MPLS LDP Inbound Label Binding Filtering

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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.

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.

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

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

Information about MPLS LDP Inbound Label Binding Filtering

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 25.0.0.2 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:** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**ip access-list standard** *access-list-number* **Example:** **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:** **Example:** `Router(config-std-nacl)# permit 10.0.0.0`	Specifies one or more prefixes permitted by the access list.
Step 5	**exit** **Example:** **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:** **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 steps to verify that inbound label bindings are filtered:

SUMMARY STEPS

1. 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.
2. Enter the **show ip access-list** command to display the contents of all current IP access lists or of a specified access list.
3. 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.

DETAILED STEPS

Step 1 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.

Example:

```
show mpls ldp neighbor
 [vrf

vpn-name
][
address
 |
interface
] [detail
```

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

Following is sample output from the **show mpls ldp neighbor** command.

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; Src IP addr: 25.0.0.2
     holdtime: 15000 ms, hello interval: 5000 ms
   Addresses bound to peer LDP Ident:
    10.0.0.129       10.12.12.12     10.0.0.2
   Peer holdtime: 180000 ms; KA interval: 60000 ms; Peer state: estab
   LDP inbound filtering accept acl: 1
```

Step 2 Enter the **show ip access-list** command to display the contents of all current IP access lists or of a specified access list.

Example:

```
show ip access-list
 [
```

```
access-list-number
 |
access-list-name
]
```

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 3 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: 12.12.12.12:0, tag: imp-null
 tib entry: 10.0.0.0/8, rev 8
     local binding:  tag: imp-null
Router#
```

Configuration Examples for MPLS LDP Inbound Label Binding Filtering

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

Related Documents

Related Topic	Document Title
MPLS Label Distribution Protocol (LDP)	MPLS Label Distribution Protocol

Standards

Standard	Title
None	--

MIBs

MIB	MIBs Link
LDP Specification, draft-ietf-mpls-ldp-08.txt	To locate and download MIBs for selected platforms, Cisco IOS 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 Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Feature Information for MPLS LDP Inbound Label Binding Filtering Feature

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

Feature Name	Releases	Feature Information
MPLS LDP Inbound Label Binding Filtering Feature	12.0(26)S 12.2(25)S 12.3(14)T 12.2(18)SXE	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. In Cisco IOS Release 12.0(26)S, this feature was introduced on the Cisco 7200. This feature was integrated into Cisco IOS Release 12.2(25)S for the Cisco 7500 series router. This feature was integrated into Cisco IOS Release 12.3(14)T. This feature was integrated into Cisco IOS Release 12.2(18)SXE for the Cisco 7600 series router. The following commands were introduced or modified: • **clear mpls ldp neighbor** • **mpls ldp neighbor labels accept** • **show mpls ldp neighbor**

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 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.