OSPF Inbound Filtering Using Route Maps with a Distribute List

The OSPF Inbound Filtering Using Route Maps with a Distribute List feature allows users to define a route map to prevent Open Shortest Path First (OSPF) routes from being added to the routing table. In the route map, the user can match on any attribute of the OSPF route.

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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.

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.

Prerequisites OSPF Inbound Filtering Using Route Maps with a Distribute List

It is presumed that you have OSPF configured in your network.

Information About OSPF Inbound Filtering Using Route Maps with a Distribute List

Benefits of OSPF Route-Map-Based-Filtering

Users can define a route map to prevent OSPF routes from being added to the routing table. This filtering happens at the moment when OSPF is installing the route in the routing table. This feature has no effect on LSA flooding. In the route map, the user can match on any attribute of the OSPF route. That is, the route map could be based on the following **match** options:

- **match interface**
- **match ip address**
- **match ip next-hop**
- **match ip route-source**
- **match metric**
- **match route-type**
- **match tag**

This feature can be useful during redistribution if the user tags prefixes when they get redistributed on ASBRs and later uses the tag to filter the prefixes from being installed in the routing table on other routers.

Filtering Based on Route Tag

Users can assign tags to external routes when they are redistributed to OSPF. Then the user can deny or permit those routes in the OSPF domain by identifying that tag in the **route-map** and **distribute-list in** commands.

Filtering Based on Route Type

In OSPF, the external routes could be Type 1 or Type 2. Users can create route maps to match either Type 1 or Type 2 and then use the **distribute-list in** command to filter certain prefixes. Also, route maps can identify internal routes (interarea and intra-area) and then those routes can be filtered.

Filtering Based on Route Source

When a match is done on the route source, the route source represents the OSPF Router ID of the LSA originator of the LSA in which the prefix is advertised.

Filtering Based on Interface

When a match is done on the interface, the interface represents the outgoing interface for the route that OSPF is trying to install in the routing table.

Filtering Based on Next-Hop

When a match is done on the next hop, the next hop represents the next hop for the route that OSPF is trying to install in the routing table.

How to Configure OSPF Inbound Filtering Using Route Maps

Configuring OSPF Inbound Filtering Using a Route Map

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-tag* [**permit** | **deny**] [*sequence-number*]
4. **match tag** *tag-name*
5. Repeat Steps 3 and 4 with other **route-map** and **match** commands if you choose.
6. **exit**
7. **router ospf** *process-id*
8. **distribute-list route-map** *map-tag* **in**
9. **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.
Step 3	**route-map** *map-tag* [**permit** | **deny**] [*sequence-number*] **Example:** `Router(config)# route-map tag-filter deny 10`	Defines a route map to control filtering.
Step 4	**match tag** *tag-name* **Example:** **Example:**	Matches routes with a specified name, to be used as the route map is referenced. • At least one **match** command is required, but it need not be this **match**command. This is just an example.

	Command or Action	Purpose

	`or other` **`match`** `commands`
	Example:
	`Router(config-router)# match tag 777`
		• The list of **match** commands available to be used in this type of route map appears on the **distribute-list in** command reference page.
		• This type of route map will have no **set** commands.

Step 5	Repeat Steps 3 and 4 with other **route-map** and **match** commands if you choose.	--
Step 6	**exit** **Example:** `Router(config-router)# exit`	Exits router configuration mode.
Step 7	**router ospf** *process-id* **Example:** `Router(config)# router ospf 1`	Configures an OSPF routing process.
Step 8	**distribute-list route-map** *map-tag* **in** **Example:** `Router(config-router)# distribute-list route-map tag-filter in`	Enables filtering based on an OSPF route map.
Step 9	**end** **Example:** `Router(config-router)# end`	Exits router configuration mode.

Configuration Examples for OSPF Inbound Filtering Using Route Maps with a Distribute List

Example OSPF Route-Map-Based Filtering

In this example, OSPF external LSAs have a tag. The value of the tag is examined before the prefix is installed in the routing table. All OSPF external prefixes that have the tag value of 777 are filtered (prevented from being installed in the routing table). The permit statement with sequence number 20 has no match conditions, and there are no other route-map statements after sequence number 20, so all other conditions are permitted.

```
route-map tag-filter deny 10
 match tag 777
route-map tag-filter permit 20
!
router ospf 1
 router-id 10.0.0.2
```

```
log-adjacency-changes
network 172.16.2.1 0.0.0.255 area 0
distribute-list route-map tag-filter in
```

Additional References

The following sections provide references related to configuring the OSPF Inbound Filtering Using Route Maps with a Distribute List feature.

Related Documents

Related Topic	Document Title
OSPF commands	*Cisco IOS IP Routing: OSPF Command Reference*
Configuring OSPF	"Configuring OSPF"
Cisco IOS master command list, all releases	Cisco IOS Master Command List, All Releases

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
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	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
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	--

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 OSPF Inbound Filtering Using Route Maps with a Distribute List

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.

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.

Table 1: Feature Information for OSPF Inbound Filtering Using Route Maps with a Distribute List

Feature Name	Releases	Feature Information
OSPF Inbound Filtering Using Route Maps with a Distribute List	Cisco IOS XE Release 2.1	The OSPF Inbound Filtering Using Route Maps with a Distribute List feature allows users to define a route map to prevent OSPF routes from being added to the routing table. The following commands are introduced or modified in the feature documented in this module: • **distribute-list in (IP)**