MPLS LDP Inbound Label Binding Filtering

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

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see 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 document.

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Restrictions for MPLS LDP Inbound Label Binding Filtering

Inbound label binding filtering does not support extended ACLs; it only supports standard ACLs.

Information about MPLS LDP Inbound Label Binding Filtering

MPLS LDP Inbound Label Binding Filtering Benefit

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

How to Configure MPLS LDP Inbound Label Binding Filtering

Configuring MPLS LDP Inbound Label Binding Filtering

Perform this task to configure a router for inbound label filtering.

The following configuration allows the router to accept only the label for prefix 192.168.1.1 from LDP neighbor router 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:** `Router> enable`	Enables privileged EXEC mode. - Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

Command or Action	Purpose
Step 3 **ip access-list standard** *access-list-number* **Example:** `Router(config)# ip access-list standard 1`	Defines a standard IP access list with a number.
Step 4 **permit** {*source* [*source-wildcard*] | **any**} [**log**] **Example:** `Router(config-std-nacl)# permit 10.0.0.0`	Specifies one or more prefixes permitted by the access list.
Step 5 **exit** **Example:** `Router(config-std-nacl)# exit`	Exits the current mode and goes to the next higher level.
Step 6 **mpls ldp neighbor** [**vrf** *vpn-name*] *nbr-address* **labels accept** *acl* **Example:** `Router(config)# mpls ldp neighbor 10.12.12.12 labels accept 1`	Specifies the ACL to be used to filter label bindings for the specified LDP neighbor.
Step 7 **end** **Example:** `Router(config)# end`	Exits the current mode and enters 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**

Use this command to enable privileged EXEC mode. Enter your password if prompted. For example:

Example:

```
Router> enable
Router#
```

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

Enter the **show mpls ldp neighbor** command to show the status of the LDP session, including the name or number of the ACL configured for inbound filtering.

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

Example:

```
Router# 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*]

Enter the **show ip access-list** command to display 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:

```
Router# 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**

Enter the **show mpls ldp bindings**command to verify that the LSR has remote bindings only from a specified peer for prefixes permitted by the access list.

Example:

```
Router# 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**

Use this command to exit to user EXEC mode. For example:

Example:

```
Router# exit
Router>
```

Configuration Examples for MPLS LDP Inbound Label Binding Filtering

- Configuring MPLS LDP Inbound Label Binding Filtering Example, page 5

Configuring MPLS LDP Inbound Label Binding Filtering Example

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.

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

```
Router# 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

The following sections provide additional references related to MPLS LDP inbound label binding filters.

Related Documents

Related Topic	Document Title
Configuration information for MPLS LDP	"MPLS Label Distribution Protocol (LDP) " chapter in the *Cisco IOS XE Multiprotocol Label Switching Configuration Guide*
MPLS LDP commands	*Cisco IOS Multiprotocol Label Switching Command Reference*

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	--

MIBs

MIB	MIBs Link
MPLS Label Distribution Protocol MIB (draft-ietf-mpls-ldp-08.txt*)*	To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 3036	LDP Specification
RFC 3037	LDP Applicability

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

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 Bonding Filtering

Feature Name	Releases	Feature Information
MPLS LDP Inbound Label Binding Filtering	Cisco IOS XE Release 2.1	The MPLS LDP Inbound Label Binding Filtering feature supports inbound label binding filtering. You can use the Multiprotocol Label Switching (MPLS) Label Distribution Protocol (LDP) feature to configure access control lists (ACLs) for controlling the label bindings a label switch router (LSR) accepts from its peer LSRs.
		In Cisco IOS XE Release 2.1, support was added for the Cisco ASR 1000 Series Aggregation Services Routers.
		The following commands were introduced or modified: **clear mpls ldp neighbor**, **mpls ldp neighbor labels accept**, **show mpls ldp neighbor**.

Glossary

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

inbound label binding filtering --Allows 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.