

MPLS Configuration Commands

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Chapter 1 MPLS Configuration Commands

1.1 MPLS Configuration Commands

MPLS configuration commands include:

- `mpls ip (global)`
-
- `mpls ip(port)`
- `mpls static binding ipv4`
- `mpls static crossconnect`
- `mpls ip propagate-ttl`
- `mpls ip ttl-expiration pop`
- `mpls mtu`
- `clear mpls counters`
- `show mpls forwarding-table`
- `show mpls ftn-table`
- `show mpls interface`
- `show mpls label range`
- `show mpls static`
- `show mpls traffic`

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
<i>dest</i>	Stands for the prefix of the destination address of the layer-3 FTN.
<i>mask</i>	Stands for the mask of the address prefix.
<i>nexthop</i>	Stands for the address of the next hop.
<i>outgoing-label</i>	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
<i>incoming-label</i>	Stands for the incoming label whose range is the static label range.
<i>outgoing-intf</i>	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 transmitted 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
<i>label-depth</i>	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
<i>bytes</i>	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
next hop address ]
```

Parameter

Parameter	Description
<i>network</i>	Stands for the number of the destination network.
mask	Stands for the mask of the destination network.
interface intf	Displays the items with specified outgoing port in the label forwarding information base.
labels label	Displays the locally distributed items with specified label in the label forwarding information base.
next hop 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
<i>network</i>	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
<i>interface-name</i>	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 statistics 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
<i>binding ipv4</i>	Displays the statically configured FTN.
<code>crossconnect</code>	Displays the statically configured ILM.

Default value

There is no default configuration.

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 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
<i>interface</i>	Means that the IP address of the designated interface is used as the router ID of LDP.
<i>force</i>	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 taken 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.
<i>ip_address</i>	Designates a specific IP address to establish a TCP connection.
<i>interface</i>	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 <i>prefix-access-list</i>	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.
<i>second</i>	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
<i>ipaddr</i>	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.
<i>second</i>	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
<i>second</i>	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 <i>prefix-acl</i>	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 <i>peer-acl</i>	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-through 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

none

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
  202.252.1.252 143.10.1.252 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
<i>vfi-name</i>	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 <i>peer-addr</i> 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
<i>value</i>	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
<i>peer-addr</i>	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
<i>vfi-name</i>	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 <i>vlan-id</i>	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
<i>min</i>	Means the minimum value of the label range, which is 1024 by default.
<i>max</i>	Means the maximum value of the label range, which is 1048575 by default.
<i>static</i>	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
<i>vfi-name</i>	VFI's name
<i>incoming-label</i>	Incoming label whose range is the static label range
<i>peer-addr</i>	Address of the VFI neighbor
<i>outgoing-label</i>	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
<i>value</i>	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
<i>vfi-name</i>	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
<i>vfi-name</i>	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
<i>pwid</i>	Stands for the ID of the fake line.
<i>peer-addr</i>	Presents the IP address of the neighbor.
<i>interface-name</i>	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