



P Commands

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

password option

To configure a Message Digest (MD5) password for Label Distribution Protocol (LDP) sessions with neighbors whose LDP router IDs are permitted by a specified prefix list, use the **password option** command. To return to the default setting, use the **no** form of this command.

password option *number* **for** *prefix-list* **key-chain** *keychain-name*

no password option *number*

Syntax Description	<i>number</i>	Order in which the prefix lists is evaluated when the device determines a neighbor password. The valid range is from 1 to 32767.
	for	Specifies the prefix list control on LDP peers.
	<i>prefix-list</i>	Prefix list for LDP peers.
	key-chain	Specifies a key chain name.
	<i>keychain-name</i>	Key chain name.

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 an MD5 password for LDP sessions with neighbors whose LDP router IDs are permitted by a specified prefix list:

```
switch# configure terminal
switch(config)# mpls ldp configuration
switch(config-ldp)# password option 1 for peer-prefix key-chain keychain1
switch(config-ldp)#
```

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

password required

To configure a Label Distribution Protocol (LDP) password when establishing a session between LDP peers, use the **password required** command. To return to the default setting, use the **no** form of this command.

password required [**for** *prefix-list*]

no password required

Syntax Description	for	(Optional) Specifies a prefix list when establishing a session between a peers.
	<i>prefix-list</i>	(Optional) Prefix list for LDP peers.

Defaults	None
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Command Modes	LDP configuration mode
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Supported User Roles	network-admin vdc-admin
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Command History	Release	Modification
	5.2(1)	This command was introduced.

Usage Guidelines	This command requires the MPLS Services license.
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Examples	<p>This example shows how to configure an LDP password when establishing a session between LDP peers:</p> <pre>switch# configure terminal switch(config)# mpls ldp configuration switch(config-ldp)# password required for password1 switch(config-ldp)#</pre>
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Related Commandss	Command	Description
	mpls ldp configuration	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

path-option (TE interface configuration mode)

To configure a path option for a Multiprotocol Label Switching (MPLS) traffic engineering (TE) tunnel, use the **path-option** command. To restore the system to its default condition, use the **no** form of this command.

```
path-option [protect] preference-number {dynamic | explicit {identifier id | name name}  
[verbatim]} [lockdown] [bandwidth kbps] [attributes listname]
```

```
no path-option
```

Syntax Description	
protect	(Optional) Specifies a secondary path option to protect an already defined primary path option. Using this keyword will cause a second protected LSP to be signalled (if the path is available) and traffic will switch to this protected LSP if the primary LSP goes down.
<i>preference-number</i>	Preference for this path option. When you configure multiple path options, lower numbered options are preferred. The range is from 1 to 1000.
dynamic	Specifies the setup based on a dynamically calculated path.
explicit	Specifies the setup based on a preconfigured path.
identifier	Specifies an TE explicit path by number.
<i>id</i>	Number of the TE explicit path. The ID range is from 1 to 65535.
name	Specifies an TE explicit path by name.
<i>name</i>	Name that is any case-sensitive, alphanumeric string.
verbatim	(Optional) Bypasses the topology database verification process.
lockdown	(Optional) Specifies that this is not a candidate for reoptimization.
bandwidth	(Optional) Overrides the bandwidth configured on the tunnel or the attribute list. The kbps is the number of kilobits per second set aside for the path option.
<i>kbps</i>	(Optional) Kilobits per second. The range is from 1 to 4294967295.
attributes	(Optional) Specifies an LSP attribute list.
<i>listname</i>	(Optional) LSP attribute list name. The listname is any case-sensitive, alphanumeric string up to 63 characters.

Defaults	None
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Command Modes	TE interface configuration mode
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Supported User Roles	network-admin vdc-admin
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Command History

Release	Modification
5.2(1)	This command was introduced.

Usage Guidelines

You can configure multiple path options for a single tunnel. For example, there can be several explicit path options and a dynamic option for one tunnel. The path setup preference is for lower (not higher) numbers, so option 1 is preferred.

If you specify the **dynamic** keyword, the software checks both the physical bandwidth of the interface and the available TE bandwidth to be sure that the requested amount of bandwidth does not exceed the physical bandwidth of any link. To oversubscribe links, you must specify the **explicit** keyword. If you use the **explicit** keyword, the software checks only how much bandwidth is available on the link for TE; the amount of bandwidth that you configure is not limited to how much physical bandwidth is available on the link.

This command requires the MPLS Services license.

Examples

This example shows how to configure the tunnel to use a named TE explicit path and if that path is not available, then to fall back to a path dynamically calculated from the TE topology database:

```
switch# configure terminal
switch(config)# interface tunnel-te 1
switch(config-if-te)# path-option 10 explicit name Link5
switch(config-if-te)# path-option dynamic 20
switch(config-if-te)#
```

Related Commands

Command	Description
interface tunnel-te	Configures the traffic engineering (TE) interface.

path-selection metric (TE configuration mode)

To configure the metric type to use if a metric type is not explicitly configured for a Multiprotocol Label Switching (MPLS) traffic engineering (TE) tunnel, use the **path-selection metric** command. To restore the system to its default condition, use the **no** form of this command.

path-selection metric {igp | te}

no path-selection metric

Syntax Description	igp	Specifies the Interior Gateway Protocol (IGP) metric.
	te	Specifies the traffic engineering (TE) metric.

Defaults	TE
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Command Modes	TE 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 If you configure the TE path selection metric type, you should configure the MPLS TE administrative weight on each interface for which TE is enabled.

Use this command to specify the metric type to be used for traffic engineering (TE) tunnels for which the **tunnel path-selection metric** command has not been specified.

The metric type to be used for path calculation for a given tunnel is determined as follows:

- If you entered the **tunnel path-selection metric** command to specify a metric type for the tunnel, use that metric type.
- If you entered the TE configuration mode path-selection metric was entered to specify a metric type, use that metric type.
- If you did not do any of the above tasks, use the default (te) metric.

This command requires the MPLS Services license.

Examples This example shows how to configure the metric type to use if a metric type is not explicitly configured for an MPLS TE tunnel:

```
switch# configure terminal
switch(config)# mpls traffic-eng configuration
```

```
switch(config-te)# path-selection metric te  
switch(config-te)#
```

Related Commands

Command	Description
interface tunnel-te	Configures the traffic engineering (TE) interface.

path-selection metric (TE interface configuration mode)

To configure the metric type to be used if a metric type is not explicitly configured for an Multiprotocol Label Switching (MPLS) traffic engineering (TE) tunnel, use the **path-selection metric** command. To restore the system to its default condition, use the **no** form of this command.

path-selection metric {igp | te}

no path-selection metric

Syntax Description	igp	Specifies the Interior Gateway Protocol (IGP) metric.
	te	Specifies the traffic engineering (TE) metric.

Defaults	TE
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Command Modes	TE interface configuration mode
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Supported User Roles	network-admin vdc-admin
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Command History	Release	Modification
	5.2(1)	This command was introduced.

Usage Guidelines	If you configure the TE path selection metric type, you should configure the MPLS TE administrative weight on each interface for which TE is enabled.
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Use this command to specify the metric type to be used for traffic engineering (TE) tunnels for which the **tunnel path-selection metric** command has not been specified.

The metric type to be used for path calculation for a given tunnel is determined as follows:

- If you entered the tunnel path-selection metric command was entered to specify a metric type for the tunnel, use that metric type.
- If you entered the TE configuration mode path-selection metric was entered to specify a metric type, use that metric type.
- If you did not do any of the above tasks, use the default (te) metric.

This command requires the MPLS Services license.

Examples	This example shows how to configure the metric type to use if a metric type is not explicitly configured for an MPLS TE tunnel:
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```
switch# configure terminal
switch(config)# interface tunnel-te 1
```



```
switch(config-if-te)# path-selection metric te  
switch(config-if-te)#
```

Related Commands

Command	Description
interface tunnel-te	Configures the traffic engineering (TE) interface.

path-selection overload allow

To allow overloaded nodes in Constrained Shortest Path First (CSPF), use the **path-selection overload allow** command. To return to the default setting, use the **no** form of this command.

path-selection overload allow { **head** [**middle** [**tail**]] | **middle** [**tail**] | **tail** }

no path-selection overload allow

Syntax Description	head	Specifies that an overloaded node can still be used as a tunnel head in the traffic engineering (TE) constrained Shortest Path First (CSPF).
	middle	(Optional) Specifies the overloaded middle node in the TE CSPF.
	tail	(Optional) Specifies the overloaded tail node in the TE CSPF.
Defaults	None	
Command Modes	TE 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	<p>This example shows how to specify that an overloaded node can still be used as a tunnel head in the traffic engineering (TE) constrained Shortest Path First (CSPF):</p> <pre>switch# configure terminal switch(config)# mpls traffic-eng configuration switch(config-te)# path-selection overload allow head switch(config-te)#</pre>	
Related Commands	Command	Description
	mpls traffic-eng configuration	Configures the Multiprotocol Label Switching (MPLS) Traffic Engineering Protocol (MPLS-TE).

ping mpls

To test the Multiprotocol Label Switching (MPLS) label switched path (LSP) reachability, use the **ping mpls** command.

```
ping mpls {ipv4 destination-address/destination-mask-length | pseudowire ipv4-address vc-id |  
traffic-eng tunnel-te interface number}
```

Syntax Description		
ipv4		Specifies the target as an IPv4 address.
<i>destination-address</i>		Target Forwarding Equivalence Class (FEC) address.
<i>destination-mask-length</i>		Target FEC address with the mask length.
pseudowire		Specifies the target virtual channel (VC) as an IPv4 address and VC ID.
<i>ipv4-address</i>		IPv4 address.
<i>vc-id</i>		VC ID. The range is from 0 to 4294967295.
traffic-eng		Specifies as a traffic engineering (TE) tunnel interface.
tunnel-te		Specifies the TE interface.
<i>interface number</i>		TE interface number. The range is from 0 to 65503.

Defaults None

Command Modes EXEC 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 test MPLS LSP reachability:

```
switch# ping mpls pseudowire 1.2.3.4 200  
LSP ping for VCCV is not supported  
switch(config)#
```

This example shows how to specify an LDP IPv4 prefix FEC for validation:

```
switch# ping mpls ipv4 10.131.191.252/32 repeat 5 exp 5 verbose  
Sending 5, 100-byte MPLS Echos to 10.131.191.252/32,  
timeout is 2 seconds, send interval is 0 msec:
```

Codes: '!' - success, 'Q' - request not sent, '.' - timeout,
 'L' - labeled output interface, 'B' - unlabeled output interface,
 'D' - DS Map mismatch, 'F' - no FEC mapping, 'f' - FEC mismatch,
 'M' - malformed request, 'm' - unsupported tlvs, 'N' - no label entry,
 'P' - no rx intf label prot, 'p' - premature termination of LSP,
 'R' - transit router, 'I' - unknown upstream index,
 'X' - unknown return code, 'x' - return code 0

Type Ctrl-C to abort.

```
Q    size 100
Q    size 100
Q    size 100
Q    size 100
Q    size 100
```

Success rate is 0 percent (0/5)

Total Time Elapsed 6 ms

switch#

Related Commands

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

ping mpls pseudowire

To target virtual circuit (VC) specified as an IPv4 address and VC ID, use the **ping mpls pseudowire** command.

ping mpls pseudowire *ipv4-address vc-id*

Syntax Description

<i>ipv4-address</i>	IPv4 address.
<i>vc-id</i>	Virtual circuit ID. The range is from 1 to 4294967295.

Defaults

None

Command Modes

EXEC mode

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
6.2.2	This command was introduced.

Usage Guidelines

This command requires an MPLS license.

Examples

This example shows how to target a VC specified as an IPv4 address and VC ID:

```
switch# ping mpls pseudowire 33.0.1.63 100
```

Related Commands

Command	Description
mpls oam	Targets a VC specified as an IPv4 address and VC ID

police

To create a policy map to enforce a committed data rate of 256000 bits per second, use the **police** command. To return to the default setting, use the **no** form of this command.

```
police [cir] {x [bps | kbps | mbps | gbps] | percent x-percent} [[bc] bc [bytes | kbytes | mbytes |
ms | us]] [pir y [bps | kbps | mbps | gbps] | percent y-percent] [[be] be [bytes | kbytes | mbytes
| ms | us]] [conform conform-action [exceed exceed-action [violate violate-action]]]
```

```
no police [cir] {x [bps | kbps | mbps | gbps] | percent x-percent} [[bc] bc [bytes | kbytes | mbytes
| ms | us]] [pir y [bps | kbps | mbps | gbps] | percent y-percent] [[be] be [bytes | kbytes |
mbytes | ms | us]] [conform conform-action [exceed exceed-action [violate violate-action]]]
```

Syntax Description

cir	(Optional) Specifies the committed information rate.
<i>x</i>	Committed information rate value. The range is from 1 to 80000000000.
bps	(Optional) Specifies the rate value in bits per second.
kbps	(Optional) Specifies the rate value in kilobits per second.
mbps	(Optional) Specifies the rate value in megabits per second.
gbps	(Optional) Specifies the rate value in gigabits per second.
percent	Specifies the rate as a percentage of the interface data rate.
<i>x-percent</i>	Percentage. The range is from 1 to 100.
bc	(Optional) Specifies the committed burst.
<i>bc</i>	Burst value. The range is from 1 to 536870912.
bytes	(Optional) Specifies the burst value in bits per second.
kbytes	(Optional) Specifies the burst value in kilobits per second.
mbytes	(Optional) Specifies the burst value in megabits per second.
ms	(Optional) Specifies burst value in milliseconds.
us	(Optional) Specifies the burst value in microseconds.
pir	(Optional) Specifies the peak information rate.
<i>y</i>	Value of the peak rate.
<i>y-percent</i>	Percentage. The range is from 1 to 100.
be	(Optional) Specifies extended burst.
<i>be</i>	Extended value. The range is from 1 to 536870912.
conform	(Optional) Specifies the conform action.
<i>conform-action</i>	(Optional) Conform action value.
exceed-action	(Optional) Specifies the exceed action.
violate-action	(Optional) Specifies the violate action.
<i>violate-action</i>	(Optional) Violate action value.

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 create a policy map to enforce a committed data rate of 256000 bps. If the data rate is in conformance, the router sets the EXP field of the outer (topmost) label of the MPLS header. If the data rate is exceeded, the router drops packets:

```
switch# configure terminal
switch(config)# policy-map policy1
switch(config-pmap-qos)# class Class2
switch(config-pmap-c-qos)# police cir 256000 conform set-mpls-exp-topmost-transmit violate drop
switch(config-pmap-c-qos)# end
switch#
```

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

policy-map

To configure a policy map, use the **policy-map** command. To return to the default setting, use the **no** form of this command.

policy-map [**type qos**] *policy-map-name*

no policy-map [**type qos**] *policy-map-name*

Syntax Description	type	(Optional) Specifies the type of the policy map.
	qos	(Optional) Specifies the QoS policy.
	<i>policy-map-name</i>	Policy map name. The maximum size is 40 alphanumeric characters.
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 configure a policy map:	
	<pre>switch# configure terminal switch(config)# policy-map policy1 switch(config-pmap-qos)#</pre>	
Related Commands	Command	Description
	mpls ldp configuration	Configures the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP).

port-profile type pseudowire

To enter interface port profile configuration mode and configure a pseudowire port profile, use the **port-profile type pseudowire** command.

port-profile type pseudowire *profile-name*

Syntax Description	<i>profile-name</i>	Name of the profile. The string can be any alphanumeric string up to 80 characters.
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Defaults	None
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Command Modes	Global configuration mode
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Supported User Roles	network-admin vdc-admin
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Command History	Release	Modification
	6.2.2	This command was introduced.

Usage Guidelines	This command requires the MPLS Services license.
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Examples	<p>This example shows how to specify an address to exclude while configuring an explicit path:</p> <pre>switch# configure terminal switch(config)# port-profile type pseudowire AToM switch(config-if-prof)#</pre>
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Related Commands	Command	Description
	encapsulation mpls	Specifies MPLS encapsulation for this profile.
	interface pseudowire	Enters interface pseudowire configuration mode and configures a static pseudowire logical interface.
	state enabled	Enables the interface port profile.

priority (LSP attribute configuration mode)

To configure the label switched path (LSP) priority, use the **priority** command. To restore the system to its default condition, use the **no** form of this command.

priority *setup-priority* [*hold-priority*]

no priority

Syntax Description	<i>setup-priority</i>	Setup priority. The range is from 0 to 7.
	<i>hold-priority</i>	(Optional) Hold priority. The range is from 0 to 7.

Defaults By default, the setup priority is 7. The value of hold priority is the same as the value of setup priority.

Command Modes LSP attribute configuration mode

Supported User Roles network-admin
vdc-admin

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

Usage Guidelines

Use the *setup-priority* argument when signaling an LSP to determine which existing LSPs can be preempted. The range is from 0 to 7, where a lower number indicates a higher priority. Therefore, an LSP with a setup priority of 0 can preempt any LSP with a nonzero priority.

Use the *hold-priority* argument LSP to determine if an LSP should be preempted by other LSPs that are being signaled. The range is from 0 to 7, where a lower number indicates a higher priority.

The two priorities enables the signaling of an LSP with a low setup priority (so that the LSP does not preempt other LSPs during the setup) and a high hold priority (so that the LSP is not preempted after it is established). The setup priority and hold priority are typically configured to be equal; the setup priority cannot be higher (numerically smaller) than the hold priority.

This command requires the MPLS Services license.

Examples This example shows how to configure the LSP priority:

```
switch# configure terminal
switch(config)# mpls traffic-eng configuration
switch(config-te)# lsp attributes 1
switch(config-lsp-attr)# priority 1 1
```

Related Commands

Command	Description
mpls traffic-eng configuration	Configures the Multiprotocol Label Switching (MPLS) Traffic Engineering Protocol (MPLS-TE).

priority (TE interface configuration mode)

To configure the label switched path (LSP) priority, use the **priority** command. To restore the system to its default condition, use the **no** form of this command.

priority *setup-priority* [*hold-priority*]

no priority

Syntax Description

<i>setup-priority</i>	Setup priority. The range is from 0 to 7.
<i>hold-priority</i>	(Optional) Hold priority. The range is from 0 to 7.

Defaults

By default, the setup priority is 7. The value of hold priority is the same as the value of setup priority.

Command Modes

TE interface configuration mode

Supported User Roles

network-admin
vdc-admin

Command History

Release	Modification
5.2(1)	This command was introduced.

Usage Guidelines

Use the *setup-priority* argument when signaling an LSP to determine which existing LSPs can be preempted. The range is from 0 to 7, where a lower number indicates a higher priority. Therefore, an LSP with a setup priority of 0 can preempt any LSP with a nonzero priority.

Use the *hold-priority* argument LSP to determine if an LSP should be preempted by other LSPs that are being signaled. The range is from 0 to 7, where a lower number indicates a higher priority.

The two priorities enable the signaling of an LSP with a low setup priority (so that the LSP does not preempt other LSPs during the setup) and a high hold priority (so that the LSP is not preempted after it is established). The setup priority and hold priority are typically configured to be equal; the setup priority cannot be higher (numerically smaller) than the hold priority.

This command requires the MPLS Services license.

Examples

This example shows how to configure the LSP priority:

```
switch# configure terminal
switch(config)# interface tunnel-te 1
switch(config-if-te)# priority 1 1
switch(config-if-te)#
```

Related Commands

Command	Description
interface tunnel-te	Configures the traffic engineering (TE) interface.

protection fast-reroute

To enable a Multiprotocol Label Switching (MPLS) traffic engineering (TE) tunnel to request a backup tunnel to protect against a link or node failure, use the **fast-reroute** command. To restore the system to its default condition, use the **no** form of this command.

protection fast-reroute [bw-protect]

no protection fast-reroute

Syntax Description	bw-protect (Optional) Sets the bandwidth protection desired bit so that backup bandwidth protection is requested at each hop that the LSP traverses.	
Command Modes	LSP attribute 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 failure protection on the LSP: switch# configure terminal switch(config)# mpls traffic-eng configuration switch(config-te)# lsp attributes 1 switch(config-lsp-attr)# protection fast-reroute switch(config-te-lsp-attr)#	
Related Commands	Command	Description
	mpls traffic-eng configuration	Configures the Multiprotocol Label Switching (MPLS) Traffic Engineering Protocol (MPLS-TE).