



MPLS LDP Inbound Label Binding Filtering

Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) supports inbound label binding filtering. You can use the MPLS LDP Inbound Label Binding Filtering feature to configure access control lists (ACLs) for controlling the label bindings a label switch router (LSR) accepts from its peer LSRs.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Restrictions for MPLS LDP Inbound Label Binding Filtering

Inbound label binding filtering does not support extended access control lists (ACLs); it only supports standard ACLs.

Information about MPLS LDP Inbound Label Binding Filtering

Overview of MPLS LDP Inbound Label Binding Filtering

The MPLS LDP Inbound Label Binding Filtering feature can be used to control the amount of memory used to store Label Distribution Protocol (LDP) label bindings advertised by other devices. For example, in a simple Multiprotocol Label Switching (MPLS) Virtual Private Network (VPN) environment, the VPN provider edge (PE) devices might require label switched paths (LSPs) only to their peer PE devices (that is, they do not need LSPs to core devices). Inbound label binding filtering enables a PE device to accept labels only from other PE devices.

How to Configure MPLS LDP Inbound Label Binding Filtering

Configuring MPLS LDP Inbound Label Binding Filtering

Perform this task to configure a device for inbound label filtering. The following configuration allows the device to accept only the label for prefix 25.0.0.2 from the Label Distribution Protocol (LDP) neighbor device 10.12.12.12.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ip access-list standard** *access-list-number*
4. **permit** {*source* [*source-wildcard*] | **any**} [**log**]
5. **exit**
6. **mpls ldp neighbor** [*vrf vpn-name*] *nbr-address* **labels accept acl**
7. **end**

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|--|---|
| Step 1 | enable Example: Device> enable | Enables privileged EXEC mode. • Enter your password if prompted. |
| Step 2 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 3 | ip access-list standard <i>access-list-number</i> Example: | Defines a standard IP access list with a number. |

| | Command or Action | Purpose |
|---------------|--|---|
| | Device(config)# ip access-list standard 1 | |
| Step 4 | permit { <i>source</i> [<i>source-wildcard</i>] any } [log] Example: Device(config-std-nacl)# permit 10.0.0.0 | Specifies one or more prefixes permitted by the access list. |
| Step 5 | exit Example: Device(config-std-nacl)# exit | Returns to global configuration mode. |
| Step 6 | mpls ldp neighbor [<i>vrf vpn-name</i>] <i>nbr-address</i> labels accept <i>acl</i> Example: Device(config)# mpls ldp neighbor 10.12.12.12 labels accept 1 | Specifies the access control list (ACL) to be used to filter label bindings for the specified LDP neighbor. |
| Step 7 | end Example: Device(config)# end | Returns to privileged EXEC mode. |

Verifying that MPLS LDP Inbound Label Bindings are Filtered

If inbound filtering is enabled, perform the following tasks to verify that inbound label bindings are filtered.

SUMMARY STEPS

1. **enable**
2. **show mpls ldp neighbor** [*vrf vpn-name*] [*address* | *interface*] [**detail**]
3. **show ip access-list** [*access-list-number* | *access-list-name*]
4. **show mpls ldp bindings**
5. **exit**

DETAILED STEPS

Step 1

enable

Enables privileged EXEC mode. Enter your password if prompted.

Example:

```
Device> enable
Device#
```

Step 2 `show mpls ldp neighbor [vrf vpn-name] [address | interface] [detail]`

Shows the status of the Label Distribution Protocol (LDP) session, including the name or number of the access control list (ACL) configured for inbound filtering.

Note To display information about inbound label binding filtering, you must enter the **detail** keyword.

Example:

```
Device# show mpls ldp neighbor 10.12.12.12 detail
Peer LDP Ident: 10.12.12.12:0; Local LDP Ident 10.13.13.13:0
TCP connection: 10.12.12.12.646 - 10.13.13.13.12592
State: Oper; Msgs sent/rcvd: 49/45; Downstream; Last TIB rev sent 1257
Up time: 00:32:41; UID: 1015; Peer Id 0;
LDP discovery sources:
Serial1/0/0; Src IP addr: 192.168.1.1
holdtime: 15000 ms, hello interval: 5000 ms
Addresses bound to peer LDP Ident:
10.0.0.129      10.12.12.12      192.168.1.1
Peer holdtime: 180000 ms; KA interval: 60000 ms; Peer state: estab
LDP inbound filtering accept acl: 1
```

Step 3 `show ip access-list [access-list-number | access-list-name]`

Displays the contents of all current IP access lists or of a specified access list.

Note It is important that you enter this command to see how the access list is defined; otherwise, you cannot verify inbound label binding filtering.

The following command output shows the contents of IP access list 1:

Example:

```
Device# show ip access 1
Standard IP access list 1
permit 10.0.0.0, wildcard bits 0.0.0.255 (1 match)
```

Step 4 `show mpls ldp bindings`

Verifies that the label switch router (LSR) has remote bindings only from a specified peer for prefixes permitted by the access list.

Example:

```
Device# show mpls ldp bindings
tib entry: 10.0.0.0/8, rev 4
local binding: tag: imp-null
tib entry: 10.2.0.0/16, rev 1137
local binding: tag: 16
tib entry: 10.2.0.0/16, rev 1139
local binding: tag: 17
tib entry: 10.12.12.12/32, rev 1257
local binding: tag: 18
tib entry: 10.13.13.13/32, rev 14
local binding: tag: imp-null
tib entry: 10.10.0.0/16, rev 711
local binding: tag: imp-null
tib entry: 10.0.0.0/8, rev 1135
local binding: tag: imp-null
remote binding: tsr: 10.12.12.12:0, tag: imp-null
```

```
tib entry: 10.0.0.0/8, rev 8
  local binding: tag: imp-null
```

Step 5 **exit**

Returns to user EXEC mode.

Example:

```
Device# exit
Device>
```

Configuration Examples for MPLS LDP Inbound Label Binding Filtering

Examples: MPLS LDP Inbound Label Binding Filtering Configuration

In the following example, the **mpls ldp neighbor labels accept** command is configured with an access control list to filter label bindings received on sessions with the neighbor 10.110.0.10.

Label bindings for prefixes that match 10.b.c.d are accepted, where b is less than or equal to 63, and c and d can be any integer between 0 and 128. Other label bindings received from 10.110.0.10 are rejected.

```
Device# configure terminal
Device(config)# access-list 1 permit 10.63.0.0 0.63.255.255
Device(config)# mpls ldp neighbor 10.110.0.10 labels accept 1
Device(config)# end
```

In the following example, the **show mpls ldp bindings neighbor** command displays label bindings that were learned from 10.110.0.10. This example verifies that the LIB does not contain label bindings for prefixes that have been excluded.

```
Device# show mpls ldp bindings neighbor 10.110.0.10

tib entry: 10.2.0.0/16, rev 4
  remote binding: tsr: 10.110.0.10:0, tag: imp-null
tib entry: 10.43.0.0/16, rev 6
  remote binding: tsr: 10.110.0.10:0, tag: 16
tib entry: 10.52.0.0/16, rev 8
  remote binding: tsr: 10.110.0.10:0, tag: imp-null
```

Additional References

Related Documents

| Related Topic | Document Title |
|--|--|
| Cisco IOS commands | Cisco IOS Master Command List, All Releases |
| MPLS commands | Cisco IOS Multiprotocol Label Switching Command Reference |
| MPLS Label Distribution Protocol (LDP) | “MPLS Label Distribution Protocol” module in the <i>MPLS Label Distribution Protocol Configuration Guide</i> |

MIBs

| MIB | MIBs Link |
|--|---|
| <i>LDP Specification, draft-ietf-mpls-ldp-08.txt</i> | To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mib |

RFCs

| RFC | Title |
|----------|-----------------------------------|
| RFC 3036 | LDP Specification |
| RFC 3037 | LDP Applicability |

Technical Assistance

| Description | Link |
|---|---|
| The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password. | http://www.cisco.com/cisco/web/support/index.html |

Feature Information for MPLS LDP Inbound Label Binding Filtering

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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Table 1: Feature Information for MPLS LDP Inbound Label Binding Filtering

| Feature Name | Releases | Feature Information |
|--|-------------------------------------|---|
| MPLS LDP Inbound Label Binding Filtering | 12.0(26)S 12.2(25)S 15.2(1)SY | <p>You can use the MPLS LDP Inbound Label Binding Filtering feature to configure access control lists (ACLs) for controlling the label bindings a label switch router (LSR) accepts from its peer LSRs.</p> <p>In Cisco IOS Release 12.0(26)S, this feature was introduced on the Cisco 7200.</p> <p>This feature was integrated into Cisco IOS Release 12.2(25)S for the Cisco 7500 series router.</p> <p>In 15.2(1)SY, the feature was integrated into Cisco IOS Release 15.2(2)SY.</p> <p>The following commands were introduced or modified:</p> <p>clear mpls ldp neighbor , mpls ldp neighbor labels accept , show mpls ldp neighbor</p> |

Glossary

carrier supporting carrier—A situation where one service provider allows another service provider to use a segment of its backbone network. The service provider that provides the segment of the backbone network to the other provider is called the backbone carrier. The service provider that uses the segment of the backbone network is called the customer carrier.

CE device—customer edge device. A device that is part of a customer network and that interfaces to a provider edge (PE) device.

inbound label binding filtering—Allows label switch routers (LSRs) to control which label bindings it will accept from its neighboring LSRs. Consequently, an LSR does not accept or store some label bindings that its neighbors advertise.

label—A short fixed-length identifier that tells switching nodes how to forward data (packets or cells).

label binding—An association between a destination prefix and a label.

