autonomous system 119 is declared from by the RIP

OSPF routing and assigned to the RIP routing weights 8.

router rip 1
    default-metric 8

    redistribute ospf119

Related commands

redistribute

default-information originate

2.1.4. iprip authentication

Use the ip rip authentication interface configuration command to specify the type of authentication used for the RIP-2 package,

no ipri p authentication The message is not certified.

ip rip authentication {**simple |md5|dynamic**}

no ip rip authentication

Parameter

Parameter	Parameter Declaration
Simple	Definitive certification type
Md5	MD5 ciphertext authentication type
Dynamic	Dynamic authentication type

Default

Not certified.

Command mode

Interface configuration.

Instruction

The RIP-1 does not support the certification.

Example

The configuration interface uses the MD5 ciphertext authentication type.

ip rip authentication md5；

Configure the interface using dynamic ciphertext authentication.

Ip rip authentication dynamic

Related commands

ip rip password

ip rip md5-key

ip rip dynamic-key

2.1.5. iprip md5-key

Using the ip ripmd5-authen-key interface configuration command to activate the authentication of the RIP-2 package and specify the MD5 ciphertext authentication key chain used on this interface, no ip rip md5-authen-key prevents authentication.

ip rip md5-key*key-id* **md5 password**

no ip rip md5-key

Parameter

Parameter	Parameter Declaration
key-id	An identifier.
Password	Specify the key.

Default

The MD5 authentication is invalid.

Command mode

Interface configuration.

Instruction

If no key has been configured with ipripmd5-keykey-idmd5password, no authentication is performed on the interface.

Example

This example configuration interface can accept and send MD5 ciphertext authentication messages belonging to the key mykey.

ipripmd5-key4md5mykey

Related commands

ip rip authentication

2.1.6. iprip dynamic-key

Use the ip rip dynamic-key interface configuration command to activate the authentication of the RIP-2 package and specify those used on that interface

MD5 or SHA 1 ciphertext authentication key chain, no ip rip authentication is prohibited authentication.

ip rip dynamic-key*key-id* {**md5|sha1**} **password xxxx-xx-xx-xx:xxxx:xx**

no ip rip dynamic-key*key-id* {**md5|sha1**}

Parameter

Parameter	Parameter Declaration
key-id	An identifier.
{md5|sha1}	Keyid corresponding to the key's algorithm
Password	Specifies the key (20 bytes).
xxxx-xx-xx-xx:xx	The start effective time of the key for Keyid
xx:xx	Effective time length of the key corresponding to Keyid

Default

Invalid dynamic authentication.

Command mode

Interface configuration

Instruction

In general, each key is only valid for its effective time period (its effective time is based on

the system time, so it is strongly recommended to configure the time consistency of the interface neighbors, such as a certain standard time as a reference).

When dynamic authentication is enabled, if no key is active, the authentication will fail.

When the key expiration period times out and no key can be updated, the valid length of the last key is automatically extended until a new key takes effect. Many keys can be added at a time, and the system will expire based on the initial effective time of the configured key and the effective time length of the configuration.

Multiple keys are allowed to be valid at the same time. At this time, one of the messages will be randomly selected to calculate the message. After sending the message, the message will be verified according to key id.

Suggestion: The effective time length of each key is 24 hours, and one key is in the activated state in normal operation

The start of the key is 3 minutes before the last key valid timeout.

Example

ip rip dynamic-key2 sha1xxxxxxxxxxx   2009-3-3-9:0 24:5

ip rip dynamic-key5 md5xxxxxxxxx   2009-3-10-9:0 24:5

ip rip dynamic-key6 sha1xxxxxxxxxxxxx2009-3-11-9:0 24:5.

Related commands

ip rip authentication

2.1.7. iprip password

Use the ip rip password interface configuration command to activate the authentication of the RIP-2 package and specify the plain authentication key used on the interface, and noip rip password prevents authentication

ip rip password*password*

no ip rip password

Parameter

Parameter	Parameter Declaration
Password	Specify the key

Default

No certification.

Command mode

Interface configuration

Instruction

If no key is configured with ip rip password, no authentication is performed on the interface.

Example

This example configuration interface can accept and send any plain authentication message belonging to the key mykey.

ip rip password mykey

Related commands

ip rip authentication

2.1.8. iprip authentication commit

Use the ip rip authentication commit interface command to clearly notify the router, the authentication function of the interface) has been configured, and the authentication message will be sent immediately. If the response cannot be received in a short time, the authentication will be considered and the aging of the opposite end peer and the route learned from the opposite end will be accelerated.

ip rip authentication commit

Parameter

None

Default

Not executed, authentication is carried by regular updates and trigger updates.

Command mode

Interface configuration

Instruction

If you want to speed up the aging of routing and peer when the authentication fails, you should execute the command on both interfaces separately after the authentication is

configured. Note: If the authentication configuration fails after changing the authentication configuration, the routing and peer will eventually age and delete them, but it takes a long time. Also, this command will not be displayed at the show run time.

Example

The following command will send the peer request message immediately after execution under the interface：

ip rip authentication commit

Related commands

ip rip authentication

2.1.9. iprip passive

Use the ip rip passive router configuration command to unsend routing updates on the interface. Reactivate the route updates by using the no ip rip passive.

ip rip passive

no ip rip passive

Parameter

None

Default

Send the routing updates on the interface.

Command mode

Interface configuration

Instruction

If you cancel sending routing updates on one interface, a specific subnet will continue to announce to other interfaces that the routing updates from other routers to that interface can be accepted and processed.

Example

The following example sends RIP message updates to all interfaces belonging to 172.16.0.0 (except for G0 / 1)：
!
interface GigaEthernet0/1
    ip rip 1 enable
ip address 172.15.0.1 255.255.0.0
ip rip passive
!

router rip 1
!

Related commands

None

2.1.10.   ip rip deaf

Use the ipripdeaf routing configuration command to ban receiving the rip protocol message on the interface. Use the no iprip deaf or default ipripdeaf command to rereceive the rip protocol message from the routing update.

ip rip deaf

no ip rip deaf

Parameter

None

Default

Not open ip rip deaf, receive rip protocol message on the interface.

Command mode

Interface configuration

Instruction

If you set up an ip rip deaf on an interface, he will also continue to send outward routing requests, notify route updates, etc., but will not accept any rip protocol messages.

Example

The following example sends the RIP message updates to GigaEthernet 0/0, but does not receive the rip message：
!
interface GigaEthernet0/0
ip rip 1 enable
ip address 172.16.0.1255.255.0.0
 ip rip deaf
!
router rip 1
!

Related commands

None

2.1.11.   ip rip receive version

Using the ip rip receive version interface configuration command to specify which version

of the RIP package the interface allows to receive, no ip rip receive version follows the global version convention.

ip rip receiveversion[**1**][**2**]

no ip rip receiveversion

Parameter

Parameter	Parameter Declaration
1	(Optional) only allows the interface to receive RIP packages for version 1.
2	(Optional) only allows the interface to receive RIP packages for version 2.

Default

Receiving the grouping of RIP-1 and RIP-2.

Command mode

Interface configuration

Instruction

This command can override the default behavior of the RIP specified by the version, which can only be applied to the interface that is being configured. The interface can be configured to accept the RIP packages for versions 1 and 2.

Example

The next example configuration interface can accept the RIP packages for versions 1 and 2：

ip rip receive version 1 2

The next example configuration interface can only accept the RIP packages for version 1：

ip rip receive version 1

Related commands

ip rip

sendversionversio

n

2.1.12.   iprip send version

Using the ip rip send version interface configuration command to specify which version of the RIP package the interface allows to send, no ip rip send version follows the global version convention.

`ip rip send version` [1 |2 | compatibility]

no ip rip send version

Parameter

Parameter	Parameter Declaration
1	Only allow the interface to send RIP packages of version 1 (optional)
2	Only allow the interface to send RIP packages for version 2 (optional)
compatibility	Only allow interface to broadcast send version 2 RIP package (optional)

Default

If there is no global version configured and no peer or no version cannot be determined according to the adaptive rules of rip, and only the grouping of RIP-2 is sent.

Command mode

Interface configuration

Instruction

This command can override the default behavior of the RIP specified by the version, which can only be applied to the interface that is being configured. The interface can be configured to accept the RIP packages for versions 1 and 2. If there is no global version configured and no peer or no version cannot be determined according to the adaptive rules of rip, and only the grouping of RIP-2 is sent

Example

The next example configuration interface can send the RIP packages for version 1:

ip rip send version 1

The next example configuration interface can only send the RIP packages for version 2：
ip rip send version 2

Related commands

ip rip receive version

version

2.1.13.   iprip v1demand

Use the ip rip v1demand interface configuration command to specify the v1 format message used when the interface sends request messages, and no ip rip v1demand or default ip rip v1demand removes the Command configuration.

ip rip v1demand

no iprip v1demand

Parameter

None

Default

Follow the set global version and interface version, if not set by the adaptive principle (according to the received version).

Command mode

Interface configuration

Instruction

Using this command lets the interface send request in v1 format. This command has no direct relationship with the global version and the version set on the interface. It only applies when sending the request, normally using the interface and the global version (if the update message).

Example

Next example configuration interface sending request of v1, update RIP package of v2：

ip rip v1demand
Ip rip send version 2

Related commands

`ip rip v2 demand`
`ip rip send Version`

2.1.14.　　iprip v2demand

Use the ip rip v2demand interface configuration command to specify the v2 format message used when the interface sends request messages, and no ip rip v2demand or default ip rip v2demand removes the command configuration.

ip rip v2demand

no ip rip v2demand

Parameter

None

Default

Follow the set global version and interface version, if not set by the adaptive principle (according to the received version).

Command mode

Interface configuration

Instruction

Using this command lets the interface send the request in the v2 format. This command has no direct relationship with the global version and the version set on the interface. He only applies it when sending the request, normally using the interface and the global version (if the update message).

Example

Next example configuration interface sending request of v2, update RIP package of v1：

ip rip v2demand
Ip rip send version 1

Related commands

ip rip v1demand

ip rip send version

2.1.15.　　iprip split-horizon

Sets whether the interface uses horizontal segmentation when sending RIP messages.

ip rip split-horizon {simple | poisoned}

no ip rip split-horizon {simple | poisoned}

Parameter

Parameter	Parameter Declaration
simple	Simple horizontal segmentation.
poisoned	Horizontal segmentation with toxicity reversal.

Default

Depending on the medium.

Command mode

Interface configuration

Instruction

For any interface other than frame relay or SMDS, horizontal segmentation is active by default; if the interface is used

encapsulation frame-relis configured, and the horizontal segmentation is not activated by default.

pay attention to：For networks including the X. 25 PSN link, the neighbor router configuration command can disable the horizontal segmentation, or you can explicitly use the no ip rip split-horizon {simple | poisoned} command in the configuration. However, if you do so, you must equally use the routers in all of the relevant multiocular broadcast groups on that networknoipripsplit-horizon {simple | poisoned}.

If the horizontal segmentation is not activated on the interface, the horizontal segmentation function is activated with the ip rip split-horizon {simple | poisoned} command.

pay attention to：

Generally, do not change the default state of the iprip split-horizon {simple | poisoned} command unless you are convinced that your application needs such a change to declare the route correctly. If horizontal segmentation is not activated on a serial interface or an interface connecting a packet switching network, you must prohibit all the relevant horizontal segmentation functions of the relevant router and access server on this network.

Example

This example forbids horizontal segmentation on the link：

interface GigaEthernet0/0

no ip rip split-horizon simple

Related commands

neighbor

2.1.16. iprip process-id enable

On the specified link port, enable the RIP instance.

```
ip rip process-id enable

no ip rip process-id enable
```

Parameter

Parameter	Parameter Declaration
process-id	Example ID, value range 1-65535

Command mode

Interface configuration

Instruction

When the command is configured on an interface, the interface will be bound to the corresponding rig instance and become the ride interface of the instance, and the corresponding direct network segment of the interface will be generated as ride; each interface can only be associated with one RIP instance, and the interface is not related to any instance by default.

Note: If you enable an RIP instance that has not been created on the interface, the RIP instance will be created with the instance number of the interface enable and the current vrf of the interface; If enable an instance on the interface with the currently bound and the vrf specified in the instance, the interface will not be the active interface for the RIP until the vrf of the interface and the vrf specified by the instance agree.

Example

interface GigaEthernet0/0

ip rip1 enable

Related commands

Router rip *process-id* [vrf*name*]

2.1.17. neighbor

Use the neighbor command to define the neighbor router that exchanges the routing information, and no neighbor cancels the neighbor router.

neighbor_ip-address_

no neighbor_ip-address_

Parameter

Parameter	Parameter Declaration
ip-address	The neighbor router IP address that exchanges the routing information

Default

The No-neighbor router is defined.

Command mode

Routing configuration

Instruction

neighbor The command specifies the address to address the special needs of a specific non-broadcast network that cannot be sent at a broadcast address.

Example

In the following example, the neighbor router configuration command can allow the RIP updates to be sent to the specified neighbor.

router rip 1
Neighbor 131.108.20.4

Related commands

Router rip process-id

2.1.18.   offset

Use the offset router configuration command to add an offset to the learned (in or out) routing weights through RIP, and no offset cancels an offset.

offset {_type number_ |*****}{**in | out**} _aclist-name offset_value_

no offset {_type number_ |*****} {**in | out**}

Parameter

Parameter	Parameter Declaration
In	Apply the access list to the inbound route weights
Out	Apply the access list to the outbound routing weights
aclist-name	Standard access list code or name being applied. List number 0 indicates all access lists.if offset
offset_value	Is 0, but take any action
type	Positive offset, applied to the routing weights that match the access list network
number	(Optional) interface type

Default

Invalid state.

Command mode

Routing configuration

Instruction

Add an offset to the routing weight. The offset list with the interface type and the catch slogan is expanded and has a higher priority than the offset list without the extension. Thus, if both the extended and unextended offset lists are applied, the extended offset is added to the routing weights.

Example

In the following example, the router increases the offset 10 to the route obtained from the Gigabit Ethernet interface GigaEthernet0 / 1：

router rip 1

offset GigaEthernet0/1 in cost_add_filter 10

2.1.19.　　router rip process-id

Use the routerrip process-id global command to configure the RIP instance, and the no router rip process-id closes the RIP

living example.

router rip *process-id [*vrf *vrf-name]*

no router rip *process-id [*vrf *vrf-name]*

Parameter

Parameter	Parameter Declaration
Process-id	Specifies the VRF where the RIP instance belongs
Vrf-name	Conconfigured instance ID with a range of 1-65535

Default

The system default does not run any RIP instance; during the instance configuration, processid cannot Default; the default vrf-name instance will not belong to any VRF.

Command mode

Global configuration state

Instruction

The RIP instance must be started before entering the route instance configuration state to configure the various global parameters of the RIP instance, and the interface-related configuration parameter is not constrained by whether the RIP instance has been started.

Example

Start the RIP instance and enter the instance configuration state.

Related commands

ip rip process-id enable

2.1.20.　　　timers expire

Use the timers expire router configuration command to adjust the timer for the RIP network, and the notimers expire restores the default timer.

timers expire interval

no timers expire

Parameter

Parameter	Parameter Declaration

expire	The time interval (unit: seconds), at least three times the parameter update. If no update of the refresh route arrives, the route becomes invalid, enters a blocked state, and is marked as inaccessible and inaccessible. However, this route can still be used for forwarding the grouping. The default value is 180 seconds

Default

The expire is 180 seconds.

Command mode

Routing configuration

Instruction

The basic timing parameters of the RIP are adjustable. Since RIP performs a distributed asynchronous routing algorithm, it is very important to set all the timing parameters of the routers and access servers in the network to be the same.

pay attention to：

You can use the show iprip command to view the current or default timer parameters.

Example

The following example sets up the RIP, and the route is declared unavailable if no information from the router is received within 30 seconds.

router rip *1*

timers expire 30

2.1.21.　　timers holddown

Use the timers holddown router configuration command to adjust the timer for the RIP network, and the no timers holddown restores the default timer.

timers holddownsecond

no timers holddown

Parameter

Parameter	Parameter Declaration

second	The time interval when the routing information is suppressed (in seconds), after receiving the update packet indicating that the route is inaccessible, the route enters the holddown state and is declared inaccessible. However, the route can still be used for forwarding and grouping. When the holddown time arrives, and routes from other sources are received, the original route is removed from the route table. The default value is 120 seconds

Default

Holddownis120seconds

Command mode

Routing configuration

Instruction

The basic timing parameters of the RIP are adjustable. Since RIP performs a distributed asynchronous routing algorithm, it is very important to set all the timing parameters of the routers and access servers in the network to be the same.

pay attention to：

You can use the show iprip command to view the current or default timer parameters.

Example

The following example sets the RIP to remove the route from the routing table if the router is still not received for the next 30 seconds after the route is declared unavailable.

router rip *1*

timers holddown 30

2.1.22.　　timers update

Use the timers update router configuration command to adjust the timer for the RIP network, and the notimers update restores the default timer.

timers update Interval

no timers update

Parameter

Parameter	Parameter Declaration
update	The basic timing parameter of the router, specifies the time interval (in seconds), and the default value is 30 seconds.

Default

The update is for 30 seconds.

Command mode

Routing configuration

Instruction

The RIP basic timing Parameter is adjustable. Since RIP performs a distributed asynchronous routing algorithm, it is very important to set all the timing parameters of the routers and access servers in the network to be the same.

pay attention to：

You can use the show iprip command to view the current or default timer parameters.

Example

The following example sets the RIP update to broadcast every 5 seconds.

router rip 1

   timers update 5

   pay attention to：

Setting the update cycle too small can lead to congestion on low-speed serial links, but do not worry on fast Ethernet and T-1 rate serial links. Also, if many routes are included in the update, it may cause the router to spend more time processing the update.

2.1.23.   timers trigger

Use the timers trigger adjustment trigger update timer to send a trigger update message to the rip link when routing changes.no timers trigger Recover the default trigger update timer timeout interval.

timers trigger *second*

notimerstrigger

Parameter

Parameter	Parameter Declaration
second	Value range: <0-5> Default is 5 (in seconds)

Default

5 seconds

Command mode

Routing configuration

Instruction

The basic timing parameters of the RIP are adjustable. Since RIP performs a distributed asynchronous routing algorithm, it is very important to set all the timing parameters of the routers and access servers in the network to be the same

pay attention to：

You can use the show ip rip command to view the current or default timer parameters.

Example

The following example sets RIP. If the route receives the router within the next 1 second, then the route is removed from the routing table.

!
router rip *1*
   timers trigger1
!

2.1.24.   timers peer

Use the timers peer router configuration command to adjust the neighbor timeout interval, originally rip is no hello message message. However, according to the customer MIB requirements, the neighbor is required to set the timeout time, so this function is added.no timers holddown Restore the default timer.

  timers peer *second*

  no timerspeer

Parameter

Parameter	Parameter Declaration
second	Set the neighbor time out interval, originally rip is no hello message. However, according the customer MIB requirements. So this extra feature is added. This value is calculated dynamically (expire time + holddown time)/3+2s

Default

102 seconds.

Command mode

Routing configuration

Instruction

The basic timing parameters of the RIP are adjustable. Since RIP performs a distributed asynchronous routing algorithm, it is very important to set all the timing parameters of the routers and access servers in the network to be the same.

pay attention to：

You can use the show ip rip command to view the current or default timer parameters.

Example

The following example sets the RIP to remove the route from the routing table if the router is still not received for the next 30 seconds after the route is declared unavailable.

```
!
router rip 1
    timers peer30
!
```

2.1.25.   validate-update-source

Using the validate-update-source router configuration command to confirm the router IP address that sends the RIP update, no validate-update-source cancels this feature.

validate-update-source

no validate-update-source

Parameter

No parameters or keywords.

Default

This feature is currently active.

Command mode

Routing configuration

Instruction

This command applies only to the RIP and the IGRP. The software guarantees that the router IP address for sending the routing update is the same as a certain network address defined by the receiving interface.

Eliminating horizontal segmentation also enables the system to perform this verification function.

For the unnumbered IP interface (IPunnumbered), this validation is not performed.

Example

The previous example configures the router to verify the source IP address for the inbound RIP update.

!

router rip 1

  no validate-update-source

!

2.1.26.   check-zero-domain

Check check-zero-domain routing field with the check-zero-domain router configuration command, and no check-zero-domain cancels this function.

  check-zero-domain

  no check-zero-domain

Parameter

No parameters or keywords

Default

This feature is currently active.

Command mode

Routing configuration

Instruction

This command is mainly applied under version 1, and only the route-tag, subnet mask, next hop, etc. fields of routing entries received under version 1 must be zero.

Example

!

router rip 1

  no check-zero-domain

!

2.1.27.   version

Use the version command to set the version of the RIP message on the interface, and no version restores the default value.

  version {1 |2}

no version

Parameter

Parameter	Parameter Declaration
1	The specified version is the RIP-1.
2	The specified version is the RIP-2.

Default

Send and accept rip grouping according to the configuration on each port. If the port does not configured version, select the version of peer according to the adaptive rules of rip, and send the default RIP-2 grouping if no peer.

Command mode

Routing configuration

Instruction

If you use the command no version, you can specify the available RIP version on the interface, using the ipripreceive version and iprip send version commands; otherwise the accepted RIP message will be sent in the global configuration version.

Example

The following example causes the software to send and receive packets of the RIP-2.

```
router rip 1
    version 2
```

Related commands

ip rip

receiveversionip rip

sendversion

2.1.28.   distance

Set the RIP route management distance.

Distanceweight<addressmask<access-list-name>>

Parameter

Parameter	Parameter Declaration
weight	Manage distance, ranging from 1 to 255. The recommended use range is from 10 to 255 (0 to 9 reserved). If this parameter is used alone, it tells the router system software to use it as the default management distance when there is no provision on a information source. Routes with a managed distance of 255 are not added in the routing table.
address	(Optional) Source IP address (form aa.bb.cc. dd)
mask	(Optional) IP address mask (form aa.bb.cc. dd). If a bit is 0, the software will ignore the value of the corresponding bit in the address.
access-list-name	(Optional) Standard access list name.

Default

120

Command mode

Routing configuration state.

Instruction

The administrative distance is an integer number ranging from 0 to 255. In general, the higher this value, the lower the confidence. If the optional parameter access list access-list-name is used in the command, this access list is applied when a network route is inserted into the routing table. Doing so allows filtering some networks based on the router address that provides routing information.

Example

Routes received from the 192.1.1.0/24 network, whose distance value is set to 100.

!

router rip 1

distance 100 192.1.1.0 255.255.255.0

!

2.1.29.   filter

The received and sent RIP routes are filtered.

filter {GigaEthernet/*null* /*****} {in | out} { access-list** *acl-name* [**gateway** *acl-name*]

| gateway*acl-name* **[access-list** *acl-name* |**prefix-list** *prefix-list-name***]**

/ **prefix-list** *prefix-list-name* [**gateway** acl-name] **}**

no filter {GigaEthernet|*null*|***** **} {in | out} [access-list** *acl-name* [**gateway** *acl-name*]

| gateway*acl-name* **[access-list** *acl-name* |**prefix-list** *prefix-list-name***]**

| **prefix-list** *prefix-list-name* [**gateway** acl-name]]

Parameter

Parameter	Parameter Declaration
acl-name	access-List-name, the standard IP access list name, this list defines which networks are received and those networks are suppressed in the routing update.
prefix-list-name	Standard IPprefix list name, this list defines which networks are received and those networks are suppressed.
in/out	Access list for inbound / outbound route update applications.
*	For all ports, inbound / outbound update the application access list.
interface	The application access list applies to the specified three-tier routing interface

Default

The received and sent RIP routes are not filtered.

Command mode

Routing state.

Instruction

The received and sent routes are filtered. When filtering a list of dynamic routing protocols, if you use access-list to filter routes. Standard access list is required.

Example

The route 10.0.0.0/8 sent out from the port GigaEthernet0 / 0 is filtered.
!
router rip 1
   filter GigaEthernet0/0 out access-list mylist
!
ip access-list standard mylist
   deny 10.0.0.0 255.0.0.0
!

2.1.30. maximum-nexthop

Configure the maximum number of equivalent routes in the RIP routing information. The no maximum-nexthop restores the default settings.

maximum-nexthop*number*

no maximum-nexthop

Parameter

Parameter	Parameter Declaration
number	The maximum number of equivalent routes to be set is 1-16

Default

4

Command mode

Routing configuration

Instruction

maximum-nexthop Sets the maximum number of equivalent routes for the RIP local routes. When fully equivalent route route information is learned from multiple neighbors (metric, distance), if the number of neighbors is greater than the maximum value of the equivalent route number, the next jump number of the route entry is not added to the route table.

Example

In the next example, the number of equivalent routes for the RIP routing information is 5.

!

router rip *1*

   maximum-nexthop 5

!

Related commands

None

2.1.31. input-queue

Size of the receiving queue. The no input-value restores the default settings.

input-queue_number_

no input-queue

Parameter

Parameter	Parameter Declaration
number	The receiving queue size to be set, take the value range: 1-61440

Default

200

Command mode

Routing configuration

Instruction

The input-queue sets the receive queue size in packages. It is not easy to set too small, otherwise it is easy to lead to a large number of routes learning incomplete routing.

Example

In the following example, the receiving queue size for the RIP routing information is 500.

```
!
router rip 1
input-queue 500
!
```

Related commands

None

2.1.32.   show ip rip

Displays all of the RIP instances.

showip rip

Parameter

None

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see all of the current RIP instances.

Example

Show all of the RIP instances.

router#showip rip

Process: 2

Update: 30,Expire: 180,Holddown: 120

Input-queue:50

Validate-update-source: Enable

zero-domain-check: Enable

Neighbor List:

interfaceList:

interface Loopback0

The significance of the above individual domains is as follows：

Field	Description
Process	Conconfigured instance ID
Update	Update the interval of message messages
Holddown	When the route is maintained
Expire	Route the aging time
Input-queue	Message queue depth
Validate-update-source	Check the validity of the message source address

zero-domain-check	Check the domain domain legitimacy of the message
NeighborList	Conconfigured neighbor list
interface List	List of the ports associated with the instance

2.1.33.　　show ip rip process-id interface

Displays all the interfaces and the interface status of the RIP instance process-id.

```
show ip rip process-id interface
```

Parameter

Parameter	Parameter Declaration
process-id	Example ID, value range 1-65535

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see all the interfaces and interface status of the RIP instance.

Example

Displays all the interface and interface status information of the RIP instance .

Router_config#showiprip1interface

Interface Loopback7 ,vrf (0)

　　Address:22.2.2.2,mask:255.255.255.0

　state:active

　Send version: V1(default)

　　Receive version: V1 and V2(default)

　Passive: Disable

　v1demand:Disable

　v2demand:Disable

　deaf: Disable

　　Authentication type: NULL

MD5authenticationkey: NULL

Simple password: NULL Interface

GigaEthernet0/0 ,vrf (0)

   Address:2.2.2.1, mask:255.255.255.0

state:active

Send version: V1(default)

   Receive version: V1 and V2(default)

Passive: Disable

v1demand:Disable

v2demand:Disable

deaf: Disable

   Authentication type: simple

   MD5authenticationkey: NULL

Simple password: NULL

2.1.34.   show ip rip process-id summary

Show the statistics for all routes of the RIP instance process-id.

show ip rip *process-id* summary

Parameter

Parameter	Parameter Declaration
Process-id	Example ID, value range 1-65535

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see the statistics of all the routes of the specified RIP instance.

Example

Displays all the routing statistics for the RIP instance.

Router_config#showiprip1summary

------------------RIPProcess 1 SummaryStatistic -----------------

RIProute table:

  Maximum route number:1024

  Total route number :8

   Conn ect route number   :2

   Lear n route number   :4

   Redistributed route number :0

   Holddown route number :0

--

2.1.35.   show ip rip process-id database

Displays all the routing information for the RIP instance process-id.

show ip rip *process-id* **database**

Parameter

Parameter	Parameter Declaration
process-id	Example ID, value range 1-65535

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see all the routing information of the RIP.

Example

Display all of the RIP routing information.

router#showiprip 1database

1.0.0.0/8 auto-summary

1.1.1.0/24 directlyconnectedLoopback1

100.0.0.0/8 via192.1.1.200:00:02

192.1.1.0/24 directlyconnected GigaEthernet0/2

192.1.1.0/24 auto-summary

The significance of the above individual domains is as follows：

Field	Description
Network-number/network-mask	RIP route.
Summary/connected/ via gateway	The corresponding RIP route type.
interface	RIP direct connection and summary routes.
time	Refresh time

2.1.36.　　　show ip rip process-id protocol

Displays the RIP protocol configuration information.

Show ip rip_process-id_ **protocol**

Parameter

None

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see the current RIP protocol configuration information.

Example

Displays the RIP protocol configuration information.

Router_config_rip_4#show iprip1 protocol

RIP1 isActive

update interval30(s), Invalid interval 180(s)

Holddown interval 120(s),Trigger interval 1(s), peer interval102(s)

Automatic network summarization: Enable

Filter list: Offset list:

Redistributepolicy:

Interfacesendversionandreceiveversion:

Global version : default

Interface	Send-version	Recv-vers ion	Nbr_number
Loopback7	V2 V1	V2	0
GigaEthernet0/0	V2	V1 V2	4

Distance: 0 (default is 120):

Maximum route count: 1024,   Current   route count:8

2.1.37.　　 debug ip rip database

Monitoring the routing events for the RIP.

debug ip rip database

Parameter

None

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see some events of the current RIP routing.

Example

Monitor some events of RIP routing.

router#debugip rip database
RIP-DB:Adding summary route 192.1.1.0/24 <metric0> to RIP database

The significance of the above individual domains is as follows：

Field	Description
summary	The route type that joins the routing table
192.1.1.0/24	Join the routing table
<metric 0>	Routing the metric-values

2.1.38.   debug ip rip packet [send | recv]

Monitor the messages sent and received by the RIP.

debug ip rip packet

Parameter

None

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see the content of the message received and sent by the current RIP.

Example

Monitor the RIP messages：

router#debugip rip packet

 RIP: send to 255.255.255.255 viaLoopback1 vers 1, CMD_RESPONSE, length 24

 192.1.1.0/0 via0.0.0.0 metric 1.
When running in version 2, you will get the following output：

 RIP: send to 255.255.255.255 viaLoopback1

 vers 2, CMD_RESPONSE, length 24

 192.1.1.0/24 via0.0.0.0 metric 1
The significance of the above individual domains is as follows：

Field	Description
Send/Recv	It means a message received or sent
to 255.255.255.255	The destination and address of the IP message
via Loopback1	A port to send or receive a message
vers 2	The version number of the message sent or received
CMD_RESPONSE/ CMD_REQUEST	Type of message
length 24	Message length
192.1.1.0/24	Objective network in the routing information
via 0.0.0.0	Next jump address
metric	The cost of routing

2.1.39.   debug iprip message

Monitor for events occurring in the RIP.

debug iprip message

Parameter

None

Default

None

Command mode

Management state

Instruction

According to the command output information, the user can see the happening events of the current RIP, such as the port address and status change, the timer timeout, etc.

Example

Monitor the RIP messages：

router#debugiprip message

(c0) 2010-6-1011:10:04RIP: Update timer timeout(process 2) (c0) 2010-6-1011:10:04 RIP: Expire timer timeout(process5)

3. The OSPF configuration command.

3.1. The OSPF configuration command.

The OSPF configuration command includes the：

*area authentication

*area default-cost

*area filter

*areanssa

*areanssa-range

*areanssa-translate-interval

*area range

*area stub

*area virtual-link

*auto-cost

*debugipospfadj

*debugipospfevents

*debugipospfflood

*debugipospflsa-generation

*debugipospfpacket

*debugipospfrestart

*debugipospfretransmission

*debugipospfspf

*debugipospftree

*default-information originate

*default-metric

*distance

*distanceospf

*filter

*graceful-restart

*ipospf authentication

*ipospfcost

*ipospf dead-interval

*ipospf demand-circuit

*ipospf hello-interval

*ipospf message-digest-key

*ipospf mib-binding

*ipospf network

*ipospfpassive

*ipospfpassword

*ipospf priority

*ipospfretransmit-interval

*ipospf transmit-delay

*limit

*maximum-paths

*neighbor

*network area

*redistribute

*restartospf

*router-id

*routerospf

*showipospf

*showipospfborder-routers

*showipospfdatabase

*showipospf interface

*showipospfneighbor

*showipospfvirtual-link

＊stub-router

＊summary-address

＊timers delay

＊timers hold

3.1.1. area <area-id > authentication

Authenticate an OSPF region, using the area authentication routing configuration state command. If you need to cancel a region or to delete a region, use the command no area area-id authentication or no area area-id.

area *area-id* **authentication** [**simple | message-digest**]

no area *area-id* **authentication**

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Areas to require certification.
simple	(Any option) to verify the authentication information in clear text.
message-digest	(Any option) to verify the authentication information by using MD5.

Default

OSPF messages on the interface.

Command mode

Routing configuration

Instruction

The value of authentication is written to the OSPF message. You must ensure that all routers in the same area have the same validation type. If, in a network, all OSPF routers must save the same authentication password if they want the OSPF to communicate with each other.

Example

The following example requires a simple plain text validation of regions 0 and 36.0.0.0 .

```
!
interface GigaEthernet 0/0
      Ipaddress131.119.251.201255.255.255.0

      ipospfpassword adcdefgh
!
interface GigaEthernet 0/1
      Ipaddress36.56.0.201255.255.0.0

      ipospf password ijklmnop
!
router ospf 1
      network 36.0.0.0255.0.0.0 area36.0.0.0

      network131.119.0.0255.255.0.0 area0

      area 36.0.0.0 authentication simple
      area 0 authentication simple
!
```

Related commands

   ipospfpassword

   ipospf message-digest-key

3.1.2. area <area-id > default-cost

Use area area-iddefault-cost cost to specify the cost of the default summary routing sent to the NSSA or STUB area; if you want to cancel the cost of the configured default routing, restore the default, use the no areaarea-iddefault-cost configuration command.

   area *area-id* **default-cost** *cost*

   no area *area-id* **default-cost**

   no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Represents the ID of the region. It can be a decimal number or an ip address.
cost	expense.

Default

The default value is 1.

Command mode

OSPFRouting configuration.

Instruction

This command can only be used on a domain boundary router connected to an NSSA domain or an STUB domain. After the command area stub default-information-originate is configured, the router generates a LSA (SUM _ NET _ LSA) containing the default routing information to the corresponding domain, and the cost configured with this command is used in this LSA to set the corresponding cost.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

area authentication,
areadefault-cost
areafilter,
areanssa,
areanssa-translate-interval,
areanssa-range,
arearange,
areastub,
areavirtual-link.

Example

Set the default cost to 20 for stub net 36.0.0.0 below：

```
!
interface GigaEthernet 0/1
   lp address 36.56.0.201 255.255.0.0
!
router ospf 201
   network 36.0.0.0 255.0.0.0 area 36.0.0.0
   area 36.0.0.0 stub
   area 36.0.0.0 default-cost 20
!
```

Related commands

area nssa

area stub

3.1.3. area <area-id > filter

On ABR, use the area filter command to filter the Type-3 LSA entering and leaving the area; the no area filter command to unfilter the Type-3 LSA.

area *area-id* **filter**{**in |out**}{**access-list***access-list-name* |**prefix-list** *prefix-list-name*}

no area *area-id* **filter** {**in |out**}

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Represents the region to undergo Type-3 LSA filtering. It can be a decimal number or an ip address.
in	On the ABR, filter the Type-3 LSA released to this region.
out	On ABR, Type-3 LSA released from this region to other regions was filtered.
access-list-name	The name of the access list.
prefix-list-name	The name of the prefix list.

Default

cut no ice.

Command mode

OSPFRouting configuration.

Instruction

This command operates only on the area boundary router (ABR), Does not work on the router within the region; in direction, Of the ABR to the Type-3 LSA generated in this region, Will not include the filtered out mesh segments, This principle also applies to filtering area-range segments in other regions; out direction, ABR in the Type-3 LSA generated from this region to other regions, Will not include the filtered out mesh segments, If all the subnet segments covered by an area-range are filtered, The area-range will not generate a Type-3 LSA.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

area authentication,
areadefault-cost
areafilter,
areanssa,
areanssa-translate-interval,
areanssa-range,
arearange,
areastub,
areavirtual-link.

Example

The following example is configured with region 36.0.0.0 to neither receive Type-3 LSA

contained in the segment 192.0.0.0/8 nor externally generate Type-3 LSA contained in the segment 36.0.0.0/8.

!

interface GigaEthernet0/0

   Ipaddress192.42.110.201255.255.255.0

!

interface GigaEthernet0/1

   ip address 36.56.0.201 255.255.0.0

!

router ospf 201

   network 36.0.0.0 255.0.0.0 area 36.0.0.0

   network 192.42.110.0 255.0.0.0 area0

   area 36.0.0.0 filter in prefix-list bd1

   area 36.0.0.0 filter out prefix-list bd2

!

ip prefix-list bd1 seq 5 deny 192.0.0.0/8

ip prefix-list bd2 seq 5 deny 36.0.0.0/8

!

Related commands

area authentication

3.1.4. area <area-id >nssa

Configure one region as the NSSA region.no area nssaThe command is required to unconfigure it.

area *area-id* **nssa**[**default-information-originate**[**metric***value*|**metric-type{***1*|*2***}]**
      |**no-redistribute | no-summary| translate-always**]

no area *area-id* **nssa**[**default-information-originate| no-redistribute | no-summary**
      | translate-always]

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Configure the region id of the NSSA. It can be a decimal or an ip address.

default-information-originate	(Any option) For ABR, after the command is configured, if no no-summary command is configured, regardless of this
metric	If there is a default route, a Type-7 LSA releases a default route to the region, but if no-summary is configured, a Type-3 LSA releases the
metric-type	The LSA issues the default route to the region.
no-redistribute	(Any option) the metric of the default route
no-summary	(Any option) The metric type of the default routing
translate-always	(Any option) is used to prohibit the introduction of AS external routes to NSSA areas as a Type-7 LSA

Default

Non-NSSA regions.

Command mode

OSPFRouting configuration.

Instruction

You must configure with the area nssa command on all routers and access servers in the NSSA area. To further reduce the number of LSA, no-summary can be used on the ABR router to prohibit sending summary LSA into the NSSA region.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：
area authentication,
areadefault-cost
areafilter,
areanssa,
areanssa-translate-interval,
areanssa-range,
arearange,
areastub,
areavirtual-link.

Example

The following example configuration area 36.0.0.0 is for the NSSA area:

```
!
interface GigaEthernet0/0
  Ip address 36.56.0.201 255.255.0.0
!
router ospf 201
  network 36.0.0.0 255.0.0.0 area 36.0.0.0
   area 36.0.0.0 nssa
  redistribute static
!
```

Related commands

    area authentication

    area default-cost

    redistribute

3.1.5. area <area-id >nssa-range

Route aggregation when translating the Type-7 LSA. Cancel the configuration with no area nssa-range.

area *area-id* **nssa-range** *address mask* [**advertise | not-advertise | tag***value*|**cost**]

 no area *area-id* **nssa-range** *address mask*

 no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Represents the area to perform the Type-7 LSA routing summary. It can be a decimal number or an ip
address	address.
mask	The destination IP address of the aggregated route.
advertise	Network mask of the aggregate route.
not-advertise	(Any option) is published after aggregation.
tag	(Any option) is not published after aggregation.
value	(Any option) the identity of the aggregated route.

Default

No use

Command mode

OSPFRouting configuration

Instruction

This command can only be configured on non-backbone domains.

If the local router is ABR and a translation router for the NSSA region, area nssa-range gates Type-7 LSA and generates Type-5 LSA; not for a translation router that is not an NSSA region.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

area authentication,
areadefault-cost
area filter,
areanssa,
area nssa-translate-interval,
area nssa-range,
area range,
areastub,
areavirtual-link.

Example

The following example configured the ABR router for route aggregation for the translatable Type-7 LSA at network segment 50.0.0.0.

!
interface GigaEthernet0/0
  Ip address 192.42.110.201 255.255.255.0
!
interface GigaEthernet0/1
  Ip address 36.56.0.201 255.255.0.0
!
router ospf 201
  network 36.0.0.0 255.0.0.0 area 36.0.0.0
  network 192.42.110.0 255.0.0.0 area 0
  area 36.0.0.0 nssa-range 50.0.0.0 255.0.0.0
  area 36.0.0.0 nssa
!

Related commands

area nssa

3.1.6. area <area-id >nssa-translate-interval

Configure a time interval, the value represents the time when an elected Type-7 LSA translator continues to perform after, for some reason, his translation role is replaced by others. The no area nssa-translate-interval command restores the default value.

area *area-id* **nssa-translate-interval** *interval*

no area *area-id* **nssa-translate-interval**

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Time interval, in seconds.
interval	Configure the region id of the NSSA. It can be a decimal or an ip address.

Default

40s

Command mode

The OSPF routing configuration state

Instruction

This command can only be configured on non-backbone domains.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

area authentication,

area default-cost,

area filter,

area nssa,

area nssa-translate-interval,

area nssa-range,

area range,

area stub,

area virtual-link.

Example

The following example configuration area 36.0.0.0 has a time interval of 100s:

```
!
interface GigaEthernet0/0
  Ip address 36.56.0.201 255.255.0.0
!
router ospf 201
  network 36.0.0.0 255.0.0.0 area 36.0.0.0
  area 36.0.0.0 nssa
  area 36.0.0.0 nssa-translate-interval 100
  redistribute static
!
```

Related commands

area nssa

3.1.7. area <area-id > range

Route summary at domain boundaries. Unconfigure with no area range.

area *area-id* **range** *address mask* **[advertise | not-advertise**][**cost** *value*]

no area *area-id* **range** *address mask*

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Represents the domain to make the routing summary. It can be a decimal number or an ip address.
address	IP address.
mask	IP mask.
advertise	Posted after summary.
not-advertise	Do not publish after the summary.
cost	Summary of the routing overhead.

Default

Not working.

Command mode

The OSPF routing configuration state

Instruction

area range The command is used only used on the ABR router. Action is that ABR uses a summary route to broadcast to other routers. In this way, the domain boundary route is narrowed, with only one summary route for each address range outside the region. This is the route summary.

This command can be configured on routers in multiple zones, so that the OSPF can aggregate multiple address ranges.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

  area authentication,
  areadefault-cost
  area filter,
  areanssa,
  area nssa-translate-interval,
  area nssa-range,
  area range,
  areastub
  areavirtual-link。

Example

The following example configured the ABR router for subnet 36.0.0.0 and all 192.42.110.0 hosts.

!

interface GigaEthernet0/0

ip address192.42.110.201 255.255.255.0

!

interface GigaEthernet0/1

ip address 36.56.0.201 255.255.0.0

!

router ospf 201

  network 36.0.0.0 255.0.0.0 area 36.0.0.0

  network 192.42.110.0 255.0.0.0 area 0

  area 36.0.0.0 range 36.0.0.0 255.0.0.0

  area 0 range 192.42.110.0 255.255.255.0

  !

3.1.8. area <area-id > stub

Configure a region for the stub region.no areastub Command to cancel the setting.

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub**

no area *area-id*

Parameter

Parameter	Parameter Declaration
area-id	Set the domain id of the stub zone. It can be a decimal or an ip address.
no-summary	(Any option l) prohibit the ABR router from sending summary links to the stub area.

Default

Non-stub domains

Command mode

Non-stub domains.

Instruction

You must configure with the areastub command on all routers and access servers in the stub area. The ABR router uses the default-cost option to set the cost of the internal router to reach the stub area.

There are two commands related to the stub zone: two sub-commands of the area command stub and default-cost. All routers and access servers connected to the stub zone must configure the stub subcommand of the area command. While the default-cost subcommand is only used on the domain boundary router connected to the stub zone. Default-Cost sets the cost of cluster routing generated by domain boundary routers to the stub region. To further reduce the number of LSA, no-summary can be used on the ABR router to prohibit sending summary LSA into the stub zone.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：
area authentication,
areadefault-cost,
areafilter,
areanssa,
areanssa-translate-interval,
areanssa-range,
area range,
areastub,
areavirtual-link.

Example

The following example assigns a default cost of 20 to the stub net 36.0.0.0:

```
!
interface GigaEthernet0/0
  Ip address 36.56.0.201 255.255.0.0
!
router ospf 201
  network 36.0.0.0 255.0.0.0 area 36.0.0.0
  area 36.0.0.0 stub
  area 36.0.0.0 default-cost 20
!
```

Related commands

area authentication

area default-cost

3.1.9. area <area-id > virtual-link

Configure a single virtual link.

area *area-id* **virtual-link** *neighbor-ID* [**authentication** simple| message-digest]
[**dead-interval** *dead-value*][**hello-interval** *hello-value*]
[**retransmit-interval** *retrans-value*][**transdly***dly-value*]
[**password**[*0* |*7*]*pass-string*] [message-digest-key key-id MD5 [0 | 7] md5-string]

no area *area-id* **virtual-link** *neighbor-ID*

Parameter

Parameter	Parameter Declaration
area-id	Specify the transit-area for the virtual link.
neighbor-id	The virtual-link paired-end router for the ospfrouter-id.
simple	Configuring virtual-link using plaintext authentication, the types configured at both ends of the virtual-link must agree.
message-digest	Configuring virtual-link using md 5 authentication, the types configured at both ends of the virtual-link must be consistent.
dead-value	The time interval at which the router considers the neighbor dies, in seconds. The configured values at both ends of the virtuallink must agree.
hello-value	Time interval at which the router sends Hello messages on the virutal-link, in seconds. The configured values at both ends of the virtual link must agree.
retrans-value	The time interval at which the router retransmits the message on the virtual-link. Unit: seconds. The configured values at both ends of the virtual-link must be consistent.
dly-value	The delay value when the router notifies the LSA on the virtual-link. Unit: seconds. The configured values at both ends of the virtual-link must be consistent.

pass-string	If the virutual-link is using plaintext authentication, then configure the password. Up to 8 characters. The configured values at both ends of the virtual-link must be consistent.
key-id	If virtual-link uses MD5 authentication, the MD5 key. valid range used: <1-255>. In the same
MD5-String	The configured values at both ends of the virtual-link must be the same.
0|7	Set the MD5 password, up to 16 characters. The configured values at both ends of the virtual-link must be consistent.

Default

No virtual-link was ever configured.

The default values for the other parameters are as follows：

Hello-value: 10s,   Dead-value : 40s,Retrans-value : 5s, dly-value: 1s,No certification.

Command mode

The OSPF routing configuration state.

Instruction

In order to build a virtual link, it must be configured at both ends of the virtual link, and if only at one end, the virtual link will not work.

The parameter area-id must be a non-0, since the transitarea of the virtual link must be a non-backbone region. Of course the area-id configuration on both ends of the virtual link must be the same.

In configuration, the neighbor-ID must be the ospf router-id of the opposite-end router, otherwise the virtual link cannot be established, even if the configured neighbor-ID is an IP address at the opposite end.

All parameters must be consistent at both ends of the virtual link.

The authentication parameters configured on virtual-link are effective only if the corresponding authentication method is configured with the authentication type of virtual-link or the backbone region (via command area authentication). Only one authentication method can be configured on the virtual-link, which means that the MD5 and plain authentication are mutually exclusive.

When the configured key is displayed, it is displayed as a plain or dense text according to the global command.

After the virtual link connection is established, after the FULL, virtual link will work in DemandCircuit mode, that is, without sending periodic Hello messages and LSA refresh packets.

Use the command no area area-id virtual-link neighbor-ID to cancel the previously configured virtual link. Use the command show ipospf virtual-link to view the status of the virtual link.

pay attention to：

When canceling the setting with the command no area area-id (no other parameter), it cancels all domain parameter subcommands, such as：

area authentication,
areadefault-cost
area filter,
areanssa,
areanssa-translate-interval
areanssa-range,
area range,
areastub,
areavirtual-link.

Example

The following configuration has a virtua link between routers A and B.

Configuration on the router A (router-id: 200.200.200.1)：

!

router ospf 100

  network 192.168.20.0 255.255.255.0 area 1

  area 1 virtual-link 200.200.200.2

!

Configuration on the router B (router-id: 200.200.200.2)：

!

router ospf 100

  network 192.168.30.0 255.255.255.0 area 1

  area 1 virtual-link 200.200.200.1

!

Related commands

show ipospfvirtual-link

3.1.10.　　auto-cost

The auto-cost command is used to configure the bandwidth reference value by which the link overhead is calculated. The no auto-cost command restores the default value.

auto-cost reference-bandwidth *value*

no auto-cost reference-bandwidth

Parameter

Parameter	Parameter Declaration

value	The bandwidth reference value based on calculating the link overhead range is 1~

Default

100Mbps.

Command mode

The OSPF routing configuration state.

Instruction

If the overhead value of the link is not configured, OSPF will calculate the overhead based on the link bandwidth (overhead = bandwidth reference value bandwidth, when the calculated overhead value is 65535, the maximum overhead value is greater than 65535).

If the link overhead value is configured, the OSPF no longer calculates the overhead based on the link bandwidth, but instead uses the configured link overhead value.

Example

The bandwidth reference for the link is 1000Mbps：

!

interface GigaEthernet0/0

ip address 36.56.0.201 255.255.0.0

!

router ospf 201

  auto-cost reference-bandwidth 1000

  network 36.0.0.0 255.0.0.0 area 36.0.0.0

!

Related commands

ipospf cost

3.1.11. bfd all-interfaces

The bfd all-interfaces command is used to configure the bfd linkage function for all ospf interfaces. The no bfd all-interfaces command is used to restore the default values.

bfd **all-interfaces**

no **bfd all-interfaces**

Parameter

None

Default

No bfd linkage.

Command mode

The OSPF routing configuration state.

Instruction

Configuring bfd all-interfaces will enable all ospf interface bfd linkage functions, except the interface with ipospf bfd disable command. The bfd all-interfaces is usually configured in the case of more oscf interfaces.

Example

The following will configure the bfd function of the ospf interfaces other than GigaEthernet0 / 1.

interface GigaEthernet0/0

  ip address 36.56.0.201 255.255.0.0

!

interface GigaEthernet0/1

ip address 36.57.0.201 255.255.0.0

ipospf bfd disable

!

interface GigaEthernet0/2

  ip address 36.58.0.201 255.255.0.0

!

router ospf 201

router-id 1.2.2.1

  network 36.0.0.0 255.0.0.0 area 36.0.0.0

  bfd all-interfaces

!

Related commands

ipospfbfd

3.1.12. debug ipospfdr

Monitor the election process of the OSPF in the DR of the broadcast network：

debug **ipospfdr**

Parameter

None.

Default

None.

Command mode

Management state.

Instruction

According to the command output information, you can view the DR election process of the OSPF.

3.1.13. debug ipospf adj

Monitor the OSPF：

debug **ipospf adj**

Parameter

None.

Default

None.

Command mode

Management state.

Instruction

According to the command output information, you can view the process of OSPF.

Example

```
Router# debug ipospf adj
OSPF: Interface 192.168.40.0 on GigaEthernet0/0 going down
OSPF NBR: 192.168.40.2 address 192.168.40.2 on GigaEthernet0/0 is dead, state DOWN
```

OSPF NBR: 192.168.40.3 address 192.168.40.3 on GigaEthernet0/0 is dead, state DOWN
Line on Interface GigaEthernet0/0, changed state to up
Line protocol on Interface GigaEthernet0/0 changed state to up
OSPF: Interface 192.168.40.0 on GigaEthernet0/0 going Up
OSPF: 2 Way Communication to 192.168.40.2 on GigaEthernet0/0, state 2WAY
OSPF: NBR 192.168.40.2 on GigaEthernet0/0 Adjacency OK, state NEXSTART.
OSPF: NBR Negotiation Done. We are the SLAVE
OSPF: NBR 192.168.40.2 on GigaEthernet0/0 Negotiation Done. We area the SLAVE
OSPF: Exchange Done with 192.168.40.2 on GigaEthernet0/0
OSPF: Loading Done with 192.168.40.2 on GigaEthernet0/0, database Synchronized (FULL)
OSPF: 2 Way Communication to 192.168.40.3 on GigaEthernet0/0, state 2WAY
OSPF: NBR 192.168.40.3 on GigaEthernet0/0 Adjacency OK, state NEXSTART.
OSPF: NBR Negotiation Done. We are the SLAVE
OSPF: NBR 192.168.40.3 on GigaEthernet0/0 Negotiation Done. We area the SLAVE
OSPF: Bad Sequence with 192.168.40.3 on GigaEthernet0/0, state NEXSTART
OSPF: NBR Negotiation Done. We are the SLAVE
OSPF: NBR 192.168.40.3 on GigaEthernet0/0 Negotiation Done. We area the SLAVE
OSPF: Exchange Done with 192.168.40.3 on GigaEthernet0/0
OSPF: Loading Done with 192.168.40.3 on GigaEthernet0/0, database Synchronized (FULL)
……

3.1.14.　　　debug ipospf events

Monitor the interface and neighbor events for the OSPF：

debug **ipospf events**

Parameter

None.

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the port of the OSPF and the trigger events of the neighbor.

Example

Router#debugipospfevents
OSPF: Interface GigaEthernet0/0 going Up
OSPF: INTF(192.168.40.0) event INTF_UP
OSPF: NBR(192.168.40.2) eventHELLO_RX
OSPF: NBR(192.168.40.2) eventTWOWAY
OSPF: NBR(192.168.40.2) eventADJ_OK
OSPF: NBR(192.168.40.2) event NEGO_DONE
OSPF: NBR(192.168.40.2) event EXCH_DONE
OSPF: NBR(192.168.40.2) event LOAD_DONE
OSPF: NBR(192.168.40.3) eventHELLO_RX
OSPF: NBR(192.168.40.3) eventTWOWAY
OSPF: NBR(192.168.40.3) eventADJ_OK
OSPF: NBR(192.168.40.3) event NEGO_DONE
OSPF: NBR(192.168.40.3) event SEQ_MISMATCH
OSPF: NBR(192.168.40.3) event NEGO_DONE
OSPF: NBR(192.168.40.3) event EXCH_DONE
OSPF: NBR(192.168.40.3) event LOAD_DONE
……

3.1.15.   debug ipospf flood

The diffusion process of the database for monitoring the OSPF：

debug ipospf flood

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the diffusion process of the OSPF database.

Example

Router# debug ipospfflood

OSPF: recv UPDATE, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 2 SEQ 0x8000022B

OSPF: Send UPDATE, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ 0x80000234

OSPF: Send ACK, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 2 SEQ 0x8000022B

OSPF: recv ACK, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ 0x80000234

OSPF: recv ACK, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 18 SEQ 0x80000233

OSPF: Send UPDATE, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 10 SEQ 0x8000022B

OSPF: recv UPDATE, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 5 SEQ 0x8000021C

OSPF: Send UPDATE, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 6 SEQ 0x8000021C

OSPF: Send UPDATE, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ 0x80000235

OSPF: recv ACK, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 4 SEQ 0x8000021C

……

3.1.16.　　debug ipospflsa-generation

The generation process of the LSA for monitoring the OSF：

debug ipospflsa-generation

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the port of the OSPF and the trigger events of the neighbor.

Example

```
router# debug ipospflsa-generation
……
OSPF: Send UPDATE, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 10 SEQ
0x8000022D
OSPF: recv UPDATE, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 5 SEQ
0x8000021E
OSPF: Send UPDATE, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 6 SEQ
0x8000021E
OSPF: Send UPDATE, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ
0x80000239
OSPF: recv ACK, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 4 SEQ 0x8000021E
OSPF: Send ACK, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 5 SEQ 0x8000021E
OSPF: recv UPDATE, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 1 SEQ
0x8000022E
OSPF: Send UPDATE, type 1 LSID 192.168.40.2 ADV_RTR 192.168.40.2 AGE 2 SEQ
0x8000022E
OSPF: recv ACK, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ
0x80000239
OSPF: recv ACK, type 1 LSID 192.168.40.3 ADV_RTR 192.168.40.3 AGE 6 SEQ 0x8000021E
OSPF: recv ACK, type 1 LSID 192.168.20.240 ADV_RTR 192.168.20.240 AGE 1 SEQ
0x80000239
……
```

3.1.17.   debug ipospfmpls

Monitor the negotiated output information of the OSPF in the participating mpls network：

debug **ipospfmpls**

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the debugging output information of the OSPF in the participating mpls network.

3.1.18.   debug ipospf packet

Monitoring the OSPF messages：

debug ipospfpacket [ack | dd | hello | update | request]

Parameter

Parameter	Parameter Declaration
ack	ACK message monitoring the OSPF.
dd	ACK message monitoring the OSPF.
hello	Monitor the Hello message of the OSPF.
update	Monitor the Update messages of the OSPF.
request	Monitor the Request messages of the OSPF.

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the port of the OSPF and the trigger events of the neighbor.

Example

```
router# debug ipospfpacket
OSPF: RecvHELLO packet from 192.168.40.3 (addr: 192.168.40.3) area 0from GigaEthernet0/0
OSPF: End of helloprocessing
OSPF: Send HELLO to 224.0.0.5 on Loopback0
        HelloInt10Dead40Opt0x2Pri1len44
OSPF: Send HELLO to 224.0.0.5 on Loopback0
        HelloInt10Dead40Opt0x2Pri1len44
OSPF: Send HELLO to 224.0.0.5 on Loopback0
```

HelloInt10Dead40Opt0x2Pri1len44

OSPF: RecvHELLO packet from 192.168.40.2 (addr: 192.168.40.2) area 0from GigaEthernet0/0

OSPF: End of helloprocessing

OSPF: Send HELLO to 224.0.0.5 on GigaEthernet0/0

HelloInt30Dead120Opt0x2Pri1len52

OSPF: RecvHELLO packet from 192.168.40.3 (addr: 192.168.40.3) area 0from GigaEthernet0/0

OSPF: End of helloprocessing

OSPF: Send HELLO to 224.0.0.5 on Loopback0

HelloInt10Dead40Opt0x2Pri1len44

......

3.1.19.   debug ipospf restart

Monitor the smooth restart process of the OSPF：

debug ipospf restart

Parameter

None

Default

None

Command mode
Management state.

Instruction
According to the command output information, you can view the smooth restart process of the OSPF.

Example

The GR Restarter end：

router# debug ipospfrestart

OSPF: Recv MSG_OSPF_GRACEFUL_RESTART message

OSPF: Build grace-LSA, adv_rtr:5.5.5.5, in area 0, at interface VLink 0.0.0.0

OSPF: Build grace-LSA, adv_rtr:5.5.5.5, in area 1, at interface VLAN1

OSPF: grace-LSAs have beenflooded out.

switchredundantOSPF:TheOSPFprocess 1 is restarting

gracefullynow. OSPF: Recv MSG_OSPF_RESTART

message

OSPF: OSPF process 1 is restarting

OSPF: Database resynchronizedwith 12.12.12.12onVLAN1 done, to FULL

OSPF: OSPF process 1 has reestablished all its adjacencies. GR successfully

OSPF: Recv MSG_OSPF_GR_TERMINATE message

OSPF: GR of OSPF process 1 terminated

The GR Helper end：

router# debug ipospfrestart

OSPF: IETF GR Received grace-LSA from 5.5.5.5(addr: 192.167.1.1) on VLink192.167.1.1

OSPF: IETFGR Validate grace-LSA from nbr5.5.5.5 on VLink 192.167.1.1

OSPF: IETFGR Process grace-LSA fromnbr 5.5.5.5on VLink192.167.1.1,age1,grace period 200, graceful restart reason:Switch to redundant control processor, graceful ipaddress:0.0.0.0

OSPF: IETF GR Entergraceful restart helper mode for nbr5.5.5.5on VLink 192.167.1.1for 199 seconds(requested200sec)

OSPF: IETF GR Received grace-LSA from 5.5.5.5(addr: 192.167.1.1) onGigaEthernet0/0

OSPF: IETFGR Validate grace-LSA from nbr5.5.5.5onGigaEthernet0/0

OSPF:IETFGR Process grace-LSA fromnbr 5.5.5.5 on GigaEthernet0/0,age1,grace period 200, graceful restart reason: Switch to redundant control processor, gracefulip ad dress: 192.167.1.1

OSPF:IETFGR Enter graceful restart helper mode for nbr5.5.5.5on GigaEthernet0/0 for 199 seconds(requested200sec)

OSPF: IETF GR Resynchronize with nbr 5.5.5.5(addr: 192.167.1.1)

OSPF: IETF GR Received grace-LSA from 5.5.5.5(addr: 192.167.1.1) onGigaEthernet0/0

OSPF: IETFGR Validate grace-LSA from nbr5.5.5.5onGigaEthernet0/0

OSPF: IETFGR Process grace-LSA from nbr 5.5.5.5 on GigaEthernet0/0,age3600, grace period 200, graceful restart reason: Switch toredundant control processor,gracefulipaddress: 192.167.1.1

OSPF: Recv MSG_OSPF_GR_HELP_RT_TERMINATE message

OSPF: IETF GR Exiting graceful restart helper mode for nbr 5.5.5.5(addr:192.167.1.1) on VLink 192.167.1.1 with 21 secs remaining

OSPF: scheduling rtrlsa for area 0 process 1

OSPF: IETFGR Exiting graceful restart helper mode for nbr 5.5.5.5(addr: 192.167.1.1) on GigaEthernet0/0 with 21 secs remaining

OSPF: scheduling rtrlsa for area 1 process 1

OSPF: scheduling net lsa on intfGigaEthernet0/0

3.1.20.   debug ipospf retransmission

Monitor the message reprocess of OSPF：

debug ipospf retransmission

Parameter

None

Techroutes

NETWORK

Default

None

Command mode

Management state

Instruction

According to the command output information, you can view the replay process of the OSPF message.

Example

router#debugipospfretransmission
OSPF: retransmit UPDATEto 192.168.40.3 (RID 192.168.40.3), state FULL
......

3.1.21.　　debug ipospfspf

The SPF calculation routing for monitoring the OSPF：

debug ipospfspf

debug ipospfspf intra

debug ipospfspf inter

debug ipospfspf external

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the calculation process of the routing of the OSPF.

Example

router# debug ipospfspf

OSPF: run ospf_spf_run

OSPF: start doing SPFforAREA0.0.0.0

OSPF: RTAB_REV(ospf) 1390.

OSPF :Initializing to do SPF

OSPF: addroute LSID 192.168.20.240

OSPF: ospf_nh_find: 192.168.40.2

......

OSPF: addroute LSID 192.168.40.3

OSPF: build a OSPF_ROUTE, dest: 192.168.40.3

OSPF: addroute LSID 192.168.40.2

......

OSPF: SPFAreaArunningNetwork Summary

OSPF: Processing LS_SUM_NET192.168.40.24, mask 255.255.255.248,adv192.168.40.3, age599

OSPF: addroute LSID 192.168.40.24

OSPF: ospf_build_routeRT192.168.40.24

OSPF: build route 192.168.40.24(255.255.255.248).

......

OSPF: Processing LS_SUM_NET1.1.1.1, mask 255.255.255.255, adv 192.168.20.240,age228

OSPF: addroute LSID 192.168.20.236

OSPF: build a OSPF_ROUTE, dest: 192.168.20.236

OSPF: start BuildingAS External Routes

OSPF: processing LS_ASE 192.168.42.0, mask 255.255.255.248,adv192.168.20.236,age258

OSPF: addroute LSID 192.168.42.0

OSPF: ospf_build_routeRT192.168.42.0

OSPF: build route 192.168.42.0(255.255.255.248).

OSPF: processing LS_ASE 192.168.43.0, mask 255.255.255.0, adv 192.168.20.236,age 258

OSPF: addroute LSID 192.168.43.0

OSPF: ospf_build_routeRT192.168.43.0

OSPF: build route 192.168.43.0(255.255.255.0).

OSPF: processing LS_ASE 192.168.44.0, mask 255.255.255.0, adv 192.168.20.236,age 258

OSPF: addroute LSID 192.168.44.0

OSPF: ospf_build_routeRT192.168.44.0

OSPF: build route 192.168.44.0(255.255.255.0).

......

OSPF: end doing SPFforAREA0.0.0.0

Show the field description：

Field	Description
LSA(192.168.20.236, LS_SUM_ASB)	The ID and the type of the LSA

3.1.22.　　debug ipospf tree

Monitor the SPF tree building of the OSPF：

debug ipospf tree

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the establishment of the SPF tree of the OSPF.

Example

router# debug ipospftree
B3710_221#
OSPF: add LSA(192.168.40.0, LS_STUB) 1600 under LSA(192.168.20.240, LS_RTR)
OSPF: add LSA(192.168.40.2, LS_RTR) 1600 under LSA(192.168.20.240, LS_RTR)
OSPF: add LSA(192.168.40.3, LS_RTR) 1600 under LSA(192.168.20.240, LS_RTR)
OSPF: add LSA(192.168.40.1, LS_STUB)0 under LSA(192.168.20.240, LS_RTR)
OSPF: add LSA(192.168.40.3, LS_STUB)1600underLSA(192.168.40.3,LS_RTR)
OSPF: add LSA(192.169.1.5,LS_RTR) 3200 under LSA(192.168.40.2, LS_RTR)
OSPF: add LSA(192.168.40.18, LS_STUB)1600 under LSA(192.168.40.2, LS_RTR)
OSPF: add LSA(192.168.40.2, LS_STUB)1600underLSA(192.168.40.2,LS_RTR)
OSPF: add LSA(192.168.40.17, LS_STUB)3200underLSA(192.169.1.5,LS_RTR)
OSPF: add LSA(192.168.40.24, LS_SUM_NET)1601 under LSA(192.168.40.3, LS_RTR)
OSPF: add LSA(192.168.40.32, LS_SUM_NET)3200 under LSA(192.168.40.2, LS_RTR)
OSPF: add LSA(192.168.40.40, LS_SUM_NET)14577 under LSA(192.169.1.5, LS_RTR)
OSPF: add LSA(192.168.20.236, LS_SUM_ASB) 3200 under LSA(192.168.40.2, LS_RTR)
Displays the field description：

Field	Description
LSA(192.168.20.236, LS_SUM_ASB)	The ID and the type of the LSA

add	son LSA
under	parent LSA

3.1.23. default-information originate (OSPF)

The default-information originate command introduces the default routing to the OSPF routing domain. no default-information originate Undeintroduces the default route.

default-information originate[**always**|**metric-type**[*1*|*2*] | **metric***cost*| **route-map** *map-name*]

no default-information originate

Parameter

Parameter	Parameter Declaration
originate	If you already have a default route and you want to transfer to another router, using this parameter causes the system to transfer an external route into the OSPF routing domain.
always	(Any option) The system broadcasts the default route regardless of whether the system has a default route.
metric-type[*1*|*2*]	(Any option) Measurement value type, the value range is 1 to 2, the default value is 2.
metric *cost*	(Any option) Route overhead value, value range from 0 to 16777214, default value is 100.
route-map map-name	(Any option) If a route mapping is met, a default route is generated.

Default

The default route is not generated.

Command mode

Routing configuration.

Instruction

Whether the router distributes the routing to the OSPF routing domain by using the redistribute command or the default-information command, the router will automatically become an ASBR router. However ASBR does not default by default route distribution to the OSPF domain. To produce a default route, you must configure a default route unless you have the always option.

When using this command, the default network must be in the routing table and must meet the route-map option. Use the default-informationoriginate always route-map command when you don't want the default network in the routing table.

Example

The following example sets the cost of the default route distributed into the OSPF routing domain to 100 and type 1:

```
router ospf 109
  redistribute rip 1
  default-information originate metric-type 1
```

Related commands

redistribute

3.1.24.   default-metric

Set the default routing rights to introduce routes. The no default-metric restores the default settings.

default-metric *value*
no default-metric

Parameter

Parameter	Parameter Declaration
value	For the routing weight to be set, the value range: 1~4294967295.

Default

The default routing weight is 10.

Command mode

The OSPF routing configuration state.

Instruction

The default-metric command is used to set the default routing weights used when introducing routes for other routing protocols, into the ospf message. When introducing other protocol routes using the redistribute command, if no specific routing weights are specified, the default routing weights specified by default-metric are introduced.

Example

Set the default routing right to introduce other routing agreement routes to 3.

router_config_ospf_100#default-metric 3

Related commands

redistribute

3.1.25.   distance

The managed distance of ospf routing. Use the no distance to cancel the settings.

distance *value* [*network mask*][*access-list-name*]

no distance *value* [*network mask*]

Parameter

Parameter	Parameter Declaration
value	(Any option) Manage distance with a value range from 1 to 255.
network	(Any option) Notice the network segment where the router-id of the router is located.
mask	(Any option) Notice the mask of the network segment where the router-id is located.
access-list-name	(Any option) Access to the list name.

Default

intra-area: 110

inter-area: 110

external: 150.

Command mode

The OSPF routing configuration state

Instruction

With at least one parameter. This command has the same function as the distance ospf. The distance can set the management distance according to the router-id and the destination network segment of the routing router, and set it more finely.

Example

The following example sets the management distance of the route published by the router 1.1.1.1 meeting the access list bd to 100:

```
router ospf 1
redistributeospf 2
distance1001.1.1.1255.255.255.255
```

Related commands

distance ospf

3.1.26.　distance ospf

Define the managed distance of the ospf routing based on the type. Use the no distance ospf to cancel the settings.

distance ospf{ [**intra-area** *dist1*] [**inter-area** *dist2*] [**external***dist3*] }

no distance ospf[**intra-area**] [**inter-area**] [**external**]

Parameter

Parameter	Parameter Declaration
intra-area dist1	(Any) Set the distance of all routes in a zone. The default value is 110.
inter-area dist2	(Any) Set the distance of all routes from one zone to another. The default value is 110.
external dist3	(Any option) Set the distance of other routing areas by redistribution. The default value is to

Default

intra-area: 110

inter-area: 110

external: 150

Command mode

The OSPF routing configuration state

Instruction

With at least one parameter. This command has the same function as the distance. And distance ospf can configure the distance of the entire routing group, not just the routing through a certain access list.

Example

The following example sets the external distance to 200.

Router A

!

router ospf 1

  redistribute ospf 2

  distance ospf external 200

!

router ospf 2

  redistribute ospf 1

  distance ospf external 200

Router B

!

router ospf 1

  redistribute ospf 2

  distance ospf external 200

!

router ospf 2

  redistribute ospf 1

  distance ospf external 200

!

Related commands

    distance

3.1.27.   filter

Set up the routing filter table, using the filter routing configuration state command. Use the no filter command to restore to the default settings.

filter { **interface-type** *interface*-number | *****} {**in|out**} {**access-list** *access-list-name* |

      gateway *access-list-name* | **prefix-list** *prefix-list-name* }

no filter { **interface-type** interface-number | ***** }{ **in**| out }{**access-list** *access-list-name*|

      gateway*access-list-name*|**prefix-list***prefix-list-name*}

Parameter

Parameter	Parameter Declaration
interface-**type**	Port type.
interface-number	port number.
*	All ports.
In	Filters the received ospf route
out	Filters outgoing external (redistribute) routes, only for *, not for specific ports
access-list-name	The name of the access list.
access-list-name	The name of the access list.
prefix-list-name	The name of the prefix list.

Default

None

Command mode

The OSPF routing configuration state

Instruction

None

Example

router ospf 1

    filter * in access-list mylist

3.1.28.   graceful-restart

Set the OSPF smooth restart function and related parameters. Restore to the default settings by using the no graceful-restart command.

graceful-restart ietfhelper {disable | strict-lsa-checking}

no graceful-restart ietf helper {disable| strict-lsa-checking}

Parameter

Parameter	Parameter Declaration
disable	(Any option) Turn off the GRhelper capability, and by default, the device can be the GR Helper of any OSPF neighbor.
strict-lsa-checking	(Any option) Turn on strict-lsa-checking capability. When GR Helper detects a LSA change, exit HelpMode and turn off by default.

Default

None

Command mode .

The OSPF routing configuration state

Instruction

None

Example

graceful-restart ietf helper disable

3.1.29.   ipospf authentication

Specify the authentication method used when sending and receiving ospf messages on one interface, using the ipospf authentication interface configuration state command. If you need to cancel the ospf authentication on the interface, use the no ipospf authentication command.

ipospf authentication [*simple* **|** *message-digest*]

no ipospf authentication

Parameter

Parameter	Parameter Declaration
simple	(Option l) To verify the authentication information in clear text.

message-digest	(Option l) The authentication information is verified using MD5.

Default

The default of OSPF messages on the interface does not require verification.

Command mode

Interface configuration.

Instruction

If the configuration ipospf authentication simple command specifies that the interface uses clear text authentication, you need to configure a clear text password using the ipospf password command. If you configure the ipospfauthentication message-digest command specifies that the interface uses md 5 encryption authentication, you need to configure the key for md 5 using the ipospf message-digest-key command. If in a network, all OSPF routers must have the same, if they want the OSPF to communicate with each other, the same authentication type and authentication password.

For compatibility purposes, the authentication type configuration for an ospf domain is retained, and when the ospf authentication type is not configured on the interface, the authentication type of the domain where the interface is used (the default authentication type on the domain is no authentication).

Example

The following example requires the docking port G0 / 0 for md 5 verification.

!

interface GigaEthernet0/0

ip address 131.119.251.201 255.255.255.0

ipospfauthentication message-digest

ipospf message-digest-key 1md5abcdefg

!

router ospf 1

network 131.119.0.0 255.255.0.0 area 0

!

Related commands

ipospfpassword

ipospf message-digest

area authentication

3.1.30.   ipospf cost

Specifies the cost required for the interface to run the OSPF protocol, and the no ipospf cost command restores the default value.

ipospfcost *cost-value*

no ipospf cost

Parameter

Parameter	Parameter Declaration
cost-value	Is the value required for the OSPF protocol, an integer between range 1 and 65535.

Default

The value of the default interface is based on the rate of the port.

Command mode

Interface configuration.

Example

The value of configure the OSPF protocol on interface GigaEthernet0 / 0 is 2.

interface gigaEthernet 0/0

    ipospf cost 2

Specifies the cost required for the interface to run the OSPF protocol, and the no ipospf cost command restores the default value.

3.1.31.   ipospf dead-interval

Specifies the length of time for which the adjacent router is dead, and the noipospf dead-

interval command restores the default.

ipospf dead-interval *seconds*

ipospf dead-interval

Parameter

Parameter	Parameter Declaration
Seconds	For the time length of the adjacent router death, in seconds, the legal range is 1 to 65535.

Default

The length of the interface is 40 seconds.

Command mode

Interface configuration.

Instruction

The value of the dead-interval will be written into the Hello message and transmitted with the Hello message. The dead-interval parameters between the routers adjacent to this interface must be consistent and at least 4 times the hello-interval value.

Example

The death time of the adjacent router on the configuration interface GigaEthernet0 / 0 is 60 seconds.

router_config_g0/0#ip ospfdead-interval 60

Related commands

ipospf hello-interval

3.1.32.　　ipospf demand-circuit

ipospf demand-circuit specifies the interface as the on-demand circuit, and no ipospfdemand-circuit recovers to the default value.

ipospf demand-circuit

no ipospf demand-circuit

Parameter

None

Default

Not working

Command mode

Interface configuration.

Instruction

After being configured as an on-demand circuit, the hello message and the periodic link state update message can be suppressed. When the network topology is stable, the underlying link can be closed.

Example

Configure the interface GigaEthernet0 / 0 for the on-demand circuit：

router_config_g0/0#ipospfdemand-circuit

3.1.33.　　　ipospf hello-interval

Specifies the interval for sending a Hello message on the interface and no ipospfhello-interval returns to the default.

ipospf hello-interval *seconds*

no ipospf hello-interval

Parameter

Parameter	Parameter Declaration
Seconds	For the interval of HELLO messages in seconds, range from 1 to 255.

Default

The default interval for sending the HELLO message on the interface is 10 seconds.

Command mode

Interface configuration.

Instruction

The value of the hello-interval will be written into the HELLO message and transmitted with the HELLO message. The smaller the value of hello-interval, the faster the change in the network topology will be found, but the more the routing overhead. Ensure consistent hello-interval parameters between the routers adjacent to the interface.

Example

The interval between the interface GigaEthernet0 / 0 is 20 seconds.

router_config_g0/0#ipospfhello-interval 20

Related commands

ipospf dead-interval

3.1.34. ipospf message-digest-key

Set the key-id and key for MD5 authentication. Unset by using no ipospf message-digest-key.

ipospf message-digest-key *keyid***md5**[*0*|*7*] key

no ipospf message-digest-key*keyid*

Parameter

Parameter	Parameter Declaration
keyid	Certified ID (1-255).
key	A 16-bit alphanumeric string.
0|7	0 indicates that the following string is the plaintext form of the key; 7 indicates that the following string is the encrypted form of the key.

Default

No MD5 key.

Command mode

Interface configuration.

Instruction

Usually, each interface uses a key value to generate the authentication information or the validation input package. The adjacency router must have the same key value. The process of changing the key, such as after. Suppose that the current configuration is as follows:

interface GigaEthernet0/1

ipospf message-digest-key 100 md5 OLD

It is now changed to the following configuration:

interface GigaEthernet0/1

ipospf message-digest-key 101 md5 NEW

The system assumes that its adjacency router also has no new key, so it sends multiple copies of the same packet, each with a different key value. In this example, the router sends two copies of each package, one key=100 and another key=101.

This allows the adjacency router to continue to communicate when the manager is modifying the key value. This process stops and once all adjacencies are found to adopt new key values. If the system receives a packet with a new key value, the adjacent router has a new key.

When all the neighbors adopt the new key, the old key will be removed. In this example, it should be configured as follows:

interface GigaEthernet0/1

no ipospf message-digest-key 100

In this way, Ether mouth 1 can only be certified with key=101.

It is suggested that each interface should not have multiple keys. After adding a new key value, the old key value should be deleted to prevent the local system from using the old key to communicate with the unfriendly system that knows the old key value. Deleting the old key values also reduces the communication burden. When the configured key is

displayed, it is displayed as plain or dense text according to the global command.

Example

The following example sets the new key=19, and the password is 8ry4222：

interface GigaEthernet0/1
   ipospfmessage-digest-key10 md5xvv560qle
   ipospf message-digest-key19md58ry4222

Related commands

  area authentication

3.1.35.　　ipospf mib-binding

Set the OSPF process that the NetTube mib can operate on. The no ipospfmib-binding restores the default value.

  ipospf mib-binding *process-id*

  no ipospf mib-binding

Parameter

Parameter	Parameter Declaration
process-id	OSPF process number, value range from 1 to 65535.

Default

The MIB action is bound to the process with the smallest OSPF process number.

Command mode

Global configuration state.

Instruction

When multiple OSPF processes are configured, you can use this command to bind the

MIB operation to a specific OSPF process.

Example

Configure the MIB action bound to the OSPF process 100：

router_config#ipospf mib-binding 100

3.1.36.   ipospf network

Set the network type of the interface. no ipospf network Cancel the setting.

ipospf network { **broadcast | nonbroadcast | point_to_multipoint|point-to-point**}
no ipospf network

Parameter

Parameter	Parameter Declaration
broadcast	The network type for setting the interface is the broadcast type.
nonbroadcast	The network type for setting the interface is a non-broadcast NBMA type.
point-to-point	Set the interface for the network type as point-to-point
point-to-multipoint	The network type for setting the interface is point-to multipoint

Command mode

Interface configuration.

Instruction

On a broadcast network without multiple access capability, the interface should be configured as an NBMA mode. When an NBMA network cannot be guaranteed that any two routers are directly accessible between them, the network should be set in a point-to-point mode.

Example

Configure the interface GigaEthernet0 / 0 as a non-broadcast NBMA type.

router_config_g0/0#ip ospf network non-broadcast

3.1.37.   ipospf passive

Use the ipospf passive routing configuration state command to unsend the HELLO packets on the interface. Use no ipospf passive to reactivate the HELLO message.

ip**ospfpassive**

no **ipospfpassive**

Parameter

The command has no keywords or parameters.

Default

Send the HELLO message on the interface.

Command mode

Interface configuration.

Instruction

If you cancel a HELLO message on one interface, a specific subnet will continue to announce to other interfaces and the routing updates from other routers to that interface can be accepted and processed. This is usually used on, STUB networks, where there are usually no other OSPF routers.

Example

The following example sends HELLO messages to all interfaces covered by the network 172.16.0.0 (except for the gigabit port GigaEthernet0 / 0)：

！

interface GigaEthernet0/0

   Ip address 172.16.0.1 255.255.0.0

   ipospf passive

！

router ospf 110

   network 172.16.0.0 255.255.0.0 area 1

Related commands

None

3.1.38. ipospf password

For a plain and clearly certified key. Use the no ipospf password to cancel the settings.

Ip ospfpassword [*0*|*7*] *password*

no ipospfpassword

Parameter

Parameter	Parameter Declaration
password	Any continuous 8-bit string.
0|7	0 indicates that the following string is the plaintext form of the key; 7 indicates that the following string is the encrypted form of the key.

Default

No clear authentication key.

Command mode

Interface configuration.

Instruction

This command generates a password inserted directly into the ospf routing information package. You can configure a password for each network of each interface. All the neighbor routers must have the same password to exchange the ospf routing information.

When the configured key is displayed, it is displayed as plain or dense text according to the global command.

Example

ipospfpassword yourpass

Related commands

area authentication

3.1.39.   ipospf priority

Configure the priority of the interface on election router, no ipospf priority returns to default.

ip**ospf priority priority**

no **ipospf priority**

Parameter

Parameter	Parameter Declaration
priority	For the priority, the legal range is 0 to 255

Default

The interface has a default priority of 1 when electing the router.

Command mode

Interface configuration.

Instruction

When two routers connected to the same network segment want to be election routers, select the high priority; if the priority is equal, then the large router ID is large. When a router's priority is 0, the router will not be elected as either an "election router" or a "back-up election router." Conuring priority on a non-point-to-point network only takes effect.

Example

Set the priority of the interface GigaEthernet0 / 0 to 8 when electing the router.

router_config_g0/0#ipospf priority8

Related commands

neighbor

3.1.40.   ipospf retransmit-interval

Specifies the retransmission interval for the transfer link state broadcast between the interface and the adjacent router, and the no ipospf retransmit command restores the

default value.

ipospfretransmit-interval *seconds*

no ipospf retransmit-interval

Parameter

Parameter	Parameter Declaration
seconds	For the retransmission interval when the transmission link state is broadcast with the adjacent router, in seconds, the range is

Default

The retransmission interval between the adjacent router is 5 seconds.

Command mode

Interface configuration.

Instruction

When a router broadcasts the link status to its neighbor, it maintains the link state until confirmation from the other party. If no confirmation was received within seconds, retransmission. The seconds value must be greater than the time the two packets transmit the message.

Example

The retransmission interval between the interface GigaEthernet0 / 0 and the adjacent router is 8 seconds.

router_config_g0/0#ip ospf retransmit-interval 8

3.1.41.   ipospftransmit-delay

Set the delay value of the transfer link state broadcast on the interface, and the no ipospftransit-delay restores the default value.

ipospf transit-delay *time*

no ipospf transit-delay

Parameter

Parameter	Parameter Declaration
time	The delay value of the transmission link state broadcast on the interface, in seconds, ranging from 1 to 65535.

Default

The default delay of the transfer link state broadcast on the interface is 1 second.

Command mode

Interface configuration.

Example

The delay value of the transmission link status broadcast on the configuration interface GigaEthernet0 / 0 is 3 seconds.

router_config_g0/0#ipospftransmit-delay3

3.1.42.   limit

Set the maximum number of AS external LSA, no limit restore the default settings.

limit max-ext-lsa*value*

no limit max-ext-lsa

Parameter

Parameter	Parameter Declaration
value	Maximum number of AS external LSA, value range from 0 to 1000000.

Default

Maximum number of AS external LSA, value range from 0 to 1000000..

Command mode

The OSPF routing configuration state

Instruction

Maximum number of AS external LSA, value range from 0 to 1000000..

Example

Maximum number of AS external LSA, value range from 0 to 1000000.：

router_config#routerospf 100
router_config_ospf_100#limitmax-ext-lsa 1000

3.1.43.　　　maximum-paths

Set the maximum number of load-balancing routes

maximum-paths *value*

no maximum-paths

Parameter

Parameter	Parameter Declaration
value	Set the maximum number of load-balancing routes

Default

8.

Command mode

The OSPF routing configuration state

Instruction

Set the maximum number of load-balancing routes，value range from 1 to 8

Example

Set the maximum number of load-balancing routes.：

```
router_config#routerospf 100
router_config_ospf_100#maximum-paths 3
```

3.1.44. neighbor

Maximum number of AS external LSA, value range from 0 to 1000000..

neighborip-address [*priority numbe*r] [**poll-interval**seconds] [**cost** number]

no neighborip-address [*priority number*][**poll-interval**seconds] [*cost number*]

Parameter

Parameter	Parameter Declaration
ip-address	Maximum number of AS Maximum number of AS external LSA, value external LSA, value range range from 0 to 1000000.
prioritynumber	Maximum number of AS external LSA, value range from 0 to 1000000.
poll-interval seconds	Maximum number of AS external LSA, value range from 0 to 1000000.
costnumber	Maximum number of AS external LSA, value range from 0 to 1000000.

Default

No default value.

Command mode

The OSPF routing configuration state

Instruction

For each non-broadcast network neighbor, it must be configured in the router. And the neighbor address must be the main address of the interface. If the adjacent router is in inactive, it is still necessary to send it a hello package. These hello packages are sent in decreasing poll interval intervals.

When opening the router, it simply sends hello packets to a router with a non-zero priority. This router is likely to become both a DR and a BDR router. When the DR and BDR routers are selected, the DR and BDR routers send the hello packets to form an adjacent table.

Example

The following example specifies the router 131.108.3.4 address as a non-broadcast network with a priority value of 1 and a poll interval interval of 180 seconds：

!

router ospf 1

  neighbor 131.108.3.4 priority1 poll-interval 180

!

The following examples represent the configuration of a point-to-multipoint non-broadcast network.

!

interface G0/0

  Ip address 10.0.1.1 255.255.255.0

ipospf network point-to-multipoint non-broadcast

  no shutdown

!

router ospf 1

  network 10.0.1.0 255.255.255.0 area 0

  neighbor 10.0.1.3 cost 5

  neighbor 10.0.1.4 cost 10

  neighbor 10.0.1.5 cost 15

!

Related commands

  ipospf priority

3.1.45.　　　network area

Define several network segments in an area as a network range, and the no network command cancels the network range.

network *networkmask* **area** *area_id*[**advertise** |**not-advertise**]

[**no**]**network***networkmask* **area** *area_id*[**advertise** |**not-advertise**]

Parameter

Parameter	Parameter Declaration
network	Network IP address, points in a decimal format.
mask	Mask, points in decimal format.
area_id	For the area number.
Advertise notadvertise	Specifies whether the summary information for routing to this network range will be broadcast out.

Default

The system default does not configure the network scope.

Command mode

The OSPF routing configuration state

Instruction

Once a range of a network is added to a region, the internal routes to all IP addresses in the region are no longer being broadcast independently to other regions, but only broadcast summary information of the entire network range route. The introduction of the network range and the restriction of this range can reduce the communication amount of routing information between regions.

Example

Definine network range 10.0.0.0 255.0.0.0 added to region 2.

router_config_ospf_10#network 10.0.0.0 255.0.0.0 area 2

3.1.46.   redistribute

redistribute Command are used to introduce external routing information. Use the no redistribute command to unintroduce the external routing information.

redistribute *protocol* [*process-id*] [**metric-type** [*1* | *2*]| **metric***cost* | **tag** *tag*| **route-map** *WORD*]

no redistribute *protocol* [*process-id*] [**metric | tag | route-map**]

Parameter

Parameter	Parameter Declaration
protocol	Designated introduced routing protocols that can be beigrp, bgp, connect, ospf, rip, static.
process-id	Optional process number or autonomous system number, no protocol connect, static.
metric-type[*1|2*]	Measure value type, value range is from 1 to 2, default value is 2.
metric *cost*	Optional route overhead value, ranging from 0 to 16777214, with a default value of 100.
tag *tag*	Routing identification in the external LSA can range from 0 to 4294967295 with a default value of 0.
route-map*WORD*	Optional configuration can only introduce routes that meet the specified routing policy.

Default

Introducing external routing information.

Command mode

The OSPF routing configuration state

Instruction

External routing refers to the route to the outside of the autonomous system. The order does not introduce a default route.

Example

Static routing was introduced with metric Type-1, routing identity 1000 and metric 10：

router_config_ospf_10#redistribute static metric-type 1 tag 1000metric 10

3.1.47.　　restart ospf

restart ospf Command is used to restart the OSPF process. If process-id, restart all OSPF processes.

restart ospf[*process-id*]

no restart ospf[*process-id*]

Parameter

Parameter	Parameter Declaration
process-id	Optional OSPF process number with a value range from 1 to 65535

Default

None

Command mode

Management state.

Instruction

Restart the OSPF process using the restart ospf [process-id] command with the following results：

(1) You can immediately clear all of the data structures of the OSPF process.

(2) The execution of this command will reelect the Router ID.

(3) The OSPF configuration before the restart will not be lost.

Example

Restart all OSPF processes：

router#restartospf

3.1.48.   router-id

Specifies the router-id.no router-id recovery-selected router-id for the OSPF process.

router-id *ip-address*

no router-id

Parameter

Parameter	Parameter Declaration
ip-address	The RouterID of the OSPF process, with points in the decimal form.

Default

The OSPF process selects its own router-id.

Command mode

The OSPF routing configuration state

Instruction

When the new router-id is configured, the OSPF process will restart. Conconfigured router-id, to be unique within the entire OSPF autonomy.

Example

An OSPF process is configured below, with its router-id designated as 1.1.1.1：

router ospf 109
    router-id 1.1.1.1

Related commands

router ospf

3.1.49.   router ospf

router ospfThe command is used to start the OSPF process. no router ospfTo close the ospf process.

router ospf_process-id_ [**vrf**_WORD_]

no router ospf_process-id_ [**vrf**_WORD_]

Parameter

Parameter	Parameter Declaration
process-id	ospf process number. The value range is from 1 to 65535.
vrf_WORD_	Optional: Configure the VPN instance name of the OSPF process binding.

Default

The system is running without an ospf process.

Command mode

Global configuration state.

Instruction

On a single router, multiple ospf processes can be run by specifying a different process number. In this case, it is recommended to use the router-id command to specify different Router ID for different processes.

If the OSPF is used as a VPN internal routing protocol, the OSPF process needs to be bound to the VPN instance.

Example

An ospf process is configured below, with the process number of 109：

Router_config#routerospf 109

Related commands

network area

3.1.50.   show ipospf

show the OSPF primary information.

showipospf[*process-id*]

Parameter

Parameter	Parameter Declaration
process-id	(Optional) Process number.

Default

None

Command mode

Management state.

Instruction

According to the command output information, can help the user for OSPF fault diagnosis. If with the process-id will only display, the global configuration information for the corresponding OSPF process.

Example

Displays the configuration information for all of the OSPF processes：

router#showipospf

OSPF process: 1, Router ID is 192.168.99.81

Distance:intra-area110inter-area130external150

Source DistanceAccess-list

240.240.1.1/241what

SPF schedule delay 5 secs, Hold time between two SPFs 10 secs

Number of areas is 3

AREA: 1

Number of interface in this area is 1(UP: 1)

Areaauthenticationtype:None

AREA: 36.0.0.1

This is a stub area.

Number of interface in this area is 0(UP: 0)

Areaauthenticationtype:None

AREA: 192.168.20.0

Number of interface in this area is 0(UP: 0)

Areaauthenticationtype:None

Net Range list:

10.0.0.0/255.0.0.0 Not-Advertise

140.140.0.0/255.255.0.0 Advertise

filter list on receiving UPDATE is Gateway:weewe

filter list on sending UPDATE is Prefix: trtwd

Summary-address list:

150.150.0.0/16advertise

router#

Displays the field description：

Field	Description
OSPF process: 1	The ID of the OSPF process.
Router ID is 192.168.99.81	The ID of the router.
Distance: intra-area 110 inter-area 130 ex ternal 150	The default management distance used when the current router generates the route.
SourceDist ance Access-list	Management distance based on the specific routing configuration.
SPFscheduledelay5 secs, Hold timebetween two SPFs 10 secs	Values of the two TIMER associated with the OSPF.
Number of areas is 3	The number of domains currently configured, and the parameters configured in each domain.
filter listonreceiving.	The configured filtering of the route to the input.
filter list on sending	The configured filtering of the routing of the output.
Summary-address list	Configured routing is converged.

3.1.51.   show ipospf border-routers

Display the data items for the ABR and the ASBR in the router.

 show ipospf border-routers

Parameter

None

Default

None

Command mode

Management state.

Example

```
router#
router#showipospfborder-routers
OSPF process: 1
Codes: i - Intra-area route, I - Inter-area route
Destination Adv-RtrCostTypeArea
i 192.168.20.77 192.168.20.77 11ABR 0
router#
```
Displays the field description：

Field	Description
Destination	The ID of the destination router.
Adv-Rtr	The next jump to reach the destination router.
Cost	The overhead of using this router.
Type	The type of the destination router; either ABR, or ASBR, or both.
Area	The domain ID of the domain learned to route.

3.1.52.   show ipospf database

Displays the OSPF connection status database information.

show ipospf database

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the output information of this command, the OSPF connection status database information can be viewed to help the user in troubleshooting.

Example

router#
router#showipospf database
OSPF process: 1
(Router ID 192.168.99.81)
AREA: 0
Router Link States
Link IDADV RouterAge Seq # Checksum Link count
192.168.20.77192.168.20.77770x8000008a0x90ed1
192.168.99.81192.168.99.81660x800000030xd9781
Net Link States
Link IDADV RouterAge Seq # Checksum
192.168.20.77 192.168.20.77800x800000010x9625
SummaryNet Link States
Link IDADV RouterAge Seq # Checksum
192.168.99.0 192.168.99.81870x800000030xd78c
AREA: 1
Router Link States
Link IDADV RouterAge Seq # Checksum Link count
192.168.99.81192.168.99.81700x800000020x08171
SummaryNet Link States

Link IDADV RouterAge Seq # Checksum

192.168.20.0 192.168.99.81660x800000060xd1c1

router#

Displays the field description：

Domain	Description
AREA: 1	The domain
Router Link States/Net Link States/Summary Net Link States	LSA type
Link ID	LSAID.
ADVRouter	Publish the router
Age	publish age
Seq #	Generate the serial number
Checksum	check sum

3.1.53.   show ipospf interface

Displays the OSPF interface information.

show ipospf interface

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, view the configuration and operation of OSPF on the interface, and the user can confirm whether the configuration is correct and conduct OSPF fault diagnosis.

Example

router#showipospfinterface

GigaEthernet1/0 isup,lineprotocolisup

InternetAddress: 192.168.20.81/24, Nettype: BROADCAST

OSPF process is 1,AREA0,RouterID202.96.135.201

Cost 10,Transmit Delay is 1 sec, Priority1

Hello interval10, Dead timer40, Retransmit 5

OSPF INTF State is DrOther

DesignatedRouter id 131.119.254.10, Interface address 131.119.254.10

Backup Designated router id131.119.254.28,Interfaceaddr131.119.254.28

Neighbor Count is 8,Adjacent neighbor countis 2

Adjacent withneighbor 131.119.254.28(BackupDesignatedRouter)

Adjacent withneighbor 131.119.254.10(DesignatedRouter)

router#

Display the field Description：

Domain	Description
Internet Address:	The Port IP address.
Nettype	The OSPF port network type.
OSPF process is	The same OSPF process number that it is located in
AREA	Where the Domain.
Router ID	Process router ID.
Cost	Router OSPF port cost.
Transmit Delayis	Send delay.
Priority	Router port priority.
Hellointerval	hello margin.
Dead timer	dead time.
Retransmit	Re-transmission interval.
OSPF INTF State is	The OSPF port status.
Designated Router id	Assign the router's IP ID and the port IP address.
Backup Designated router id	Backup of the assigned router ID and the port IP address.
Neighbor Countis	The number of adjacent routers.
Adjacent neighbor count is	Number of neighbors that have established neighbor encies.
Adjacent withneighbor	List of neighbors that have established an adjacency relationship

3.1.54.　　　show ipospf neighbor

Displays the OSPF neighbor point information.

show ipospf neighbor

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the situation of the OSPF neighbors, and help the user to confirm whether the OSPF neighbors are configured correctly and perform the OSPF fault diagnosis.

Example

router#showipospf neighbor
OSPF process: 1
AREA1
Neighbor Pri State DeadTimeAddress Interface
21.0.0.321 FULL/DR 31 192.168.99.32GigaEthernet10/0
AREA36.0.0.1
Neighbor Pri State DeadTimeAddress Interface
199.199.199.1371EXSTART/DR31202.19.19.137GigaEthernet0/2
AREA192.168.20.0
Neighbor Pri State DeadTimeAddress Interface
140.140.0.461 FULL/DR 108 140.140.0.46 GigaEthernet0/0
133.133.2.111 FULL/DR 110 133.133.2.11 GigaEthernet0/0
192.31.48.2001 FULL/ DROTHER31192.31.48.200 GigaEthernet0/0
show the field description：

Domain	Description
OSPF process	The home-site OSPF process number
AREA	place Domain
Neighbor	back-fence ID
pri	Neighbor priorities

state	Connecconnection states of the same neighbors
deadTime	Time of neighbor failure
Address	The IP address of the neighbor
Interface	The router reaches the port used by the neighbor

3.1.55.　　show ipospf virtual-link

Displays the OSPF virtual link information.

show ipospfvirtual-link

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the status of the virtual link configured by the OSPF. Use the command show ipospf neighbor to view the adjacent information in more detail.

Example

router#showipospf virtual-link

Virtual Link Neighbor ID 200.200.200.2 (UP)

Run as Demand-Circuit

TransArea: 1, Cost is 185

Hello intervalis10, Dead timer is 40 Retransmit is 5

INTFAdjacency state is IPOINT_TO_POINT

Display the field description：

Domain	Description
neibhbor ID	Conconfigured-end neighbor ID.
Neighbor state	States of the adjacency relationship with the neighbors.
Demand-Circuit	Indicates that the work is performed in the DC mode.
TransArea	The configured transport area of.
cost	For the co, the minimum reach in the TransArea. 0 is not accessible.
HelloInterval	Current HelloInterval
DeadTime	Time of neighbor failure.
Retrans	Re-transmission interval.
INTF Adjace ncy State	virtual link The state of the interface.

Related commands

area vritual-link

showipospfneighbor

3.1.56. show ipospfmemlog

Display the key log information recorded by the OSPF in this module. If the power drops, clear the zero.

show ipospf neighbor

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the process of establishing the neighbor of OSPF neighbors, including the DR election status in the broadcast network, to help the user to diagnose OSPF faults.

Example

router#showipospfmemlog
0: 1672499000 OSPF: Nbr 1.1.1.1 (addr: 172.17.20.1) recv hello, become TWOWAY

1: 1672499000 OSPF[1]: 2 Way Communication to 1.1.1.1 on GigaEthernet0/0, state 2WAY

2: 1672499000 OSPF(N2Way): Nbr 1.1.1.1 (addr: 172.17.20.1) stop in 2WAY, interface type is 1, dr is NULL, bdr is NULL

3: 1672499000 OSPF: call if_trans(NBR_CHANGE) ospf_rx_hello 1509

4: 1672499002 OSPF: Nbr 2.2.2.2 (addr: 172.17.20.2) recv hello, become TWOWAY

....
17: 1672499408 OSPF: Nbr 2.2.2.2 (addr: 172.17.20.2) recv hello, become TWOWAY

18: 1672499408 OSPF[1]: 2 Way Communication to 2.2.2.2 on GigaEthernet0/0, state 2WAY

19: 1672499408 OSPF[1]: Interface 172.17.20.0 on GigaEthernet0/0 Nbr changed

20: 1672499408 OSPF: Interface GigaEthernet0/0 start to choose dr, old dr is 1.1.1.1 (FULL), old bdr is 3.3.3.3 (2WAY), self is BDR, &intf->nbr=0x3583af7c, olddr=0x358106c8, oldbdr=0x3583af7c

21: 1672499408 OSPF: Interface GigaEthernet0/0 finish to choose dr, new dr is 1.1.1.1 (FULL), new bdr is 3.3.3.3 (2WAY), self is BDR, new dr=0x358106c8, new bdr=0x3583af7c

22: 1672499408 OSPF: Nbr 2.2.2.2 (addr: 172.17.20.2) call nbr_trans(ADJ_OK) in N 2Way 768

23: 1672499408 OSPF[1]: NBR 2.2.2.2 on GigaEthernet0/0 Adjacency OK, state EXSTART.

Display the field description：

Domain	Description

OSPF process	The home OSPF process number
AREA	place Domain
Nbr	back-fence ID
Adjacency	To reach the adjacency state. In the broadcast network, DR, BDR and all adjacencies reach the adjacent state. DRother Only reach the adjacent
Address	The IP address of the neighbor
Interface	The router reaches the port used by the neighbor

3.1.57.　　show ipospfreverse-memlog

Display the key log information recorded by the OSPF in this module. If the power drops, clear the zero.

show ipospf neighbor

Parameter

None

Default

None

Command mode

Management state.

Instruction

According to the command output information, you can view the process of OSPF neighbors, including the DR election status in the broadcast network, and help the user in OSPF fault diagnosis. Adopt the opposite order to memlog, that is, the reverse output.

Example

router#showipospfreverse-memlog
23: 1672499408 OSPF[1]: NBR 2.2.2.2 on GigaEthernet0/0 Adjacency OK, state EXSTA
RT.

22: 1672499408 OSPF: Nbr 2.2.2.2 (addr: 172.17.20.2) call nbr_trans(ADJ_OK) in N 2Way 768

21: 1672499408 OSPF: Interface GigaEthernet0/0 finish to choose dr, new dr is 1.
1.1.1 (FULL), new bdr is 3.3.3.3 (2WAY), self is BDR, new dr=0x358106c8, new bdr =0x3583af7c

20: 1672499408 OSPF: Interface GigaEthernet0/0 start to choose dr, old dr is 1.1
.1.1 (FULL), old bdr is 3.3.3.3 (2WAY), self is BDR, &intf->nbr=0x3583af7c, oldd r=0x358106c8, oldbdr=0x3583af7c

19: 1672499408 OSPF[1]: Interface 172.17.20.0 on GigaEthernet0/0 Nbr changed

18: 1672499408 OSPF[1]: 2 Way Communication to 2.2.2.2 on GigaEthernet0/0, state 2WAY

17: 1672499408 OSPF: Nbr 2.2.2.2 (addr: 172.17.20.2) recv hello, become TWOWAY

16: 1672499362 OSPF: Interface GigaEthernet0/0 finish to choose dr, new dr is 1.
1.1.1 (FULL), new bdr is 3.3.3.3 (2WAY), self is BDR, new dr=0x358106c8, new bdr =0x3583af7c
....
.

Display the field description：

Domain	Description
OSPF process	The home OSPF process number
AREA	place Domain
Nbr	back-fence ID
Adjacency	To reach the adjacency state. In the broadcast network, DR, BDR and all adjacencies reach the adjacent state. DRother Only reach the adjacent
Address	The IP address of the neighbor
Interface	The router reaches the port used by the neighbor

3.1.58.   stub-router

Set the router to a stub router. no stub-router Restore the default settings.

stub-router
no stub-router

Parameter

None

Default

Not working

Command mode

The OSPF routing configuration state

Instruction

When the router is configured as a Stub router, the router is unwilling to forward the message that the destination network segment is not on the router. In the Router-LSA published by the router, the link type of 1 (point-to-point link), 2 (connected to the transmission network) and 4 (virtual link) is set to the maximum value of 65535, while the link type of 3 (connected to the Stub network) is unchanged. Thus, if other routers have less expensive routes to these destination addresses, the data is not forwarded through this Stub router.

Example

The following will configure the local router as the Stub router:
router ospf 109
    stub-router

3.1.59.   summary-address

Use the summary-address routing configuration state command to establish the address for the OSPF for the routing sink. Use the no summary-address routing configuration state command to remove the address of the routing convergence.

summary-address *address mask* [**not-advertise**]

no summary-address *address mask*

Parameter

Parameter	Parameter Declaration
address	A cluster address for a given address range.
Mask	Subnet mask of the clustering routing.
not-advertise	(Any option) is used to suppress the matching route generation LSA

Default

None

Command mode

The OSPF routing configuration state

Instruction

Multiple groups of addresses can be summarized. Routing learned from other routing protocols can also be aggregated. After summarizing, all the networks it covers will not be sent to other routes Domain. The cost of aggregate routes is the minimum value assigned to all aggregated routes. This command reduces the size of the routing table.

For the OSPF using this command causes the OSPF autonomous system boundary Router (ASBR) to notify an external route as an aggregate of all external routes (via redistribute) that it covers. This command will only aggregate routes from other routing protocols coming in to the OSPF via redistribute. Routing can be summarized by area range in the OSPF.

Example

In the following examples, the summary address 10.1.0.0 represents 10.1.1.0,10.1.2.0,10.1.3.0, etc. Address only10.1.0.0 was broadcast out.

Router_config_ospf_1#summary-address 10.1.0.0 255.255.0.0

Related commands

area range

ipospfpassword

ipospf message-digest-key

3.1.60.　　Timers

Set the time interval between two consecutive LSDB aging checks using the timers age-time routing configuration state command. Return to the default settings by using the no timersage-timer command.

timers { age-timer *agetime*| **delay-timer**lsa*spf-delay* | **hold-timer lsa**spf-holdtime**}**
no timers { age-timer |delay-timer | **hold-timer }**

Parameter

Parameter	Parameter Declaration
age-timer	Set the time interval between the two consecutive LSDB aging checks
delay-timer	To specify the time-configured delay interval between when the OSPF receives a topology change and when it starts a shortest path priority computation, the timer delay routing configuration state command is used
hold-timer	Set the interval between two consecutive SPF calculations using the timers hold routing configuration state command
agetime	Time interval between two consecutive LSDB aging checks. From from 1 to 65535. The default is 60 seconds.

spf-delay	Time ency between topology change and starting computation in seconds. From 0 to 65535. The default value is
spf-holdtime	For 5 seconds. If it is 0 seconds, then there is no delay, or there is a change immediately recalculated.

Default

age-time: 60S；spf-delay: 5S；spf-holdtime: 10S.

Command mode

The OSPF routing configuration state

Instruction

The smaller the setting time, the more timely the aging lsa processing; the faster the network changes;. But it takes up even more processor time.

Example

Router_config_ospf_1#timers delay-timer 10

Setsthe minimum interval at which the software acceptsthe same LSA from OSPF neighbors

```
  timers              -- Set OSPF protocol related timers
Router_config_ospfv3_6500#timers
  age    -- LSDB age time
  delay  -- Delay between receiving a change to SPF calculation
  hold   -- Hold time between consecutive SPF calculations
Router_config_ospfv3_6500#timers d
Router_config_ospfv3_6500#timers delay ?
<0-65535>          -- Time value (seconds)
Router_config_ospfv3_6500#timers ag
Router_config_ospfv3_6500#timers age ?
<1-3600>          -- Time value (seconds)
Router_config_ospfv3_6500#timers age 300 ?
<cr>
```

4. The BGP configuration command

4.1. The BGP configuration command

The BGP configuration command has：

*address-family

*aggregate-address

*bgp always-compare-med

*bgpasnotation dot

*bgpbestpath med

*bgp client-to-client reflection

*bgp cluster-id

*bgp confederation identifier

*bgp confederation peers

*bgp dampening

*bgp default

*bgp deterministic-med

*bgp fast-external-fallover

*bgp graceful-restart

*bgp log-neighbor-changes

*bgpmaxas-limit

*bgp redistribute-internal

*bgp router-id

*bgp update-delay

*clearipbgp

*debugipbgp

*distance

*filter

*maximum-paths

*neighboractivate

*neighbor advertisement-interval

*neighborallowas-in

*neighbor capability orf prefix-list

*neighbor default-originate

＊neighbor description

＊neighbor distribute-list

＊neighborebgp-multihop

＊neighbor fall-over

＊neighbor filter-list

＊neighbor four-octet-as-cap

＊neighbor local-as

＊neighbor maximum-prefix

＊neighbor next-hop-self

＊neighbor password

＊neighbor peer-group

＊neighbor prefix-list

＊neighbor remote-as

＊neighbor remove-private-AS

＊neighbor route-map

＊neighbor route-reflector-client

＊neighbor route-refresh

＊neighbor send-community

＊neighbor send-label

＊neighbor shutdown

＊neighbor soft-reconfiguration

＊neighbor timers

＊neighborttl-security-hop

＊neighbor update-source

＊neighbor weight

＊network (BGP)

＊redistribute（BGP）

＊routerbgp

＊showipbgp

＊showipbgp community

＊showipbgp dampened-paths

＊showipbgp flap-statistics

＊showipbgp ipv4

＊showipbgp labels

＊showipbgp neighbors

＊showipbgp paths

＊showipbgp prefix-list

＊showipbgpregexp

＊showipbgp summary

＊showipbgp vpnv4

＊synchronization

＊table-map

＊timers

4.1.1. address-family

Use the address-family command to enter the bgp address family configuration mode：

address-family { **ipv4** [**mdt**| **multicast** | **unicast** | **vrf**name] | **vpnv4** }

Parameter

Parameter	Parameter Declaration
ipv4	Enter the ipv 4 address family configuration mode.
vpnv4	Enter the vpnv 4 address family configuration mode.
mdt	Enter the mdt configuration mode
multicast	Enter the multicast configuration mode
unicast	Enter the unicast configuration mode
vrf	Go into the vrf configuration mode
name	Vrf name

Default

None.

Command mode

BGP configuration state.

Instruction

Extended bgp configuration mode.

Example

Activate the neighbor 1.1.1.1 ipv4 mdt routing notification：

router bgp 1
neighbor 1.1.1.1 remote-as 1
address-family ipv4 mdt

Techroutes

N E T W O R K

neighbor 1.1.1.1 activate
exit-address-family

Related commands

exit-address-family

4.1.2. aggregate-address

Use the aggregate-address router configuration command to create aggregate addresses in the BGP routing table. Use the no aggregate-address command to prohibit this feature：

aggregate-addressA.B.C.D/n [as-set] [**summary-only**] [**attribute-map***map-name*]

no aggregate-addressA.B.C.D/n

Parameter

Parameter	Parameter Declaration
A.B.C.D/n	Aggregated network.
as-set	Includes AS set path attribute (AS-SET)
summary-only	Suphibit all more specific routes.
attribute-map	Specifies the route-map setting of the properties of the aggregate route.
map-name	Routing map name.

Default

None.

Command mode

BGP configuration state.

Instruction

There are three ways to inject routing into BGP: first, dynamic injection through forwarding (redistribute), network command and aggregate (aggregate) static injection. The routes generated by all three methods are considered locally generated and can be notified to other counterparts, but not injected into the local IP route table.

Aggent routes are generated to reduce the number of routing routes and increase the efficiency of routing indexes and the stability of routing. The BGP aggregation routing is performed in the BGP routing table, which is considered locally generated and is not added to the routing table, but can be seen in the BGP routing table. The aggregate-address command with the same prefix will overwrite the original configuration.

The aggregation route is often to aggregate the existing route according to certain rules, and the existence of this route depends on the state of the source route of this aggregated route. BGP converged routing relies on the routing with the same prefix and the more precise routing, which is valid only if the BGP routing table has at least one route with the same prefix or a more accurate routing. The aggregated route can be displayed by show ipbgp with *> tag. The gent route can inhibit source route with s label if the source route is suppressed.

Without using the as-set option, the aggregate routing as-path property formation follows the following rules:

All entries that appear in the as-sequence should appear in the aggregated as-path;

All entries appearing in the as-set should appear in at least one type of the aggregated as-path;

The longest identical entry appearing in the as-sequence served as the aggregated as-sequence;

The remaining entries served as the as-set.

The as-path property of all already routed using the as-set option appears in the as-set type in the aggregate routing as-path.

Using the summary-only option, you can not only create an aggregated route (for example, 193. *. *. *), And can inhibit more specific routes.

Use the attribute-map option to modify the properties of the route when an aggregate route is generated.

The maximum number of aggregate commands that can be used is determined by router resources, such as a configured RAM.

Example

The following example creates an aggregation address：

router bgp 5
    aggregate-address 193.0.0.0/8

Related commands

route-map

4.1.3. bgp always-compare-med

Generally, when BGP selects routing, it is possible to compare MED only if two routes are from the same autonomous system. bgp always-comapre-med makes BGP always compare MED regardless of whether the route is from the same autonomous system; close the option with the no bgp always-compare-med command：

bgp always-compare-med

no bgp always-compare-med

Parameter

None.

Default

The default does not compare the MED of routing from different autonomous systems.

Command mode

BGP configuration state.

Instruction

Generally speaking, when BGP selects routes, MED is possible only if two routes are from the same autonomous system, using bgp always-comapre-med can make BGP always compare MED, regardless of whether the route is from the same autonomous system. This can change the process of routing selection.

Example

In the following example, turn on the function：

router bgp 5

bgp always-compare-med

Related commands

bgpbestpath med

bgp deterministic-med

4.1.4. bgpasnotation dot

Open the asdot mode：

bgpasnotation dot

no bgpasnotation dot

Parameter

None.

Default

The default is in the asplain mode.

Command mode

BGP configuration state.

Instruction

Configure as display form, you can only display in asdot if as is greater than 65535.
Configure this command requires clear ipbgp * to take effect.

Example

In the following example, turn on the function：

router bgp100
    bgpasnotation dot

Related commands

route bgp

show ipbgp

4.1.5. bgpbestpath med

Used to modify the way the BGP handles the MED attribute of the route. no bgpbestpath
med The command removes the configuration and restores to the default processing
mode.

bgpbestpath med confed|missing-as-worst

no bgpbestpath med confed|missing-as-worst

Parameter

Parameter	Parameter Declaration
Confed	The autonomous system alliance compares the MED properties.
missing-as-worst	When comparing MED properties, routes without MED properties are considered the worst.

Default

    None

Command mode

    BGP configuration state.

Instruction

    In default, if the MED attribute of BGP routing is not set, but the MED is required, the MED is always considered 0, that is, the minimum, the most preferred. After the missing-as-worst option is configured, if the MED attribute of BGP routing is not set, the MED is considered as the maximum and the least preferred.

    By default, the same routes published by different BGP routers within the same autonomous system compare MED, while within the same autonomous system alliance, the same routes published by different autonomous systems do not compare MED. Once the confed option is configured, this rule is modified to make all the same routing comparison MED published within the same autonomous system consortium.

Example

    (100) and (200) are not routes from the same sub-autonomous system, the default does not compare with MED. After bgpbestpath med confed is configured, because they are from the sub-autonomous system 100 and the sub-autonomous system 200 within the autonomous system alliance, they belong to the same autonomous system alliance, so MED should be compared.

Related commands

    bgp always-compare-med

    bgp deterministic-med

4.1.6. bgp client-to-client reflection

    The customer-to-customer routing reflex function enables commands, and the no form of this command is used to prohibit customer-to-customer routing reflex functions.

    bgp client-to-client reflection

    no bgp client-to-client reflection

Parameter

    None

Default

    When the routing reflector is configured, the routing reflector reflects a customer's route to another customer by default.

Command mode

    BGP configuration state.

Instruction

    If no radiology or autonomous union is configured, generally all IBGP in the autonomous system must be fully connected and the neighbors no longer notify the routes received from the IBGP neighbors, thus prevents routing circulation. But if a routing reflector is used, then all IBGP speakers do not have to be fully connected. And when all of the IBGPs in these autonomous systems later become fully connected, then there is no requirement for routing reflection. This function can be banned by this order.

Example

In the following example, the configured local router is a routing reflector, when the three neighbors are fully connected, turning off the routing reflection function.

router bgp 5

    neighbor 192.168.20.190 route-reflector-client

    neighbor 192.168.20.191 route-reflector-client

    neighbor 192.168.20.192 route-reflector-client

    no bgp client-to-client reflection

Related commands

    neighbor route-reflector-client

    bgp cluster-id

4.1.7. bgp cluster-id

    bgp cluster-id *cluster-id*

    no bgp cluster-id *cluster-id*

Parameter

Parameter	Parameter Declaration
cluster-id	BGP routing reflects cluster identification, either in an ip address format or digital, with a maximum length of 4 bytes.

Default

If there is only a single routing reflector in the BGP routing reflection cluster, the router-id of the router is identified as the routing reflection cluster.

Command mode

BGP configuration state.

Instruction

One or more routing reflectors and their clients form a BGP routing reflection cluster, usually a BGP routing reflection cluster has only one routing reflector, when the cluster is identified by the router ID of the routing reflector. To increase redundancy and avoid failure of a single node, a cluster may have more than one routing reflector. In this case, all the routing reflectors in the cluster must be configured with the 4-byte cluster ID, so that the routing reflector can recognize the update information of the routing reflector in the same cluster.

If a cluster has more than one routing reflector, the command is used to configure the BGP routing reflection cluster identity. And the same ID requires all the routing reflectors in the cluster.

Example

In the following example, the local router is a routing reflector serving for the entire cluster, configured with a BGP routing reflection cluster identity to identify the cluster, and the neighbor 198.92.70.24 as the routing reflection customer：

router bgp 5

    neighbor 198.92.70.24 route-reflector-client

    bgp cluster-id 50000

Related commands

neighbor route-reflector-client

show ipbgp summary

4.1.8. bgp confederation identifier

Use the bgp confederation identifier command to specify a BGP autonomous system alliance identity, and use the no bgp confederation identifier command to remove the BGP autonomous system Alliance identity：

bgp confederation identifier autonomous-system

no bgp confederation identifierautonomous-system

Parameter

Parameter	Parameter Declaration
autonomous-system	The Autonomous System Alliance of the Autonomous System No

Default

None

Command mode

BGP configuration state.

Instruction

One way to reduce IBGP connections is to divide an autonomous system into sub-autonomous systems and then form them into a single autonomous system consortium. The autonomous system alliance concept based on an AS can be divided into several subAS. Within each subAS, all IBGP rules are applicable, such as all IBGP neighbors must form a full network structure. Each subAS has a different AS number, so EBGP must be run between them. Although EBGP is used between subAS, the routing performance within the alliance is similar to IBGP routing within a single AS. That is, the Next hop, MED, Local preference information is retained when the boundary of the subAS is crossed. To the outside world, the alliance looks like a single AS.

The Autonomous System Alliance Identification (identifier) is the external autonomous system number of an autonomous system alliance. All BGP routers within the same Autonomous System Alliance must be configured with the same Autonomous System Alliance identity.

Configuring the autonomous system alliance identity often requires a new BGP connection.

Example

In the following examples, AS are divided into AS4001,4002,4003,4004,4005,4006, and 4007 and are identified by the consortium identifier 5. Local AS is 4001, neighbor 1.2.3.4 within your Autonomous System Alliance and neighbor 3.4.5.6 outside your Autonomous System Alliance. For neighbor 3.4.5.6, your AS is 5：.

router bgp 4001

  bgp confederation identifier 5

  bgp confederation peers 4002 4003 4004 4005 4006 4007

  neighbor 1.2.3.4 remote-as 4002

  neighbor 3.4.5.6 remote-as 510

Related commands

bgp confederation peers

show ipbgp summary

4.1.9. bgp confederation peers

Use the bgp confederation peers command to configure AS belonging to the Autonomous System Alliance. Use the no bgp confederation peers command to remove AS from the Autonomous System Alliance：

bgp confederation peers autonomous-system [autonomous-system]

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

Parameter

Parameter	Parameter Declaration
autonomous-system	Autonomous system number.

Default

None

Command mode

BGP configuration state.

Instruction

The autonomous system alliance concept based on an AS can be divided into several subAS. Within each subAS, all IBGP rules are applicable, such as all IBGP neighbors must form a full network structure. Each subAS has a different AS number, so EBGP must be run between them. Although EBGP is used between subAS, the routing performance within the alliance is similar to IBGP routing within a single AS. That is, the Nexthop, MED, Localpreference information is retained when the boundary of the subAS is crossed. To the outside world, the alliance looks like a single AS.

The autonomous system specified by this command is within the same autonomous system union for the local autonomous system, and is a sub-autonomous system. Each sub-autonomous system is fully connected within itself.

Generally, the bgp confederation identifier command is also used to specify which autonomous system alliance the local AS belongs to.

Configuring this command often requires re-establishing the BGP connection.

Example

The following examples specify that AS1090,1091,1092, and 1093 belong to a single consortium：

router bgp 1090
   bgp confederation identifier 23
   bgp confederation peers 1091 1092 1093

Related commands

bgp confederation identifier

show ipbgp summary

4.1.10.   bgp dampening

Configure the BGP routing fluctuation control parameters, and start the BGP routing fluctuation control function. Turn off the function with the no bgp dampening command.

bgp dampening [*half-timeresuse-valuesuppress-valuehold-time*]

nobgp dampening

Parameter

Parameter	Parameter Declaration
half-time	Half-life of routing penalty values that decay in minutes.
reuse-value	Reuse the penalty value of the route.
suppress-value	The penalty value of the inhibitory route.
hold-time	Maximum hold time for suppressed routing, in minutes.

Default

half-time：   15 minutes.

reuse-value：   750

suppress-value：   2000

hold-time：   60 minutes

Command mode

BGPConfiguration.mode

Instruction

Routing fluctuation control has different effects on routes in different states, mainly affecting whether the route and can be aggregated and whether the main route table is added. The fluctuation process according to a route and its variation Description is as follows：

A stable route is punished for fluctuations, and aggregated to the neighbor when the penalty value is less than the minimum of the penalty value (Suppress), the penalty value can decrease over time before the maximum penalty value of the reused route, and cannot be notified or aggregated. When the penalty value drops below Reuse, the route becomes effective, and the neighbor can be notified and aggregated.

Example

The bgp dampening command can start the BGP routing fluctuation control function and use the default parameter configuration. Different fluctuation control parameters can be set for different routes by the following command.

router bgp 100

  bgp dampening 15 750 2000 60

Related commands

set dampening

4.1.11.   bgp default

Sets the default parameters for the BGP process. Restore the default value through the no bgp default command.

bgp default local-preference<*0-4294967295*>

no bgp default local-preference

Parameter

Parameter	Parameter Declaration
local-preference	Set the default parameters for the local priority.
<0-4294967295>	Default value for the local priority.

Default

The default value for the local priority is 100.

Command mode

BGP configuration state.

Instruction

For routes received from IBGP neighbors, BGP sets a local priority with a default value of 100. This can be modified by this command.

Example

The default local priority is 200 for routes from IBGP neighbors with the following command.

router bgp 100

   bgp default local-preference 200

Related commands

None

4.1.12.   bgp deterministic-med

Modify the way BGP handles the MED attribute and restore the default value with no bgp deterministic-med.

bgp deterministic-med

no bgp deterministic-med

Parameter

None

Default

None

Command mode

BGP configuration state.

Instruction

By default, BGP compares the MED for the routing of different BGP neighbors from the autonomous system. The bgpbestpath med confed command compares the MED of the BGP. This command means to compare the routing of different neighbors from the same autonomous system and the same sub-autonomous system.

Example

None

Related commands

> **bgpbestpath med**
>
> **bgp always-compare-med**

4.1.13.   bgp fast-external-fallover

Start the quick clear neighbor feature and cancel it with no bgp fast-external-fallover.

bgp fast-external-fallover

no bgp fast-external-fallover

Parameter

None

Default

The quick neighbor clearing function is enabled by default.

Command mode

BGP configuration state.

Instruction

In default, the quick clear neighbor function is enabled. When an interface state changes to Down, the BGP session directly connected to external neighbors built on the interface is cleared immediately.

Example

None

Related commands

> **router bgp**
>
> **clear ipbgp**

4.1.14.   bgp graceful-restart

Configure the bgp graceful restart capability.

bgpgraceful-restart [**restart-time**value]| [**stalepath-time**value]

no bgpgraceful-restart

Parameter

Parameter	Parameter Declaration
restart-time	Configuration protocol for restart neighbor up with default of 120s.
stalepath-time	Configure the maximum holding time of aging route after neighbor restart with a default of 360s.

Default

bgp graceful restart Capacity is not started.

Command mode

BGP configuration state.

Instruction

bgp graceful-restart restart-time configuration time for Restart Time during BGP GR capability notification for Receiving Speaker.

bgp graceful-restart stalepath-time configuration time to maintain the aging route.

Example

None

Related commands

bgp update-delay

clear ipbgp

4.1.15.   bgp log-neighbor-changes

Tip the neighbor up / down.

bgp log-neighbor-changes

nobgp log-neighbor-changes

Parameter

None

Default

None

Command mode

BGP configuration state.

Instruction

The bgp neighbor up / down log prompt was turned on by the bgp log-neighbor-changes command, and no bgp log-neighbor-changes closes the bgp neighbor up / down log prompt.

Example

None

Related commands

clear ipbgp

4.1.16.   bgpmaxas-limit

Configure the maximum number of as through which bgp routing passes.

bgpmaxas-limit<value>

no bgpmaxas-limit

Parameter

Parameter	Parameter Declaration
value	Range: 1-500

Default

None

Command mode

BGP configuration state.

Instruction

The route received from the peripheral neighbor is restricted by the number of as in the aspath attribute, and the route is discarded when the number of as in the aspath attribute exceeds the value of the bgpmaxas-like configuration.

Example

None

Related commands

clear ipbgp

4.1.17.   bgp redistribute-internal

Allows injection of routes acquired via iBGP into IGP such as RIP or OSPF.

bgp redistribute-internal

no bgp redistribute-internal

Parameter

None

Default

Rouroute obtained from the IBGP are not injected into the IGP.

Command mode

BGP configuration state.

Instruction

When this command configuration, you must pay attention to the configuration between routers, otherwise it is easy to cause routing loop. Conconfigure this command to reset the BGP using the command clear ipbgp *.

Example

The following configuration will implement BGP access from iBGP routing will be injected into the OSPF 3.

router ospf 3

    redistribute bgp 2

!

router bgp 2

    bgp redistribute-internal

!

Related commands

None

4.1.18.   bgp router-id

Configure the bgp router identifier.

bgp router-id<A.B.C.D>

nobgp router-id<A.B.C.D>

Parameter

Parameter	Parameter Declaration
A.B.C.D	ID to be configured.

Default

None

Command mode

BGP configuration state.

Instruction

Configure a new router ID to automatically reset the BGP for a peer in the Established state.

Example

None

Related commands

clear ipbgp

show ipbgp

4.1.19.　bgp update-delay

Configure the bgp routing update processing delay.

bgp update-delay<value>

no bgp update-delay

Parameter

Parameter	Parameter Declaration
value	Specific time of routing update processing delay, range: 1-3600s.

Default

The default value is 360s.

Command mode

BGP configuration state.

Instruction

The BGP routing update processing latency configured with the bgp update-day command is only effective when the BGP process supports the GR capability. After the restart of BGP protocol GR, BGP will not immediately notify the local RIB, but wait until the bgp update-day configured stator times out, the BGP process reselects the optimal route and then announces it. That is to say, after the BGP restart, BGP will send the first update message until the timer timeout.

In another case (BGP does not need to wait for this time to time out for routing updates), see bgp graceful restart.

Example

None

Related commands

bgp graceful-restart

clear ipbgp

4.1.20. clear ipbgp

Use the clear ipbgp command under the system prompt to reconfigure the reset BGP connection with the BGP software：

clear ipbgp{* |*as-number | peer | peer6*| **aggregates** | **dampening**| **networks** | **peer-group** *name* | **redistribute}**[**soft** [**in**[prefix-filter]|**out]]** | **graceful** | **ipv4 [mdt | multicast | unicast] | vpnv4 [unicast]**

Parameter

Parameter	Parameter Declaration
*	Reset all of the current BGP sessions.
as-number	Reset the neighbors of the designated autonomous system, and the values range is <1-4294967295>.
peer	Reset the specified ipv4 BGP neighbor, the address format A.B.C. D
peer6	Reset the specified ipv6 BGP neighbor with address format X: X: X: X:: X.
aggregates	Reset all aggregate routes.
dampening	Clearing of routing information that is suppressed by fluctuations
networks	Reset all of the static network routes.
peer-group-name	Reset the specified ipv4 BGP pairs.
redistribute	Reset all forwarding routes.
soft	Soft reconfiguration.
in	out	Soft reconfiguration of the inbound or outbound routes.
prefix-filter	Soft reconfiguration of the incoming route for applying the ORF
graceful	Smooth restart
ipv4	The ipv 4 protocol family
ipv6	The ipv 6 protocol family
vpnv4	The vpnv 4 protocol family

Command mode

Management state

Instruction

Some policy configurations of BGP will not take effect immediately because a BGP session routing will be sent only once, thus requiring a reset of the BGP session to enable the routing information to be sent again.

If the BGP soft reconfiguration is specified by including the soft keywords, the session will not be reset and the router sends all the routing update information again. In order to generate new inbound update information without reset the BGP session, the local BGP session should store all updates received without modification using the neighbor soft-reconfiguration command, regardless of whether he is accepted by the inbound policy. Because the process storage capacity is large, it should be avoided as far as possible. Outbound BGP soft configuration does not require any additional memory overhead. You can trigger an outbound reconfiguration in the other side of the BGP session to bring the new inbound policy into effect.

You cannot use the soft option with aggregates, networks, redistribute, they clear the specified type of route and regenerate it to allow the new configuration to take effect.

Example

The following example resets all of the current BGP sessions：

clear ipbgp *

Related commands

neighbor soft-reconfiguration

show ipbgp

4.1.21.　　debug ipbgp

With the debug ipbgp command, the BGP tracking function can be enabled to see the action of the BGP process, and the tracking function can be turned off using the no command：

debug ipbgp ｛**all | fsm | keepalive | open | update | dampening | event | notify | vrf**｝

no debug ipbgp ｛**all | fsm | keepalive | open | update | dampening | event | notify | vrf**｝

Parameter

Parameter	Parameter Declaration
all	Turn on all of the tracking functions of the BGP.
dampening	Open the BGP route fluctuation control and tracking function.
event	Turn on the event tracking function for the BGP.
fsm	Turn on the status machine tracking function of the BGP.
keepalive	Open the Keepalive message tracking function for the BGP.
notify	Open the Notify message tracking function for the BGP.
open	Open the Open message tracking function for BGP.
update	Open the Update message tracking function for the BGP.

vrf	Open the vrf configuration information tracking function for the BGP.

Default

All of the tracking functions are turned off.

Command mode

Management state

Instruction

Opening the tracking function is only globally effective. After opening the monitoring port will display the tracking information, and other VTY turn on the terminal monitor function, the tracking information will also display the information. The function can be turned off with the no terminal monitor command to prohibit the tracking information on the VTY.

Command debug ipbgp all can open all the tracking functions of BGP, including dampening, fsm, keepalive, open, update, etc. Use the no debug ipbgp all command to turn off all open BGP tracking functions.

Example

The following example is a process of BGP connection establishment. The tracking information indicates that the router initiates the connection to BGP neighbor 10.1.1.3, and the state changes from Idle, and finally is Established, indicating the connection establishment. Send and receive various message messages, such as receiving Open, sending Open messages, sending Keepalive, receiving Keepalive, etc.

The format of the tracking information includes several major parts, starting initially as time information, depending on whether the configuration in the system allows the addition of time information to the tracking information. The real BGP information is behind the time information: first the information is about the BGP header information "BGP:", then the specific relevant BGP neighbor address, and then the specific relevant BGP event information.

BGP: 10.1.1.3 start connecting to peer

BGP: 10.1.1.3 went from Idle to Connect

BGP: 10.1.1.3 went from Connect to OpenSent

BGP: 10.1.1.3 send OPEN, length 41

BGP: 10.1.1.3 recv OPEN, length 41

BGP: 10.1.1.3 went from OpenSent to OpenConfirm

BGP: 10.1.1.3 send KEEPALIVE, length 19

BGP: 10.1.1.3 recv KEEPALIVE, length 19

BGP: 10.1.1.3 went from OpenConfirm to Established

BGP: 10.1.1.3 send KEEPALIVE, length 19

BGP: 10.1.1.3 send UPDATE, length 43

BGP: 10.1.1.3 send UPDATE, length 43

BGP: 10.1.1.3 recv KEEPALIVE, length 19

BGP: 10.1.1.3 recv KEEPALIVE, length 19

4.1.22. distance

Use the distance command to modify the default management distance for external routes, internal routes, and local routes to achieve some management policy, and use the no distance command to return the default value：

distance { bgp *external-distance internal-distance local-distance | admin-value* [*gateway mask* [*acl-name*]]**}**

no distance{bgp | *admin-value* [*gateway mask |* [*acl-name*]]**}**

Parameter

Parameter	Parameter Declaration
external-distance	Management distance of the BGP external routing. External routing is the best route learned from AS external neighbors with a default of 20.
internal-distance	Management distance of the BGP internal routing. Internal routing is the routing learned from other BGP entities of the same AS. The default value is 200
local-distance	Administrative distance for the BGP local routing. Local routing is a backdoor routing configured with the network command, with a default value of 200
admin-value	Manage distance value <1~255>
gateway	gateway
mask	Mask match
acl-name	Access list name

Default

external-distance: 20

internal-distance: 200

local-distance: 200

Command mode

BGP configuration state.

Instruction

By using the distance command, you can modify the management distance of routing, change the priority of routing, and influence the selection results of routing to reach the routing policy of the manager.

Changing the route is dangerous unless you know what you're doing. The problem that may arise is increasing routing table inconsistency, which has the potential to disrupt routing.

Example

In the following example, internal routing is known to be preferable to learning via IGP, thus setting the administrative distance：

router bgp 109

  network 131.108.0.0

  distance 20 1.1.1.1 255.255.255.0

  distance bgp 20 20 200

  neighbor 129.140.6.6 remote-as 123

  neighbor 128.125.1.1 remote-as 47

Related commands

set metric

set tag

4.1.23.   filter

Using the filter command, allowing the filtering of routes based on ports enables some management policy; using the no filter command to remove the configuration：

filter interface<**in | out**>**access-list**access-list-name**gateway**access-list-name**prefix-list**prefix-list-name

no filter interface<**in | out**>**access-list**access-list-name**gateway**access-list-name**prefix-list**prefix-list-name

Parameter

Parameter	Parameter Declaration
interface	Port name, * number represents all ports.
**in	out**	Filters the received or issued routes
access-list	Specifies the access-list used to filter the routes.
access-list-name	The name of the access-list.
gateway	Specifies the gateway that filters the route with access-list.
prefix-list	Specifies the prefix-list to filter the routes.
prefix-list-name	The name of the prefix-list.

Default

None

Command mode

BGP configuration state.

Instruction

The access-list option specifies the network prefix information filtering the routing with access-list, the gateway option specifies the nexthop property filtering the route with access-list, and the prefix-list option specifies the network prefix information filtering the route with prefix-list.

The access-list and prefix-list options cannot be used simultaneously. They can all be used with the gateway option and require the route to pass two checks.

Specify * represents all interface. If the filtering rules on the specific interface are configured, as well as the common filtering rules on all the interface are configured, requiring that the route must meet all the filtering rules.

If the configuration specifies a prefix-list or access-list that does not exist, all routes are allowed to pass.

Example

In the following example, the received routes on all ports are filtered by prefix-list and gateway：

router bgp 109

filter * in prefix-list prefix-guize gateway gateway-guize

Related commands

> **neighbor distribute-list**
>
> **neighbor filter-list**
>
> **neighbor route-map**

4.1.24. maximum-paths

Using the maximum-paths command, allowing bgp to support equivalent routing; use the no maximum-paths command to return the default value：

maximum-paths[value] | [**ibgp**value]

no maximum-paths[**ibgp**]

Parameter

Parameter	Parameter Declaration
value	The BGP supports the maximum number of equivalent routes.

Default

None

Command mode

BGP configuration state

Instruction

By using the maximum-paths command, we can modify the number of bgp supported equivalent routes, without the parameter of ibgp to modify the number of EBGP equivalent routes, and do not affect the selection result of the optimal route.

Example

In the following example, the setup supports 3 ibgp equivalent routes：

router bgp100

  maximum-pathsibgp 3

Related commands

> **clear ipbgp**
>
> **show ipbgp**

4.1.25. neighbor activate

Use the neighbor activate command to activate the routing of the specified neighbor address family information.

neighbor{*ip-address*|*X:X::X:X* | *peer-group-name*} **activate**

no neighbor{*ip-address* | *X:X::X:X* | *peer-group-name*} **activate**

Parameter

Parameter	Parameter Declaration

ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

The ipv4 neighbor activates by default for the v 4 protocol cluster.

Command mode

The BGP address protocol cluster configuration state .

Instruction

Activate the support of the routing information based on the corresponding address family.

Example

None

Related commands

neighbor remote-as

4.1.26.　　neighbor advertisement-interval

Minimum interval to sending UPDATE messages using the neighbor advertisement-interval command; use no neighbor advertisement-interval to restore the default configuration.

neighbor{*ip-address | X:X::X:X | peer-group-name*} **advertisement-interval**value

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

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
Value	<1-600>, in seconds.

Default

The ibgp: the default interval is 1s; the ebgp: the default interval is 30s.

Command mode

BGP configuration state

Instruction

Sets the minimum interval between sending a UPDATE message.

Example

In the following example, set the neighbor 10.10.10.11 to send a UPDATE message with a time interval of 15s：

```
router bgp1
    neighbor 10.10.10.11 remote-as 2
    neighbor 10.10.10.11advertisement-interval 15
```

Related commands

neighbor remote-as

4.1.27.   neighbor allowas-in

Using the neighbor allowas-in command allows BGP to receive routes containing local as in the aspath property learned from this neighbor; using no neighbor allowas-in does not allow to receive similar routes.

neighbor{*ip-address | X:X::X:X | peer-group-name*} **allowas-in[***value***]**

no neighbor{*ip-address | X:X::X:X | peer-group-name*} **allowas-in**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
Value	<1-10> The number of local as allowed in the aspath attribute with a default of 3.

Default

Is not allowed to receive the routing information containing the local as in the aspath property.

Command mode

BGP configuration state

Instruction

Allow the BGP to receive a route containing local as from the aspath property learned from this neighbor.

Example

In the following example, setting neighbor 10.10.10.11 allows receiving routing information processing the aspath property containing local as (up to 3 times)：

```
router bgp1
    neighbor 10.10.10.11 remote-as 2
    neighbor 10.10.10.11allowas-in
```

Related commands

neighbor remote-as

4.1.28.   neighbor capability orf prefix-list

Use the neighbor capability orf prefix-list command to start the output routing filtering (ORF filtering) function; turn it off with the no neighbor capability orf prefix-list.

neighbor{*ip-address* | *X:X::X:X* | *peer-group-name*} **capability orf prefix-list**{**both| receive| send**}

no neighbor{*ip-address* | *X:X::X:X* | *peer-group-name*} **capability orf prefix-list**{**both| receive| send**}

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

The ORF filtering function is not supported.

Command mode

BGP configuration state

Instruction

Allow BGP to support ORF filtering sending and receiving function, OFR filtering is based on prefix-list filtering, notifying neighbors only need to notify local required routes to reduce unnecessary update messages. This command and command neighbor prefix-list in is configured, requiring clear ipbgp * to take effect.

Example

In the following example, set the neighbor 10.10.10.11 output routing filtering function (receive and send)：

router bgp100

   neighbor 10.10.10.11 remote-as 2

   neighbor 10.10.10.11capability orf prefix-list both

Related commands

neighbor prefix-list in

clear ipbgp in prefix-filter

4.1.29.   neighbor default-originate

Use the neighbor default-originate command to allow the BGP session person (local router) to send the default route 0.0.0.0 to the specified neighbor; use not to send the default route with no neighbor default-originate；

neighbor{*ip-address* | *X:X::X:X* |*peer-group-name*} **default-originate [route-map** *work*]

no neighbor{*ip-address* | *X:X::X:X* | *peer-group-name*} **default-originate**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.

peer-group-name	The BGP peer group name.
word	The tour-map name

Default

Do not send the default route to the neighbors.

Command mode

BGP configuration state

Instruction

Configure this command to immediately send the default routes to the neighbor.

This command is unrelated to whether a 0.0.0.0 routing is generated in the BGP routing table.

Example

In the following example, the default route meeting notifies neighbour 160.89.2.3, but not neighbour 160.89.2.1：

router bgp 109
  network 160.89.0.0
  neighbor 160.89.2.1 remote-as 100
  neighbor 160.89.2.3 remote-as 200
  neighbor 160.89.2.3 default-originate

Related commands

neighbor ebgp-multihop

4.1.30. neighbor description

Neighborhood Description with the neighbor description command. Remove Description with the no neighbor description command：

neighbor{*ip-address | X:X::X:X | peer-group-name*}**description** LINE

no neighbor{*ip-address | X:X::X:X | peer-group-name*}**description** LINE

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
line	Description Text of the neighbors.

Default

No-neighbor, Description.

Command mode

BGP configuration state

Instruction

With Description, it can be annotated for the configuration, making the configuration easier to understand.

Example

In the following example, the neighbor's Description is the abc.com counterpart：

router bgp 109

    network 160.89.0.0

    neighbor 160.89.2.3 description peer with abc.com

4.1.31.   neighbor distribute-list

Use the neighbor distribute-list command to configure the access list to filter the inbound and outbound routes of the BGP neighbors. Delete the configuration by using the no neighbor distribute-list：

neighbor{*ip-address | X:X::X:X | peer-group-name*}**distribute-list** {*access-list name* }{**in | out**}

noneighbor{*ip-address | X:X::X:X | peer-group-name*}**distribute-list**   {*access-list name* }{**in | out**}

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
access-list name	The name of the access list.
in	The Access list is applied to the inbound route filtering
out	Access list is applied to outbound route filtering

Default

None

Command mode

BGP configuration state

Instruction

One of the methods for filtering BGP routing notifications based on neighbors is to use neighbor distribute-lists, which uses access-list to filter the network prefix information of BGP routes; one method uses neighbor filter-list, which uses aspath-list to filter the AS _ PATH attribute of BGP routes, and another method uses neighbor prefix-list, which uses prefix-list to filter the network prefix information of BGP routes.

If a access-list is specified that does not exist, the effect is to allow all routes.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command. Specifying the command with the IP address overrides the value inherited from the peer group.

Example

The following example applies the list Beijing to the incoming route filtering of neighbor 120.23.4.1：

router bgp 109
    network 131.108.0.0
    neighbor 120.23.4.1 distribute-list beijing in

Related commands

ipaspath-list

neighbor filter-list

ip prefix-list1

neighbor prefix-list

4.1.32.　　neighbor ebgp-multihop

Using the neighbor ebgp-multihop command allows EBGP neighbors to be in networks that are not directly connected; use no neighbor ebgp-multihop to return the default value：

neighbor {*ip-address | X:X::X:X |peer-group-name*}**ebgp-multihop**[*ttl*]

no neighbor {*ip-address | X:X::X:X | peer-group-name*}**ebgp-multihop**

Parameter

Parameter	Parameter Declaration
ip-address	The BGP session neighbor IP address.
X:X::X:X	The BGP session neighbor ipv 6 address.
peer-group-name	The BGP peer group name.
ttl	Number of jumps within the range of 1 to 255.

Default

The EBGP neighbors are only allowed to be connected directly, with the tl 1 and the IBGP neighbor tl 255.

Command mode

BGP configuration state

Instruction

By default, the EBGP neighbor requirement must be on a directly connected network, and if the EBGP neighbor is not on the directly connected network, the BGP connection cannot be established. The neighbor ebgp-multihop command allows you to set the maximum number of jumps that allow for EBGP neighbors.

This command if does not specify ttl is set to 255.

If you specify the BGP group using the peer-group-name parameter, all members of the group will inherit the features configured with that command.

Example

The following example allows for a connection with a neighbor 131.108.1.1 in a network that is not directly connected.

router bgp 109:

neighbor 131.108.1.1 ebgp-multihop 1

Related commands

    neighbor default-originate

4.1.33.   neighbor fall-over

Use the neighbor fall-over bfd command to activate the bfd link detection function; use no neighbor fall-over bfd to cancel the bfd function.

neighbor {*ip-address | X:X::X:X | peer-group-name*}**fall-over bfd**

no neighbor {*ip-address | X:X::X:X | peer-group-name*}**fall-over bfd**

Parameter

Parameter	Parameter Declaration
ip-address	The BGP session neighbor IP address.
X:X::X:X	The BGP session neighbor ipv 6 address.
peer-group-name	The BGP peer group name.

Default

The bfd detection function is not supported.

Command mode

BGP configuration state

Instruction

In the case where the corresponding interface has activated the bfd function, after you configure this command, bfd provides the detection function for this link. When the link is wrong, bfd notifies bgp to make routing updates to enable fast routing switching.

Example

None

Related commands

    neighbor remote-as

    bfd enable

4.1.34.   neighbor filter-list

The as-path list is configured using the neighbor filter-list command to filter the inbound and outbound routes of the BGP neighbors. This feature is disabled by using the no neighbor filter-list command：

neighbor {*ip-address | X:X::X:X |peer-group-name*} **filter-list** *as-path-list name* {**in | out** }

no neighbor {*ip-address | X:X::X:X |peer-group-name*}**filter-list***as-path-list name* {**in | out**}

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.

X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
as-path-list name	The AS-PATH list name, which can be defined with the ipas-path-list command.
In	Filter the incoming route.
Out	Filter the outbound route.

Default

None

Command mode

BGP configuration state

Instruction

One of the methods for filtering BGP routing notifications based on neighbors is to use neighbor distribute-lists, which uses access-list to filter the network prefix information of BGP routes; one method uses neighbor filter-list, which uses aspath-list to filter the AS _ PATH attribute of BGP routes, and another method uses neighbor prefix-list, which uses prefix-list to filter the network prefix information of BGP routes.

If aaspath-list is specified that does not exist, the effect is to allow all routes.

If you specify the BGP group using the peer-group-name parameter, all members of the group will inherit the features configured with that command. Specifying the command with the IP address overrides the value inherited from the peer group.

Example

In the following example, a route notification passing through or coming from the AS123 is not sent to the neighbor 128.125.1.1：

ip as-path access-list shanghai deny _123_
ip as-path access-list shanghai deny ^123$

router bgp 109
   network 131.108.0.0
   neighbor 129.140.6.6 remote-as 123
   neighbor 128.125.1.1 remote-as 47
   neighbor 128.125.1.1 filter-list shanghai out

Related commands

ipaspath

neighbor distribute-list

ip prefix-list

neighbor prefix-list

4.1.35.   neighbor four-octet-as-cap

The neighbor four-octeet-as-cap command is used to activate the neighbor 4-byte as capability and the no neighbor four-octeet-as-cap：

neighbor{*ip-address | X:X::X:X |peer-group-name*}**four-octet-as-cap**

noneighbor{*ip-address | X:X::X:X |peer-group-name*}**four-octet-as-cap**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

Open.

Command mode

The BGP protocol cluster configuration state.

Instruction

The no command is used to close the neighbor 4-byte as capability, open by default.

Example

None

Related commands

neighbor **remote-as**

4.1.36.　　neighbor local-as

Use the neighbor local-as command representation to establish a neighbor relationship with the peer with the specified as number as the local as, and cancel configure using no neighbor local-as：

neighbor{*ip-address | X:X::X:X |peer-group-name*}**local-as** *as-num* [**no-prepend**]

noneighbor{*ip-address | X:X::X:X |peer-group-name*}**local-as**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
as-num	The specified local as number (cannot be the same as the primary as number specified when you configured the bgp process)
no-prepend	No update message is attached to the BGP neighbor of the main AS number

Default

None

Command mode

The BGP protocol cluster configuration state

Instruction

This command is mainly used to disguise local AS numbers for specific neighbors during network migration, making the migration process smoother.

Example

None

Related commands

neighbor remote-as

4.1.37.   neighbor maximum-prefix

Using the neighbor maximum-prefix command to control at most how many network prefixes can be obtained from the neighbors using no neighbor maximum-prefix：

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

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

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
Maximum	The maximum number of network prefixes is allowed from that neighbor.
warning-only	Only warning messages are given when the route exceeds the limit

Default

No limit on the number of network prefixes.

Command mode

BGP configuration state

Instruction

This command allows configure the maximum number of prefixes a BGP routers accept from peers and provides another mechanism for controlling the acceptance of prefixes from peers (in addition to distribute list, filter list, prefix-list, and route map).

The router stops the session process when the number of prefixes accepted reaches the configured maximum number.

Example

The following example setting allows the maximum number of prefixes obtained from the neighbor 129.140.1.6.6 to be 1000：

router bgp 109

        network 131.108.0.0
        neighbor 129.140.6.6 maximum-prefix 1000

Related commands

clear ipbgp

4.1.38.   neighbor next-hop-self

Use the neighbor next-hop-self command to activate the BGP update next-hop processor in the router, set yourself to the next hop address, and prohibit the feature using no neighbor next-hop-self：

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

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

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the BGP session neighbor.
X:X::X:X	The ipv 6 address of the BGP session neighbors.
peer-group-name	The BGP peer group name.

Default

Prohibit.

Command mode

BGP configuration state

Instruction

The processing of Nexthop attribute in BGP protocol is more complex than that of IGP, which generally follows three rules: 1. For EBGP sessions: the Nexthop attribute is set as the local IP address of BGP connection when sending routes. 2. For IBGP session: If the route is generated locally generated, the nexthop attribute is set to the local IP address of BGP connection when the route is sent; if the route is obtained by EBGP, the nexthop attribute is filled in the message when the route is sent. 3. If the IP address of the routed nexthop attribute belongs to the network where the BGP dialogue is located, the nexthop attribute always uses the original nexthop.

This command is useful in an NBMA network (frame relay or X.25 network) because BGP neighbors in the NBMA network may not have access to other neighbors in the same IP subnetwork.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command. Specifying the command with the IP address overrides the value inherited from the peer group.

Example

The following example forces all routing updates to 131.108.10.1.1 in the next hop address for yourself：

router bgp 109
    neighbor 131.108.1.1 next-hop-self

Related commands

set ip next-hop

4.1.39.   neighbor password

The neighbor password command allows you to configure password authentication between BGP neighbors with the MD5 option of TCP. Uncertified by using no neighbor password.

neighbor{*ip-address |X:X::X:X |peer-group-name*}**password**{*LINE | 0 | 7}*

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

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
password	Authenticated by using the MD5 password.
LINE	cleartext passwords
0	Specifies the plaintext form password
7	Specifies the ciphertext form password

Default

None

Command mode

BGP configuration state

Instruction

You must use the neighbor remote-as command to specify your neighbors before using this command.

Both neighbors must be configured with the command and have the same password to successfully establish a neighbor connection through MD5 authentication. A password can contain any character other than a space, and the password length must be between 1 and 20 characters.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

The following example sets abcd to the verification password for neighbor 120.23.4.1：

router bgp 109
    neighbor 120.23.4.1 remote-as 108
    neighbor 120.23.4.1 password abcd

Related commands

neighbor remote-as

4.1.40.   neighbor peer-group

Configure the peers using the neighbor peer-group-name peer-group command. Conconfigured pairs were removed using no neighbor peer-group-name peer-group.

The join joining join join groups using the neighbor ip-address peer-group-name command. Neighbors joining the peer group configuration were removed using no neighbor ip-address peer-group peer-group-name.

neighbor *peer-group-name***peer-group**

no neighbor*peer-group-name* **peer-group**

neighbor{*ip-address | X:X::X:X*}**peer-group***peer-group-name*

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

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

None

Command mode

BGP configuration state

Instruction

Configure the peers using the neighbor peer-group-name peer-group command.

The join joining join join groups using the neighbor ip-address peer-group-name command. If no previous neighbor configuration exists, use this command to configure the autonomous system number of the peer group.

Example

The following example configures the peer group named group and then configneighbor 10.1.1.1 to join the group peer group：

router bgp109
  neighbor group peer-group
  neighbor group remote-as 2
  neighbor 10.1.1.1 peer-group group

Related commands

neighbor remote-as

4.1.41.   neighbor prefix-list

Using the neighbor prefix-list command you can configure to filter routing updates for neighbors with prefix-list. Remove the entry by using the no neighbor prefix-list：

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

noneighbor{*ip-address | X:X::X:X | peer-group-name*} **prefix-list** *prefix-listname*{**in | out**}

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address.
X:X::X:X	Neighbor ipv 6 address.
peer-group-name	The BGP peer group name.
prefix-list	Apply prefix list to neighbor routing updates.
prefix-listname	Prefix list Name.
In	Update of incoming routes applied to neighbors.
Out	Update of the outgoing route applied to the neighbors.

Default

None

Command mode

BGP configuration state

Instruction

One of the methods for filtering BGP routing notifications based on neighbors is to use neighbor distribute-lists, which uses access-list to filter the network prefix information of BGP routes; one method uses neighbor filter-list, which uses aspath-list to filter the AS _ PATH attribute of BGP routes, and another method uses neighbor prefix-list, which uses prefix-list to filter the network prefix information of BGP routes.

If a prefix-list is specified that does not exist, the effect is to allow all routes.

If the BGP pair is specified using the peer-group-name parameter, all members of that pair will inherit the features configured with that command. Specifying the command with the IP address overrides the value inherited from the peer group.

Example

The following example applies prefix list abc to an inbound update of Neighbor 120.23.4.1：

router bgp 109
   network 131.108.0.0
   neighbor 120.23.4.1 prefix-list abc in

The following example prefix list CustomerA is applied to the incoming update of neighbor 120.23.4.1：

router bgp 109
   network 131.108.0.0
   neighbor 120.23.4.1 prefix-list CustomerA in

Related commands

ip prefix-list

ip prefix-list description

ip prefix-list sequence-number

show ip prefix-list

clear ip prefix-list

neighbor filter-list

4.1.42.   neighbor remote-as

Use the neighbor remote-as command to create a BGP neighbor and specify its autonomous system number, using no neighbor remote-as to delete the neighbors and all of its configurations：

neighbor{*ip-address | X:X::X:X |peer-group-name*} **remote-as** *number*

noneighbor{*ip-address | X:X::X:X |peer-group-name*} **remote-as** *number*

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
Number	Numbers of which AS the neighbors belong to.

Default

None

Command mode

BGP configuration state

Instruction

The neighbor is considered IBGP as the same AS number specified in the router bgp command, otherwise, the neighbor is considered EBGP. This command is used to create the neighbors, and other commands about the neighbors can be configured only after the neighbor is created. If the neighbor is configured, you can change its autonomous system number, which causes the BGP connection to reset.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

In the following example, the local autonomous system is 109, configured with neighbors 131.108.200.1,131.108.234.2,150.136.64.19, and the autonomous system is 167,109 and 99, respectively.

router bgp 109

  network 131.108.0.0

  network 192.31.7.0

  neighbor 131.108.200.1 remote-as 167

  neighbor 131.108.234.2 remote-as 109

  neighbor 150.136.64.19 remote-as 99

Related commands

neighbor peer-group (creating)

4.1.43. neighbor remove-private-AS

Use the neighbor remove-private-AS command to remove the private aspath attribute when notifying ebgp neighbors of routing and unconfigure with no neighbor remove-private-AS：

neighbor{*ip-address | X:X::X:X |peer-group-name*} **remove-private-AS**

noneighbor{*ip-address | X:X::X:X |peer-group-name*} **remove-private-AS**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

None

Command mode

The BGP protocol cluster configuration state

Instruction

The command is configurable with the ebgp neighbor, and when the command notifies the ebgp neighbor, if the aspath attribute of the routing information is private, the routing aspath attribute is deleted and notified to the ebgp neighbor.

Example

None

Related commands

neighbor remote-as

4.1.44. neighbor route-map

Use the neighbor route-map command to use ROUTE-MAP to filter the neighbors or modify their properties; use the no neighbor route-map command to remove the configuration：

neighbor {*ip-address | X:X::X:X | peer-group-name*}**route-map** *map-name* {*in | out*}

noneighbor {*ip-address |X:X::X:X |peer-group-name*}**route-map** *map-name* {*in | out*}

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
map-name	Routing map name.

in	Applied to the incoming route.
out	Applied to outbound routing.

Default

None

Command mode

BGP configuration state

Instruction

Using distribute-list, prefix-list, as-path-list can only be based on neighbor filtering routing, using route-map can filter routing not only based on neighbors, but also can flexibly change the attributes of routing based on neighbors, so as to achieve more flexible routing strategy.

Different routes have different properties, and Route-map can modify the properties of various routes. If match rules or setting rules used for routing properties are configured to apply to BGP routing, BGP routing are ignored. Rules valid for BGP routing have:matchaspath, match community, match ip address, match ip next-hop, match metric, match tag, match extcommunity, match length, match mpls-label, set aggregator, set as-path, set atomic-aggregate, set community, set community-additive, set ipnexthop, set local-preference, set metric, set origin, set tag, set weight, set default, set extcomm-list, set extcommunity, set metric-type, set mpls-label.

If a non-existent Route-map is configured, the effect is to allow all routing without change.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command. Specifying the command with the IP address overrides the value inherited from the peer group.

Example

The following example applies the route mapping named internal-map to the incoming route from 198.92.70.24：

router bgp 5
   neighbor 198.92.70.24 route-map internal-map in

route-map internal-map
   match as-path abc
   set local-preference 100

Related commands

neighbor peer-group (creating)

route-map

4.1.45.   neighbor route-reflector-client

Use the neighbor route-reflector-client command to configure the local router as a BGP routing reflector, and simultaneously specify the neighbor as the customer. Remove a customer using the no neighbor route-reflector-client. When all customers fail, the local router is no longer a routing reflector：

neighbor {*ip-address| X:X::X:X| peer-group-name* }**route-reflector-client**

noneighbor {*ip-address | X:X::X:X | peer-group-name* }|**route-reflector-client**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the BGP neighbors.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

No routing reflector in the AS.

Command mode

BGP configuration state

Instruction

By default, all IBGP participants in the AS must be fully connected, and the BGP speakers do not notify the routes learned from the IBGP neighbors.

With routing reflectors, all IBGP sessions do not have to be fully connected. In routing reflector mode, the routing reflector is responsible for routing to the customer learned from the IBGP. This scheme eliminates the necessity for each router to talk with the other routers.

Use the neighbor route-reflector-client command to configure the local router as a routing reflector and specify a neighbor as one of its customers. All of the neighbors configured with this command are members of the customer group. The remaining IBGP counterparts are members of the local routing reflector non-customer group.

Example

In the following example, the local router is a routing reflector that passes the learned IBGP path to the neighbors 198.92.70.24：

router bgp 5

   neighbor 198.92.70.24 route-reflector-client

Related commands

bgp cluster-id

show ipbgp

4.1.46.   neighbor route-refresh

Using the neighbor route-refresh command allows neighbors to use the routing refresh function, and the command no neighbor route-refresh forbids the routing refresh function：

neighbor{*ip-address| X:X::X:X| peer-group-name* }**route-refresh**

no neighbor {*ip-address| X:X::X:X| peer-group-name* } **route-refresh**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the BGP neighbors.
X:X::X:X	Neighbor's ipv 6 address.

peer-group-name	The BGP peer group name.

Default

The Route refresh feature is not used.

Command mode

BGP configuration state

Instruction

By default, BGP routes exchange only once when the connection is established and later only change routes. If the configuration of the routing policy is changed, it often does not take effect immediately. Generally, there are two methods: first, reset BGP connection; second, use soft-reconfiguration function. The first method is slower and the routing changes may be larger; the second method requires more storage space and takes up more CPU time. Neither of these methods is very good methods, so a new method is developed: routing refresh.

Routing refresh is a negotiation option when establishing a BGP connection. Its purpose is to send a route refresh request message to ask neighbors to send all UPDATE messages to them, so that there is no need to reset the BGP connection or store a large number of routes, which is an ideal solution.

Example

In the following example, allow the neighbor 198.92.70.24 to use the routing refresh function：

router bgp 5
    neighbor 198.92.70.24 route-refresh

Related commands

show ipbgp neighbors

4.1.47.   neighbor send-community

Use the neighbor send-community command to allow routing updates sent to BGP neighbors with community attributes; use no neighbor send-community to delete the configuration：

neighbor{*ip-address*| *X:X::X:X*| *peer-group-name* }**send-community**{standard | extended | both}

noneighbor{*ip-address*| *X:X::X:X*| *peer-group-name*   }**send-community**{standard | extended | both}

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

Routing updates sent to neighbors do not contain community attributes.

Command mode

BGP configuration state

Instruction

The default does not allow to send group attributes to neighbors, and routes can be sent to neighbors with neighbor send-community.

The community properties of the routing can be set by the set community command of the route-map, or the routing notification from the neighbors.

Show ipbgp neighbors The command can see whether sending community attributes to neighbors.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

In the following example, the router belongs to AS109, configured to send COMMUNITIES and EXTCOMMUNITIES properties to neighbors with the IP address 198.92.70.23：

router bgp 109
 neighbor 198.92.70.23 send-communityboth

Related commands

match community

neighbor peer-group (creating)

set community

set community-additive

4.1.48. neighbor shutdown

Use the neighbor shutdown command and reactivate the neighbor or peer group using the no neighbor shutdown command：

neighbor{*ip-address| X:X::X:X| peer-group-name* }**shutdown**

noneighbor{*ip-address| X:X::X:X| peer-group-name* }**shutdown**

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

None

Command mode

BGP configuration state

Instruction

neighbor shutdown The command stops a session that specifies a neighbor or peer

group and removes all relevant routing information. In the peer case, this could mean the abrupt termination of numerous sessions.

Information about BGP neighbors and peer groups was observed using the show ipbgp summary or show ipbgpneighbors command. The neighbor state prohibited by the neighbor shutdown order is shutdown.

Related commands

show ipbgp summary

show ipbgp neighbors

4.1.49.   neighbor soft-reconfiguration

Use the neighbor soft-reconfiguration command to start the storage route update; use the no neighbor soft-reconfiguration to clear and stop the storage route update:

neighbor {*ip-address| X:X::X:X| peer-group-name* }**soft-reconfigurationinbound**

noneighbor {*ip-address|X:X::X:X|peer-group-name*}**soft-reconfigurationinbound**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the BGP session neighbor.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.
inbound	Store the incoming routing updates.

Default

Do not store the inbound route updates, and store the outbound route updates.

Command mode

BGP configuration state

Instruction

Outbound route updates are always stored, and inbound route updates are only stored when clearly configured. Storage routing updates can take effect without having to reset BGP sessions after changing the routing policies. Reset BGP sessions leads to a lot of network data exchange and a large number of routing fluctuations. Using soft reconfiguration avoids large amounts of network data exchange and can minimize routing fluctuations.

Outbound route updates are always stored, and incoming route updates are not stored by default. Change the local configuration policy to make the new configuration effective:

First, reset the relevant BGP session; second, locally execute the inbound route soft reconfigured clear ipbgpa.b.c. din (require local router configured neighbor a.b.c. d soft-reconfiguration); Third, the other party performs the outbound route update soft reconfiguration clear ipbgpa.b.c.Dout (no additional configuration is required).

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

The following example activates the inbound soft-reconfiguration of the neighbor

131.108.1.1, and all updates received from that neighbor will be stored without modification regardless of the inbound policy.

router bgp 100

    neighbor 131.108.1.1 remote-as 200

    neighbor 131.108.1.1 soft-reconfiguration inbound

Related commands

clear ipbgp

neighbor peer-group (creating)

4.1.50.   neighbor send-label

Neighborhood-or peer NLRI tag power was activated using the neighbor send-label command, and neighbor-or peer NLRI tag power was closed using the no neighbor send-label command：

neighbor{*ip-address| X:X::X:X| peer-group-name* }**send-label**

noneighbor{*ip-address| X:X::X:X| peer-group-name* }**send-label**

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address.
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name.

Default

None

Command mode

The BGP protocol cluster configuration state

Instruction

The neighbor send-label command activation nlri carries mpls tag information and is generally used across DomainvpnoptionC schemes and in 6PE environments.

Related commands

neighbor remote-as

neighbor route-map

show ipbgp neighbors

4.1.51.   neighbor timers

Use the neighbor timers command to set a timer for a specific BGP counterpart or peer group; use the no neighbor timers command to clear the specific BGP counterpart or peer group timer：

neighbor {*ip-address|X:X::X:X| peer-group-name*}**timers** *keepalive holdtime***[***Idleholdtime***]**

noneighbor {*ip-address | X:X::X:X | peer-group-name*}**timers**

Parameter

Parameter	Parameter Declaration
ip-address	Is the IP address of the BGP counterpart
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	Is the BGP peer group name
Keepalive	For the keepalive timer value in seconds, 0-21845
Holdtime	For Holdtime timer values in seconds, range: 0 or (3 to 65535)
Idleholdtime	For the Idleholdtime timer value in seconds, 0-65535

Default

Keepalive is 30 s

Holdtime is 90 s

Idleholdtime is 0

Command mode

BGP configuration state

Instruction

A timer configuration for the default BGP neighbor. In general, the holdtime is 3 times that of the keepalive. When keepalive and holdtime is 0, sending keepalive message is prohibited, which requires the tcp connection manager to notify the BGP module of the status of the connection.

Idleholdtime Not0, indicating DampPeerOscillation function initiation, when bgp counterpart in 5 min connected / disconnected 10 times start idleholdtimer inhibition keeps bgp counterpart as fiddle state, holds time as configured idleholdtime.

The Idleholdtime is 0 when the DampPeerOscillation function is off.

Example

The following example changes the keepalive timer of the BGP counterpart 192.98.47.10 to 70s and the holdtime timer to 210s：

router bgp 109

   neighbor 192.98.47.10 timers 70 210

4.1.52. neighbor ttl-security-hop

Use the neighbor ttl-security-hop command to configure the TTL cap cap for BGP connections; use the no neighbor ttl-security-hop command to cancel the TTL cap limit：

neighbor{*ip-address | X:X::X:X| peer-group-name*} **ttl-security-hop***value*

no neighbor {*ip-address | X:X::X:X| peer-group-name*}**ttl-security-hop**

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name

value	The number of jumps limit the specific value, the configuration range is 1-254

Default

None

Command mode

BGP configuration state

Instruction

The configuration parameter is the maximum number of jumps supported by bgp neighbors, beyond which bgp connections cannot be established.

Example

The following example setting 100:: 2 The number of neighborttl jumps is limited to 1 jump：

router bgp 100

    neighbor 100::2ttl-security-hop 1

Related commands

neighbor peer-group (creating)

neighbor remote-as

4.1.53.　　neighbor update-source

Use the neighbor update-source command to allow the BGP sessions to establish a TCP connection using the specified port address. Recovery of the automatic selection interface by using the no neighbor update-source：

neighbor {*ip-address | X:X::X:X| peer-group-name*}**update-source** *interface*

noneighbor {*ip-address | X:X::X:X| peer-group-name*}**update-source**

Parameter

Parameter	Parameter Declaration
ip-address	The IP address of the BGP session neighbor
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name
Interface	Port name

Default

Establish a TCP connection using the local port IP address calculated from the route.

Command mode

BGP configuration state

Instruction

By default, the IP module determines the local IP address of the TCP connection when the BGP initiates the connection. The IP module determines the outgoing port according to the route, and then binds the main IP address of that port as the local address of the TCP connection. Use the update-source feature to specify the primary IP address on the

locally specified port when a TCP connection is established.

Generally, the loopback port is used, because the loopback port protocol state is always up, which keeps the BGP session stable and prevents the routing fluctuations.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

The following example shows the specified neighbor BGP connection using the loopback port IP：

router bgp 110

   network 160.89.0.0

   neighbor 160.89.2.3 remote-as 110

   neighbor 160.89.2.3 update-source Loopback0

Related commands

neighbor peer-group (creating)

4.1.54.　　neighbor weight

Use the neighbor weight command to assign weights to the BGP connections; use the no neighbor weight command to remove the assigned weights：

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

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

Parameter

Parameter	Parameter Declaration
ip-address	Neighbor IP address
X:X::X:X	Neighbor's ipv 6 address.
peer-group-name	The BGP peer group name
Weight	The assigned weight, the acceptable range is 0~65535

Default

The route default weight obtained through the BGP counterpart is 0, and the route default weight generated by the local router is 32768.

Command mode

BGP configuration state

Instruction

BGP routing weights are an important criterion for routing selection. The default weights of all routes learned from neighbors are 0. Through this command can set the weights for routes from a neighbor. Another way to modify the weights is with a rate-map.

If the BGP pair is specified using the peer-group-name parameter, all members of the pair will inherit the features configured with that command.

Example

The following example sets all the routing weights learned through 151.23.12.1 to 50：

Techroutes

N E T W O R K

```
router bgp 109
    neighbor 151.23.12.1 remote-as 100
    neighbor 151.23.12.1 weight 50
```

Related commands

neighbor peer-group (creating)

set weight 23

4.1.55.   network (BGP)

Use the network command to inject network routing into the BGP; use the no network command to remove the configuration：

network A.B.C.D/n[**route-map** *map-name* |**backdoor**]

no network A.B.C.D/n

Parameter

Parameter	Parameter Declaration
A.B.C.D/n	Inject the network prefix to the BGP.
route-map	Specify the route-map.
map-name	Name of the route-map.
backdoor	Back door network.

Default

Do not inject any network prefix into the BGP at the default time.

Command mode

BGP configuration state

Instruction

There are three ways to inject routing into BGP: first, dynamic injection through forwarding (redistribute), network command and aggregate (aggregate) static injection. The routes generated by all three methods are considered locally generated and can be notified to other counterparts, but not injected into the local IP route table.

The network configured with network assumes that an exact identical route exists in the main route table of the IP.

The network configured with aggregate-address assumes the premise that at least one more precise or identical route exists in the local BGP routing table.

If the mask length is not specified, the length is generated by the standard network type.

Use the route-map to set the properties of the route in making the generated route make.

The backdoor network is not used to generate routes, it is used to modify the routing Distance. The default Distance of this routing from the neighbors is modified to the Distance of Local routing with the default of 200.

The maximum number of network commands that can be configured is determined by router resources, such as a configured NVRAM or RAM.

Example

The following example injects it to the BGP to route the 131.108.0.0/8：

router bgp 120
   network 131.108.0.0/8

Related commands

> **redistribute (BGP)**

> **aggregate-address**

4.1.56.   redistribute（BGP）

Use the redistribute command to inject a route of a routing process into the BGP. Use the no redistribute command to prohibit injection：

redistribute{ protocol<*process-id*> | **static** | **connnect** } [route-map*map-name*] [metric]

no redistribute{ protocol<*process-id*> | **static** | **connnect** }

Parameter

Parameter	Parameter Declaration
protocol	Type of dynamic routing protocols, including is, ospf, rip, beigrp, etc.
process-id	Process number of the dynamic routing protocol, such as the process number of the ospf.
static	Redistribute the static routing
connect	Redistribute direct connection routing
route-map	Apply the route-map to set the routing attributes.
map-name	Name of the route-map.
metric	Sets the metric-value for the redistribution route

Additional subtypes of distribution routes are added for ospf.

redistributeospf<*process-id*> [route-map*map-name*] [metric]

> **[match {external**<*route-type*> **| internal | nssa-external** <*route-type*>**}]**

Parameter	New to the Parameter Declaration
match	Redistribute the ospf match types
external	Redistributed the OSPF external types
internal	Redistributed the OSPF internal types
nssa-external	Redistributed the OSPF NSSA external types
route-type	Redistribution OSPF external route types, divided into 1,2, and 1 and 2 can be distributed

Subtypes of distribution routes are extra added for isis.

redistributeisis<*process-id*> [route-map*map-name*] [metric]

[level-1 | level-2 | level-1-2]

Parameter	New to the Parameter Declaration
level-1	Redistributing the IS-IS level-1 routing
level-2	Redistributing the IS-IS level-2 routing
level-1-2	Redistribution of the IS-IS level-1 and IS-IS level-2 routes

Default

Route forwarding is prohibited.

Command mode

BGP configuration state

Instruction

There are three ways to inject routing into BGP: first, dynamic injection through forwarding (redistribute), network command and aggregate (aggregate) static injection. The routes generated by all three methods are considered locally generated and can be notified to other counterparts, but not injected into the local IP route table.

Routing can be dynamically injected into the BGP with the redistribute command, and changes in routing sources are automatically reflected into the BGP. The dynamically injected route notifies the other neighbors. Each time the configure redistribute command reviews the routing of the specified type in the routing table. External routes in the OSPF are not injected into the BGP.

Use the route-map to set the properties of the route when it is generated.

Example

The following example forwards the route of the OSF process 23 to the BGP：

router bgp 109

   redistribute ospf23

Related commands

route-map

4.1.57.   router bgp

Start the BGP process with the router bgp command or enter the BGP configuration state and close the BGP process with the no router bgp command：

router bgp*as-number*

norouter bgp*as-number*

Parameter

Parameter	Parameter Declaration
as-number	Autonomous system number.

Default

The BGP process is closed.

Command mode

Global configuration state

Instruction

Only up to one BGP process is allowed in the system. The BGP task in the system is created when the system is initialized and is activated after starting the BGP process. When the BGP process is not configured, the BGP task only receives messages from the command module, has no relationship to the routing module and other modules, and does not respond to other messages. The relevant show, clear commands are both invalid.

The BGP process can be deleted with the no router bgp command, while other configurations associated with the BGP should also be removed, such as neighbors, etc. The BGP routes in the routing table should also be removed.

After you configure the BGP process, you can observe it through the show running and show ipbgp summary commands.

Example

The following example starts the BGP process and specifies its autonomous system number 200：

router bgp 200

Related commands

neighbor remote-as

4.1.58. show ipbgp

Use the show ipbgp command to display the entries in the ipv4 BGP routing table：

show ipbgp[**network**]

Parameter

Parameter	Parameter Declaration
network	Displays the specified routing information.

Command mode

Management state

Instruction

If no network is specified, the entire ipv4 BGP routing table is displayed. After you specify the network, display only the details of the network.

Example

Below is a set of BGP display information, and the first two lines show some marker information.

Status code Explain the meaning of the markers before the route, S is the inhibition, Show that this route is suppressed by the aggregate configuration, An invalid route, Not being selected; And d is the decay, Indicating that the route is suppressed due to fluctuations, It is an invalid route; Route h for history, Show that this route is preserved because of the fluctuation control, There is no real route out there, It is an invalid route; * For the effective routing, Show that this route is an effective route, Can be selected as the best route; > For the best routing, Indicates that the route is the best route from all valid routes; And i for the internal routing, Show that this route is derived from the IBGP

neighbors, Does not include the routing between the neutron autonomous systems of the autonomous system alliance.

Origin codes Note the Origin attribute of the route, i IGP, e EGP,? To be unclear.

For each route, the properties of its status, destination address, gateway address, Metric (MED), Local-preference, Weight, AS Path, etc. are displayed. Where the gateway address of the locally generated route is 0.0.0.0.Metric if it is not displayed, otherwise it is its value. Local-preference is 100 for IBGP routing, something not displayed actually contain the default value, or the set value is displayed. Weight For the locally generated route is 32768, or the set value, if not set, 0.AS PathDomain displays the AS Path attribute of the route, including AS list and Origin attribute. Brbrackets are sub-autonomous systems in the AS-set or autonomous systems alliance.

The last row shows the number of routes displayed for this time, including various valid and invalid routes.

Router#showipbgp

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
* 192.168.10.0/24	192.168.69.5			0	10 400 i
*>i192.168.10.0/24	192.168.69.14	100		0	(65030) 400 i
*>i192.168.11.0/24	192.168.69.14	100		0	(65030) 400 i
* 192.168.65.0/30	192.168.69.1	100		0	(65020) 10 ?
*> 192.168.65.0/30	192.168.69.5			0	10 ?
* 192.168.65.4/30	192.168.69.1	100		0	(65020) 10 ?
*> 192.168.65.4/30	192.168.69.5			0	10 ?
* 192.168.65.8/30	192.168.69.1	100		0	(65020) 10 ?
*> 192.168.65.8/30	192.168.69.5			0	10 ?
* 192.168.66.0/30	192.168.66.2	100		0	(65020) ?
*> 192.168.66.0/30	0.0.0.0			32768	?
* i192.168.66.4/30	192.168.66.6	100		0	?
*> 192.168.66.4/30	0.0.0.0			32768	?
*>i192.168.66.8/30	192.168.66.6	100		0	?
*>i192.168.67.0/30	192.168.69.18	200	100	0	500 ?

Number of displayed routes: 15

Related commands

show ipbgp community

show ipbgp neighbors

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.59.   show ipbgp community

Display the statistics of the BGP community structure using the show ipbgp community command：

show ipbgp community

Parameter

None

Command mode

Management state

Instruction

This command uses to display statistics about the bgp community attribute structure in the system.

Related commands

show ipbgp

show ipbgp neighbors

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.60.　　show ipbgplabels

Use the show ipbgp labels command to display the routing label information in the bgp v4 global table：

show ipbgplabels

Parameter

None

Command mode

Management state

Instruction

This command is used to display the routing label information in the bgp v4 global table.

Related commands

show ipbgp

show ipbgp neighbors

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.61.　　show ipbgpdampened-paths

Display the routing that is suppressed because of routing fluctuation control using the show ipbgp dampened-paths command：

show ipbgpdampened-paths

Parameter

None

Command mode

Management state

Instruction

This command is used to show the routing that is suppressed by routing fluctuation control.

Related commands

show ipbgp

bgp dampening

4.1.62.　　　show ipbgp ipv4 unicast

Use the show ipbgp ipv4 unicast command to display the entries in the ipv4 BGP routing table：

show ipbgpipv4 unicast [*network*]

Parameter

Parameter	Parameter Declaration
network	Displays the specified routing information.

Command mode

Management state

Instruction

If no network is specified, the entire ipv4 BGP routing table is displayed. After you specify the network, display only the details of the network.

Example

Below is a set of BGP display information, and the first two lines show some marker information.

Status code Explain the meaning of the markers before the route, S is the inhibition, Show that this route is suppressed by the aggregate configuration, An invalid route, Not being selected; And d is the decay, Indicating that the route is suppressed due to fluctuations, It is an invalid route; Route h for history, Show that this route is preserved because of the fluctuation control, There is no real route out there, It is an invalid route; * For the effective routing, Show that this route is an effective route, Can be selected as the best route; > For the best routing, Indicates that the route is the best route from all valid routes; And i for the internal routing, Show that this route is derived from the IBGP neighbors, Does not include the routing between the neutron autonomous systems of the autonomous system alliance.

Origin codes Note the Origin attribute of the route, i IGP, e EGP,? To be unclear.

For each route, the properties of its status, destination address, gateway address, Metric (MED), Local-preference, Weight, AS Path, etc. are displayed. Where the gateway address of the locally generated route is 0.0.0.0.Metric if it is not displayed, otherwise it is its value. Local-preference is 100 for IBGP routing, something not displayed actually contain the default value, or the set value is displayed. Weight For the locally generated

route is 32768, or the set value, if not set, 0.AS PathDomain displays the AS Path attribute of the route, including AS list and Origin attribute. Brbrackets are sub-autonomous systems in the AS-set or autonomous systems alliance.

The last row shows the number of routes displayed for this time, including various valid and invalid routes.

Router#showipbgp ipv4 unicast

BGP table version is 0, local router ID is 172.31.36.81

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
*>i22.2.2.2/32	22.2.2.2	0	100	0	?
*>i32.1.1.0/24	22.2.2.2	0	100	0	?
*>i172.31.36.0/24	22.2.2.2	0	100	0	?

Total number of prefixes 3

Related commands

None

4.1.63.   show ipbgp neighbors

Use the show ipbgp neighbors command to display the information about the neighbors：

show ipbgp neighbors [*ip-address*] [**received-routes | routes** | **advertised-routes**]

Parameter

Parameter	Parameter Declaration
ip-ddress	The address of the neighbor, and if the parameter is ignored, all the neighbors are displayed.
received-routes	Displays all routes (accepted and rejected) received from the designated neighbor.
routes	Displays all routes received and accepted from the designated neighbor.
advertised-routes	Displays all routes of router announcements to neighbors.

Command mode

Management state

Instruction

This command can see details about neighbors and current status, and some configuration information can be seen from here. The route associated with the neighbor can be displayed by specifying the corresponding keywords.

Related commands

show ipbgp

show ipbgp community

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.64.   show ipbgpflap-statistics

Statistics of the routing fluctuations were displayed using the show ipbgp flap-statistics command：

show ipbgpflap-statistics [*ip-prefix* | **filter-list** *name* **| regexp***expression*]

Parameter

Parameter	Parameter Declaration
ip-prefix	The ip address prefix that is used to specify the route.
filter-list	Displays the routes that matches the path list
name	Path list name
regexp	Show the route matching to the AS-path regular expression
expression	regular expression

Command mode

Management state

Instruction

Through this command, you can see the fluctuation statistics of the routes that meet the conditions.

Related commands

show ipbgp

show ipbgp community

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.65.   show ipbgpvpnv4

Use the show ipbgp vpnv4 command to display the VPNv4 routing information：

show ipbgpvpnv4 { **all**| **rd***rd_value* | **vrf***name* } [*network* | **labels** | **neighbors** |**summary**]

Parameter

Parameter	Parameter Declaration

all	Displays all of the VPNv4 routing information
rd	Display the specified RD information
rd_value	RD price
vrf	Displays the specified VRF information
name	Vrf name
network	Displays the information that specifies the Ip address or prefix
labels	Displays the VPNv 4 routing labels information
neighbors	Information displaying the vpnv 4 neighbors of the BGP
summary	Show the summary information for the vpnv 4

Command mode

Management state

Instruction

VPNv 4 routing information.

Related commands

show ipbgp

address-family vpnv4

4.1.66. show ipbgp paths

Show the statistics of the BGP pathway structure using the show ipbgp paths command：

show ipbgp paths

Parameter

None

Command mode

Management state

Instruction

This command is used to display the statistics about the BGP path structure in the system.

Related commands

show ipbgp

show ipbgp community

show ipbgp neighbors

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.67. show ipbgp prefix-list

Use the show ipbgp prefix-list command to display the ipv4 BGP routing information matching the specified prefix-list：

show ipbgp prefix-list {*prefix-list name*}

Parameter

Parameter	Parameter Declaration
prefix-list name	Name of the Prefix-list.

Command mode

Management state

Instruction

This command filters the display of the show ipbgp command by specifying the prefix-list, and only the routes that can match the prefix-list are displayed.

Related commands

show ipbgp

show ipbgp community

show ipbgp neighbors

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

ip prefix-list

ip prefix-list description

ip prefix-list sequence-number

show ip prefix-list

clear ip prefix-list

4.1.68. show ipbgpregexp

Use the show ipbgpregexg to display the route that matches the specified regular expression：

show ipbgpregexpregular-expression

Parameter

Parameter	Parameter Declaration
regular-expression	AS pathway regular expression.

Command mode

Management state

Instruction

This command is to filter the display content of the show ipbgp command by specifying regular expressions about as-path. Only the routes that match the regular expression are shown.

Related commands

show ipbgp

show ipbgp community

show ipbgp neighbors

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.69.   show ipbgp summary

Use the show ipbgp summary command to display the summary information for all the BGP connections：

show ipbgp summary

Parameter

The command is No parameters or keywords.

Command mode

Management state

Instruction

Some global configurations of the BGP protocol can be viewed through the show ipbgp summary command. For example, the global distance configuration, the configuration of IGP synchronization, the identification AS number of the autonomous system alliance, the members of the autonomous system alliance, the route reflection cluster identification, etc. In addition, the local autonomous system number, the local router-id, and the general information of all neighbors can also be seen through this command.

Example

The following example shows the information that show ipbgp summary can provide：

Router#showipbgp summary
router bgp 4
BGP local AS is 4
Router ID is 192.168.20.72
IGP synchronization is enabled
Distance: external 20 internal 200

Neighbor   V   AS MsgRcvdMsgSentTblVerInQOutQ Up/Down State/Pref
192.168.20.12   4   5   0   0   0 0 0 never   Connect

Related commands

show ipbgp

show ipbgp community

show ipbgp neighbors

show ipbgp paths

show ipbgp prefix-list

show ipbgpregexp

show ipbgp summary

4.1.70. synchronization

Use the synchronization command to initiate the synchronization between BGP and IGP：

synchronization

no synchronization

Parameter

None

Default

No synchronization configuration.

Command mode

BGP configuration state

Instruction

IGP synchronization is whether a BGP receives a route from the IBGP before notifying the other EBGP neighbors until the route appears in the form of an IGP. When using IGP synchronization, BGP will notify other EBGP neighbors until the IBGP route appears in the IBGP route. The IGP mentioned here includes direct connection routing, static routing, RIP routing, OSPF routing, and other internal gateway protocol routing.

The IGP synchronization function is not turned on by default.

Example

The following example requires the router to wait for the IGP synchronization to broadcast the ibgp routing：

router bgp 120
    synchronization

Related commands

router bgp

4.1.71. table-map

Set the Route-map when added to the routing table to change certain properties of the route. You can remove the configurations with the no table-map.

table-map *<name>*

no table-map

Parameter

Parameter	Parameter Declaration
name	The name of the Route-map.

Default

None

Command mode

BGP configuration state

Instruction

Setting the table-map can filter routes or modify routing properties when BGP adds routes to the routing table.

Example

None

Related commands

None

4.1.72.   timers

Modify the default timers of the BGP neighbor and restore the default value with the no timers command.

timers bgp<*keepalive*><*holdtime*><*Idleholdtime*>

no timers bgp

Parameter

Parameter	Parameter Declaration
keepalive	Default Keepalive time interval for BGP neighbors, 0-21845.
holdtime	BGP neighbor, 0-65535.
Idleholdtime	Default Idlehold time interval for BGP neighbors, 0-65535.

Default

Keepalive：   30 seconds

Holdtime：   90 seconds

Idleholdtime：   0

Command mode

BGP configuration state

Instruction

Global configuration of the BGP neighbor's clock modifies the neighbor's default clock settings, with the neighbor setting taking preference over the global configuration.

Example

The following configuration can set the default clock to 10 and 40.

router bgp 100
  timers bgp 10 40

Related commands

   neighbor timers

5. Routing a public configuration command

5.1. The ipas-path list configuration command

5.1.1. ip as-path access-list

Create an AS path list (AS-path list) rule for matching BGP routing, and delete the configured AS path list (as-path list) with the no command.

ip as-path access-list *<name><***deny| permit***><regexp>*

no ip as-path access-list *<name>*[**deny| permit**][*regexp*]

Parameter

Parameter	Parameter Declaration
name	Name of the as-path-list.
deny| permit	Nature of the as-path-list rule.
regexp	The as-path property regular expression

Default

The default is to reject all as-path expressions except for the explicitly stated permit.

Command mode

Global configuration state

Instruction

The list of AS paths is used to filter the AS _ PATH property of BGP routing. The AS _ PATH attribute of BGP routing is a sequence of some numbers (representing the autonomous system number), often represented by a string, where the right number is the autonomous system number starting from the route and the autonomous system number passing through on the left. For example: 22 23 98, representing the route from the autonomous system 98, successively through the autonomous system 23,22 to reach the autonomous system.

The AS path list in the system is identified by name, and the total number of AS path lists that can be configured in the system is limited by the system resources. Multiple matching rules can be configured under the same AS path list (AS-path list). The process of applying as-path list is checked in the order of configuration. Once a match is successful, the subsequent check will be stopped and the nature of the rule (deny / permit) will be returned. If all rules cannot match successfully, return deny. Rules are organized in a configured order.

aspath Expression is a general regular expression, common expression special

characters are as follows：

character	sign	significance
full stop	.	Match any single character, including blank characters
asterisk	*	Sequences of 0 or more in the matching pattern
plus sign	+	Of 1 or more sequences in the matching pattern
question mark	!	0 or 1 occurrence in match mode (Same as?)
add character	^	Match the start of the input string
Dollar character	$	Match the end of the input string
underline	_	Match the comma, left braces, right braces, left brackets, right brackets, start of the input string, end of the input string, or a space
square brackets	[scope]	Represents the range of the single-character pattern
en dash	-	Separa range

Combined with the representation of path properties, correctly using regular expressions can create a powerful list of AS pathways. Here are some examples：

.*   Representing arbitrary AS path properties.

^$ Represents the empty path property.

^22$ Represents the path properties that contain only the autonomous system 22.

^22_   Represents a path attribute beginning with 22, such as: 22,2233.

_22$ 22, such as: 22,3422,99 4522.

_22_   Represents the path attributes containing 22 in the middle, such as: 2322 45,44222 23 44.

The AS path list (as-path list) can be used in combination with the match as-path command in the route-map and the neighbor filter-list command in the BGP.

Example

The as-path list hell defined in the next example will only allow all path attributes beginning with 23, or with 22 in the middle：

ip as-path access-list hell permit^23

ip as-path access-list hell permit _22_

   for another example：
ipas-pathaccess-listguangzhoudeny^300

ipas-pathaccess-listguangzhoudeny_300_

ip as-path access-list guangzhoupermit .*

All as-path attributes starting with 300 or containing 300 in between are rejected and the others can pass. But assuming that the order of the definition is different, the effect is completely different. As follows, all of the as-path properties are passable.

ip as-path access-list guangzhoupermit .*

ipas-pathaccess-listguangzhoudeny^300

ipas-pathaccess-listguangzhoudeny_300_

Related commands

match as-path

neighbor filter-list

5.1.2. show ip as-path-list

Displays the list of AS paths (aspath list) configured in the system, and the specified name can display the specified aspathlist information.

show ip as-path-list <*name*>

Parameter

Parameter	Parameter Declaration
name	Name of the Aspath-list

Default

None

Command mode

Management state

Instruction

Without no name, information for all configured as-path-lists in the system.

Example

The following example shows all of the aspathlist in the system：

show ip as-path-list

Related commands

ip as-path access-list

5.2. The ip community-list configuration command

5.2.1. ip community-list

Create a Group List (community list) rule for BGP routing, and remove the configured Group List (community list) rule with the no-command.

ipcommunity-list<expanded | standard><*name*><**deny| permit**>[**aa:nn**|*1-4294967295* | **local-AS|no-advertise|no-export**]

noipcommunity-list<expanded | standard><*name*><**deny|permit**>[**aa:nn**|*1-4294967295* |**local-AS|no-advertise|no-export**]

Parameter

Parameter	Parameter Declaration
name	Name of the Community-list
deny| permit	Nature of the Community-list rule
<1-4294967295>	The Community value, the Community is a 32-bit unsigned integer.
aa:nn	The new form of Community values, aa represents higher values of 16 bits and nn represents lower values of 16 bits.
no-advertise	No notice to any neighbor (famous group number).
local-AS	No notification to outside the autonomous system, including the EBGP neighbors (famous group number) within the same autonomous system alliance.
no-export	No notice is given outside the autonomous system or the autonomous system alliance (famous group number).
Expanded/standard	Select the mode of community-list

Default

The default is to reject all community except permit explicitly stated permit.

Command mode

Global configuration state

Instruction

community-List, also known as the group list, is used to filter or set the group (community) properties of BGP routing, which is a group number or a group of group numbers. A group number is a 4-byte value that is retained in the following range: 0x00000000 to

0x0000FFFF and 0xFFFF0000 to 0xFFFFFFFF. These group numbers are recognized and have global significance. Generally recognized group numbers are:

NO_EXPORT (0xFFFFFF01): After receiving a route with this group number, it should not notify the autonomous system or the autonomous system alliance (if the router belongs to an autonomous system alliance).

NO_ADVERTISE (0xFFFFFF02): upon receipt of a route with this group.

NO_EXPORT_SUBCONFED (0xFFFFFF03): Often known as LOCAL _ AS, receiving a route with this group number should not be notified to counterparts outside the autonomous system.

The community list in the system is identified by name and the total number of group lists that can be configured is limited by system resources. Multiple matching rules can be configured under the same community list. The process of applying community list is checked in the order of configuration. Once a match is successful, the subsequent check is stopped and the nature of the rule (deny / permit) is returned. If all the rules do not match, return deny. the order of the check is in the order when configured.

A community-list rule has three elements: name, nature of the rule (deny / permit), and group number sequence. A group number sequence is a collection of a set of group numbers. Check whether the given group attribute matches a rule, that is, check whether all the group numbers in the group attribute are in the group sequence of the specified rule, if yes, the match is considered successful, return the nature of the rule, if not, if the match is considered failed, continue the match of the next rule.

community list Can be used in combination with the match community command of the route-map.

Example

The community-list yall defined in the following example is rejected with community values of 5 and 10,15 and 20 allowed.

ip community-list expandedyall deny 5 10

ip community-list expandedyall permit 15 20

Related commands

match community-list 4

5.2.2. show ip community-list

Displays the community list configured in the system, using the specified name to display the specified community list information.

show ip community-list <*name*>

Parameter

Parameter	Parameter Declaration
name	Displays the community list configured in the system, using the specified name to display the specified

Default

None

Command mode

Management state

Instruction

Without no name, information for all configured community list in the system.

Example

The following example shows all of the community list in the system：

show ipcommunity-list

Related commands

ip community-list

5.3. ip prefix-list Command

5.3.1. clear ip prefix-list

Clear the specified prefix-list.

clear ip prefix-list[<name>[<*prefix*>]]

Parameter

Parameter	Parameter Declaration
name	Name of the Prefix-list.
prefix	Network prefix, the format is: A.B.C. D / n, and n is the mask length.

Default

None

Command mode

Management state

Instruction

If the prefix is not specified, clear all the statistics in the prefix-list.

Example

None

Related commands

ip prefix-listdescription

ip prefix-listsequence-number

show ip prefix-list

clear ip prefix-list

5.3.2. ip prefix-list

Create a prefix-list (prefix list) or add a prefix-list rule. The user uses the no command to delete the configuration.

Ip prefix-list<*name*>[<**seq**><*seq_number*>] <**deny|permit**><**prefix|any**>
      [<*ge*><*value*>][<**le**><*value*>]

No ip prefix-list<*name*>[<**seq**><*seq_number*>] <**deny|permit**><**prefix|any**>
      [<*ge*><*value*>][<**le**><*value*>]

Parameter

Parameter	Parameter Declaration
name	prefix-list name
seq	Specify the sequence-number
seq_number	The sequence-number values
deny|permit	Nature of the prefix-list rule
prefix| any	Specify either a prefix or any prefix
ge	Specifies the minimum length of the matched prefix, namely the lower limit
value	prefix Length, 0 — 32
le	Specifies the maximum length of the matching prefix, namely the upper limit
value	prefix Length, 0 — 32

Default

None

Command mode

Global configuration state

Instruction

Prefix list (prefix-list) is a collection of the set of rules used to filter network prefixes. Each rule contains five elements: serial number (sequence), nature (deny / permit), prefix, and length (a.b.c. And d / n), lower limit (gex), and upper limit (ley). All the rules are numbered from small to large. When applying the prefix list, check from the rule with the smallest serial number. If the match is successful, stop the match of other rules and return the nature of the rule (deny / permit).

Use a rule to check whether a given network prefix matches, checking not only whether the length of the network prefix, but also whether the network prefix is exactly the same within the specified length. As given the a.b.c. Network d / n, with a prefix list of the rule " ip prefix-list test seq 5 A.B.C. D / M ge X leY " to check for match, the following process:

First to see whether the mask length (n) of the network meets the expression: $X <= n <= Y$ (if geX is not specified, the expression should be: $M <= n <= Y$; if leY is not specified, the expression should be: $X <= n <= 32$; if neither geX nor leY are specified, the expression should be: $n == M$). If satisfied, proceed to the next step; otherwise, this rule is not satisfied, compare the next rule.

Check the network (a.b.c. And d / n) with the A.B.C. Whether the anterior M position of D is identical. If the same is true, the nature of the rule (deny / permit) is returned; otherwise, the next rule is compared.

If all the rules are not met, return the deny.

For the serial number of the prefix list (prefix-list), there is another command: ip prefix-list sequence-number. This command is used to control whether the prefix list uses the sequence number, please refer to the description of this command for details.

The no command that only specifies the name removes the entire prefix list.

Example

Assuming the following matching target and the prefix list definition, the matching results are as described below. Target route 1：120.120.0.0/14

Target Route 2:120.120.0.0/16 Target Route 3:120.120.0.0/25 Target Route 4:130.130.0.0/16 Target Route 5:130.130.0.0/8 Target Route 6:130.130.0.0/24 Target Route 7：12.0.0.0/8

Prefix-list：

ip prefix-list sample permit 120.120.0.0/8 ge 16 le 24

ip prefix-list sample deny 130.130.0.0/16

All target routes match the prefix-listsample results:

Target route 1: match failed,deny

Target route 2: matching matching, permit

Target route 3: match failed, deny

Target route 4: matching success, deny

Target route 5: match failed, deny

Target route 6: match failed, deny

Target route 7: match failed,deny

Related commands

    ip prefix-listdescription

    ip prefix-listsequence-number

    show ip prefix-list

    clear ip prefix-list

5.3.3. ip prefix-list description

Configure the Description of the prefix list to delete the configuration with the no command.

    ip prefix-list<*name*><**description**><*strings*>

    no ip prefix-list <*name*><**description**>

Parameter

Parameter	Parameter Declaration
name	prefix-list name.
description	Specifies the Description information for the prefix-list.
strings	Description Information.

Default

None

Command mode

Global configuration state

Instruction

None

Example

The following example adds Description information to prefix-list hard to make the configuration easy to read：

ip prefix-list hard deny any

ip prefix-list hard description This prefix-list is used to filter routes from neighbor hard

Related commands

   ip prefix-listdescription

   ip prefix-listsequence-number

   show ip prefix-list

   clear ip prefix-list

5.3.4. ip prefix-list sequence-number

Set whether prefix-list uses serial number, delete the configuration with no command.

  ip prefix-list_sequence-number_

  no ip prefix-list _sequence-number_

Parameter

None

Default

The serial number is used by default.

Command mode

Global configuration state

Instruction

This command is used to control whether each rule assigns a sequence number under the prefix list (prefix-list). After using the serial number, there can only be one rule for the same serial number, so the newly configured rules of the same sequence number will implicitly delete the old one. If the serial number is not used, the rule can only be explicitly deleted with the command. The configuration can not specify the serial number, then the system implied to all rules assigned sequence number, starting from 5, increasing by 5.

Example

None

Related commands

ip prefix-listdescription

ip prefix-listsequence-number

show ip prefix-list

clear ip prefix-list

5.3.5. show ip prefix-list

Displays the relevant information for the specified prefix-list or all prefix-list, including the configuration situation and statistics of that prefix-list.

show ip prefix-list [<**summary| detail**><*name*>]

Parameter

Parameter	Parameter Declaration
summary	Generate the information.
detail	detailed information.
name	Name of the Prefix-list.

Default

None

Command mode

Management state

Instruction

If no prefix list name, display all prefix list information.

Example

The one prefix-list is configured in the following example：

Techroutes

N E T W O R K

ip prefix-listyellpermit 130.12.19.0/24

ipprefix-list yell permit 140.20.0.0/16 ge16le24

show ip prefix-list detail is shown as follows：

prefix-list with the last deletion/insertion:yell

ip prefix-listyell: 2 entries

count: 2, rangeentries: 1, sequences: 5 - 10

seq 5 permit 130.12.19.0/24 (hit count: 0, refcount: 10)

seq 10 permit 140.20.0.0/16ge 16 le24 (hitcount: 0, refcount: 10)

The first line indicates that the prefix-list that used the last modified configuration is yes.

From the second line, list all the prefix-list information, here only one prefix-list. named yl, which includes two items.

Count: 2，There are two items in this prefix-list；

range entries: 1, the number of network ranges defined in this prefix-list is 1 (an item corresponding to seq 10); sequences: 510, refers to the serial number range of each item in this prefix-list. Here are the definitions and statistics of each item.

Hit count: 0, means that the number of matches for this item is 0;

Refcount: 10, means the number of attempts to match this item is 10.

Related commands

    ip prefix-listdescription

    ip prefix-listsequence-number

    show ip prefix-list

    clear ip prefix-list

5.4. route-map Command.

5.4.1. route-map

Create a route map (route-map) or define a route map entry. Can delete with the no command.

    route-map [*name* seq] [**deny|permi**]

    no route-map [*name* seq] [**deny| permi**]

Parameter

Parameter	Parameter Declaration

name	Name of the route-map
seq	Execution serial number of the route-map entry, the default is 10
deny| permit	Nature of the route-map entries and, by default, is permit

Default

By default, the seq value is 10 and the property is permit.

Command mode

Global configuration state

Instruction

Routing mapping (route-map) is used to modify the properties of routing, to filter routing. Policies commonly used in dynamic routing protocols, such as redistribute routing, filtering routing, setting routing properties for policy routing, etc.

The rate-map is identified by the name, and there can be multiple entries under the same rate-map. The total number of route-maps in the system is limited only by the resources of the system. Each item under the same rate-map can specify a serial number or be automatically generated by the system. Each entry has a property (deny / permit), each entry can configure match rules (with match command), set rules (with set command), exit policy (with on-match command).

A match rule is used to check whether a certain attribute of the target satisfies a certain rule. If the target meets all the matching rules under this entry, the target is considered to match this entry successfully, otherwise, matching this entry fails. If any match rule is not configured under an entry, any target matches this entry. If the matching rule is checked by other lists (such as access-list, prefix-list, community-list, aspath-list, etc.), then the return value of the list is the result of the matching rule.

Set a rule to set a attribute of the target. If the target matches this entry successfully and the nature of this entry is permit, then the setting rules configured under this entry are used to modify the properties of the target; if the target matches this entry successfully with deny, check the exit policy; if the target matches this entry fails, the next destination check is performed.

The exit strategy is used to determine the action after the target matches this entry successfully. When the target matches one entry successfully, if the exit policy is not configured under the entry, stop checking the other entry and return the nature of the entry (deny / permit). If the on-match next is configured, proceed with the next destination check. If on-match gotoN is configured, skip to the entry of the specified serial number N and start the check; if the specified entry does not exist, return the nature of this entry (deny / permit).

Under the same entry, only one matching rule or setting rule for the same attribute can be configured, and the latter configuration will overwrite the previous configuration. This can be configured under the same entry:

match metric 34

set metric 100

There are only one match rule and only one set rule.

To match multiple values for the same attribute, you can use the exit rule：

route-map match-multi-metric10 permit

    match metric 10

    on-match goto 30

route-map match-multi-metric20 permit

    match metric 20

    on-match goto 30

route-map match-multi-metric30 permit

    set metric 100

In the above example, match metric to 10 or 20 and set its metric to 100.

During the configuration, the system can automatically generate the sequence number for each item. The default starts from 10 and adds 10 in turn.

Route-map can handle different types of routes, and some matching rules and setting rules only apply to partial routes. If you attempt to match or modify the target with an unsupported matching rule or setting rule, it is ignored by the system.

After the no route-map command, delete the entire route-map, otherwise delete the specified entry.

Example

In the next example, filter the route forwarded from ospf by route-map and set its attributes：

!

router bgp 20

    redistribute ospf 3 route-map redist-ospf

!

route-map redist-ospf

    match tag 139009

    set local-preference 300

!

Related commands

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.2. match as-path

Set a route-map matching rule to check the BGP routing properties by as-path list. You can delete the configuration with the no-command.

match as-path <*as-path-list-name*>

no match as-path<*as-path-list-name*>

Parameter

Parameter	Parameter Declaration
as-path-list-name	The name of the as-path list.

Default

None

Command mode

The tour-map configuration state.

Instruction

Match the targets with the specified AS path list. Only applicable for BGP routing. The AS _ PATH attribute used to filter the BGP routing.

Example

As-list1 was used to check whether the BGP route was matched.

route-map match-aspath

match as-pathas-list1

Related commands

route-map

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.3. match community

Set a route-map matching rule to check the BGP routing properties by community list. You can delete the configuration with the no-command.

match community*<community-list-name>*
no match community*<community-list-name>*

Parameter

Parameter	Parameter Declaration
community-list-name	Name of the community-list.

Default

None

Command mode

The tour-map configuration state.

Instruction

Match the target with the specified group list. Only applicable for BGP routing. Group properties used to filter out the BGP routing.

Example

The m-list1 was used to check whether BGP routes match.

route-map match-comm
   match community comm-list1

Related commands

route-map

match as-path

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.4. match ip address

Set a route-map matching rule to match the routing destination network address via ip access list. You can delete the configuration with the no-command.

match ip address<*name*>

no match ip address <*name*>

Parameter

Parameter	Parameter Declaration
name	Name of the ip access-list.

Default

None

Command mode

The Route-map configuration state.

Instruction

Use access-list to filter the routing network addresses. Applicable to various IP routing and messages.

Example

In the next example, the route that can check through the access list is set with metric :

route-map set-metric

   match ip address acl-metric

   set metric 100

Related commands

route-map

match as-path

match community-list

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.5. match ip next-hop

Set a route-map matching rule to check if the routing nexthop address matches the specified nexthop address. You can delete the configuration with the no-command.

match ip next-hop <*a.b.c.d*>

no match ip next-hop<*a.b.c.d*>

Parameter

Parameter	Parameter Declaration
a.b.c.d	IP address.

Default

None

Command mode

The Route-map configuration state.

Instruction

Use the access-list to check the nexthop properties of the route. For all IP routes.

Example

In the following example, a route with the nexthop address of 192.121.13.28 will match the entry 20 on the route-map：

route-mapbeijing10permit

matchipnext-hop172.12.29.98

set metric 100

route-mapbeijing20permit

Matchipnext-hop192.121.13.28

set metric 20

Related commands

route-map

match as-path

match community-list

match ip address

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.6. match ip address prefix-list

Set a route-map matching rule to match the routing destination network address via ip prefix list. You can delete the configuration with the no-command.

match ip address prefix-list<*name*>

no match ip address prefix-list <*name*>

Parameter

Parameter	Parameter Declaration
name	Name of the prefix-list.

Default

None

Command mode

The Route-map configuration state.

Instruction

For all IP routing.

Example

In the following example, a route with the destination address 192.121.0.0 will match the upper rate-map match-prefix：

ip prefix-list beijingpermit 192.121.0.0/16
  route-map match-prefix
    Matchipaddressprefix-listbeijing
    set metric 100

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.7. match length

Set a route-map matching rule to check if the routing metric matches the specified metric. You can delete the configuration with the no-command.

match length <*minimum-length*><*maximum-length*>

no match length <*minimum-length*><*maximum-length*>

Parameter

Parameter	Parameter Declaration
minimum-length	Minimum length of the message.
maximum-length	Maxmaximum length of the message.

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing.

Related commands

route-map

5.4.8. match metric

Set a route-map matching rule to check if the routing metric matches the specified metric. You can delete the configuration with the no-command.

match metric <*value*>

no match metric <*value*>

Parameter

Parameter	Parameter Declaration
value	Metric price.

Default

None

Command mode

The Route-map configuration state

Instruction

Applicable to all routes.

Example

In the next example, a route with metric 120 will match the entry 20 of the upper route-map and be rejected：

route-mapbeijing10permit
　Matchipnext-hop172.12.29.98
　set metric 100
route-mapbeijing20deny
　match metric120

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.9. match tag

Set a route-map match rule to check if the tag of the route matches the specified tag. You can delete the configuration with the no-command.

match tag <*value*>

no match tag <*value*>

Parameter

Parameter	Parameter Declaration
value	Tag price.

Default

None

Command mode

The Route-map configuration state

Instruction

Applicable to all routes.

Example

In the next example, a route with a tag of 120923 will match the entry 20 of the upper route-map and be rejected：

route-maphuang10permit

matchipnext-hop172.12.29.98
set metric 100
route-maphuang20deny

Matchtag120923

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.10.   on-match

Configure the exit policy for the route-map entry. The configuration can be deleted with the no-command.

on-match {**next | goto**n}

no on-match{**next | goto**n}

Parameter

Parameter	Parameter Declaration
n	Serial number of the target entry.

Default

None

Command mode

The Route-map configuration state

Instruction

Uses to set the exit policies for the route-map entries. If the rate-map entry matches successfully, if the exit policy is not configured under this entry, the inspection of another entry is stopped to return the nature of the entry (deny / permit). If the on-match next is configured, proceed with the next destination check. If on-match gotoN is configured, skip to the entry of the sequence number N and start the check; if the specified entry does not exist, return the nature of this entry (deny / permit).

Example

In the following example, Configure the next check attribute for the policy：

route-maphuang

on-match next

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.11.　　set aggregator

Configure a route-map setup rule to set the aggregator properties of the BGP routing. You can delete the configuration with the no-command.

set aggregator <**as**><*as-number*><*a.b.c.d*>

no set aggregator<**as**><*as-number*><*a.b.c.d*>

Parameter

Parameter	Parameter Declaration
as-number	Routing aggregator's autonomous system No.
a.b.c.d	The IP address of the routing aggregator.

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.

Example

In the following example, you set the aggregator attribute for all the routes：

route-maphuang
   set aggregatoras 200 192.12.90.82

Related commands

> **route-map**
>
> **match as-path**
>
> **match community-list**
>
> **match ip address**
>
> **match ip next-hop**
>
> **match ip prefix-list**
>
> **matchmetric**
>
> **match tag**
>
> **on-match**
>
> **set as-path**
>
> **set atomic-aggregate**
>
> **set community**
>
> **set community-additive**
>
> **set ip next-hop**
>
> **set local-preference**
>
> **set metric**
>
> **set origin**
>
> **set tag**
>
> **set weight**
>
> **show route-map**

5.4.12.   set as-path

Configure a route-map setup rule, add AS before the as-path property of BGP routing.
You can remove the configuration by no command.

set as-path <**prepend**>*<as>*

no set as-path<**prepend**>*<as>*

Parameter

Parameter	Parameter Declaration
prepend	Add before the as-path attribute.
as	Autonomous system number.

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.

Example

In the following example, add your own autonomous system number to all the routing AS-PATH attributes to increase the length of the AS-PATH attribute, thus changing the result of routing.

```
route-map add-as
    Setas-pathprepend200200200200
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.13.   set atomic-aggregate

Configure a route-map setting rule to set the atomic-aggregate properties of the BGP routing. You can delete the configuration with the no-command.

set atomic-aggregate

no set atomic-aggregate

Parameter

None

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.If a system route causes the aggregation of information loss, it need to assign the atomic-aggregate attribute.

Example

In the following example, add your own autonomous system number to all the routing AS-PATH attributes to increase the length of the AS-PATH attribute, thus changing the result of routing.

```
route-map tee
    set atomic-aggregate
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set as-path

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.14. set community

Configure a route-map setting rule to set the community properties of BGP routing. You can delete the configuration with the no-command.

set community<*aa:nn | 1-4294967295*|**local-AS | no-advertise| no-export**>

no set community<*aa:nn | 1-4294967295* |**local-AS | no-advertise | no-export**>

Parameter

Parameter	Parameter Declaration
aa:nn	New and new type of Community value
1-4294967295	The Community value
no-advertise	No notice to any neighbor (famous group number)
local-AS	No notification to those outside the autonomous system, including the EBGP neighbors within the same autonomous system alliance (famous group number)
no-export	No notice is given outside the autonomous system or autonomous system alliance (famous group number).

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.The newly set community value will replace the original community attribute.

Example

In the following example, set local-AS community properties to all routes from neighbor 193.12.202.12 so that these routes do not notified to other autonomous systems.

router bgp 200
   neighbor193.12.202.12remote100

   neighbor193.12.202.12route-mapteein
route-map tee
   set community local-AS

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

matchtag

on-match

set aggregator

set as-path

set atomic-aggregate

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.15.　　set community-additive

Configure a route-map setting rule to add community values to the community property of the BGP route. You can delete the configuration with the no-command.

set   community-additive <*aa:nn | 1-4294967295*| **local-AS | no-advertise | no-export**>

noset   community-additive<*aa:nn|1-4294967295*| **local-AS|no-advertise| no-export**>

Parameter

Parameter	Parameter Declaration
aa:nn	New and new type of Community value

1-4294967295	The Community value
no-advertise	No notice to any neighbor (famous group number)

local-AS	No notification to those outside the autonomous system, including the EBGP neighbors within the same autonomous system alliance (famous group number)
no-export	No notice is given outside the autonomous system or autonomous system alliance (famous group number)

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing. The newly set community value is added to the original routing community attribute.

Example

In the following example, add local-AS community properties to all routes from neighbor 193.12.202.12 so that these routes do not notified to other autonomous systems.

```
router bgp 200
    neighbor193.12.202.12remote100

    neighbor193.12.202.12route-mapteein
route-map tee
    set community-additivelocal-AS
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

Techroutes

N E T W O R K

set aggregator

set as-path

set atomic-aggregate

set community

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.16.   set default

Sets the default information for the policy route. Delete the configuration with the no-command.

set default interface<*interface-name*>

no set default interface<*interface-name*>

Parameter

Parameter	Parameter Declaration
interface-name	Specified port name.

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing. Uses the default outgoing port for policy routes. Really works only when the state of the port is available. A port availability means that the port must meet two conditions:

First: the IP protocol for the port, UP.

Second: The port has an IP address, or a negotiated IP address, or a NULL port.

Related commands

    route-map

5.4.17.   set interface

Set up the exit port for the policy routes. Delete the configuration with the no-command.

    set interface   *<interface-name>*

    no set interface *<interface-name>*

Parameter

Parameter	Parameter Declaration
interface-name	Specified port name.

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing.Uses the default outgoing port for policy routes. Really works only when the state of the port is available. A port availability means that the port must meet two conditions:

First: the IP protocol for the port, UP.

Second: The port has an IP address, or a negotiated IP address, or a NULL port.

Related commands

route-map

5.4.18.   set ip default

Set the default nexthop for policy routing. You can delete the configuration with the no command.

set ip default next-hop *<A.B.C.D>*

no set ip default next-hop*<A.B.C.D>*

Parameter

Parameter	Parameter Declaration
A.B.C.D	Gateway address

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing. Is only considered valid when the nexthop is reachable and can be set to route.

Example

None

Related commands

route-map

5.4.19.   set ip precedence

Set up precedence for policy routing. You can delete the configuration with the no

command.

set ip precedence<0-7>

no set ip precedence<0-7>

Parameter

Parameter	Parameter Declaration
0-7	Set up the precedence for the message.

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing. When the policy route can be used for the route, precedence can also be set for it. If the policy route fails, the Precedence of the precedence.IP message is not set as defined as follows：

routine 0 priority 1

immediate   2

flash   3

flash-override   4

critical   5

internet   6

network   7

Related commands

route-map

5.4.20.　　　set iptos

Set up precedence for policy routing. You can delete the configuration with the no command.

set iptos<0-15>

no set iptos<0-15>

Parameter

Parameter	Parameter Declaration
0-15	The TOS set up for the message.

Default

None

Command mode

The Route-map configuration state

Instruction

Applies for policy routing. After the policy routing can be suitable for the routing, the tos can also be set for it. If the policy routing fails, the tos.Tos will not be set as follows. Different tos can be set by bit or together：

normal 0

min-monestary   1

max-reliability   2

max-throughput   4

min-delay   8

Related commands

route-map

5.4.21.　　set ip next-hop

Configure a route-map setting rule to set the next-hop address of the route. You can delete the configuration with the no-command.

set ip next-hop <*a.b.c.d*>

no set ip next-hop <*a.b.c.d*>

Parameter

Parameter	Parameter Declaration
a.b.c.d	IP address.

Default

None

Command mode

The Route-map configuration state

Instruction

For all IP routing.

Example

In the following example, setting the nexthop address for all routes from neighbor 193.12.202.12 is 193.12.202.1：

router bgp 200
 Neighbor193.12.202.12remote100

 Neighbor193.12.202.12route-mapteein

route-map tee
 set ip next-hop 193.12.202.1

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.22.   set local-preference

Configure a route-map setting rule to set the local-preference property of the BGP routing. You can delete the configuration with the no-command.

set local-preference *<value>*

no set local-preference *<value>*

Parameter

Parameter	Parameter Declaration
value	Local-preference values.

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.

Example

The ROUTE-MAP as defined in the next example can set the local-preference value of the BGP routing to 200：

```
route-map set-local-pref
    set local-preference 200
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set metric

set origin

set tag

setweight

showroute-map

5.4.23.　　　set metric

Configure a route-map setting rule to set the metric value of the route. You can delete the configuration with the no-command.

set metric<*value*>

no set metric<*value*>

Parameter

Parameter	Parameter Declaration
value	Metric price.

Default

None

Command mode

The Route-map configuration state

Instruction

For all IP routing.

Example

The ROUTE-MAP defined in the next example can set the metric value of the route to 120：

route-map set-metric
    set metric 120

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set origin

set tag

set weight

show route-map

5.4.24.   set metric-type

Configure a route-map setup rule to set the metric-type value of the routing, which can be set to type1 or type2, to support the external type routing of ospf. You can delete the configuration with the no-command.

set metric-type   [**type-1** |**type2**]

no set metric-type   [**type-1** |**type2**]

Parameter

Parameter	Parameter Declaration
Type-1	Ospf external type 1metric
Type-2	Ospf external type 2metric

Default

None

Command mode

The Route-map configuration state

Instruction

Only applicable for ospf external routing.

Example

The ROUTE-MAP as defined in the next example can set the routing metric-type value to type1：

route-map set-metric-type
   set metric-type type-1

Related commands

route-map

match as-path

match community-ist

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

show route-map

5.4.25.   set origin

Configure a route-map setting rule to set the origin properties of BGP routing. You can delete the configuration with the no-command.

set origin [**igp|egp|incomplete**]

no set origin[**igp| egp|incomplete**]

Parameter

Parameter	Parameter Declaration
igp	Internal routing of the autonomous system.
egp	External routing of the autonomous system.
incomplete	Unsure routing.

Default

The default routing configured locally with network command is igp, the default routing configured with aggregate command is incomplete, and that generated through redistribute is incomplete.

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.

Example

The ROUTE-MAP defined in the following example can set the origin attribute of the BGP route to igp：

```
route-map set-origin
    match as-pathself
    set originigp
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set tag

set weight

show route-map

5.4.26.   set tag

Configure a route-map setting rule to set the tag value of the route. You can delete the configuration with the no-command.

set tag *<value>*

no set tag *<value>*

Parameter

Parameter	Parameter Declaration
value	Tag price.

Default

The default tag values are all 0.

Command mode

The Route-map configuration state

Instruction

For all IP routing.

Example

The ROUTE-MAP as defined in the next example can set the tag value of the routing to 120980：

```
route-map set-tag
    set tag120980
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

 match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set weight

show route-map

5.4.27.　　set weight

Configure a route-map setting rule to set the weight value of the BGP route. You can delete the configuration with the no-command.

set weight <*value*>

no setweight <*value*>

Parameter

Parameter	Parameter Declaration
value	Weight price.

Default

The default locally generated BGP route has a weight value of 32768 and a routing weight value from the neighbors of 0.

Command mode

The Route-map configuration state

Instruction

Only applicable for BGP routing.

Example

The ROUTE-MAP defined in the next example can set the weight value of the BGP route to 230：

```
route-map set-weight
    set weight 230
```

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

matchmetric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

show route-map

5.4.28.   show route-map

Displays the route map configured in the system, using the specified name to display the specified route map information.

Showroute-map [*name*]

Parameter

Parameter	Parameter Declaration
name	The name of the Route-map.

Default

None

Command mode

Management state

Instruction

Without no name, information for all the configured route-map in the system.

Example

The following example shows all the rate-maps in the system：

show route-map

Related commands

route-map

match as-path

match community-list

match ip address

match ip next-hop

match ip prefix-list

match metric

match tag

on-match

set aggregator

set as-path

set atomic-aggregate

set community

set community-additive

set ip next-hop

set local-preference

set metric

set origin

set tag

set weight

6. Policy routing of the PBR configuration command

6.1. The PBR configuration command

The PBR configuration command includes the;

＊debugip policy

*ip policy route-map

*matchipaddress

*matchlength

*set default interface

*setinterface

*setip defaultnext-hop

*setip next-hop

*route-map

*Debug ip policy

*ip local policy

*ippolicy

*iproute-weight

*showip localpolicy

*showip policy

6.1.1. debug ip policy

Using debug ip policy, view the results of the application policy routing.

debug ip policy

no debug ip policy

Parameter

None

Default

By default, the results of the application policy route are not printed.

Command mode

Management status.

Instruction

Use debug ippolicy to see if policy routing is applied to the IP message received by the port. Since this command prints the result of the application policy route for every IP message received by the port, use it with little network traffic.

Example

Example: Open the policy route debug information.

Router#debugippolicy

2004-1-1615:32:54PBR:s=10.1.1.2 (GigaEthernet0/0),d=99.1.1.1, len 84, policyrejected--normalforwarding

2004-1-1615:32:54PBR:s=10.1.1.21 (GigaEthernet0/0),d=99.1.1.1 (GigaEthernet0/0.13), len= 84,gate=13.1.1.99policyrouted

Related commands

None

6.1.2. ip policy route-map

In port configuration mode, use ippolicy route-map route-map name using policy routing for ip received messages. Cancel the policy route for the port configuration, using the no ip policy route-map route-map name.

ip policy route-map *route-map name*

no ip policy route-map

Parameter

Parameter	Parameter Declaration
route-mapname	Name of the route-map.

Default

Techroutes

NETWORK

None

Command mode

Port configuration status.

Instruction

If you policy route to the ip message received on the port, use ippolicy route-map.

Example

Example: Enable policy routing at G0 / 0.

Router_config#int g0/0
Router_config_g0/0#ip policy route-map pbr

Related commands

route-map

6.1.3. match ip address

Use the match ipaddress access-list name matching strategy based on the source IP address.

match ip address *access-listname*

no match ip address [*access-list name*]

Parameter

Parameter	Parameter Declaration
access-list name	The name of the standard access list.

Default

By default, no access list is specified.

Command mode

The rate-map configuration state.

Instruction

If the route-map is policy routed, the ip message source address is used to match the configured access list, if matched, apply the set rule; if not, apply the next serial number of

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the same route-map (if present）.

Example

Example: In the following example, the message allowed by the source IP address access list net1 will be sent to g0 / 0.

interface g0/0

   Ippolicyroute-mapmoon

!

route-map moon

   match ip address net1

   set interface g0/0

Related commands

set default interface

set interface

set ip default next-hop

set ip next-hop

route-map

6.1.4. match length

Use match length to specify the routing policy based on the IP message length.

match length *minimum-length maximum-length*

no match length *minimum-length maximum-length*

Parameter

Parameter	Parameter Declaration
minimum-length	Specifies the minimum length of the matching message
maximum-length	Specifies the maximum length of the matching message

Default

No configuration is by default.

Command mode

The rate-map configuration state.

Instruction

match length Enables users to route their policies according to the IP message size.

Example

Example: In the following example, ip packets greater than or equal to 1000 byte and less than or equal to 1500 byte will be sent to g0 / 0

```
interface g0/0
   ip policy route-map moon
!
route-map moon
   match length 1000 1500

   set interface g0/0
```

Related commands

match ip address

set default interface

set interface

set ip default next-hop

set ip next-hop

route-map

6.1.5. set default interface

Use set default interface to set the default next hop port for the matching ip packet.

set default interface interfacename[*...interface name*][**load-balance**]

no set default interface interfacename[*...interface name*] [**load-balance**]

Parameter

Parameter	Parameter Declaration
interfacename	The name of the port.

Default

No configuration is by default.

Command mode

The rate-map configuration state.

Instruction

The default next hop port with set default interface for the matching ip message is valid only if all the following conditions are met:

No set ip next-hop configured or set ip next-hop configured but no routing table to next-hop specified by set ip next-hop.

No set interface is configured, or set interface is configured, but these ports are in a unroutable state (port down or no ip address).

No set ip default next-hop configured or set ip default next-hop configured but no routing table to the next-hop specified by set ipdefault next-hop.

Example

None

Related commands

match ip address

match length

set interface

set ip default next-hop

set ip next-hop

route-map

6.1.6. set interface

Use set interface to set up the next hop port for the matching ip packet.

set interfaceinterfacename[*...interface name*] [**load-balance**]

no set interface interfacename[*...interfacename*] [**load-balance**]

Parameter

Parameter	Parameter Declaration

interfacename	The name of the port

Default

No configuration is by default.

Command mode

The rate-map configuration state.

Instruction

The next hop port set with set interface for the matching ip message is valid only when all the following conditions are met:

No set ip next-hop configured or set ip next-hop configured but no routing table to next-hop specified by set ip next-hop.

Port routable (port protocol up, with IP address).

Example

None

Related commands

match ip address

match length

set default interface

set ip default next-hop

set ip next-hop

route-map

6.1.7. set ip default next-hop

Set the default next hop for the matched IP message using the set ip default next-hop.

set ip default next-hop A.B.C.D [*...A.B.C.D*] [**Load-balance**]

no set ip default next-hopA.B.C.D[*...A.B.C.D*] [**Load-balance**]

Parameter

Parameter	Parameter Declaration
A.B.C.D	Next jump address.

Default

No configuration is by default.

Command mode

The rate-map configuration state.

Instruction

Set the default next hop for the matched IP message with set ip default next-hop is valid only if all of the following conditions are met:

No set ip next-hop configured or set ip next-hop configured but no routing table to next-hop specified by set ip next-hop.

No set interface is configured, or set interface is configured, but these ports are unroutable (port down or no IP address).

Rourouting table to next-hop specified with set ip default next-hop.

Related commands

    set default interface

    set interface

    set ip next-hop

    route-map

6.1.8. set ip next-hop

Set the next hop for the matched ip packets using the set ip next-hop.

    set ip next-hop A.B.C.D[*...A.B.C.D*] [**Load-balance**]

no set ip next-hopA.B.C.D [*...A.B.C.D*] [**Load-balance**]

Parameter

Parameter	Parameter Declaration
A.B.C.D	Next jump address

Default

No configuration is by default.

Command mode

The rate-map configuration state.

Instruction

The next hop set with set ip next-hop for the matching ip packet is only valid when the following condition is met: a route to the next-hop specified in the set ip next-hop routing table.

Related commands

set default interface

set interface

set ip default next-hop

set ip next-hop

route-map

6.1.9. route-map

route-map *route-map name* [*sequence-number*] [**permit** |**deny**]

no route-map *route-map name* [*sequence-number*] [**permit** |**deny**]

Parameter

Parameter	Parameter Declaration
route-mapname	The route-map name
sequence-number	(Optional) Specifies the route-map serial number

permit	(Optional) If matched, allow for forward routing or allow policy routing
deny	(Optional) If matched, forwarding routing is not allowed or policy routing is not allowed

Default

No static route by default.

Command mode

Global configuration status.

Instruction

Configure the route-map by using the route-map command.

Example

Example: The following example is configured with a route-map named pbr.

```
route-map pbr10 permit
    match ip address net1
    set ip next-hop 13.1.1.99
!
route-map pbr20 permit
    match ip address net2
    set ip next-hop 14.1.1.99
!
route-map pbr30 permit
    match ip address net3
    set ip next-hop13.1.1.99 14.1.1.99 load-balance
```

Related commands

match ip address

match length

set default interface

set interface

set ip default next-hop

set ip next-hop

6.1.10.   debug ip policy

debug ip policy

no debug ip policy

Parameter

None

Default

The policy route trace function is not turned on.

Command mode

Management state

Instruction

debug ip policy The command uses to open the tracking function of policy routing, and no debug ip policy turns off the tracking function of policy routing.

Example

None

Related commands

Ip local policy

Ip policy

show ip local policy

show ip policy

6.1.11.   ip local policy

ip local policy Command use the policy routing function to open local packets, no ip local policy close the local policy routing function.

ip local policyroute-map[*name*]

no ip local policyroute-map [*name*]

Parameter

Parameter	Parameter Declaration
name	The Route-map name used for policy routing.

Default

The policy routing function of the local packets is turned off.

Command mode

Global configuration mode

Instruction

A policy route can be applied to locally issued messages or forwarded messages. For locally issued packets we call local policy routing. Policy routing of locally issued packets can be achieved by configuring the iplocal policy route-map <name> command in a global configuration state and to configure the appropriate Route-map.

Strategy route checks whether the message is broadcast and finds the corresponding strategy route for the broadcast message. The result of the policy routing will only return one outgoing port or one nexthop, and there is no case of routing to multiple ports.

Route-map for policy routing can match the message by Access-list or message length, by setting the nexthop or outgoing port. By using Access-list, various policy needs can be met, such as routing according to the source address, routing by the application, etc.

The policy route can set the outgoing port, nexthop, tos, precedence, etc. The order of selecting policy routing is: nexthop, default nexthop, interface, default interface. Normal routing is used when these four types are not available.

Nexthop Availability means that the route can be found in the routing table for the nexthop, and interface availability refers to the port IP protocol UP with a legitimate IP address (or a negotiated address, or a NULL port).

Example

The following configuration will strategically route locally issued messages and send

messages with the destination address of 100.0.0.0/8 network to g0 / 0 port：

```
!
ip local policy route-map Policy
!
 route-map Policy
    match ip address Policy-ACL
    set interface g0/0
!
ip access-list extendedPolicy-ACL
 permit ip any 100.0.0.0 255.0.0.0
!
```

Related commands

Ip policy

show ip local policy

show ip policy

6.1.12.   ip policy

ip policy The command used to open the policy routing function on the port and no ip policy closes the local policy routing function.

ip local policyroute-map[*name*]

no ip policyroute-map [*name*]

Parameter

Parameter	Parameter Declaration
name	The Route-map name used for policy routing.

Default

The policy routing function of the port is turned off.

Command mode

Interface configuration mode.

Instruction

A policy route can be applied to locally issued messages or forwarded messages. Policy routing of messages received from the port is possible by configuring the ip policy route-map <name> command on the message entry port and to configure the appropriate Route-map.

Strategy route checks whether the message is broadcast and finds the corresponding strategy route for the broadcast message. The result of the policy routing will only return an outgoing port or annexthop, and there is no case of routing to multiple ports.

Route-map for policy routing can match the message by Access-list or message length, by setting the nexthop or outgoing port. By using Access-list, various policy needs can be met, such as routing according to the source address, routing by the application, etc.

The policy route can set the outgoing port, nexthop, tos, precedence, etc. The selection order of routing for policy routing is: set ipnexthop, set interface, non-default normal route, set ip default nexthop, set default interface, normal route, or default route. Policy routing can set tos and precedence separately for normal routes.

nexthop Availability means that the route can be found in the routing table for the nexthop, and interface availability refers to the port IP protocol UP with a legitimate IP address (or a negotiated address, or a NULL port).

Example

The following configuration will strategically route the message received on the port g0 / 1 and send the message targeting the 100.0.0.0/8 network to the port g0 / 0 :

```
interface g0/1
   ippolicyroute-mapPolicy
!
route-map Policy
   match ip address Policy-ACL
   set interface g0/0
!
ip access-list extended Policy-ACL
   permit ipany 100.0.0.0 255.0.0.0
!
```

Related commands

Ip local policy

show ip local policy

show ip policy

6.1.13.   ip route-weight

The ip route-weight command is used to configure the routing weights on the port, and the no route-weight restores the initial routing weights on the port with an initial value of 1.

ip route-weight [*value*]

no ip route-weight

Parameter

Parameter	Parameter Declaration
value	Routing weights

Default

The routing weights are configured by default as1.

Command mode

Interface configuration mode

Instruction

Configure the ip route-weight command on the port to implement the proportional traffic function.

First, ip route load-balance is configured globally, and then the routing weights are configured on the outgoing ports of the equivalent route according to the traffic allocation ratio to be used, so that the packets can be sent in the configured ratio on the different outgoing ports of the equivalent route. Note that the ip cache function must be turned off right now.

Example

The packets reaching the destination network 5.0.0.0 are sent in a 3:2 ratio on ports g0/0 and g0 / 1.

!

interface GigaEthernet0/0

  ip route-weight 3

  ip address 3.0.0.1 255.0.0.0

   no ip directed-broadcast

!

interface GigaEthernet0/1

   Ip route-weight 2

  ip address 8.0.0.1 255.0.0.0

   no ip directed-broadcast

  duplex half

!

ip route load-balance

ip route 5.0.0.0 255.0.0.0 GigaEthernet0/0 1.2.3.52

ip route 5.0.0.0 255.0.0.0 GigaEthernet0/1 2.2.3.52

!

The rate-weight of f0 / 0 is configured as 3, and the rate-weight of e1 / 1 is configured as 2, which would have the same effect if they are configured as 6 and 4, respectively, and their maximum common divisor is excluded here.

Related commands

ip route load-balance

ip route-cache

6.1.14. show ip local policy

show ip local policy

Parameter

None

Default

None

Command mode

management model .

Instruction

The show ip local policy command is used to display the configuration status of the local policy route.

Example

None

Related commands

    Ip local policy

    Ip policy

    show ip policy

6.1.15.   show ip policy

    showip policy

Parameter

    None

Default

    None

Command mode

    management model .

Instruction

    The show ip policy command is used to display the configuration status of the port policy route.

Example

    None

Related commands

    Ip local policy

    Ip policy

    show ip local policy

7. The DNS configuration command

7.1. The DNS configuration command

The DNS configuration command includes the：

*ip domain lookup

*ip domain name-server

*ip domain name

*ip domain list

*ip host

*ip domain retry

*ip domain timeout

*clearip host

*ip domain primary-server

*ip domain dynamic enable

*ip domain dynamic period

*ip domain bind

*showiphost

*debugipdomain

7.1.1. ip domain lookup

ip domain lookup

no ip domain lookup

Parameter

None

Default

Activate the DNS-based name-address resolution.

Command mode

Global configuration state

Instruction

Activate the DNS-based name-address resolution. To cancel DNS based name address resolution, use the no form of this command.

Example

The following example will activate the DNS-based name and address resolution function：

ip domain lookup

7.1.2. ip domain name-server

Specifies the Domain name server address. To delete the Domain name server in the no form available for this command.

ip domain name-server*ip-address*
no ip domain name-server*[ip-address]*

Parameter

Parameter	Parameter Declaration
ip-address	Domain The IP address of the first-name server.

Default

The Domain-name server is not configured.

Command mode

Global configuration state

Instruction

You can specify multiple Domain name servers, but only up to six. The first specified server will be the first query, if the query is not the host to find the latter server. If no form without ip-address means to delete all Domain name servers.

Example

The following example specifies that the IP address of the Domain name server is 192.168.1.3:

ip domain name-server address192.168.1.3

7.1.3. ip domain name

Specify a default Domain name. To remove a default Domain name using the no form of this command.

ip domain name*name*

no ip domain name

Parameter

Parameter	Parameter Declaration
name	The default Domain name

Default

The default Domain name is not specified.

Command mode

Global configuration state

Instruction

Complete incomplete host name by specifying a default Domain name, the default Domain name is only used if there is no list of Domain names.

Example

The following example will specify the default Domain name as aaa.com.cn：

ip domain name aaa.com.cn

7.1.4. ip domain list

Define the Domain name list. To delete the list of Domain names, use the no form of this command.

ip domain list *name*
no ip domain list *[name]*

Parameter

Parameter	Parameter Declaration
name	Domain Name and list name.

Default

The Domain name list is not configured.

Command mode

Global configuration state

Instruction

resolver Use the Domain name in the configured list to complete the incomplete host name, resolver in the Domain name will try the Domain name in the list, until find the corresponding host or Domain name list search. If a domain list exists, the default Domain name is not used. Conconfigure up to six Domain name lists. no ip domain listnameDeltes Domain name name; no ip domain list removes all Domain names in the list of Domain names.

Example

The following example will configure a list of Domain names named com.cn and edu.cn：

ip domain list com.cn
ip domain list edu.cn

7.1.5. ip host

Define the static host name — the address map. If you want to remove the host name-address map, use the no ip host command. The same host name can correspond to multiple IP addresses.

ip host *nameaddress1*[*address2*，…]
no ip host *name* [*address1*，…]

Parameter

Parameter	Parameter Declaration
name	hostname.
address	Host IP address.

Default

Not that any mappings are being configured.

Command mode

Global configuration state

Instruction

no ip host name Without IP address Parameter, delete all hosts with name name.

Example

The following example configuration IP address with a 202.96.1.3 host name is dns-server.

Ip host dns-server 202.96.1.3
A host name may also map multiple IP addresses, as the mapping host djh corresponds to multiple IP addresses.

router_config# ip host name *djh 172.16.20.209*

router_config# ip host name *djh 172.16.20.210*

or：

router_config# ip host name djh172.16.20.209 172.16.20.210
You can also delete one or more IP addresses, and you can also delete the host.

router_config# no iphost name djh 172.16.20.209 /* One IP address of the djh will be

removed*/ **router_config# no iphost name** djh 172.16.20.209 172.16.20.210 /* Two IP

addresses of the djh are deleted*/

router_config# no iphost name djh   /*The djh host will be deleted*/

7.1.6. ip domain retry

Set the replay times of the DNS query. To restore the default replay times, uses the no form of this command.

ip domain retry_count_
no ip domain retry

Parameter

Parameter	Parameter Declaration
count	Number of reissues. Range of value: 1 ~ 10.

Default

Reissue number is 3 (times).

Command mode

Global configuration state

Example

The following example sets the number of restarts to 5：

ip domain retry *5*

7.1.7. ip domain timeout

Set the timeout value for the timeout replay of the DNS query.

ip domain timeout *seconds*

no ip domain timeout

Parameter

Parameter	Parameter Declaration
seconds	Timeout value for timeissue. Range of value: 1 ~ 30.

Default

The timeout replay is 2 (seconds).

Command mode

Global configuration state

Example

The following example sets the timeout to 3 seconds：

Ip domain timeout *3*

7.1.8. clear ip host

Remove the host name and address mapping item from the cache.

cleariphost *name*

clear ip host *

Parameter

Parameter	Parameter Declaration
name	The host name in the cache that you want to delete
*	Delete all of the hosts in the cache

Command mode

Management state

Instruction

The queried host is placed in the resolve cache and can remove one or all host name and address mapping items from the cache. This command does not delete the statically configured host name and address mapping items.

Example

The following example will remove the host name in the cache as www.sina.com. The host of the cn：

clear ip hostwww.sina.com.cn

Related commands

show ip host

7.1.9. ip domain primary-server

Specifies the IP address of the primary Domain name server. To delete the main Domain name server, use the no form of this command.

ip domain primary-server_address_
no ip domain primary-server

Parameter

Parameter	Parameter Declaration
address	The IP address of the primary Domain name server

Default

The primary Domain name server is not specified.

Command mode

Global configuration state

Instruction

Only one primary Domain name server can be configured, and if multiple, the later configuration will override the previous.

Example

The following example will specify the IP address of the primary Domain name server as 192.168.1.8：

Ip domain primary-server 192.168.1.8

7.1.10.   ip domain dynamic enable

Activate the dynamic update function of the DNS Resolver terminal. To turn off the dynamic update feature to use the no form of this command.

ip domain dynamic enable

no ip domain dynamic enable

Parameter

None

Default

Turn off the dynamic update function.

Command mode

Global configuration state

Example

The following example will activate the dynamic update function based on the DNS Resolver end：

Ip domain dynamic enable

7.1.11.   ip domain dynamic period

Sets the timeout value for the periodic update Domain name and address binding. To restore to the default timevalue use the no form of this command.

ip domain dynamic period *seconds*
no ip domain dynamic period

Parameter

Parameter	Parameter Declaration
seconds	Periourally update the timeout value of Domain name and address binding

Default

Periodically update Domain name and address binding time-out value of 60 (seconds).

Command mode

Global configuration state

Example

The following example sets the timeout value of Domain name and address binding to 3600 (seconds).

Ip domain dynamic period *3600*

7.1.12.   ip domain ddns update

Enter the Domain name binding configuration state.

Parameter

None

Default

Unbound.

Command mode

Global configuration state

Example

ipdomain ddns update

7.1.13.   bind

Configure the Domain name and the address required to bind. You can directly configure

- 311

the Domain name to bind to the IPv4 / IPv6 address, or you can directly configure the Domain name to bind to the main IPv4 / IPv6 address of the device interface.

bind *name***{** *A.B.C D* **|** *X::Y* **}**
no bind *name* **{** *A.B.C.D* **|** *X::Y* **}**
bind *name* **interface { v4 | v6 }***NUMBER*
no bind *name* **interface { v4 | v6 }***NUMBER*

Parameter

Parameter	Parameter Declaration
name	The Domain name requiring the binding
A.B.C.D	The IPv4 address that is required to bind to the Domain name
X::Y	The IPv6 address required to bind to the Domain name
NUMBER	An interface name that is required to bind to the Domain name

Default

No binding Domain name.

Command mode

Domain Name of the binding configuration state.

Example

The following example will bind the Domain name www.example.com with the IPv4 address of 10.1.1.1.

```
ip domain ddns update
    bind www.example.com 10.1.1.1
!
```

7.1.14.   show ip hosts

Displays the default Domain name, some features related to the Domain name, and the Domain name address table items in the cache.

show ip hosts [**detail**]

Parameter

Parameter	Parameter Declaration

detail	[Optional] In addition to the above, it also displays information about the upper application of the non-blocking call DNS

Command mode

Management state

Example

The following command displays all of the host name / address maps：

show ip hosts

Related commands

Clear ip host

7.1.15.　debug ip domain

Turn on the debugging function of the DNS module. To turn off the debug function, use the no form of this command.

debug ip domain

Parameter

None

Command mode

Management state

Example

The following command turns on the debugging function of the DNS module：

debug ipdomain all

8. PeanutHull Configuration command

PeanutHull Configuration command includes：

＊ippeanuthull

＊enable

＊server

＊port

＊username

＊password

＊bind

＊showippeanuthull

＊debugip domain

8.1.1. ippeanuthull

Add the specified name configuration group to enter the DHRP configuration group.
ippeanuthull name

Delete the specified name configuration group. no ippeanuthull name.

Parameter

Parameter	Parameter Declaration
name	To configure the name.

Default

None

Command mode

Global configuration state

Example

ippeanuthullaaa

8.1.2. enable

Activate name and address resolution based on DHRP.

enable

Cancel the DHRP-based name and address resolution.

no enable

Parameter

None

Default

None

Command mode

peanuthulll Config status.

Example

Router_peanuthulll_aaa#enable

8.1.3. server

Specify the server name：**server name**

Remove the server name：**no server**

Parameter

Parameter	Parameter Declaration
name	Server name

Default

None

Command mode

peanuthulll Config status.

Instruction

Only one server can be configured, and if multiple, the latter configuration will override the previous. If not, the server name is automatically obtained via web sevice.

Example

server ph031.oray.net

8.1.4. port

Specifies the port number.：**port** *num*

Remove the configuration：**no port**

Parameter

Parameter	Parameter Declaration
num	port number

Default

None

Command mode

peanuthulll Config status.

Instruction

Set up the port number for connecting to the server.

Example

Port6060

8.1.5. username

Set the username：**username** name

Remove the configuration：**no username**

Parameter

Parameter	Parameter Declaration
name	user name

Default

None

Command mode

peanuthulll Config status.

Instruction

Set the user name, the user name required to use when registration, in the peanut shell designated website maintenance.

Example

username aaa

8.1.6. password

set a password.

password *password*

Remove the configuration.

no password

Parameter

Parameter	Parameter Declaration
password	password

Default

None

Command mode

peanuthulll Config status.

Instruction

Set the password, the password required to use when registration, in the peanut shell designated website maintenance.

Example

Passwordaaa

8.1.7. bind

Binding port：**bind** interface number

Binding IP address：**bind**ip_addr

Parameter

Parameter	Parameter Declaration
number	port number
ip_addr	IP address

Default

None

Command mode

peanuthulll Config status.

Instruction

Bind the local ip or the port to the registered Domain name. There may be multiple ip under the port, and the system selects the main ip address by itself. The peanut shell client cannot start when the port has no ip address. When the port is assigned ip or ip changes, the peanut shell client will re-register.

Example

Bind interface g0/2

8.1.8. show ippeanuthull

Displays the default Domain name, Domain name server information, and host name, and the client is running status.

8.1.9. debug ip domain

Display the debug information for this module.

9. Routing management configuration command

9.1. Routing management configuration command

The route management configuration command includes：

＊distance

*filterin

*filteron

＊redistribute

9.1.1. distance

Use distance to define a managed distance, and no distance to remove a definition of a managed distance.

distance weight [*address mask* [*access-list-name*]]
no distance weight [*address mask* [*access-list-name*]]

Parameter

Parameter	Parameter Declaration
weight	Manage distance, range from 1 to 255. Recommended use range from 10 to 255 (0 to 9 reserved). If this Parameter is used alone, it tells the router system software to use it as the default management distance when there is no provision for a information source. Routes with a managed distance of 255 are not installed in the routing table.
address	(Optional) IP address (form aa.bb.cc. dd)
mask	(Optional) IP address mask (form aa.bb.cc. dd). If a bit is 0, the software will ignore the value of the corresponding bit in the address.
access-list-name	(Optional) The standard access list name applied to the incoming routing update.

Default

The following table lists the default administrative distances：

Routing source	Default distance
Connected	0
Static	1
External BGP	20
BIGP	90
OSPF	110
RIP	120
Internal BGP	200

Command mode

Routing configuration.

Instruction

The administrative distance is an integer number ranging from 0 to 255. In general, the higher this value, the lower the confidence. A management distance of 255 means that the routing information sources cannot be trusted at all and should be ignored.

If the RIP or BEIGRP, address / mask refers to the neighbor's IP address; but in the OSPF,

address / Mask is the router ID that declares the relevant LSA.

If the optional Parameter access list access-list-name is used in the command, this

access list is applied when a network route is inserted into the routing table. Doing so allows filtering some networks based on the router address that provides routing information. For example, it can be used to filter the error routing information from a router that is never under your administrative control.

Note that the order of the management distance you enter may have an unexpected effect on the assigned management distance (as explained in the example below).

The value of ParameterWeight is completely subjective, and there is no quantitative way to choose this value.

Example

In the following example, the global command router rip sets RIP routes, and the first router configuration command distance sets the default management distance to 255, which indicates that the router: if the management distance is not explicitly set for a router, all routes from it will be ignored. The second command, distance, sets the management distance of all routers on the C network 192.31.7.0 to 90. The second command distance sets the address to 128.88.1.3. The router's management distance is 120.

router rip 10

　distance 255

　distance 90 192.168.7.0 0.0.0.255

　distance 120 133.8.1.3 0.0.0.0

9.1.2. filter in

Using the router configuration command filter to filter the network received in the routing update, no filter changes or cancels this filter.

　filter * in access-list {*access-list-name*}

　filter * in gateway{*access-list-name*}

　filter * in prefix{*prefix-list-name*}

　filter type number in access-list{*access-list-name*}

　filter type number in gateway{*access-list-name*}

　filter type number in prefix{*prefix-list-name*}

　no filter * in
　no filter type number in

Parameter

Parameter	Parameter Declaration
access-list-name	Standard IP access list name, this list defines which networks are received and those networks are suppressed.

prefix-list-name	Standard IPprefix list name, this list defines which networks are received and those networks are suppressed.
In	Access list for incoming routing updates.
type	(Optional) Interface type
number	(Optional) Apply access list to inbound updates on which interface. If no interface is specified, an access list will be applied to all inbound updates.

Default

Invalid state.

Command mode

Routing configuration.

Instruction

To filter the network in the received update.

Example

In the following example, the RIP routing process receives only the two networks of 0.0.0.0 and 131.108.0.0：

ip access-list standard 1

   permit 0.0.0.0 255.255.255.0

   permit 131.108.0.0 255.255.255.0

   deny 0.0.0.0 255.255.255.0

router rip 10

   filter * in access-list 1

Related commands

   filter out

9.1.3. filter out

Using the filter out router configuration command to suppress which networks are not declared in the update, nofilter out cancels this feature.

   filter * out access-list {*access-list-name*}

   filter * out gateway{*access-list-name*}

   filter * out prefix{ *prefix-list-name*}

   filter type number out access-list {*access-list-name*}

   filter type number out gateway{*access-list-name*}

filter type number out prefix{*prefix-list-name*}

no filter * out

no filter type number out

Parameter

Parameter	Parameter Declaration
access-list-name	Standard IP access list number or name, which defines which networks are sent and those networks are suppressed.
prefix-list-name	Standard IPprefix list name, this list defines which networks are received and those networks are suppressed in the routing update.
Out	Access list for outgoing route updates.
Interface-name	(Optional) The name of an interface.

Default

Invalid state.

Command mode

Routing configuration.

Instruction

When redistributing the network, the name of the routing process can be specified as an optional suffix Parameter of the command filter. This makes the access list applied to only those routes obtained from the specified routing process. When this process-related access list is applied, any access list without the process name Parameter specified in the filter will be applied. An address not specified in the filter will not be declared in the outbound route update.

pay attention to：

To filter the network in that received the update, use the command filter in.

Example

The following example enables that only one network 131.108.0.0 can be declared by the RIP routing process：

```
 !
ip access-list standard 1
   permit 131.108.0.0 255.255.255.0
   deny 0.0.0.0 255.255.255.255
```

```
!
router rip 10
 filter * out access-list 1
!
```

Related commands

filter in

9.1.4. redistribute

Use the redistribute router configuration command to redistribute routes from one route Domain to another route Domain. Use no redistribute to unredistribute.

redistribute*protocol*[*process-id*] [**route-map** *map-name*]

no redistribute*protocol*[*process-id*] [**route-map** *map-name*]

Parameter

Parameter	Parameter Declaration
protocol	The source protocol for routing to be distributed can be one of the following key words: The bgp, ospf, static [ip], connected, and rip. The keyword static [ip] was used to redistribute the IP static routes. When the route is redistributed to the In IS-IS, when using this optional IP keyword. Keyword connected refers to those routes that are automatically established after IP activation on the interface. For those like the OSPF andIS-IS routing protocol, these routes are distributed as external routes to the autonomous system.
process-id	(Optional) For bgp, or bigp, the Parameter is an autonomous system number of 16 digits.
	For OSPF, this is the corresponding OSPF process ID where the routing key is distributed. This identifies the routing process. It is a non-zero decimal number. For rip, no process identity process-id.
route-map	(Optional) This Parameter tells the route map to filter those routes imported from the source protocol to the current routing protocol. If this Parameter is not given, all routes are redistributed. If this keyword is given but no route mapping tag is listed, no route is imported.

Default

Route redistribution is in an invalid state.

protocol- - -No-routing protocol is defined

The process-id- - -No-process ID is defined

Route-mapmap-tag- - -If Parameterroute-map is not given, all routes will distribute. If there is no input map-tag, no route is imported.

Command mode

Routing configuration.

Instruction

Changing or invalidating any keyword will not affect the status of the other keywords. When a router receives a link state protocol packet with internal routing weights, it weights it from itself to that one

The sum of the weights of the new distributed router and the weights of the declared reaching purpose serves as the weights of the route, while the external routing weights only consider the weights of the reaching purpose declared in the declaration.

Redistributed routing information is always filtered by the filter out router configuration command, which ensures that only the routing specified by the administrator can enter the accepted routing protocol.

Whenever you use the redistribute or default-information router configuration command to distribute routes to the OSPF routing Domain, that router automatically becomes the autonomous system boundary router ASBR. However, by default, ASBR does not produce a default route (default route) within the OSPF routing Domain.

When the routing is redistributed between the OSPF processes, the OSPF routing weights are all used.

When the routing is redistributed to the OSPF, if the routing weights are not specified with meric keywords, the OSPF uses 20 for the default routing weight (1 for BGP). Further, when the route is redistributed between two OSPF processes on the same router, without the default routing weights within a routing process are brought into the process of executing the redistribution.

When rerouting is redistributed into the OSPF, only which new routes do not carry the subnetwork can be distributed if the keyword subnets is not given.

Those connected routes that are affected by the redistribute command are those that are not specified with the network command. You cannot use the default-metric command to influence the weights of the declared connected route.

pay attention to：

The routing weights specified in redistribute suppress the routing weights specified in default-metric.

Redistribution of routes from IGP or EGP to BGP is not allowed unless the default-information originate command is given.

Example

The following example makes OSPF routing to redistribution to BGP routing Domain：

router bgp 109

  redistribute ospf1

The following example causes the routing in the specified RIP to be redistributed into the OSPFDomain：

router ospf 109

  redistribute rip 1

In the following example, network 20.0.0.0 is declared as an external link state at a cost of 100：

!

interface GigaEthernet0/0

  ip address 20.0.0.1 255.0.0.0

  ipospf cost 100

!

interface GigaEthernet0/1

  Ip address 10.0.0.1 255.0.0.0

!

router ospf 1

  network 10.0.0.0 255.255.255.0 area 0

  redistribute ospf 2

!

router ospf 2

  network 20.0.0.0 255.255.255.0 area 0

!

10. The VRF configuration command

10.1. The VRF configuration command

The VRF configuration command includes the：

- **ipvrfvrf-name**
- **description**
- **export map**
- **import map**
- **rd**
- **route-target**
- **ipvrf forwarding**
- **ipvrf sitemap**
- **show ipvrf**

10.1.1.   ipvrfvrf-name

Configure a VRF and enter the VRF configuration state. Remove the VRF by using the no-command.

ip vrf*vrf-name*

no ip vrf*vrf-name*

Parameter

Parameter	Parameter Declaration
vrf-name	VRF the name of

Default

None

Command mode

Global configuration state

Instruction

If the configured VRF has been created, the ipvrfvrf-name command enters the VRF configuration state not to recreate the VRF; otherwise, enter the VRF configuration state to create the VRF.

The no ipvrfvrf-name command removes all configurations of the VRF, removes the VRF table, and has the VRF configuration of the port associated with the VRF, but does not remove the sitemap configuration on the port.

Example

Create a VRF named a PE：

R1_config#ip vrfPE

Related commands

rd

10.1.2.　description

Configure the Description description for the VRF, and the no command removes the Description description for the VRF.

description*LINE*

no **description**

Parameter

Parameter	Parameter Declaration
LINE	For Description for VRF, up to 79 characters

Default

None

Command mode

VRF configuration state .

Instruction

Example

Configure the Description description of the VRF named PE：

R1_config#ip vrf PE

R1_config_vrf_PE#description this is description for pe vrf

Related commands

ipvrfvrf-name

10.1.3. exportmap

Configure the extended attributes carried by the VRF outgoing route. The no command cancels the configuration of extended properties carried by routes sent out the VRF.

export map_WORD_

no export map_WORD_

Parameter

Parameter	Parameter Description
WORD	Name of the route-map

Default

None

Command mode

VRF configuration state.

Instruction

When using the export map WORD command, If the corresponding VRF is not configured with a export map, The export map name of the VRF is placed as the configured route-map name; If the corresponding VRF is configured with export map with different names, The export map name of the VRF is placed as the newly configured route-map name; If the corresponding VRF is already configured with a export map of the same name, The user is prompted to say, "%Warning, This entry have been configed.".

When using the no export map WORD command, if the export map name to be deleted is inconsistent with the export map name of VRF, prompt the user:% Err, This entry is not configed.;; if the export map name to be deleted matches the export map name of VRF, delete the export map of VRF.

When using the no export map command, if the export map of the VRF is configured with export map, the corresponding VRF is deleted; if the corresponding VRF is not configured with export map, no reaction is made.

The MP-BGP route sent from the VRF will carry the export map output target VPN extension attribute configured by the VRF.

Example

The route-map of the export map with the VRF named PE is named pe-export-map：

R1_config#ip vrf PE

R1_config_vrf_PE#export map pe-export-map

R1_config_vrf_PE#exit

R1_config#route-map pe-export-map 10 permit

R1_config_route_map #set extcommunity rt 1:1

Related commands

ipvrfvrf-name

rd

10.1.4.   importmap

Configure the route-map filtering conditions that join the VRF routing table. The no command cancels the route-map filtering of the routes that join the VRF routing table.

import map WORD

no import map WORD

Parameter

Parameter	Parameter Description
WORD	Name of the route-map

Default

None

Command mode

VRF configuration state

Instruction

When using the import map WORD command, If the corresponding VRF is not configured with a import map, The import map name of the VRF is placed as the configured route-map name; If the corresponding VRF is configured with import map with different names, The import map name of the VRF is placed as the newly configured route-map name; If the corresponding VRF is already configured with a import map of the same name, The user is prompted to say, "%Warning, This entry have been configed.".

When using the no import map WORD command, if the import map name to be deleted is inconsistent with the import map name of the VRF, prompt the user:% Err, This entry is not configed.;; if the import map name to be deleted is consistent with the import map name of the VRF, delete the import map of the VRF.

When using the no import map command, if the import map of the VRF is configured with import map, the corresponding VRF is deleted; if the corresponding VRF is not configured with import map, no reaction is made.

For routes originating from the PE, the MP-BGP will only add the routes allowed by the import map of the VRF to that VRF table.

Example

The route-map of the import map with the VRF named PE is named pe-import-map：

R1_config#ip vrf PE

R1_config_vrf_PE#export map pe-import-map

R1_config_vrf_PE#exit

R1_config#route-map pe-import-map 10 permit

Related commands

ipvrf *vrf-name*

rd

10.1.5.   rd

The VPN routing markers are configured for the VRF.

rdASN:nn or IP-address:nn

Parameter

Parameter	Parameter Description
ASN:nn or IP-address:nn	The VPN routing marker

Default

None

Command mode

VRF configuration state

Instruction

The 8-byte long RD consists of 2-byte type area Domain and 6-byte value area Domain.

Type region Domain determines the length of two subregions Domain (manager subregion Domain and assigned numerical subregion Domain) in the numerical region Domain. Currently, the type area Domain defines three values: 0,1, and 2.

For type 0, the manager subzone Domain includes 2 bytes, while the allocation value subzone Domain includes 4 bytes. The manager subzone Domain uses a 2-byte autonomous Domain number (ASN) to allocate the numeric space managed by the free service provider to provide VPN services and related to the assigned ASN.

For type 1, the manager subzone Domain includes 4 bytes, while the allocation value subzone Domain includes 2 bytes. The manager subzone Domain uses an IPv4 address to allocates the value subzone Domain numerical space managed by the free service provider to provide VPN services and relate to the assigned IPv4 address.

For type 2, the administrative subzone Domain includes 4 bytes, while the assigned numerical subzone Domain includes 2 bytes. The manager subzone Domain uses a 4-

byte autonomous Domain number (ASN) to allocate the numeric space managed by the free service provider to provide VPN services and associate with the assigned ASN.

When using the rd command, If the corresponding VRF is already configured with the same routing tag, The user is prompted to say, "%Warning, This entry have been configed."; If the corresponding VRF is already configured with different routing markers, The user is prompted to say, "%Warning, Do 'no ipvrf' before redefining the VRF.", Change the routing markers for the configured VRF, The VRF must be deleted first, Then recreate it; If the corresponding VRF is not configured with routing markers, Then the routing marker of this VRF is placed as the newly configured routing marker.

When an RD is configured on a PE router, all routes within a VPN are not required to use the same RD, but you must ensure that each RD is globally unique.

Example

The VPN route for the VRF named PE is marked 1:1：

R1_config#ip vrf PE

R1_config_vrf_PE#rd 1:1

Related commands

ipvrfvrf-name

10.1.6.   route-target

Configure the target VPN extension attribute, and the no command removes the target VPN extension attribute.

route-target [export|import|both]ASN:nn or IP-address:nn

no route-target [export|import|both] [ASN:nn or IP-address:nn]

Parameter

Parameter	Parameter Description
ASN:nn or IP-address:nn	Target VPN extension attribute

Default

None

Command mode

VRF configuration state

Usage Guidines

Route-target ASN: nn or IP-address: The nn command configures increasing the input and output target VPN extension attributes of the VRF to the configured value.

Route-target export ASN: nn or IP-address: The nn command increases the output target

VPN extension attribute of the VRF to the configured value.

Route-target import ASN: nn or IP-address: The nn command increases the input target VPN extension attribute of the VRF to the configured value.

Route-target both ASN: nn or IP-address: The nn command adds the input and output target VPN extension attributes of the VRF to the configured value.

The no route-target command removes all the input and output target VPN extension properties of the VRF.

no route-target ASN: nn or IP-address: The nn command removes the input and output target VPN extension properties specified in the VRF.

The no route-target export command removes all the output target VPN extension properties of the VRF.

no route-target export ASN: nn or IP-address: nn command removes the output target VPN extension attribute specified by the VRF.

The no route-target import command removes all the input target VPN extension properties of the VRF.

no route-target import ASN: nn or IP-address: nn command removes the input target VPN extension attribute specified by the VRF.

The no route-target both command removes all the input and output target VPN extension properties of the VRF

no route-target both ASN: nn or IP-address: The nn command removes the input and output target VPN extension properties specified in the VRF.

When you configure the rate-target target extension attribute by using the route-target command, if the target extension attribute already exists, prompt the user "%Warning, This entry have been configed.".

When the no route-target command removes the route-target target extension attribute, if the target extension attribute does not exist, prompt the user "% Err, This entry is not configed.".

Constraining the release of VPN routing information by the use of BGP extended community attributes. The extended Community attribute is hosted in the BGP message as a routing attribute.

Rouroutes received by MP-BGP, only those allowed by the route-target import of the VRF can be added to that VRF.

The rate-target configured by the VRF when the MP-BGP sends the routing.

Example

Configure the input target VPN extension attribute for the VRF named PE. is 1:1：

R1_config#ip vrf PE

R1_config_vrf_PE#route-target import 1:1

Related commands

ip vrf vrf-name

rd

10.1.7. ipvrfforwarding

To associate the interface with the VRF, the no command cancels the port with the VRF.

ipvrf forwarding*vrf-name*

no ipvrf forwarding [*vrf-name*]

Parameter

Parameter	Parameter Description
vrf-name	VRF the name of

Default

The interface is not associated with any VRF.

Command mode

Interface configuration.

Usage Guidines

The ipvrf forwarding vrf-name command, If the interface does not have an associated VRF, Is associated with the assigned VRF in this interface, Also delete the IP address on the interface; If the interface is already associated with another VRF, Then delete the association relationship between the interface and the original VRF, Establish the association of the interface with the new VRF, Delete the interface IP address at the same time; If the interface is already associated with the same VRF, The user is prompted to say, "%Warning, Interface type num have existed in VRF vrf-name.", Where the type is the port type, To for the slogan, The vrf-name is the corresponding VRF name of the interface.

no ipvrf forwarding Command, If the interface has no associated VRF, prompt the user to "%Warning, Interface type num not in any VRF.", where type is the interface type and num is the slogan; If the interface has an associated VRF, delete the associated relationship between the interface and the IP address of the interface.

The no ipvrf forwarding vrf-name command, If the interface does not have an associated VRF, To prompt the user to "% Err, Interface type num not in VRF vrf-name.", among, Type is the interface type, To for the slogan, The vrf-name is the VRF name; If the interface is associated with any other VRF, To prompt the user to "% Err, Interface type num not in VRF vrf-name.", among, Type is the interface type, To for the slogan, The vrf-name is the configured VRF name; If the interface is associated with the VRF, Then delete the association relationship between the interface and the VRF, Also remove the interface IP address.

Example

Configure the interface interface GigaEthernet0 / 0 is associated with VRF PE：

R1_config#ip vrf PE

R1_config_vrf_PE#rd 1:1

R1_config_vrf_PE#exit

R1_config #interface GigaEthernet0/0

R1_config_g0/0#ip vrf forwarding PE

Related commands

ipvrfvrf-name

10.1.8.   ipvrfsite-map

Configure the routing of MP-BGP forwarding and the Soo property of the routing injected with network injection, the no command removes the configuration.

ipvrf sitemap WORD

no ipvrf sitemap [WORD]

Parameter

Parameter	Parameter Description
WORD	Name of the route-map

Default

None

Command mode

Interface configuration.

Usage Guidines

The interface configuration sitemap will affect the routing to MP-BGP forwarding and the Soo properties of the routing injected with network. There was no effect on CE routing learned through MP-BGP.

Example

The sitemap of the configuration interface interface GigaEthernet0 / 0 is named intf-sitemap：

R1_config # interface GigaEthernet0/0

R1_config_g0/0#ip vrf sitemap intf-sitemap

R1_config_g0/0#exit

R1_config#route-map intf-sitemap 10 permit

R1_config_route_map #set extcommunitysoo 1:1

Related commands

ipvrfsite-map

ipvrf forwarding

10.1.9.　　　showipvrf

Displays the specified VRF information.

show ipvrf [brief|detail|interface] [WORD]

Parameter

Parameter	Parameter Description
WORD	VRF the name of

Default

None

Command mode

Use in all states other than management.

Usage Guidines

The show ipvrf [vrf-name] command and the show ipvrf brief [vrf-name] command show brief information about the VRF.

The show ipvrf detail [vrf-name] command displays the details of the VRF.

The show ipvrf interface [vrf-name] command displays the port information for the specified VRF.

Example

Show the VRF information：

R1 #show ipvrf

Name	RD	Interfaces
CE	1:1	GigaEthernet0/0
PE	2:1	

Related commands

ipvrf *vrf-name*