



BASIC MPLS - Enable MPLS

MPLS forwarding of IPv4 packets along normally routed paths (sometimes called dynamic label switching) is enabled by this command. Enabling MPLS forwarding of IP packets for the platform does not enable it for a platform interface. For a given interface to perform dynamic label switching, this switching function must be enabled for the interface as well as for the platform.

Configuration

MPLS forwarding of IPv4 packets along normally routed paths is sometimes called dynamic label switching. If dynamic label switching is enabled for the platform when this command is issued on an interface, label distribution for the interface begins with the periodic transmission of neighbor Discovery Hello messages on the interface. The **mpls ip (interface configuration)** command works in conjunction with the **mpls ip (global configuration)** command to enable label distribution for the platform interface. When the outgoing label for a destination that is routed through the interface is known, packets for the destination are assigned that outgoing label and forwarded through the interface.

Enable MPLS Incrementally in a Network

```
NetStepByStep-R2 (config) # mpls ip
```

- Enable Multiprotocol Label Switching (MPLS) forwarding of IP version 4 (IPv4) packets along normally routed paths for the platform.
- To disable MPLS forwarding of IPv4 packets, use the **no** form of this command.

```
NetStepByStep-R2 (config-if) # mpls ip
```

- Enable Multiprotocol Label Switching (MPLS) forwarding of IP version 4 (IPv4) packets along normally routed paths for a particular interface
- To disable MPLS forwarding of IPv4 packets, use the **no** form of the command.

Verification

show mpls ldp neighbor

- Use to display the status of Label Distribution Protocol (LDP) sessions.
- Use this command in privileged EXEC mode.
- This command can provide information about all LDP neighbors, or the information can be limited to the following:
 - Neighbor with specific IP address
 - LDP neighbors known to be accessible over a specific interface
- This command displays information about all LDP neighbors if no optional keywords or arguments are specified.

NetStepByStep-R2# **show mpls ldp neighbor**

Peer LDP Ident: 3.3.3.3:0; Local LDP Ident 2.2.2.2:0

TCP connection: 3.3.3.3.38735 - 2.2.2.2.646

State: Oper; Msgs sent/rcvd: 16/15; Downstream

Up time: 00:00:23

LDP discovery sources:

Ethernet0/1, Src IP addr: 23.23.23.3

Addresses bound to peer LDP Ident:

35.35.35.3 3.3.3.3 33.33.33.33 34.34.34.3
23.23.23.3

Peer LDP Ident: 4.4.4.4:0; Local LDP Ident 2.2.2.2:0

TCP connection: 4.4.4.4.18235 - 2.2.2.2.646

State: Oper; Msgs sent/rcvd: 16/16; Downstream

Up time: 00:00:22

LDP discovery sources:

Ethernet0/2, Src IP addr: 24.24.24.4

Addresses bound to peer LDP Ident:

46.46.46.4 4.4.4.4 44.44.44.44 34.34.34.4
24.24.24.4 47.47.47.4

show mpls ldp bindings

- Use to display the contents of the label information base (LIB).
- Use this command in privileged EXEC mode.
- If no optional keyword or argument is supplied, the command displays the entire LIB.

NetStepByStep-R2# **show mpls ldp bindings**

tib entry: 2.2.2.2/32, rev 6

local binding: tag: imp-null

remote binding: tsr: 3.3.3.3:0, tag: 21

remote binding: tsr: 4.4.4.4:0, tag: 17

tib entry: 3.3.3.3/32, rev 8

local binding: tag: 18

remote binding: tsr: 3.3.3.3:0, tag: imp-null

remote binding: tsr: 4.4.4.4:0, tag: 18

```
tib entry: 4.4.4.4/32, rev 10
  local binding: tag: 19
  remote binding: tsr: 3.3.3.3:0, tag: 22
  remote binding: tsr: 4.4.4.4:0, tag: imp-null
tib entry: 5.5.5.5/32, rev 12
  local binding: tag: 20
  remote binding: tsr: 3.3.3.3:0, tag: 17
  remote binding: tsr: 4.4.4.4:0, tag: 21
tib entry: 6.6.6.6/32, rev 14
  local binding: tag: 21
  remote binding: tsr: 3.3.3.3:0, tag: 18
  remote binding: tsr: 4.4.4.4:0, tag: 20
tib entry: 12.12.12.0/24, rev 24
  local binding: tag: imp-null
tib entry: 22.22.22.0/24, rev 18
  local binding: tag: imp-null
```

..... Truncated

show mpls interfaces

- Use to display information about one or more or all interfaces that have been configured for label switching.
- Use this command in privileged EXEC mode.
- If no optional keyword or argument is specified in this command, summary information is displayed for each interface configured for label switching.

```
NetStepByStep-R2# show mpls interfaces
Interface          IP          Tunnel    Operational
Ethernet0/1        Yes (ldp)   No        Yes
Ethernet0/2        Yes (ldp)   No        Yes
```

Troubleshoot

debug mpls ldp peer state-machine

- Use to display information about state transitions for Label Distribution Protocol (LDP) sessions.
- Use this command in privileged EXEC mode.
- To disable this feature, use the no form of this command.
- This command has no arguments or keywords.
- LDP manages peer sessions by means of the following two coupled state machines:
 - A low-level state machine that deals with session establishment and shutdown.
 - A high-level state machine that deals with setting up and shutting down label advertisement

debug mpls ldp messages sent

- Use to display the contents of Label Distribution Protocol (*LDP*) messages sent to and received from LDP peers.
- Use this command in privileged EXEC mode.
- To disable debugging output, use the **no** form of this command.
- LDP requires periodic transmission of keepalive messages. If you do not specify the **all** option, periodic keepalive messages are not displayed.

Video Cheat Sheet

R2

```
conf t
mpls ip

interface e0/1
  mpls ip

interface e0/2
  mpls ip
```