

MPLS Static Commands

This module describes the commands used to configure static MPLS labels in a Multiprotocol Label Switching (MPLS) network on the Cisco ASR 9000 Series RoutersCisco NCS 4000 Series Router.

For detailed information about MPLS concepts, configuration tasks, and examples, see *MPLS Configuration Guide for Cisco ASR 9000 Series Routers*.

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address family ipv4 unicast (mpls-static)

To enable static MPLS label binding on a specific IPv4 unicast destination address prefix and on the forwarding next-hop address, use the **address-family ipv4 unicast** command in MPLS static configuration mode. To remove MPLS static binding, use the **no** form of this command.

address-family ipv4 unicast local-label *label_value* **allocate** [**per-prefix** *ipv4_prefix_value*] **forward path** *path_value* **nexthop** *nexthop_information interface-type interface-path-id* **out-label** { *label_value* | **pop** | **exp-null** }

Syntax Description

local-label *label_value*	Specifies MPLS local-label value for static binding and forwarding. The range is from 16 to 1048575.
allocate	Displays local-label allocation options.
per-prefix *ipv4_prefix_value*	Specifies IPv4 prefix value to which the specified MPLS label will be statically bound.
forward	Configure forwarding for traffic with static MPLS label.
path *path-value*	Specifies path-ID for MPLS cross-connect path.
nexthop *nexthop_information*	Specifies the next-hop information that is either an IP address or interface.
interface-type interface-id	Interface type. For more information, use the question mark (?) online help function.
out-label *label_value*	Specifies mpls local-label value for static binding on the egress packet.
pop	Removes label from egress packet.
exp-null	Applies explicit null label on the egress packet.

Command Default

None

Command Modes

MPLS static configuration

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read

The following command sequence shows how to specify local label for an ip-prefix and define LSP.

```
RP/0/RP0RSP0/CPU0:router:hostname#configure
RP/0/RP0RSP0/CPU0:router:hostname(config)#mpls static
```

```
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static)#address-family ipv4 unicast
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static-af)#local-label 30500 allocate per-prefix
 10.1.1.1/24 forward path 1 nexthop 12.2.2.2 out-label 30600
```

clear mpls static local-label discrepancy

To clear any discrepancy between statically allocated and dynamically allocated local labels, use the **clear mpls static local-label discrepancy** command in EXEC modeXR EXEC mode. A label discrepancy is generated when:

- A static label is configured for an IP prefix (per VRF) that already has a binding with a dynamic label.
- A static label is configured for an IP prefix, when the same label value is dynamically allocated to another IP prefix.

clear mpls static local-label discrepancy { *label-value* | **all** }

Syntax Description

label-value	A value that denotes the label for which the discrepancies are cleared.
all	Specifies that all discrepancies are cleared.

Command Default

None

Command Modes

EXECXR EXEC

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read

```
RP/0/RP0RSP0/CPU0:router:hostname#clear mpls static local-label discrepancy all
```

interface (mpls-static)

To enable MPLS encapsulation on specified interfaces, use the **interface** command in MPLS static configuration mode. To disable MPLS encapsulation on specified interfaces, us the **no** form of the command.

interface *interface-type* *interface-id*

Syntax Description

interface-type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Physical interface instance.

Command Default

None

Command Modes

MPLS static configuration

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read and write

Example

The following command sequence shows how to enable MPLS encapsulation on a gigabit ethernet port.

```
RP/0/RP0RSP0/CPU0:router:hostname# configure
RP/0/RP0RSP0/CPU0:router:hostname(config)# mpls static
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static)# interface gigabitEthernet 0/1/0/0
```

show mpls static local-label

To display information about local labels allocated using **mpls static** command, use the **show mpls static local-label** command in EXEC modeXR EXEC mode.

show mpls static local-label { *label-value* | **all** | **discrepancy** | **error** | **vrf** { *vrf-name* | **default** } { **all** | **discrepancy** | **error** } } [**detail**]

Syntax Description

local-label *label-value*	Specifies local label value to display MPLS static information for only that label.
all	Displays MPLS static information about all local labels.
discrepancy	Displays label discrepancy between static labels and dynamic labels.
error	Displays MPLS static labeling errors.
vrf *vrf-name*	Specifies VRF name to display MPLS static information specific to that VRF.
default	Displays MPLS static information for the default VRF.
detail	(Optional) Detailed information is displayed.

Command Default

None

Command Modes

EXECXR EXEC

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read

The following command sequence shows how to view label discrepancy information:

```
RP/0/RP0RSP0/CPU0:router:hostname#show mpls static local-label discrepancy detail
Tue Apr 22 18:20:47.183 UTC
Label   VRF             Type         Prefix           RW Configured   Status
------- --------------- ------------ ---------------- --------------- --------
16003   default         Per-Prefix   10.0.0.1/32       No              Discrepancy
          STATUS :  Label has discrepancy
```

The following command sequence shows how to view MPLS static information for all local labels:

```
RP/0/RP0RSP0/CPU0:router:hostname#show mpls static local-label all
Tue Apr 22 18:21:41.813 UTC
Label   VRF             Type         Prefix           RW Configured   Status
------- --------------- ------------ ---------------- --------------- --------
200     default         Per-Prefix   10.10.10.10/32   Yes             Created
16003   default         Per-Prefix   10.0.0.1/32       No              Discrepancy
```

The following command sequence shows how to view MPLS static information for all local labels in a particular VRF:

```
RP/0/RP0RSP0/CPU0:router:hostname#show mpls static local-label vrf vpn1 all
Wed Apr 23 18:13:56.671 UTC
Label   VRF             Type         Prefix           RW Configured   Status
------- --------------- ------------ ---------------- --------------- --------
1100    vpn1            Per-Prefix   10.10.10.10/32   No              Created
```

show mpls static summary

To display MPLS static summary information, use the **show mpls static summary** command in EXEC modeXR EXEC mode.

show mpls static summary

Syntax Description

summary	Displays MPLS static binding information.

Command Default

None

Command Modes

EXECXR EXEC

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read

This is the sample output for **show mpls static summary** command:

```
RP/0/RP0RSP0/CPU0:router:hostname#show mpls static summary
Tue Apr 22 18:22:17.931 UTC

Label     :  Total      2   Errored     0   Discrepancies         1
VRF       :  Total      1   Active      1
Interface :  Total      7   Enabled     1   Forward-Reference     0

LSD       :  CONNECTED
IM        :  CONNECTED
RSI       :  CONNECTED
```

top-label-hash

To configure MPLS top label hash on a specific IPv4 unicast destination and on the forwarding next-hop address, use the **top-label-hash** command in MPLS static address family IPv4 unicast configuration mode. To remove MPLS top label hash, use the **no** form of this command.

top-label-hash local-label *label-value* **allocate forward path** *path-count* **nexthop** *interface-type interface-path-id* **out-label pop**

Syntax Description

local-label *label-value*	Specifies MPLS local-label value for assignment and forwarding. The range is from 16 to 1048575.
allocate	Displays local-label allocation options.
forward	Configures forwarding for traffic with static MPLS label.
path *path-count*	Specifies path-ID for MPLS cross-connect path.
nexthop	Specifies the next-hop information that is either an IP address or an interface.
interface-type interface-id	Interface type. For more information, use the question mark (?) online help function.
out-label	Specifies MPLS output label.
pop	Removes the top label off the label stack.

Command Default

No default behavior or values

Command Modes

MPLS static address family IPv4 unicast configuration

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Task ID

Task ID	Operation
mpls-static	read

Example

The following example shows how to configure top label hash entries:

```
RP/0/RP0RSP0/CPU0:router:hostname#configure
RP/0/RP0RSP0/CPU0:router:hostname(config)#mpls static
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static)#address-family ipv4 unicast
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static-af)#top-label-hash
RP/0/RP0RSP0/CPU0:router:hostname(config-mpls-static-af-tlhash)#local-label 25000 allocate
 forward path 1 nexthop bundle-ether 1 out-label pop
```

vrf (mpls static)

To enable static MPLS label binding on a specific IPv4 unicast destination address prefix, in the context of a specific VRF, use the **vrf** command in MPLS-static configuration mode. To remove MPLS static binding, use the **no** form of this command.

vrf *vrf-name* **address-family ipv4 unicast local-label** *label_value* **allocate** { **per-prefix** *ipv4-prefix-value* | **per-vrf forward path** *path_value* **pop-and-lookup** }

Syntax Description

ipv4	Configure IPv4 address-family parameters.
unicast	Make MPLS static configurations for unicast traffic.
local-label *label_value*	Specifies MPLS local-label value for static binding and forwarding. The range is from 16 to 1048575.
allocate	Displays local-label allocation options.
per-prefix *ipv4_prefix_value*	Specifies IPv4 prefix value to which the specified MPLS label is statically bound.
per-vrf	The MPLS protocol requests a single VPN label to be statically bound as the local label for all the prefixes in a specified VRF.
forward	Configures forwarding for traffic with static MPLS label.
path *path-value*	Specifies path-id for MPLS cross-connect path.
pop-and-lookup	Removes the MPLS label and performs IP-based lookup to learn about provider edge (PE) or customer edge (CE) interfaces for forwarding packets.

Command Default

None

Command Modes

MPLS static configuration

Command History

Release	Modification
Release 5.1.1	This command was introduced.

Usage Guidelines

While using the VRF command, it is not possible to specify the out going label or next hop information for packet that have static MPLS label binding.

Task ID

Task ID	Operation
mpls-static	read

The following command sequence shows how to specify local label for an ip-prefix in context of a specific VRF.

```
RP/0/RP0RSP0/CPU0:router:hostname#configure
RP/0/RP0RSP0/CPU0:router:hostname(config)#mpls static
RP/0/RP0RSP0/CPU0:router:hostname#vrf vrf1 address-family ipv4 unicast
RP/0/RP0RSP0/CPU0:router:hostname#local-label 30500 allocate per-prefix 10.2.2.2/24
```

The following command sequence shows how to remove the MPLS label and perform IP-based lookup to forward the packets.

```
RP/0/RP0RSP0/CPU0:router:hostname#configure
RP/0/RP0RSP0/CPU0:router:hostname#mpls static
RP/0/RP0RSP0/CPU0:router:hostname#vrf vrf1 address-family ipv4 unicast
RP/0/RP0RSP0/CPU0:router:hostname#local-label 30500 allocate per-vrf forward path 1
pop-and-lookup
```