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## M Commands

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This chapter describes the Cisco NX-OS Multiprotocol Label Switching commands that begin with M.

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## match

To configure a classification criteria, use the **match** command. To return to the default setting, use the **no** form of this command.

```
match [not] mpls experimental topmost exp-list
```

```
no match [not] mpls experimental topmost exp-list
```

### Syntax Description

<b>not</b>	(Optional) Negates this match result.
<b>mpls</b>	Specifies a match on the MPLS label.
<b>experimental</b>	Specifies a match on the MPLS experimental label.
<b>topmost</b>	Specifies a match on the MPLS topmost label.
<i>exp-list</i>	List that can contain values and ranges. The range is from 0 to 7.

### Defaults

None

### Command Modes

Class-map configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

This command requires the MPLS Services license.

### Examples

This example shows how to specify that the packets should be matched (or not) on the 3-bit experimental (EXP) field in the outermost (topmost) MPLS label in the MPLS header:

```
switch# configure terminal
switch(config)# class-map type qos match-all class-2
switch(config-cmap-qos)# match mpls experimental topmost 1
switch(config-cmap-qos)#
```

### Related Commands

Command	Description
<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## maximum routes

To configure the maximum number of routes that can be stored in the virtual routing and forwarding (VRF) route table, use the **maximum routes** command. To return to the default setting, use the **no** form of this command.

**maximum routes** *max-routes* [*threshold-value* [**reinstall** *threshold-value*]] | **warning-only**

**no maximum routes** *max-routes* [*threshold-value* [**reinstall** *threshold-value*]] | **warning-only**

Syntax Description		
<i>max-routes</i>		Maximum number of routes. The range is from 1 to 4294967295.
<i>threshold-value</i>		Threshold value at which to generate a warning message. The range is from 1 to 100.
<b>reinstall</b>		Reinstalls the previously rejected route that exceeded the maximum route limit.
<b>warning-only</b>		Generates a warning message if the maximum route limit is exceeded.

**Defaults** None

**Command Modes** Address-family configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** None.

**Examples** This example shows how to configure the maximum number of routes that can be stored in the VRF route table:

```
switch# configure t
switch(config)# vrf context vpn1
switch(config-vrf)# address-family ipv4 unicast
switch(config-vrf-af-ipv4)# maximum routes 10000
switch(config-vrf-af-ipv4)#
```

This example shows how to reinstall the previously rejected route that exceeded the maximum route limit:

```
switch# configure t
switch(config)# vrf context vpn1
```

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```
switch(config-vrf)# address-family ipv4 unicast  
switch(config-vrf-af-ipv4)# maximum routes 10000 2 reinstall 2  
switch(config-vrf-af-ipv4)#
```

---

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>address-family</b>	Configures the address family.

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## mdt asm-use-shared-tree

To specify that a shared-tree [(\*,G)] entry should be created for a default multicast distribution tree (MDT) when the default MDT group is in PIM ASM mode, use the **mdt asm-use-shared-tree** command.

**mdt asm-use-shared-tree**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Default MDT group is in PIM ASM mode.

**Command Modes** VRF configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure the shared-tree [(\*,G)] entry should be created for the default MDT when the default MDT group is in PIM ASM mode:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# vrf context vrf1
switch(config-vrf)# mdt asm-use-shared-tree
switch(config-vrf)#
```

Related Commands	Command	Description
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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## mdt data

To configure a range of group addresses that are used for data multicast distribution trees (MDTs), use the **mdt data** command.

```
mdt data mdt -group-prefix [threshold threshold-value] [route-map policy-name]
```

### Syntax Description

<i>mdt-group-prefix</i>	List of group range prefixes.
<b>threshold</b>	(Optional) Specifies the threshold in kilobits per second. The range is from 0 to 4294967.
<i>threshold-value</i>	Threshold in bytes per second when the stream is switched to the data MDT.
<b>route-map</b>	Specifies the route map for creating data MDTs. The map can be a case-sensitive alphanumeric string up to 63 characters.
<i>policy-name</i>	Policy file that defines which customer data streams should be considered for switching to the data MDT.

### Defaults

The default value for the threshold parameter is 100 kbps

### Command Modes

Configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

This command requires the MPLS Services license.

### Examples

This example shows how to configure the the range of group address used for data MDTs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# vrf context vrf1
switch(config-vrf)# mdt data 232.7.7.0/24 threshold 10 route-map rmap2mdt data
239.192.20.32 0.0.0.15 threshold 1
switch(config-vrf)#
```

### Related Commands

Command	Description
<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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## mdt data bidir-enable

To configure the range of group address used for data multicast distribution trees (MDTs), use the **mdt data bidir-enable** command.

**mdt data bidir-enable**

**no mdt data bidir-enable**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command allows the user to override the default behavior that is, create data MDTs for bidir routes as well.

This command requires the MPLS Services license.

**Examples** This example shows how to configure the the range of group addresses used for data MDTs:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# vrf context vrf1
switch(config-vrf)# mdt data bidir-enable
switch(config-vrf)#
```

Related Commands	Command	Description
	<b>show mvpn mdt route</b>	Displays the details of the default and the MDT route.

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## mdt default

To configure the default multicast distribution tree (MDT) for a virtual routing and forwarding (VRF), use the **mdt default** command. To return to the default settings, use the **no** form of the command.

**mdt default** *group-address*

**no mdt default** *group-address*

<b>Syntax Description</b>	<i>address</i>	IP multicast group address.
<b>Defaults</b>	None	
<b>Command Modes</b>	Configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	<p>This example shows how to configure the default MDT for a VRF:</p> <pre>switch# <b>config t</b> Enter configuration commands, one per line. End with CNTL/Z. switch(config)# <b>vrf context vrf1</b> switch(config-vrf)# <b>mdt default 232.0.0.1</b> switch(config-vrf)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.



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## mdt enforce-bgp-mdt-safi

To enforce the use of multicast distribution tree (MDT) subsequent address family identifiers (SAFI) for a virtual routing and forwarding instance (VRF), use the **mdt enforce-bgp-mdt-safi** command. To interoperate with peers that do not support MDT SAFI, use the **no** form of the command. When the **no** form is used, initially only the (\*,G) entry for the default MDT group is populated if it falls within the Any Source Multicast (ASM) range. Then later, based on traffic, the (S,G) entries are learned like regular ASM routes.

**mdt enforce-bgp-mdt-safi**

**no mdt enforce-bgp-mdt-safi**

**Syntax Description** This command has no arguments or keywords.

**Defaults** Enabled

**Command Modes** VRF configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure MDT to interoperate with peers that do not support MDT SAFI:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# vrf context vrf1
switch(config-vrf)# no mdt enforce-bgp-mdt-safi
switch(config-vrf)#
```

Related Commands	Command	Description
	<b>show mvpn bgp mdt-safi</b>	Displays detailed information of the BGP advertisement for MVPN MDT SAFI.

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## mdt mtu

To configure the maximum transmission unit (MTU) associated with the multicast tunnel interfaces created for the default and data multicast distribution tree (MDT) groups, use the **mdt mtu** command.

**mdt mtu** *mtu-size*

**no mdt mtu** *mtu-size*

<b>Syntax Description</b>	<i>mtu-size</i>	MTU value. The range is from 576 to 65535.
<b>Defaults</b>	1376	
<b>Command Modes</b>	Configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	<p>This example shows how to configure the maximum transmission unit (MTU) associated with the multicast tunnel interfaces created for the default and data MDT groups:</p> <pre>switch# <b>config t</b> Enter configuration commands, one per line. End with CNTL/Z. switch(config)# <b>vrf context vrf1</b> switch(config-vrf)# <b>mdt mtu 600</b> switch(config-vrf)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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## mdt pim hello-interval

To configure the hello interval used between peers, use the **mdt pim hello-interval** command.

**mdt ip pim hello-interval** *interval*

**no mdt ip pim hello-interval** *interval*

<b>Syntax Description</b>	<i>interval</i>	Interval in milliseconds. The range is from 3000 to 18724286.
<b>Defaults</b>	30000 milliseconds	
<b>Command Modes</b>	Configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	<p>This example shows how to configure the hello interval used between peers:</p> <pre>switch# <b>config t</b> Enter configuration commands, one per line. End with CNTL/Z. switch(config)# <b>vrf context vrf1</b> switch(config-vrf)# <b>mdt pim hello-interval 30000</b> switch(config-vrf)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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## mdt pim jp-interval

To configure the PIM periodic interval associated with join or prune packet transmission over the default multicast distribution tree (MDT) tunnel interface, use the **mdt pim jp-interval** command. To return to the default settings, use the **no** form of the command.

**mdt pim jp-interval** *interval*

**no mdt pim jp-interval** *interval*

<b>Syntax Description</b>	<i>interval</i>	Interval in seconds. The range is from 60000 to 18724286.
<b>Defaults</b>		60000 milliseconds
<b>Command Modes</b>		Configuration mode
<b>Supported User Roles</b>		network-admin vdc-admin
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>		This command requires the MPLS Services license.
<b>Examples</b>		<p>This example shows how to configure the PIM periodic interval associated join packet transmission over the default MDT tunnel interface:</p> <pre>switch# <b>config t</b> Enter configuration commands, one per line. End with CNTL/Z. switch(config)# <b>vrf context vrf1</b> switch(config-vrf)# <b>mdt pim jp-interval 60000</b> switch(config-vrf)#</pre>
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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## mdt source

To configure the interface that is used to set the multicast virtual private network (VPN) data multicast distribution tree (MDT) source address, use the **mdt source** command.

**mdt source** *interface*

**no mdt source** *interface*

<b>Syntax Description</b>	<i>interface</i>	Interface used to set the multicast VPN data multicast distribution tree (MDT) source address.
<b>Defaults</b>	None	
<b>Command Modes</b>	Configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	<p>This example shows how to configure the interface that is used to set the multicast VPN data multicast distribution tree (MDT) source address:</p> <pre>switch# <b>config t</b> Enter configuration commands, one per line. End with CNTL/Z. switch(config)# <b>vrf context vrf1</b> switch(config-vrf)# <b>mdt source interface</b> switch(config-vrf)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show mvpn mdt route</b>	Displays the detail of the default and the MDT route.

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# mpls ip

To enable IP over Multiprotocol Label Switching (MPLS), use the **mpls ip** command.

## mpls ip

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Interface configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to enable IP over MPLS:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface ethernet 2/2
switch(config-if)# mpls ip
switch(config-if)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls ip (TE configuration mode)

To enable the LDP over an MPLS TE tunnel, use the **mpls ip** command.

```
mpls ip
```

**Syntax Description** This command has no arguments and keywords.

**Defaults** None

**Command Modes** TE configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure the IP TTI propagation over MPLS:

```
switch# config t
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# interface tunnel-te
switch(config-te)# mpls ip
switch(config-te)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls ip default-route

To allow Multiprotocol Label Switching (MPLS) forwarding for the IP default route, use the **mpls ip default-route** command. To revert to the default settings, use the **no** form of the command.

**mpls ip default-route**

**no mpls ip default-route**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** LDP configuration interface mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to allow MPLS forwarding for the IP default route:

```
switch# config t
switch(config)# mpls ldp configuration
switch(config-ldp)# mpls ip default-route
switch(config-ldp)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).



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## mpls label range

To configure the Multiprotocol Label Switching (MPLS) label range for a static label assignment, use the **mpls label range** command. To return to the default setting, use the **no** form of this command.

**mpls label range** *min-value max-value* [**static** *min-static-value max-static-value*]

**no mpls label range** *min-value max-value* [**static** *min-static-value max-static-value*]

Syntax Description		
<i>min-value</i>		Minimum label value. The range is from 16 to 492286.
<i>max-value</i>		Maximum label value. The range is from 16 to 492286.
<b>static</b>		(Optional) Specifies the block of labels for static bindings.
<i>min-static-value</i>		Minimum static label value. The range is from 16 to 492286.
<i>max-static-value</i>		Maximum static label value. The range is from 16 to 492286.

**Defaults** None

**Command Modes** Global configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to reserve a range of labels for static label assignment:

```
switch# configure terminal
switch(config)# mpls label range 200 100000 static 16 199
switch(config)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls ldp autoconfig

To enable Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) autoconfiguration for all level-1, all level-2, or all level-1 and level-2 IS-IS interfaces, use the **mpls ldp autoconfig** command. To return to the default setting, use the **no** form of this command.

```
mpls ldp autoconfig {level-1 | level-1-2 | level-2}
```

```
no mpls ldp autoconfig {level-1 | level-1-2 | level-2}
```

Syntax Description	level-1	level-1-2	level-2
	Specifies the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) autoconfiguration (AC) on IS-IS level-1 only.	Specifies the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) autoconfiguration (AC) on IS-IS level-1 and level-2.	Specifies the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) autoconfiguration (AC) on IS-IS level-2 only.

**Defaults** None

**Command Modes** Router configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to enable MPLS LDP autoconfiguration for all level-1, all level-2, or all level-1 and level-2 IS-IS interfaces:

```
switch# configure terminal
switch(config)# router isis p1
switch(config-router)# mpls ldp autoconfig level-1
switch(config-router)#
```

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Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls ldp autoconfig area

To enable Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) autoconfiguration for all Open Shortest Path First (OSPF) interfaces, use the **mpls ldp autoconfig area** command. To return to the default setting, use the **no** form of this command.

```
mpls ldp autoconfig area area-id
```

```
no mpls ldp autoconfig area area-id
```

<b>Syntax Description</b>	<i>area-id</i>	Area ID as an integer or IP address. The range is from 0 to 4294967295.
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<b>Defaults</b>	None
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<b>Command Modes</b>	Router configuration mode
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<b>SupportedUserRoles</b>	network-admin vdc-admin
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Command History	Release	Modification
	5.2(1)	This command was introduced.

<b>Usage Guidelines</b>	This command requires the MPLS Services license.
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<b>Examples</b>	This example shows how to enable MPLS LDP autoconfiguration for all OSPF interfaces:
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```
switch# configure terminal
switch(config)# p1
switch(config-router)# mpls ldp autoconfig area 10
switch(config-router)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls ldp configuration

To configure the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP), use the **mpls ldp configuration** command.

### mpls ldp configuration

**Syntax Description** This command has no arguments or keywords.

**Defaults** Enabled

**Command Modes** Global configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** When MPLS LDP is disabled on the device, no LDP commands are available. This command requires the MPLS Services license.

**Examples** This example shows how to configure MPLS LDP:

```
switch(config)# mpls ldp configuration
switch(config-ldp)#
```

Related Commands	Command	Description
	<b>mpls ldp sync</b>	Enables Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) Interior Gateway Protocol (IGP) synchronization for all IS-IS interfaces.

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## mpls ldp discovery transport-address

To configure the transport address that is advertised in the Label Distribution Protocol (LDP) discovery hello messages sent on an interface, use the **mpls ldp discovery transport-address** command. To return to the default setting, use the **no** form of this command.

```
mpls ldp discovery transport-address {ip-address | interface}
```

```
no mpls ldp discovery transport-address {ip-address | interface}
```

Syntax Description		
	<i>ip-address</i>	IP address that is advertised as the transport address.
	<b>interface</b>	Specifies that the interface IP address be advertised as the transport address.

Defaults	
	None

Command Modes	
	Interface configuration mode

Supported User Roles	
	network-admin vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

Usage Guidelines	
	This command requires the MPLS Services license.

Examples	
	This example shows how to configure the transport address that is advertised in the LDP discovery hello messages sent on an interface:

```
switch(config)# interface ethernet 6/1
switch(config-if)# mpls ldp discovery transport-address 209.165.200.225
switch(config-if)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

*Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).*

## mpls ldp igp autoconfig

To enable the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) for the specified interface, use the **mpls ldp igp autoconfig** command. To return to the default setting, use the **no** form of this command.

**mpls ldp igp autoconfig**

**no mpls ldp igp autoconfig**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Interface configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to enable MPLS LDP for the specified interface:

```
switch# configure terminal
switch(config)# interface ethernet 7/1
switch(config-if)# mpls ldp igp autoconfig
switch(config-if)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

[Send document comments to nexus7k-docfeedback@cisco.com.](mailto:nexus7k-docfeedback@cisco.com)

## mpls ldp igp sync

To configure a delay time for Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) Interior Gateway Protocol (IGP) synchronization on the specified interface, use the **mpls ldp igp sync** command. To return to the default setting, use the **no** form of this command.

**mpls ldp igp sync** [*delay seconds*]

**no mpls ldp igp sync** [*delay seconds*]

Syntax Description	delay	(Optional) Specifies LDP to IGP sync achieved notification delay time.
	<i>seconds</i>	(Optional) Display in seconds. The range is from 5 to 60 seconds.

Defaults	None
----------	------

Command Modes	Interface configuration mode
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Supported User Roles	network-admin vdc-admin
----------------------	----------------------------

Command History	Release	Modification
	5.2(1)	This command was introduced.

Usage Guidelines	The <b>no mpls ldp igp sync delay</b> command sets the delay time to 0 seconds but leaves the MPLS LDP and IGP synchronization enabled.  This command requires the MPLS Services license.
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Examples	This example shows how to configure a delay time for the MPLS LDP and IGP synchronization on the specified interface:
----------	-----------------------------------------------------------------------------------------------------------------------

```
switch# configure terminal
switch(config)# feature mpls ldp
switch(config)# interface ethernet 6/1
switch(config-if)# mpls ldp igp sync delay 30
```

Related Commands	Command	Description
	<b>mpls ldp sync</b>	Enables Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) Interior Gateway Protocol (IGP) synchronization for all IS-IS interfaces.



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## mpls ldp sync

To enable Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) and Interior Gateway Protocol (IGP) synchronization for all Open Shortest Path First (OSPF) interfaces, use the **mpls ldp sync** command. To return to the default setting, use the **no** form of this command.

**mpls ldp sync**

**no mpls ldp sync**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Router configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to enable MPLS LDP and IGP synchronization for all OSPF interfaces:

```
switch# configure terminal
switch(config)# pl
switch(config-router)# mpls ldp sync
```

Related Commands	Command	Description
	<b>mpls ldp igp sync</b>	Allows Label Distribution Protocol (LDP) Interior Gateway Protocol (IGP) Synchronization on this interface.

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## mpls oam

To configure MPLS Operations and Management (OAM) for customizing the default behavior of echo packets, use the **mpls oam** command. To return to the default setting, use the **no** form of this command.

**mpls oam**

**no mpls oam**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Global configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure MPLS OAM:

```
switch# configure terminal
switch(config)# mpls oam
switch(conf-mpls-oam)#
```

Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

[Send document comments to nexus7k-docfeedback@cisco.com.](mailto:nexus7k-docfeedback@cisco.com)

## mpls static binding ipv4

To configure the static binding of labels to IPv4 prefixes, use the **mpls static binding ipv4** command. To return to the default setting, use the **no** form of this command.

```
mpls static binding ipv4 prefix mask {label | input label | output nexthop {explicit-null | implicit-null | label}}
```

```
no mpls static binding ipv4 prefix mask {label | input label | output nexthop {explicit-null | implicit-null | label}}
```

Syntax Description		
<i>prefix mask</i>		Destination prefix and mask.
<i>label</i>		Label value. The range is from 16 to 1048575492286.
<b>input</b>		Specifies the incoming local label.
<b>output</b>		Specifies the outgoing remote label.
<i>nexthop</i>		Destination next hop.
<b>explicit-null</b>		Specifies the IETF MPLS IPv4 explicit null label.
<b>implicit-null</b>		Specifies the IETF MPLS implicit null label.

**Defaults** None

**Command Modes** LDP configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure the static binding of labels to IPv4 prefixes:

```
switch# configure terminal
switch(config)# mpls ldp configuration
switch(config)# mpls static binding ipv4 10.2.2.0 255.255.255.255 input 17
switch(config)#
```

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Related Commands	Command	Description
	<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls static binding ipv4 vrf

To configure the Multiprotocol Label Switching (MPLS) static binding of labels to the IPv4 destination VPN routing prefix, use the **mpls static binding ipv4 vrf** command. To return to the default setting, use the **no** form of this command.

```
mpls static binding ipv4 vrf vpn-name prefix mask {input label | label}
```

```
no mpls static binding ipv4 vrf vpn-name prefix mask {input label | label}
```

### Syntax Description

<i>vpn-name</i>	VPN name. The maximum size is alphanumeric 32 characters.
<i>prefix-mask</i>	Destination prefix and mask.
<b>input</b>	Specifies the incoming local label.
<i>label</i>	Label value.

### Defaults

None

### Command Modes

LDP configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

You must configure the MPLS VPN and VRFs before creating VRF-aware static labels. This command requires the MPLS Services license.

### Examples

This example shows how to configure static label bindings input and output labels for several prefixes:

```
switch# configure terminal
switch(config)# mpls ldp
switch(config-ldp)# mpls static binding ipv4 vrf vpn100 10.2.0.0 255.255.0.0 input 17
switch(config-ldp)#
```

### Related Commands

Command	Description
<b>mpls ldp configuration</b>	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

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## mpls traffic-eng administrative-weight

To override the Interior Gateway Protocol (IGP) administrative weight (cost) of the link as used in traffic engineering (TE) path calculations, use the **mpls traffic-eng administrative-weight** command. To restore the system to its default condition, use the **no** form of this command.

**mpls traffic-eng administrative-weight** *weight*

**no mpls traffic-eng administrative-weight** *weight*

### Syntax Description

<i>weight</i>	TE administrative weight.
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### Defaults

The TE link administrative weight defaults to the IGP cost of the link

### Command Modes

Interface configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

This command requires the MPLS Services license.

### Examples

This example shows how to override the IGP administrative weight (cost) of the link:

```
switch# configure terminal
switch(config)# interface ethernet 2/1
switch(config-if)# mpls traffic-eng administrative weight 20
switch(config-if)#
```

### Related Commands

Command	Description
<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng area

To turn on the Multiprotocol Label Switching (MPLS) traffic engineering (TE) for the indicated Open Shortest Path First (OSPF) area, use the **mpls traffic-eng area** command. To return to the default setting, use the **no** form of this command.

```
mpls traffic-eng area area-id
```

```
no mpls traffic-eng area area-id
```

<b>Syntax Description</b>	<i>area-id</i>	Area ID that can be a IP address or a positive integer.
<b>Defaults</b>	None	
<b>Command Modes</b>	Router configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	This example shows how to turn on MPLS TE for the indicated OSPF area:  <pre>switch(config)# <b>router ospf 100</b> switch(config-router)# <b>mpls traffic-eng area 1</b> switch(config-router)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng attribute-flags

To set the user-defined interface attribute flags, use the **mpls traffic-eng attribute-flags** command. To return to the default setting, use the **no** form of this command.

**mpls traffic-eng attribute-flags** *value*

**no mpls traffic-eng attribute-flags**

<b>Syntax Description</b>	<i>value</i>	Attribute flags. Typically entered in the range 0x0 - 0xffffffff.
<b>Defaults</b>	None	
<b>Command Modes</b>	Interface configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command requires the MPLS Services license.	
<b>Examples</b>	This example shows how to set the user-defined interface attribute flags:  <pre>switch# <b>configure terminal</b> switch(config)# <b>interface ethernet 6/1</b> switch(config-if)# <b>mpls traffic-eng attribute-flags 0x3f</b> switch(config)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.



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## mpls traffic-eng backup-path

To assign one or more backup tunnels to a protected interface, use the **mpls traffic-eng backup-path** command. To restore the system to its default condition, use the **no** form of this command.

**mpls traffic-eng backup-path tunnel-te** *interface number*

**no mpls traffic-eng backup-path tunnel-te** *interface number*

### Syntax Description

<b>tunnel-te</b>	Specifies a traffic engineering (TE) interface.
<i>interface number</i>	Interface number. The range is from 0 to 65503.

### Defaults

Enter this command on the interface to be protected (Link Protection), or on the interface whose downstream node is being protected (Node Protection). You can enter this command multiple times to select multiple backup tunnels for a given protected interface. An unlimited number of backup tunnels can be assigned to protect an interface. The only limitation is memory. By entering this command on a physical interface, LSPs using this interface (sending data out of this interface) can use the indicated backup tunnels if there is a link or node failure.

### Command Modes

Interface configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

This command requires the MPLS Services license.

### Examples

This example shows how to configure an MPLS backup for this interface:

```
switch# configure terminal
switch(config)# interface ethernet 6/1
switch(config-if)# mpls traffic-eng bandwidth-path tunnel-te 1000
switch(config-if)#
```

### Related Commands

Command	Description
<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

[Send document comments to nexus7k-docfeedback@cisco.com.](mailto:nexus7k-docfeedback@cisco.com)

## mpls traffic-eng bandwidth

To allocate the Multiprotocol Label Switching (MPLS) traffic engineering (TE) bandwidth pool for the interface, use the **mpls traffic-eng bandwidth** command. To restore the system to its default condition, use the **no** form of this command.

**mpls traffic-eng bandwidth** [*interface-kbps* | **percent** *percentage*]

**no mpls traffic-eng tunnels**

Syntax Description		
	<i>interface-kbps</i>	(Optional) Maximum amount of bandwidth (in kbps) that can be allocated by TE flows. The range is from 1 to 10000000.
	<b>percentage</b>	(Optional) Specifies the maximum percentage of the link bandwidth that may be allocated by TE flows.
	<i>percentage</i>	(Optional) The range is from 1 to 100.

**Defaults** If neither interface-kbps nor a percentage are specified, then the bandwidth pool size defaults to 75% of the interface's bandwidth.

**Command Modes** Interface configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to allocate the MPLS TE bandwidth pool for the interface:

```
switch# configure terminal
switch(config)# interface ethernet 2/1
switch(config-if)# mpls traffic-eng bandwidth 1000
switch(config-if)#
```

Related Commands	Command	Description
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng configuration

To configure Multiprotocol Label Switching (MPLS) traffic engineering (TE), use the **mpls traffic-eng configuration** command.

### mpls traffic-eng configuration

**Syntax Description** This command has no arguments or keywords.

**Defaults** Enabled

**Command Modes** Global configuration mode

**SupportedUserRoles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to configure MPLS TE:

```
switch(config)# mpls traffic-eng configuration
switch(config-te)#
```

Related Commands	Command	Description
	None	There are no related commands.

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## mpls traffic-eng flooding threshold

To set the Multiprotocol Label Switching (MPLS) flooding thresholds, use the **mpls traffic-eng flooding threshold** command. To return to the default setting, use the **no** form of this command.

```
mpls traffic-eng flooding thresholds { down decreased reserved bw | up increased reserved bandwidth }
```

```
no mpls traffic-eng flooding thresholds { down | up }
```

### Syntax Description

<b>down</b>	Specifies the thresholds for decreased resource availability.
<i>decreased reserved bw</i>	Decreased bandwidth usage. The range is from 1 to 100.
<b>up</b>	Specifies the thresholds for increased resource availability.
<i>increased reserved bandwidth</i>	increased bandwidth usage. The range is from 1 to 100.

### Defaults

None

### Command Modes

Interface configuration mode

### Supported User Roles

network-admin  
vdc-admin

### Command History

Release	Modification
5.2(1)	This command was introduced.

### Usage Guidelines

This command requires the MPLS Services license.

### Examples

This example shows how to specify the thresholds for decreased resource availability:

```
switch(config)# interface ethernet 6/1
switch(config-if)# mpls traffic-eng flooding thresholds down 90
switch(config-if)#
```

### Related Commands

Command	Description
<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng level

To configure the Multiprotocol Label Switching (MPLS) traffic engineering (TE) for Intermediate System-to-Intermediate System (IS-IS), use the **mpls traffic-eng level** command. To return to the default setting, use the **no** form of this command.

```
mpls traffic-eng {level-1 | level-1-2 | level-2}
```

```
no mpls traffic-eng {level-1 | level-1-2 | level-2}
```

Syntax Description	level-1	level-1-2	level-2
	Specifies MPLS TE on IS-IS level-1 only.	Specifies MPLS TE on IS-IS level-1 and level-2.	Specifies MPLS TE on IS-IS level-2 only.

**Defaults** Enable

**Command Modes** Router configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** You can enable MPLS for level-1, level-2 or level 1 and level-2 routers.  
This command requires the MPLS Services license.

**Examples** This example shows how to configure MPLS TE for IS-IS:

```
switch(config)# router isis p1
switch(config-router)# mpls traffic-eng level-1
switch(config-router)#
```

Related Commands	Command	Description
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng router-id

To specify that the traffic engineering router identifier for the node is the IP address associated with a given interface, use the **mpls traffic-eng router-id** command. To return to the default setting, use the **no** form of this command.

**mpls traffic-eng router-id** *interface*

**no mpls traffic-eng router-id** *interface*

<b>Syntax Description</b>	<i>interface</i>	Virtual interface number. The range is from 0 to 1023.
<b>Defaults</b>	Enable	
<b>Command Modes</b>	Router configuration mode	
<b>Supported User Roles</b>	network-admin vdc-admin	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	5.2(1)	This command was introduced.
<b>Usage Guidelines</b>	This command is not effective until you configure the specified loopback with an IP address. This command requires the MPLS Services license.	
<b>Examples</b>	This example shows how to configured the TE router-ID to be the IP address of the loopback 0 interface: <pre>switch(config)# <b>router isis</b> switch(config-router)# <b>mpls traffic-eng router-id loopback0</b> switch(config-router)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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## mpls traffic-eng tunnels

To enable Multiprotocol Label Switching (MPLS) traffic engineering (TE) tunnels on an interface, use the **mpls traffic-eng tunnels** command. To restore the system to its default condition, use the **no** form of this command.

**mpls traffic-eng tunnels**

**no mpls traffic-eng tunnels**

**Syntax Description** This command has no arguments or keywords.

**Defaults** None

**Command Modes** Interface configuration mode

**Supported User Roles** network-admin  
vdc-admin

Command History	Release	Modification
	5.2(1)	This command was introduced.

**Usage Guidelines** This command requires the MPLS Services license.

**Examples** This example shows how to enable MPLS traffic engineering tunnels:

```
switch(config)# interface ethernet 2/1
switch(config-if)# mpls traffic-eng tunnels
switch(config-if)#
```

Related Commands	Command	Description
	<b>interface tunnel-te</b>	Configures the traffic engineering (TE) interface.

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