



OSPF ABR Type 3 LSA Filtering

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The OSPF ABR Type 3 LSA Filtering feature extends the ability of an ABR that is running the OSPF protocol to filter type 3 link-state advertisements (LSAs) that are sent between different OSPF areas. This feature allows only packets with specified prefixes to be sent from one area to another area and restricts all packets with other prefixes. This type of area filtering can be applied out of a specific OSPF area, into a specific OSPF area, or into and out of the same OSPF areas at the same time.

History for the OSPF ABR Type 3 LSA Filtering Feature

Release	Modification
12.0(15)S	This feature was introduced.
12.2(4)T	This feature was integrated into Cisco IOS Release 12.2(4)T.
12.2(4)T3	Support for the Cisco 7500 series was added in Cisco IOS Release 12.2(4)T3.
12.2(8)T	Support for the Cisco 1710, 1721, 3631, 3725, 3745 and IGX 8400 series URM was added in Cisco IOS Release 12.2(8)T.
12.2(11)T	Support for the Cisco AS5300, AS5400, and AS5800 series was integrated into Cisco IOS Release 12.2(11)T.
12.2(28)SB	This feature was integrated into Cisco IOS Release 12.2(28)SB.

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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.

Benefits

The OSPF ABR Type 3 LSA Filtering feature gives the administrator improved control of route distribution between OSPF areas.

Restrictions

Only type 3 LSAs that originate from an ABR are filtered.

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Related Features and Technologies

This feature is an extension of the OSPF routing protocol. For more information about configuring OSPF and configuring route summarization and filtering, refer to the "OSPF" module of the Cisco IOS IP Configuration Guide, Release 12.4 and the Cisco IOS IP Routing Protocols Command Reference, Release 12.4T.

Configuration Tasks

See the following sections for configuration tasks for the OSPF ABR Type 3 LSA Filtering feature. Each task in the list is identified as either required or optional:

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Configuring OSPF ABR Type 3 LSA Filtering

SUMMARY STEPS

1. Router(config)# **router ospf** *process-id*
2. Router(config-router)# **area** *area-id* **filter-list prefix** *prefix-list-name* **in**
3. Router(config-router)# **exit**
4. Router(config)# **ip prefix-list** *list-name* [**seq** *seq-value*] **deny** | **permit network/len** [**ge** *ge-value*] [**le** *le-value*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	Router(config)# router ospf <i>process-id</i>	Configures the router to run an OSPF process.
Step 2	Router(config-router)# area <i>area-id</i> filter-list prefix <i>prefix-list-name</i> in	Configures the router to filter interarea routes into the specified area.
Step 3	Router(config-router)# exit	Exits router configuration mode and returns to global configuration mode.
Step 4	Router(config)# ip prefix-list <i>list-name</i> [seq <i>seq-value</i>] deny permit network/len [ge <i>ge-value</i>] [le <i>le-value</i>]	Creates a prefix list with the name specified for the <i>list-name</i> argument.

Configuring OSPF ABR Type 3 LSA Filtering

To filter interarea routes out of a specified area, use the following commands beginning in router configuration mode:

SUMMARY STEPS

1. Router(config)# **router ospf** *process-id*
2. Router(config-router)# **area** *area-id* **filter-list prefix** *prefix-list-name* **out**
3. Router(config-router)# **exit**
4. Router(config)# **ip prefix-list** *list-name* [**seq** *seq-value*] **deny** | **permit network/len** [**ge** *ge-value*] [**le** *le-value*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	Router(config)# router ospf <i>process-id</i>	Configures the router to run an OSPF process.
Step 2	Router(config-router)# area <i>area-id</i> filter-list prefix <i>prefix-list-name</i> out	Configures the router to filter interarea routes out of the specified area.
Step 3	Router(config-router)# exit	Exits router configuration mode and returns to global configuration mode.

Command or Action	Purpose
Step 4 Router(config)# ip prefix-list <i>list-name</i> [seq <i>seq-value</i>] deny permit network/len [ge <i>ge-value</i>] [le <i>le-value</i>]	Creates a prefix list with the name specified for the <i>list-name</i> argument.

Verifying OSPF ABR Type 3 LSA Filtering

To verify that the OSPF ABR Type 3 LSA Filtering feature has been configured, use the **show ip ospf** command in the EXEC mode. The **show ip ospf** command will show that this feature has been enabled by listing the area filter as "in" or "out." The following is sample output from the **show ip ospf** command:

```
router# show ip ospf 1
Routing Process "ospf 1" with ID 172.16.0.1
Supports only single TOS(TOS0) routes
Supports opaque LSA
It is an area border router
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
Number of external LSA 0. Checksum Sum 0x0
Number of opaque AS LSA 0. Checksum Sum 0x0
Number of DCbitless external and opaque AS LSA 0
Number of DoNotAge external and opaque AS LSA 0
Number of areas in this router is 2. 2 normal 0 stub 0 nssa
External flood list length 0
  Area BACKBONE(0)
    Number of interfaces in this area is 2
    Area has no authentication
    SPF algorithm executed 6 times
    Area ranges are
      10.0.0.0/8 Passive Advertise
    Area-filter AREA_0_IN in
    Area-filter AREA_0_OUT out
    Number of LSA 5. Checksum Sum 0x29450
    Number of opaque link LSA 0. Checksum Sum 0x0
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
  Area 1
    Number of interfaces in this area is 1
    Area has no authentication
    SPF algorithm executed 4 times
    Area ranges are
    Area-filter AREA_1_IN in
    Area-filter AREA_1_OUT out
    Number of LSA 6. Checksum Sum 0x30100
    Number of opaque link LSA 0. Checksum Sum 0x0
    Number of DCbitless LSA 0
    Number of indication LSA 0
    Number of DoNotAge LSA 0
    Flood list length 0
```

Monitoring and Maintaining OSPF ABR Type 3 LSA Filtering

Command	Purpose
Router# show ip prefix-list	Displays information about a prefix list or prefix list entries.

Configuration Examples

The following configuration example output shows interarea filtering that is applied to both incoming and outgoing routes:

```
Router(config)# router ospf 1
log-adjacency-changes
area 1 filter-list prefix AREA_1_OUT out
area 3 filter-list prefix AREA_3_IN in
network 10.0.0.0 0.255.255.255 area 3
network 172.16.1.0 0.0.0.255 area 0
network 192.168.0.0 0.255.255.255 area 1
!
ip prefix-list AREA_1_OUT seq 10 permit 10.25.0.0/8 ge 16
ip prefix-list AREA_1_OUT seq 20 permit 172.20.20.0/24
!
ip prefix-list AREA_3_IN seq 10 permit 172.31.0.0/16
!
```

Additional References

The following sections provide references related to OSPF ABR Type 3 LSA Filtering.

Related Documents

Related Topic	Document Title
Configuring OSPF ABR Type 3 LSA Filtering	Configuring OSPF ABR Type 3 LSA Filtering
OSPF commands: complete command syntax, command mode, command history, command defaults, usage guidelines, and examples	<i>Cisco IOS IP Routing: OSPF Command Reference</i>

Standards

Standard	Title
None	--

MIBs

MIB	MIBs Link
None	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
None	--

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

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