EIGRP Route Tag Enhancements

The EIGRP Route Tag Enhancements feature enables you to specify and display route tags in dotted-decimal format, filter routes using the route tag value with wildcard mask, and set a default route tag for all internal Enhanced Interior Gateway Routing Protocol (EIGRP) routes.

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.

Restrictions for EIGRP Route Tag Enhancements

- Default route tags are not supported in EIGRP autonomous system configurations.
- Route tags will not be displayed in dotted-decimal format if the **route-tag notation** global configuration command is not enabled on the device.

Information About EIGRP Route Tag Enhancements

EIGRP Route Tag Enhancements Overview

A route tag is a 32-bit value attached to routes. Route tags are used to filter routes and apply administrative policies, such as redistribution and route summarization, to tagged routes. You can tag routes within a route map by using the **set tag** command. You can match tagged routes and apply administrative policies to tagged routes within a route map by using the **match tag** or **match tag list** command. The **match tag list** command is used to match a list of route tags.

Prior to the EIGRP Route Tag Enhancements feature, EIGRP routes could only be tagged using plain decimals (range: 1 to 4294967295). This feature enables users to specify and display route tag values as dotted decimals (range: 0.0.0.0 to 255.255.255.255), similar to the format used by IPv4 addresses. This enhancement is intended to simplify the use of route tags as users can now filter routes by using the route tag wildcard mask.

This feature also allows you to configure a default route tag for all internal EIGRP routes without using route maps. Use the **eigrp default-route-tag** command in address family configuration mode to configure a default route tag for internal EIGRP routes.

How to Configure EIGRP Route Tag Enhancements

Enabling Dotted-Decimal Notation for Route Tags

Perform this task to enable route tags to be displayed as dotted decimals in **show** commands, irrespective of whether or not the tags were configured as dotted decimals.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-tag notation dotted-decimal**
4. **end**
5. Enter one of the following:
   - **show ip route tag**
   - **show ipv6 route tag**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**route-tag notation dotted-decimal** **Example:** `Device(config)# route-tag notation dotted-decimal`	Enables the display of route tags in dotted-decimal format.
Step 4	**end** **Example:** `Device(config)# end`	Exits to privileged EXEC mode.

Step 5	Enter one of the following:
	• **show ip route tag**
	• **show ipv6 route tag**
	Example:
	`Device# show ip route tag`
	`Device# show ipv6 route tag`
		(Optional) Displays route tag entries for IPv4 or IPv6 routes.

Setting a Route Tag in a Route Map

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-name* **[permit | deny]** [*sequence-number*]
4. **set tag** {*tag-value* | *tag-value-dotted-decimal*}
5. **end**
6. **show route-map**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**route-map** *map-name* **[permit | deny]** [*sequence-number*] **Example:** `Device(config)# route-map rip-to-eigrp`	Configures a route map and enters route-map configuration mode.
Step 4	**set tag** {*tag-value* | *tag-value-dotted-decimal*} **Example:** `Device(config-route-map)# set tag 7.7.7.7`	Sets a tag value for a route. **Note** In this example, all routes from Routing Information Protocol (RIP) to EIGRP are given a tag value of 7.7.7.7.
Step 5	**end** **Example:** `Device(config-route-map)# end`	Exits to privileged EXEC mode.
Step 6	**show route-map** **Example:** `Device# show route-map`	(Optional) Displays static and dynamic route maps configured on the router.

Matching a Route Tag in a Route Map

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-name* **[permit | deny]** [*sequence-number*]
4. **match tag** {*tag-value* | *tag-value-dotted-decimal*} [**. . .** *tag-value* | *tag-value-dotted-decimal*]
5. **end**
6. **show route-map**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**route-map** *map-name* **[permit | deny]** [*sequence-number*] **Example:** `Device(config)# route-map eigrp-to-rip`	Configures a route map and enters route-map configuration mode.
Step 4	**match tag** {*tag-value* | *tag-value-dotted-decimal*} [. . . *tag-value* | *tag-value-dotted-decimal*] **Example:** `Device(config-route-map)# match tag 10.10.10.0`	Filters routes that match specific route tags.
Step 5	**end** **Example:** `Device(config-route-map)# end`	Exits to privileged EXEC mode.
Step 6	**show route-map** **Example:** `Device# show route-map`	(Optional) Displays static and dynamic route maps configured on the device.

Creating a Route Tag List

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-tag list** *list-name* **{deny | permit | sequence** *number* **{deny | permit}}** *tag-dotted-decimal mask*
4. **end**
5. **show route-tag list** [*list-name*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 3	**route-tag list** *list-name* **{deny | permit | sequence** *number* **{deny | permit}}** *tag-dotted-decimal mask* **Example:** `Device(config)# route-tag list to-rip permit 10.10.10.0 0.0.0.7`	Creates a route tag list. • Route tag lists are used by route maps to match routes based on conditions specified in the route tag lists.
Step 4	**end** **Example:** `Device(config)# end`	Exits to privileged EXEC mode.
Step 5	**show route-tag list** [*list-name*] **Example:** `Device(config-router)# show route-tag list to-rip`	(Optional) Displays information about route tag lists configured on the device. • Use the *list-name* argument to display information about a specific route tag list.

Matching a Route Tag List

Route tag lists are used in route maps to match routes based on conditions specified in the route tag lists. Multiple route tag and mask pair sequences can be configured to permit or deny any condition for a list of route tags.

Note You can match either a route tag or a route tag list within a single route map sequence.

Perform this task to match routes based on conditions specified in the route tag list.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-tag list** *list-name* **{deny | permit | sequence** *number* **{deny | permit}}** *tag-value-dotted-decimal mask*
4. **route-map** *map-name* **[permit | deny]** [*sequence-number*]
5. **match tag list** *list-name* [. . . *list-name*]
6. **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	**route-tag list** *list-name* **{deny | permit | sequence** *number* **{deny | permit}}** *tag-value-dotted-decimal mask* **Example:** `Device(config)# route-tag list list1 permit 10.10.10.0 0.0.0.7`	Configures a route tag list.
Step 4	**route-map** *map-name* **[permit | deny]** [*sequence-number*] **Example:** `Device(config)# route-map to-ospf`	Configures a route map and enters route-map configuration mode.
Step 5	**match tag list** *list-name* [. . . *list-name*] **Example:** `Device(config-route-map)# match tag list list1`	Filters routes that match a specified route tag list.
Step 6	**end** **Example:** `Device(config-route-map)# end`	Exits to privileged EXEC mode.

Setting a Default Route Tag for EIGRP Internal Routes

Perform this task to set a default route tag for all internal EIGRP routes without using a route map. Default route tags are supported only in EIGRP named mode configurations.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router eigrp** *virtual-name*
4. Enter one of the following:
   - **address-family ipv4 unicast autonomous-system** *autonomous-system-number*

- **address-family ipv6 unicast autonomous-system** *autonomous-system-number*

5. **eigrp default-route-tag** {*route-tag-plain-decimal* | *route-tag-dotted-decimal*}
6. **end**
7. Enter one of the following:
   - **show eigrp address-family ipv4 topology**
   - **show eigrp address-family ipv6 topology**

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	**router eigrp** *virtual-name* **Example:** `Device(config)# router eigrp name`	Configures an EIGRP routing process and enters router configuration mode.

Step 4	Enter one of the following:
	• **address-family ipv4 unicast autonomous-system** *autonomous-system-number*
	• **address-family ipv6 unicast autonomous-system** *autonomous-system-number*
	Example:
	`Device(config-router)# address-family ipv4 unicast autonomous-system 1`
	`Device(config-router)# address-family ipv6 unicast autonomous-system 1`
		Enters IPv4 or IPv6 address family configuration mode and configures an EIGRP routing instance.

Step 5	**eigrp default-route-tag** {*route-tag-plain-decimal* | *route-tag-dotted-decimal*} **Example:** `Device(config-router-af)# eigrp default-route-tag 10`	Sets a default route tag for all internal EIGRP routes.

	Command or Action	Purpose
Step 6	**end** **Example:** `Device(config-router-af)# end`	Exits to privileged EXEC mode.

Step 7	Enter one of the following:
	• **show eigrp address-family ipv4 topology**
	• **show eigrp address-family ipv6 topology**
	Example:
	`Device(config-router-af)# show eigrp address-family ipv4 topology`
	`Device(config-router-af)# show eigrp address-family ipv6 topology`
		(Optional) Displays entries of EIGRP address-family IPv4 or IPv6 topology tables.

Configuration Examples for EIGRP Route Tag Enhancements

Example: Enabling Dotted-Decimal Notation for Route Tags

The following example shows how to enable the display of route tags in dotted-decimal format by using the **route-tag notation** command. If you do not configure the **route-tag notation** command, route tags will be displayed as plain decimals in **show** commands even if the route tags were configured as dotted decimals. When you configure the **route-tag notation** command, route tags will be displayed as dotted decimals even if the route tags were configured as plain decimals.

```
Device# configure terminal
Device(config)# route-tag notation dotted-decimal
```

Example: Setting a Route Tag

The following example shows how to redistribute EIGRP routes into RIP and RIP routes into EIGRP by setting tags for routes within route maps:

```
Device(config)# route-map eigrp-to-rip
Device(config-route-map)# set tag 10.10.10.10
Device(config-route-map)# exit
Device(config)# route-map rip-to-eigrp
Device(config-route-map)# set tag 20.20.20.20
Device(config-route-map)# exit
Device(config)# router rip
Device(config-router)# redistribute eigrp 7 route-map eigrp-to-rip metric 5
Device(config-router)# exit
Device(config)# router eigrp name
```

```
Device(config-router)# address-family ipv4 autonomous-system 10
Device(config-router-af)# topology base
Device(config-router-af-topology)# redistribute rip route-map rip-to-eigrp 2 2 2 2 2
Device(config-router-af-topology)# end
```

Example: Matching a Route Tag

The following example shows how to redistribute EIGRP routes with a route tag value of 10.10.10.10 into a RIP domain:

```
Device(config)# route-map eigrp-to-rip
Device(config-route-map)# match tag 10.10.10.10
Device(config-route-map)# exit
Device(config)# router rip
Device(config-router)# redistribute eigrp 7 route-map eigrp-to-rip 5
Device(config-router)# end
```

Example: Configuring a Route Tag List

The following example shows how to configure a route tag list named TAG with various criteria for filtering routes. Route maps will use this list to match routes based on the criteria specified in the list. Route tag lists can accept route tags and wild card masks.

```
Device(config)# route-tag list TAG permit 1.1.1.1 0.0.0.1
Device(config)# route-tag list TAG seq 3 permit 2.2.2.2 0.0.0.3
Device(config)# route-tag list TAG seq 10 permit 3.3.3.3 0.0.0.7
Device(config)# route-tag list TAG seq 15 5.5.5.5 0.0.0.31
Device(config)# route-tag list TAG seq 20 deny 4.4.4.4 0.0.0.4
```

Example: Matching a Route Tag List

The following example shows how to use a route map to filter routes that match a specific route tag list. A single list can have multiple match criteria. All criteria must match before the route can be filtered. This example shows how to configure a route tag list named List1 in a route map and use the **match tag list** command to filter routes that match the criteria listed in the route tag list.

```
Device(config)# route-tag list List1 permit 10.10.10.0 0.0.0.7
Device(config)# route-map to-ospf
Device(config-route-map)# match tag list List1
Device(config-route-map)# exit
Device(config)# router ospf 10
Device(config-router)# redistribute eigrp 7 route-map to-ospf metric 20
Device(config-router)# end
```

Example: Setting a Default Route Tag

The following example shows how to set a default route tag for all internal EIGRP routes without using a route map. Default route tags are supported only in EIGRP named configurations.

```
Device(config)# router eigrp name
Device(config-router)# address-family ipv4 unicast autonomous-system 1
Device(config-router-af)# eigrp default-route-tag 10.10.10.10
```

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS commands	Master Command List, All Releases
EIGRP commands	EIGRP Command Reference

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 Overview of Cisco TrustSec

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 Overview of Cisco TrustSec

Feature Name	Releases	Feature Information
IPv6 enablement - Inline Tagging	Cisco IOS XE Fuji 16.8.1	The support for IPv6 is introduced.