MPLS Configuration Commands

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1.1.1   mpls ip (global)

Run **mpls ip** (global) to enable MPLS.

mpls ip

no mpls ip

Parameter

None

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

This command allows MPLS to forward the IPv4 packets along the notified route, which is sometimes called as dynamic label exchange. If a designated port needs dynamic label exchange, you shall configure this command on the port.

Example

None

Related command

None

1.1.2   mpls ip(port)

Run **mpls ip** in interface mode to start the MPLS function of the interface, including receiving and transmitting MPLS packets on the interface.

mpls ip

no mpls ip

Parameter

None

Default value

It is not configured by default.

Command mode

VLAN interface configuration mode

Usage explanation

The fact that MPLS forwards IPv4 packets along the notified route is sometimes called as dynamic label exchange. If LDP is enabled on the interface and this configuration is also enabled on the interface, neighbor negotiation can be conducted and the label can be released.

Example

None

Related command

None

1.1.3 mpls static binding ipv4

To configure layer-3 FTN items, run the first command of the following two commands:

mpls static binding ipv4 *dest mask* **output** *nexthop outgoing-label*

no mpls static binding ipv4 *dest mask* **output** *nexthop outgoing-label*

Parameter

Parameter	Description
dest	Stands for the prefix of the destination address of the layer-3 FTN.
mask	Stands for the mask of the address prefix.
nexthop	Stands for the address of the next hop.
outgoing-label	Stands for the outgoing label whose range is from 16 to 1048575.

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

The static LSP of layer-3 MPLS can serve either the internal label or the external label.

The negative form of this command can be used to cancel the corresponding static LSP configuration.

Example

switch_config# mpls static bind ipv 1.1.1.1 255.255.255.0 output 172.19.20.133 1000

Related command

None

1.1.4   mpls static crossconnect

To configure layer-3 ILM items, run the first command of the following two commands:

mpls static crossconnect *incoming-label outgoing-intf nexthop outgoing-label*

no mpls static crossconnect *incoming-label outgoing-intf nexthop outgoing-label*

Parameter

Parameter	Description
incoming-label	Stands for the incoming label whose range is the static label range.
outgoing-intf	Stands for the outgoing interface of the next hop.
nexthop	Stands for the IP address of the next hop.
outgoing-label	Stands for the outgoing label whose range is from 16 to 1048575.

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

The static LSP of layer-3 MPLS can serve either the internal label or the external label.

The negative form of this command can be used to cancel the corresponding static LSP configuration.

Example

switch_config# mpls static crossconnect 111 e1/1 172.19.20.133 112

Related command

None

1.1.5   mpls ip propagate-ttl

To configure the TTL process policy of the MPLS packets, run the first one of the following two commands.

mpls ip propagate-ttl

no mpls ip propagate-ttl

Parameter

None

Command mode

Global configuration mode

Usage explanation

The **mpls ip propagate-ttl** command is configured by default. During the process that the IP packets are encapsulated as the MPLS packets and tranmitted out, when the label is added, the TTL value of the IP packet will be copied into the TTL label's domain of MPLS. When a fixed TTL value (255) to encapsulate the first layer label of the IP packet, you can run the negative form of this command.

This command takes effect only when the CPU of the switch is forwarding packets.

Example

None

Related command

None

1.1.6   mpls ip ttl-expiration pop

To designate how to forward the packets with TTL value, run the first one of the following two commands.

mpls ip ttl-expiration pop *label-depth*

no mpls ip ttl-expiration pop *label-depth*

Parameter

Parameter	Description
label-depeth	Configures the maximum label depth for searching the routing table.

Default value

Bt default, packets are forwarded according to the previous label stack.

Command mode

Global configuration mode

Usage explanation

This command can decide whether the packets are forwarded through the global routing table or through the original label stack. The forwarding mode depends on the number of the layers of the label in the packet. You can use this command to designate the layers of the label. If the number of the layers of the label in the packet is smaller than that configured by this command, the packet will be forwarded through the global routing table and at the same time an ICMP TTL EXCEED packet will be generated. If the number of the label layers in a packet is larger than that specified by this command, the packet is forwarded according to its own label.

This command takes effect only when the CPU of the switch is forwarding packets.

Example

None

Related command

None

1.1.7 mpls mtu

To set the maximum length of the MPLS packet that a port can transmit, run the first one of the following two commands:

mpls mtu *bytes*

no mpls mtu *bytes*

Parameter

Parameter	Description
bytes	Configures MTU of the MPLS packet on a port.

Default value

By default, the MTU of a port serves as MPLS MTU.

Command mode

Interface configuration mode

Usage explanation

If the length of the MPLS / IPv4 packet exceeds MTU on a port, the packet will be segmented during forwarding.

This command takes effect only when the CPU of the switch is forwarding packets.

Example

None

Related command

None

1.1.8 clear mpls counters

To remove the MPLS traffic counter, run the following command:

clear mpls counters

Parameter

None

Default value

Default

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.1.9 show mpls forwarding-table

To display the content in the MPLS label forwarding information base, run the following command:

show mpls forwarding-table [{ network mask } | interface intf | labels label

nexthop address]

Parameter

Parameter	Description
network	Stands for the number of the destination network.
mask	Stands for the mask of the destination network.
interface intf	Displays the items with speicified outgoing port in the label forwarding information base.
labels label	Displays the locally distributed items with specified label in the label forwarding information base.
nexthop address	Displays the items that take designated neighbors as next hops in the label forwarding information base.

Default value

All items in LFIB are displayed by default.

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.1.10   show mpls ftn-table

To display the content of the FECtoNHLFE table, run the following command:

show mpls ftn-table [{ network mask } | neighbor address | remote-label value]

Parameter

Parameter	Description
network	Stands for the number of the destination network.
mask	Stands for the destination mask.
neighbor address	Stands for the next hop's address of forwarding equivalence.
remote-label value	Stands for the configured outgoing label.

Default value

By default, all items in the FTN table are displayed.

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.1.11 show mpls interface

To display the information about the MPLS interface, run the following command:

show mpls interface [*interface-name* | **all** [**detail**]]

Parameter

Parameter	Description
interface-name	Stands for the type and name of the interface.
all	Displays all interfaces, including the unconfigured MPLS IP interface.
detail	Displays MTU of the port and export and import the statisitics value of the MPLS packets.

Default value

By default, only the information about the configured MPLS interface is shown.

Command mode

EXEC

Usage explanation

This command is used to display the specific information about the configured MPLS interface or the information about all interfaces.

Example

None

Related command

None

1.1.12 show mpls label range

To display the distribution range of available local label, run the following command:

show mpls label range

Parameter

None

Default value

There is no default value.

Command mode

EXEC

Usage explanation

You can run mpls label range to configure a local label range that is used to replace the default label range. If the label is not distributed before configuration, the newly configured label range can take effect immediately, or it will not take effect until the router is restarted.

Example

None

Related command

None

1.1.13 show mpls static

To display statically configured L3FTN, ILM and L2VC, run the following command:

show mpls static binding ipv4 | crossconnect

Parameter

Parameter	Description
binding ipv4	Displays the statically configured FTN.
crossconnect	Displays the statically configured ILM.

Default value

There is no default congfiguration.

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.1.14 show mpls traffic

To display the statistics information about the MPLS packets, run the following command.

show mpls traffic

Parameter

None

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.2   LDP Configuration Commands

LDP configuration commands include:

- ☐   mpls ldp router-id

- ☐   mpls ldp enable

- ☐   mpls ldp discovery transport-address

- ☐   mpls ldp advertise-labels

None

- ●   mpls ldp discovery hello

- ☐   mpls ldp neighbor

- ☐   mpls ldp discovery targeted-hello

- ☐   mpls ldp holdtime

- ☐   mpls ldp explicit-null

- ☐   mpls ldp logging

- ☐   show mpls ldp bindings

- ☐   show mpls ldp discovery

- ☐   show mpls ldp neighbor

- ☐   show mpls ldp parameters

1.2.1   mpls ldp router-id

To designate an interface as the router ID of LDP, run the first one of the following commands:

mpls ldp router-id [interface] [force] no

mpls ldp router-id [interface] [force]

Parameter

Parameter	Description
interface	Means that the IP address of the designated interface is used as the router ID of LDP.
force	Means that the IP address of the interface is used as the router ID of LDP and takes effect immediately.

Default value

This command is not configured by default. To choose the router ID of LDP, you can refer to the following usage explanation.

Command mode

Global configuration mode

Usage explanation

If there is a loopback interface in one of these existing IP addresses of all optional interfaces you have checked, the maximum address of the loopback interface will be took as the router ID, otherwise, the maximum direct-through routing interface's address will be.

If the mpls ldp router-id command is configured and the neighborhood is not established before the settings of the force mode, the newly-configured router ID takes effect immediately; otherwise, the router ID cannot take effect until all neighborhoods are dismantled. If the force mode is configured, the router ID can soon take effect and the receiving side will not process the neighborhood information about the router ID any more. After the previous neighbor times out, a new neighbor will be established. That's why we recommend you not to configure force parameters. In normal case, the IP address of an interface functioning as router ID will be used to communicate with other neighbors upon establishment of neighborhood and still will, on the purpose of less fluctuation, even facing the deletion of the interface.

Example

switch_config#mpls ldp router-id 101.0.0.1

Related command

None

1.2.2   mpls ldp enable

To enable the LDP function of an interface, run the first one of the following two commands:

mpls ldp enable

no mpls ldp enable

Parameter

None

Default value

It is not configured by default.

Command mode

VLAN interface configuration mode

Usage explanation

The enablement of LDP on an interface runs after the **mpls ip** command is enabled globally or in interface mode.

Example

switch_config_v1#mpls ldp enable

Related command

Command	Description
show mpls ldp neighbor	Displays the state of the LDP session, including the transmission address of TCP connection session.
( ) **mpls ip global, port**	Enables MPLS IP in global or interface mode.

1.2.3   mpls ldp discovery transport-address

To configure the parameters of neighbor discovery mechanism, run the first one of the following two commands.

mpls ldp discovery transport-address { *ip_address | interface* }

no mpls ldp discovery transport-address { *ip_address | interface* }

Parameter

Parameter	Description
transport-address	Means that LDP requires to designate the IP address to establish the TCP connection.
ip_address	Designates a specific IP address to establish a TCP connection.
interface	Uses the IP address of the interface to establish a TCP connection.

Default value

The IP address of the interface is used to establish a TCP connection.

Command mode

Interface configuration mode

Usage explanation

Before the LDP session is established, the TCP connection must be first established between two routers to notify labels. To create the TCP connection, the router must know the transmission address of the peer.

After the TCP connection is successfully established, the connection will not be reestablished any more even if the IP address is changed.

Example

switch# config

switch_config# interface vlan 1

switch_config_v1# mpls ldp discovery interface

Related command

Command	Description
show mpls ldp neighbor	Displays the state of the LDP session, including the transmission address of TCP connection session.

1.2.4   mpls ldp advertise-labels

To control how to distribute the incoming label which is allocated by the prefix of the locally designated address, run the first one of the following commands:

mpls ldp advertise-labels for *prefix-access-list*

no mpls ldp advertise-labels for *prefix-access-list*

Parameter

Parameter	Description
for *prefix-access-list*	Designates the incoming label of a kind of address' prefix to be forwarded out.

Default value

The labels of all destination addresses' prefixes will be notified to all neighbors of LDP.

Command mode

Global configuration mode

Usage explanation

None

Example

switch_config# ip access-list standard pfx-filter
switch_config_std_nacl# permit 10.101.0.0
255.255.0.0 switch_config_std_nacl# permit
10.221.0.0 255.255.0.0 switch_config_std_nacl)# exit
switch_config# mpls ldp advertise-labels for pfx-filter

Related command

None

1.2.5 mpls ldp discovery hello

To control the interval of Hello information transmission and the holdtime of the neighbor, run the first one of the following two commands:

mpls ldp discovery { **hello** { **holdtime** | **interval**} *second* }

no mpls ldp discovery { **hello** { **holdtime** | **interval**} [*second*] }

Parameter

Parameter	Description
holdtime	Stands for a defined period, during which if a detected neighbor does not receive the hello information, the neighbor still exists. The default value is 15 seconds.
interval	Stands for the period to send a hello packet. The default value is three seconds.
second	Stands for the time of neighbor existence or the interval of transmitting the hello packet.

Default value

The holdtime is 15 seconds, while the interval is three seconds.

Command mode

Global configuration mode

Usage explanation

After a neighbor is detected on the port before the hold time times out, the hello information from the neighbor is not received, the neighbor will be deleted and the LDP session with the neighbor will be terminated.

If the holdtime is too long, the LDP discovery will be too slow and the connection will time out; if the holdtime is too short, abrupt flux will occur on the connection, and then the Hello packets will be lost and the LDP will terminate the session finally.

Example

switch# config

switch_config# mpls ldp discovery hello holdtime 30

switch_config# mpls ldp discovery hello interval 10

Related command

Command	Remarks:
show mpls ldp parameters	Displays the current LDP parameter settings.

1.2.6 mpls ldp neighbor

To configure the TCP session and establish the LDP neighborhood over routers, run the first one of the following commands:

mpls ldp neighbor *ipaddr* **targeted**

no mpls ldp neighbor *ipaddr* **targeted**

Parameter

Parameter	Description
ipaddr	Designates the routing ID (IP address) of the labeled neighbor.

Default value

There is no default configuration.

Command mode

Global configuration mode

Usage explanation

None

Example

switch_config# mpls ldp neighbor 1.1.1.1 targeted

Related command

Command	Description
show mpls ldp neighbor	Displays the state of the LDP session, including the transmission address of TCP connection session.

1.2.7   mpls ldp discovery targeted-hello

To configure the discovery mechanism of the designated neighbor, run the first one of the following two commands:

mpls ldp discovery targeted-hello { **accept** | **holdtime** *seconds* | **interval** *seconds* }

no mpls ldp discovery targeted-hello { **accept** | **holdtime** *seconds* | **interval** *seconds* }

Parameter

Parameter	Description
holdtime	Stands for a defined period, during which if a detected neighbor does not receive the hello information, the neighbor still exists. The default value is 45 seconds.
interval	Stands for the period to send a hello packet. The default value is 15 seconds.
second	Stands for the time of neighbor existence or the interval of transmitting the hello packet.

Default value

The holdtime is 45 seconds and the interval is 15 seconds.

Command mode

Global configuration mode

Usage explanation

After a neighbor is detected on the port before the hold time times out, the target hello information from the neighbor is not received, the neighbor will be deleted and the target LDP session with the neighbor will be terminated.

If the target holdtime is too long, the target LDP discovery will be too slow and the connection will time out; if the target holdtime is too short, abrupt flux will occur on the

connection, and then the target Hello packets will be lost and the target LDP will terminate the session finally.

Example

switch_config#mpls ldp discovery targeted-hello holdtime 60

switch_config#mpls ldp discovery targeted-hello interval 15

Related command

Command	Remarks:
show mpls ldp parameters	Displays the current LDP parameter settings.

1.2.8   mpls ldp holdtime

To configure the holdtime of the LDP session before the reception of the keepalive information, run the first one of the following two commands:

mpls ldp holdtime [*seconds*]

no mpls ldp holdtime [*seconds*]

Parameter

Parameter	Description
second	The holdtime ranges from 1 to 255 seconds.

Default value

The default time is 60 seconds.

Command mode

Global configuration mode

Usage explanation

It is used to select the minimum value of the holdtime between two LSRs as the time of the LDP session.

Example

switch_config# mpls ldp holdtime 30

Related command

Command	Remarks:

show mpls ldp parament	Displays the current LDP parameter settings.

1.2.9 mpls ldp explicit-null

To enable the LDP to notify the upstream neighbor of replacing the implicit null label with the explicit null label, run the first one of the following two commands:

mpls ldp explicit-null [**for** *prefix-acl* | **to** *peer-acl* | **for** *prefix-acl* **to** *peer-acl*]

no mpls ldp explicit-null [**for** *prefix-acl* | **to** *peer-acl* | **for** *prefix-acl* **to** *peer-acl*]

Parameter

Parameter	Description
for *prefix-acl*	Means that the ACL list which complies with the designated prefix will replace the implicit null label with the explicit null label and then notify the upstream LDP neighbor.
to *peer-acl*	Means replacing the implicit null label with the explicit null label and then notifying the designated upstream LDP neighbor.

Default value

Except a clear-cut configuration of **mpls ldp explicit-null,** LDP notifies the upstream neighbor of the implicit null label by default as to the local direct-through routes.

Command mode

Global configuration mode

Usage explanation

In general, as to the local direct-through route, LDP notifies the upstream neighbor of the implicit null label so that the upstream neighbor adopts the next to the last hop to pop up the outside label when the upstream neighbor is forwarding the MPLS packets. In order to prevent the next to the last hop from popping out the outside label, you need to take the strategy that uses the explicit null label to replace the outside label and to configure this command.

If the **mpls ldp explicit-null** command is configured, the direct-throguh route that meets prefix ACL will replace the implicit null label with the explicit null label and notifies the upstream neighbor that meets the peer ACL; if the prefix ACL is not configured, all direct-through routes will use the explicit null label to replace the implicit null label and the upstream neighbors that meet the explicit null label will be notified.

Note: If you want to enable the layer-2 VPN of the switch, make sure that the function to distribute the Explicit null label is not configured, or the uplink port of L2VPN may incorrectly handle the MPLS-encapsulated packets.

Example

The following command allows all direct-through routes to replace the explicit null label with the implicit null label and to enable all upstream neighbors to be notified.
switch_config# mpls ldp explicit-null

The following commands enable route 137.5.0.0 to replace the **explicit null** label with the **implicit null** label, and notify all upstream neighbors. As to other straight-through routes, the Implicit Null is used to notify all upstream neighbors.

switch_config# mpls ldp explicit-null for adv-exp-null

switch_config # ip access-list standard adv-exp-null

switch_config _std_nacl# permit 137.5.0.0

switch_config _std_nacl# deny any

switch_config _std_nacl#

Related command

Command	Description
show mpls ldp bindings	Displays the current LDP label binding.

1.2.10   mpls ldp logging

To record the changes of the neighbor to the log, run **mpls ldp logging neighbor-changes**.

mpls ldp logging neighbor-changes

no mpls ldp logging neighbor-changes

Parameter

None

Default value

The changes of the neighbors are not recorded to the log.

Command mode

Global configuration mode

Usage explanation

Example

switch# mpls ldp logging neighbor-changes

Related command

None

1.2.11 show mpls ldp bindings

To display the contents of the label database, run the following command:

show mpls ldp bindings

Parameter

None

Default value

None

Command mode

EXEC

Usage explanation

None

Example

PE1#show mpls ldp
bindings 132.1.1.1/32
    Upstream binding : lsr 202.252.1.252 ; tag imp-null
172.133.20.0/24
    Downstream binding : lsr 202.252.1.252 ; tag exp-
null 133.1.1.1/32
    Downstream binding : lsr 202.252.1.252 ; tag 19

Related command

None

1.2.12 show mpls ldp discovery

To display the port list in which all the ports run the LDP discovery mechanism, run the following command:

show mpls ldp discovery

Parameter

None

Default value

None

Command mode

EXEC

Usage explanation

None

Example

PE1#show mpls ldp discovery
Local LDP Identifier:
132.1.1.1:0
Discovery Sources:
Interface: Serial1/0

LDP Id: 202.252.1.252:0, From 172.167.132.252, Refresh 00:00:15
Ethernet1/1
 LDP Id: 201.201.201.201:0, From 192.168.20.149, Refresh 00:00:15
 LDP Id: 202.252.1.252:0, From 192.168.20.252, Refresh 00:00:12

Related command

None

1.2.13   show mpls ldp neighbor

To display the state of the session between LDP and neighbor, run the following command:

show mpls ldp neighbor

Parameter

None

Default value

> None

Command mode

> EXEC

Usage explanation

> None

Example

> PE1#show mpls ldp neighbor
> --------------------
> Peer LDP Ident: | 201.201.201.201:0 |
> --------------------
> Up time: 00:02:33; Refresh Time: 00:00:53; State: Operation
> TCP connection: 192.168.20.132,646 <-> 192.168.20.149,20005
> Label Distribution Method: DU
> Transport Address: 0.0.0.0
> Discovery Interface:
>   Ethernet1/1, Src IP addr: 192.168.20.149, Refresh Time:
> 00:00:14 Addresses bound to peer LDP Ident:
>   201.201.201.201 149.1.1.1 192.167.1.201 204.100.1.201
>   204.200.1.201 192.168.20.149 172.132.40.201 172.132.50.201
>   172.149.132.149
> -------------------
> Peer LDP Ident: | 202.252.1.252:0 |
> -------------------
> Up time: 00:49:30; Refresh Time: 00:00:52; State: Operation
> TCP connection: 172.167.132.132,646 <-> 172.167.132.252,51372
> Label Distribution Method: DU
> Transport Address: 172.167.132.252
> Discovery Interface:
>   Ethernet1/1, Src IP addr: 192.168.20.252, Refresh Time: 00:00:13
>   Serial1/0, Src IP addr: 172.167.132.252, Refresh Time: 00:00:14
>   Addresses bound to peer LDP Ident:
>   192.168.20.252 172.16.20.252 192.168.130.1 202.252.1.252
>   20.252.1.252 143.10.1.252 17.1.1.1 19.1.1.252

Related command

> None

1.2.14   show mpls ldp parameters

To display the current LDP parameters, run the following command:

show mpls ldp parameters

Parameter

None

Default value

None

Command mode

EXEC

Usage explanation

None

Example

PE1#show mpls ldp pa
Protocol version: 1
Session hold time: 60 sec; keep alive interval: 24 sec
Discovery hello: holdtime: 15 sec; interval: 3 sec
LDP loop detection: on
LDP label distribution method: DU
LDP label retention mode: Conservative
LDP label allocation method: Independ

The previous fields are described in the following table:

Field	Description
protocol version	Displays the information about the LDP version.
session hold time	Means that the holdtime of the neighborhood relation after LDP does not receive the information from the established neighbor.
keep alive	Means the interval of LDP to transmit the Keepalive information to the neighbor.
discovery hello	Means the interval of transmitting the Hello packets and the holdtime of not receiving the Hello packets.
loop detection	Means the detection of LSP loopback.
label distribution	Means the label distribution mode.

label retention	Means the label retention mode.
label allocation	Means the label allocation mode.

Related command

None

1.3   MPLS-L2VPN Configuration Commands

The following are MPLS-L2VPN configuration commands:

- mpls l2vpn

- mpls vfi

- pwid

- neighbor

- mpls l2vpn vfi

- mpls label range

- show mpls forwarding-table pwid

- show mpls ftn-table vfi

- show mpls ldp bindings vfi

- show mpls l2vpn vfi

- show mpls l2vpn pw

1.3.1   mpls l2vpn

To enable layer-2 MPLS VPN globally, run **mpls l2vpn**

mpls l2vpn

no mpls l2vpn

Parameter

None

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

None

Example

switch_config#mpls l2vpn

Related command

None

1.3.2   mpls vfi

To create the virtual forwarding case and enter the corresponding configuration mode, run **mpls vfi** *vfi-name* **{ ptop | vpls }**.

mpls vfi *vfi-name* { **ptop** | **vpls** }

no mpls vfi *vfi-name*

Parameter

Parameter	Description
vfi-name	Designates the VFI name.
ptop	Sets the VFI type to **point-to-point**.
vpls	Sets the VFI type to **point-to-multipoint**.

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

After L2VPN is enabled, you need to create a VFI and bind it to a VLAN interface.

Example

switch_config#mpls vfi red ptop

Related command

Command	Description
pwid	Designates the number of the fake line that is used by VFI.
neighbor *peer-addr* **encapsulation mpls**	Designates the VFI neighbor.

1.3.3　pwid

To designate the number of the fake line that is used by VFI, run the following command:

pwid *value*

Parameter

Parameter	Description
value	Stands for the ID of the fake line.

Default value

After VFI is created, the number of the fake line is not configured.

Command mode

VFI configuration mode

Usage explanation

PW ID is the ID that is used by VFI when the fake line is established. Different VFIs have different PW IDs. The same PW ID must be used to identify the same VFI among VFI neighbors; otherwise, the PW cannot be established. After a PW ID is designated for a VFI, the ID cannot be modified. If you want to modify the PW ID of a VFI, you have to delete the VFI and then reestablish it.

Example

switch_config#mpls vfi red ptop

switch_config_vfi_red#pwid 100

Related command

Command	Description
mpls vfi	Creates VFI and enters the VFI configuration mode.
neighbor *peer-addr* **encapsulation mpls**	Designates the VFI neighbor.

1.3.4　neighbor

To designate the VFI neighbor, run **neighbor *peer-addr* encapsulation mpls**.

neighbor *peer-addr* **encapsulation mpls**

no neighbor *peer-addr* **encapsulation mpls**

Parameter

Parameter	Description
peer-addr	IP address of the neighbor

Default value

After VFI is created, no neighbor is created by default.

Command mode

VFI configuration mode

Usage explanation

It is noted that you cannot establish the designated target session between two LSRs only by designating the VFI neighbor. You also need to designate the VFI neighbor as the LDP neighbor through the **mpls ldp neighbor** command. In general, the address of the loopback interface on a switch can be used as the neighbor's address and the router ID of LDP, which is easy for network management.

Only one neighbor can be designated for the point-to-point VFI.

Example

switch_config_vfi_red#neighbor 101.0.0.1 enc mpls

Related command

Command	Description
mpls vfi	Creates VFI and enters the VFI configuration mode.
pwid	Designates the number of the fake line that is used by

	VFI.

1.3.5   mpls l2vpn vfi

To bind a VFI to a VLAN interface, run mpls l2vpn vfi *vfi-name*. **mpls l2vpn vfi** *vfi-name*

no mpls l2vpn vfi *vfi-name*

Parameter

Parameter	Description
vfi-name	VFI's name

Default value

The VFI is not bound to any interface by default.

Command mode

VLAN interface configuration mode

Usage explanation

None

Example

switch_config_v1#mpls l2vpn vfi red

Related command

Command	Description
show interface vlan *vlan-id*	Browse the state of the VLAN interface.

1.3.6   mpls label range

To configure the dynamic or static label range, run **mpls label range { *min max* [static { *min max* }] }**.

mpls label range { *min max* [**static** { *min max* }] }

no mpls label range

Parameter

Parameter	Description
min	Means the minimum value of the label range, which is 1024 by default.
max	Means the maximum value of the label range, which is 1048575 by default.
static	Configures the range of static labels.

Default value

By default, the static label range is between 16 and 1023, while the dynamic label range is between 1024 and 1048575.

Command mode

Global configuration mode

Usage explanation

At present, our label range is automatically adjusted to the multiples of 32 for speeding up the research speed. In fact, labels of a 64K volume are supported. Labels 0-15 are values reserved by IETF, so we cannot use them during configuration.

If the label range is configured and the labels are not distributed to other modules, when the distribution range of the labels is changed, the new label range validates immediately; otherwise, the new label range will validate at the next startup.

If you have first taken the value range 16-1023 as the static label range and then need to modify this static label range, the modified static label range cannot exceed the range 16-1023.

Example

switch_config# mpls label range 1030 10000 static 16 99
% Label Range should be multiples of 32. So actual label range is (1030,10022).

Related command

None

1.3.7　mpls static vfi

To create the static layer-2 FTN and the ILM items, run **mpls static vfi** *vfi-name incoming-label* **output** *peer-addr outgoing-label*.

mpls static vfi *vfi-name incoming-label* **output** *peer-addr outgoing-label*

no mpls static vfi *vfi-name incoming-label* **output** *peer-addr outgoing-label*

Parameter

Parameter	Description
vfi-name	VFI's name
incoming-label	Incoming label whose range is the static label range
peer-addr	Address of the VFI neighbor
outgoing-label	Outgoing label whose range is from 16 to 1048575

Default value

It is not configured by default.

Command mode

Global configuration mode

Usage explanation

None

Example

The following command is used to create a static fake line between local switch and neighbor 134.1.1.1. The VC label for the local switch to transmit packets is 20, while that for the peer to transmit packets is 18.

switch_config# mpls static vfi blue 18 output 134.1.1.1 20

Related command

None

1.3.8   show mpls forwarding-table pwid

To browse ILM items that are consistent with the ID of the fake line in the forwarding information database, run the following command:

show mpls forwarding-table pwid value

Parameter

Parameter	Description
value	Value range: 14294967295

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.3.9   show mpls ftn-table vfi

To browse the FTN items of the designated VFI, run the following command:

show mpls ftn-table vfi *vfi-name*

Parameter

Parameter	Description
vfi-name	VFI's name

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.3.10 show mpls ldp bindings vfi

To browse the information about VFI-related label binding, run the following

command: **show mpls ldp bindings vfi** *vfi-name*

Parameter

Parameter	Description
vfi-name	VFI's name

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.3.11 show mpls l2vpn vfi

To browse the states of all VFIs, run the following command:

show mpls l2vpn vfi

Parameter

None

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None

1.3.12   show mpls l2vpn pw

To browse the state of the fake line, run the following command:

show mpls l2vpn pw [*pwid* | **neighbor** *peer-addr* | **interface** *interface-name* | **detail**]

Parameter

Parameter	Description
pwid	Stands for the ID of the fake line.
peer-addr	Presents the IP address of the neighbor.
interface-name	Stands for the type and name of the interface.
detail	Means detailed information.

Default value

None

Command mode

EXEC

Usage explanation

None

Example

None

Related command

None