



EIGRP Support for Route Map Filtering

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The EIGRP Support for Route Map Filtering feature enables Enhanced Interior Gateway Routing Protocol (EIGRP) to interoperate with other protocols by filtering inbound and outbound traffic based on complex route map options. In addition to the existing route map facility, several extended filtering options are introduced to provide EIGRP-specific match choices.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the “[Feature Information for EIGRP Support for Route Map Filtering](#)” section on page 16.

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Information About EIGRP Support for Route Map Filtering

To implement EIGRP route map filtering, you should understand the following concept:

- [EIGRP Route Map Support, page 2](#)

EIGRP Route Map Support

EIGRP support for route map filtering enables EIGRP to interoperate with other protocols by filtering inbound and outbound traffic based on route map options. Additional EIGRP-specific match choices are introduced to allow flexibility in fine-tuning EIGRP network operations.

EIGRP now supports the route map filtering capability that exists for other routing protocols to filter routes being redistributed into their protocol. For more details about understanding and configuring route maps, see the Enabling Policy Routing section of the “Configuring IP Routing Protocol-Independent Features” chapter of the *Cisco IOS IP Routing Protocols Configuration Guide*, Release 12.4T.

New match options allow EIGRP to filter internal and external routes based on source protocols, to match a metric against a range, and to match on an external protocol metric.

EIGRP can be configured to filter traffic using a route map and the **redistribute** or **distribute-list** commands. Using a route map with the **redistribute** command allows routes that are redistributed from the routing table to be filtered with a route map before being admitted into an EIGRP topology table. Routes that are dynamically received from, or advertised to, EIGRP peers can be filtered by adding a route map option to the **distribute-list** command.

A route map may be configured with both the **redistribute** and the **distribute-list** commands in the same routing process. When a route map is used with a **distribute-list** command that is configured for inbound or outbound filtering, route packets that are learned from or advertised to EIGRP peers can be processed with the route map to provide better control of route selection during the route exchange process. Redistribution serves as a mechanism to import routes into the EIGRP topology table from a routing table. A route map configured with the **redistribute** command adds flexibility to the redistribution capability and results in a more specific redistributed route selection.

In summary, demands for EIGRP to interoperate with other protocols and flexibility in fine-tuning network operation necessitate the capability to filter traffic using a route map.

How to Configure EIGRP Support for Route Map Filtering

This section contains the following tasks:

- [Configuring EIGRP Metrics Using a Route Map, page 2](#) (required)
- [Verifying EIGRP Metrics, page 5](#) (optional)

Configuring EIGRP Metrics Using a Route Map

Perform this task configure EIGRP metrics using a route map. In the Detailed Steps below, the EIGRP metrics used for filtering are configured within a route map. The first match clause defines EIGRP routes that contain an external protocol metric between 400 and 600 inclusive; the second match clause defines EIGRP external routes that match a source protocol of BGP and the autonomous system 45000. When

the two match clauses are true, a tag value of the destination routing protocol is set to 5. This route map can be used with the **distribute-list** command, see the “[Configuring EIGRP Metrics Using a Route Map: Examples](#)” section on page 6 for an example configuration.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-tag* [**permit** | **deny**] [*sequence-number*]
4. **match metric** {*metric-value* | **external** *metric-value*} [+ *deviation-number*]
5. **match source-protocol** *source-protocol* [*autonomous-system-number*]
6. **set tag** *source-protocol* [*autonomous-system-number*]
7. **exit**
8. **router eigrp** *as-number*
9. **network** *ip-address*
10. **distribute-list route-map** *map-tag* **in**

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 <i>map-tag</i> [permit deny] [<i>sequence-number</i>] Example: Router(config)# route-map metric_range	Enters route-map configuration mode.

	Command or Action	Purpose
Step 4	<p><code>match metric {metric-value external metric-value} [+ deviation-number]</code></p> <p>Example: Router(config-route-map)# match metric external 500 +- 100</p>	<p>Specifies a match clause that redistributes EIGRP routes that match an internal or external protocol metric.</p> <ul style="list-style-type: none"> <i>metric-value</i>—Internal protocol metric, which can be an EIGRP five-part metric. The range is from 1 to 4294967295. external—External protocol metric. The range is from 1 to 4294967295. <i>+ deviation-number</i>—(Optional) Represents a standard deviation. The deviation can be any number. There is no default. In this example, EIGRP routes that contain an external protocol metric between 400 and 600 inclusive are redistributed. <p>Note When you specify a metric deviation with the + and - keywords, the router will match any metric that falls inclusively in that range.</p> <p>Note The external protocol metric is not the same as the EIGRP assigned route metric which is a figure computed from EIGRP vectorized metric components (delay, bandwidth, reliability, load, and MTU).</p>
Step 5	<p><code>match source-protocol source-protocol [autonomous-system-number]</code></p> <p>Example: Router(config-route-map)# match source-protocol bgp 45000</p>	<p>Specifies a match clause that redistributes EIGRP external routes that match a source protocol.</p> <ul style="list-style-type: none"> <i>source-protocol</i>—Protocol to match. The valid keywords are bgp, connected, eigrp, isis, ospf, rip, and static. There is no default. <i>autonomous-system-number</i>—(Optional) Autonomous system number. The <i>autonomous-system-number</i> argument is not applicable to the connected, static, and rip keywords. The range is from 1 to 65535. There is no default. In this example, EIGRP external routes that match a source protocol of BGP and the autonomous system 45000.
Step 6	<p><code>set tag tag-value</code></p> <p>Example: Router(config-route-map)# set tag 5</p>	<p>Sets a tag value of the destination routing protocol when all the match criteria of a route map are met.</p> <ul style="list-style-type: none"> In this example, the tag value of the destination routing protocol is set to 5.
Step 7	<p><code>exit</code></p> <p>Example: Router(config-route-map)# exit</p>	<p>Exits configuration mode to the next highest mode in the CLI mode hierarchy.</p>

	Command or Action	Purpose
Step 8	<code>router eigrp as-number</code> Example: Router(config)# router eigrp 1	Configures the EIGRP routing process.
Step 9	<code>network ip-address</code> Example: Router(config-router)# network 172.16.0.0	Specifies a network for the EIGRP routing process.
Step 10	<code>distribute-list route-map map-tag in</code> Example: Router(config)# distribute-list route-map metric_range in	Filters networks received in updates. <ul style="list-style-type: none"> This example uses a route map to filter the networks. The route map named “metric_range” was identified in Step 3 above.

Verifying EIGRP Metrics

To verify that both the EIGRP metric and the external protocol metrics have been configured, perform the following step.

SUMMARY STEPS

- enable**
- show ip eigrp topology** [*autonomous-system-number* / *ip-address* [*mask*]] [**active** | **all-links** | **detail-links** | **pending** | **summary** | **zero-successors**]

DETAILED STEPS

-
- Step 1 enable**
Enables privileged EXEC mode. Enter your password if prompted.
Router# **enable**
- Step 2 show ip eigrp topology** [*autonomous-system-number* / *ip-address* [*mask*]] [**active** | **all-links** | **detail-links** | **pending** | **summary** | **zero-successors**]
Use this command to display the internal EIGRP metrics for a specified IP address, for example:
Router# **show ip eigrp topology 172.16.1.0/24**
- ```

IP-EIGRP (AS 45000): Topology entry for 172.16.1.0/24
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2169856
 Routing Descriptor Blocks:
 0.0.0.0 (Serial4/0), from Connected, Send flag is 0x0
 Composite metric is (2169856/0), Route is Internal
 Vector metric:
 Minimum bandwidth is 1544 Kbit
 Total delay is 20000 microseconds
 Reliability is 255/255
 Load is 1/255
 Minimum MTU is 1500
 Hop count is 0

```

In the following example, the external EIGRP metrics for a specified IP address are displayed:

```
Router# show ip eigrp topology 192.168.1.0/24

IP-EIGRP (AS 45000): Topology entry for 192.168.1.0/24
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2169856
 Routing Descriptor Blocks:
 0.0.0.0 (Serial4/0), from Connected, Send flag is 0x0
 Composite metric is (2169856/0), Route is External
 Vector metric:
 Minimum bandwidth is 1544 Kbit
 Total delay is 20000 microseconds
 Reliability is 255/255
 Load is 1/255
 Minimum MTU is 1500
 Hop count is 1
 External data:
 Originating router is 10.89.245.1
 AS number of route is 0
 External protocol is Connected, external metric is 0
 Administrator tag is 0 (0x00000000)
```

---

## Configuration Examples for EIGRP Support for Route Map Filtering

This section contains the following configuration example:

- [Configuring EIGRP Metrics Using a Route Map: Examples, page 6](#)

### Configuring EIGRP Metrics Using a Route Map: Examples

The following example shows how to configure a route map to match an EIGRP external protocol metric route with an allowable deviation of 100, a source protocol of BGP, and an autonomous system 45000. When the two match clauses are true, the tag value of the destination routing protocol is set to 5. The route map is used to distribute incoming packets for an EIGRP process.

```
route-map metric_range
 match metric external 500 +- 100
 match source-protocol bgp 45000
 set tag 5
!
router eigrp 1
 network 172.16.0.0
 distribute-list route-map metric_range in
```

The following example shows how to configure a route map to match EIGRP routes with a metric of 110, 200, or an inclusive range of 700 to 800. When the match clause is true, the tag value of the destination routing protocol is set to 10. The route map is used to redistribute EIGRP packets.

```
route-map metric_eigrp
 match metric 110 200 750 +- 50
 set tag 10
!
router eigrp 1
 network 172.21.1.0/24
 redistribute eigrp route-map metric_eigrp
```

## Additional References

The following sections provide references related to the EIGRP Support for Route Map Filtering feature.

### Related Documents

| Related Topic                                                        | Document Title                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP routing protocols overview and configuration                      | <i>Cisco IOS IP Configuration Guide, Part 2: IP Routing Protocols</i> , Release 12.3                                                                                                                                                                                                                             |
| IP routing commands including syntax, usage guidelines, and examples | <ul style="list-style-type: none"> <li>• <i>Cisco IOS IP Command Reference, Volume 2 of 4: Routing Protocols</i>, Release 12.3T</li> <li>• <i>Cisco IOS IP Routing Protocols Command Reference</i>, Release 12.2SR</li> <li>• <i>Cisco IOS IP Routing Protocols Command Reference</i>, Release 12.2SX</li> </ul> |

### Technical Assistance

| Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Link                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>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.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p> | <a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a> |

## Command Reference

This section documents only commands that are new or modified.

- [match metric \(IP\)](#)
- [match source-protocol](#)
- [show ip eigrp topology](#)

## match metric (IP)

To redistribute routes with the specified metric, use the **match metric** command in route-map configuration mode. To remove the entry for the redistributed route from the routing table, use the **no** form of this command.

**match metric** {*metric-value* | **external** *metric-value*} [+ *deviation-number*]

**no match metric** {*metric-value* | **external** *metric-value*} [+ *deviation-number*]

### Syntax Description

|                           |                                                                                                                                                                                                  |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>metric-value</i>       | Internal route metric, which can be an Enhanced Interior Gateway Routing Protocol (EIGRP) five-part metric. The range is from 1 to 4294967295.                                                   |
| <b>external</b>           | External protocol associated with a route and interpreted by a source protocol.                                                                                                                  |
| + <i>deviation-number</i> | (Optional) A standard deviation number that will offset the number configured for the <i>metric-value</i> argument. The <i>deviation-number</i> argument can be any number. There is no default. |
| <b>Note</b>               | When you specify a deviation of the metric with the + and - keywords, the router will match any metric that falls inclusively in that range.                                                     |

### Command Default

No filtering is performed on a metric value.

### Command Modes

Route-map configuration

### Command History

| Release     | Modification                                                                         |
|-------------|--------------------------------------------------------------------------------------|
| 11.2        | This command was introduced.                                                         |
| 12.3(8)T    | The <b>external</b> and +- keywords and <i>deviation-number</i> argument were added. |
| 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA.                      |
| 12.2(33)SXH | This command was integrated into Cisco IOS Release 12.2(33)SXH.                      |

### Usage Guidelines

Use the **route-map** global configuration command and the **match** and **set** route-map configuration commands to define the conditions for redistributing routes from one routing protocol into another. Each **route-map** command has a list of **match** and **set** commands associated with it. The **match** commands specify the *match criteria*—the conditions under which redistribution is allowed for the current **route-map** command. The **set** commands specify the *set actions*—the particular redistribution actions to perform if the criteria enforced by the **match** commands are met. The **no route-map** command deletes the route map.

The **match** route-map configuration command has multiple formats. The **match** commands can be given in any order, and all **match** commands must “pass” to cause the route to be redistributed according to the set actions given with the **set** commands. The **no** forms of the **match** commands remove the specified match criteria.

A route map can have several parts. Any route that does not match at least one **match** clause relating to a **route-map** command will be ignored; that is, the route will not be advertised for outbound route maps and will not be accepted for inbound route maps. If you want to modify only some data, you must configure a second route map section with an explicit match specified.

**Note**

An external protocol route metric is not the same as the EIGRP assigned route metric which is a figure computed using EIGRP vectorized metric components (delay, bandwidth, reliability, load, and MTU).

**Examples**

In the following example, routes with the metric 5 will be redistributed:

```
route-map name
 match metric 5
```

In the following example, any metric that falls inclusively in the range from 400 to 600 is matched:

```
route-map name
 match metric 500 +- 100
```

The following example shows how to configure a route map to match an EIGRP external protocol metric route with an allowable deviation of 100, a source protocol of BGP, and an autonomous system 45000. When the two match clauses are true, the tag value of the destination routing protocol is set to 5. The route map is used to distribute incoming packets for an EIGRP process.

```
route-map metric_range
 match metric external 500 +- 100
 match source-protocol bgp 45000
 set tag 5
!
router eigrp 45000
 network 172.16.0.0
 distribute-list route-map metric_range in
```

**Related Commands**

| Command                      | Description                                                                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>match as-path</b>         | Matches a BGP autonomous system path access list.                                                                                                                      |
| <b>match community</b>       | Matches a BGP community.                                                                                                                                               |
| <b>match interface (IP)</b>  | Distributes any routes that have their next hop out one of the interfaces specified.                                                                                   |
| <b>match ip address</b>      | Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets. |
| <b>match ip next-hop</b>     | Redistributes any routes that have a next hop router address passed by one of the access lists specified.                                                              |
| <b>match ip route-source</b> | Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.                                             |
| <b>match route-type (IP)</b> | Redistributes routes of the specified type.                                                                                                                            |
| <b>match tag</b>             | Redistributes routes in the routing table that match the specified tags.                                                                                               |
| <b>route-map (IP)</b>        | Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.                                                    |
| <b>set as-path</b>           | Modifies an autonomous system path for BGP routes.                                                                                                                     |
| <b>set automatic-tag</b>     | Automatically computes the tag value.                                                                                                                                  |

| Command                            | Description                                                  |
|------------------------------------|--------------------------------------------------------------|
| <b>set community</b>               | Sets the BGP communities attribute.                          |
| <b>set level (IP)</b>              | Indicates where to import routes.                            |
| <b>set local-preference</b>        | Specifies a preference value for the autonomous system path. |
| <b>set metric (BGP, OSPF, RIP)</b> | Sets the metric value for a routing protocol.                |
| <b>set metric-type</b>             | Sets the metric type for the destination routing protocol.   |
| <b>set next-hop</b>                | Specifies the address of the next hop.                       |
| <b>set tag (IP)</b>                | Sets a tag value of the destination routing protocol.        |

# match source-protocol

To match Enhanced Interior Gateway Routing Protocol (EIGRP) external routes based on a source protocol and autonomous system number, use the **match source-protocol** command in route-map configuration mode. To remove the protocol to be matched, use the **no** form of this command.

**match source-protocol** *source-protocol* [*autonomous-system-number*]

**no match source-protocol** *source-protocol* [*autonomous-system-number*]

|                           |                                 |                                                                                                                                                                                            |
|---------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax Description</b> | <i>source-protocol</i>          | Protocol to match. The valid keywords are <b>bgp</b> , <b>connected</b> , <b>eigrp</b> , <b>isis</b> , <b>ospf</b> , <b>rip</b> , and <b>static</b> . There is no default.                 |
|                           | <i>autonomous-system-number</i> | (Optional) Autonomous system number. This argument is not applicable to the <b>connected</b> , <b>static</b> , and <b>rip</b> keywords. The range is from 1 to 65535. There is no default. |

**Command Default** EIGRP external routes are not matched on a source protocol and autonomous system number.

**Command Modes** Route-map configuration

| Command History | Release     | Modification                                                    |
|-----------------|-------------|-----------------------------------------------------------------|
|                 | 12.3(8)T    | This command was introduced.                                    |
|                 | 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA. |
|                 | 12.2(33)SXH | This command was integrated into Cisco IOS Release 12.2(33)SXH. |

**Usage Guidelines** This command may not be useful with a redistribution operation that employs route maps because redistribution usually requires the configuration of a source protocol and an autonomous system value in order to redistribute. In many cases, it is more useful to configure a route map that includes matching the route type based on the source protocol and autonomous system using the **distribute-list** command for EIGRP.

**Examples** The following example shows how to configure a route map to match a source protocol of BGP and an autonomous system 45000. When the match clause is true, the tag value of the destination routing protocol is set to 5. The route map is used to distribute incoming packets for an EIGRP process.

```
route-map metric_source
 match source-protocol bgp 45000
 set tag 5
!
router eigrp 45000
 network 172.16.0.0
 distribute-list route-map metric_source in
```

| Related Commands | Command                            | Description                                                                                                                                                            |
|------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <b>distribute-list</b>             | Filters networks received in updates.                                                                                                                                  |
|                  | <b>match as-path</b>               | Matches a BGP autonomous system path access list.                                                                                                                      |
|                  | <b>match community</b>             | Matches a BGP community.                                                                                                                                               |
|                  | <b>match interface (IP)</b>        | Distributes any routes that have their next hop out one of the interfaces specified.                                                                                   |
|                  | <b>match ip address</b>            | Distributes any routes that have a destination network number address that is permitted by a standard or extended access list, and performs policy routing on packets. |
|                  | <b>match ip next-hop</b>           | Redistributes any routes that have a next hop router address passed by one of the access lists specified.                                                              |
|                  | <b>match ip route-source</b>       | Redistributes routes that have been advertised by routers and access servers at the address specified by the access lists.                                             |
|                  | <b>match route-type (IP)</b>       | Redistributes routes of the specified type.                                                                                                                            |
|                  | <b>match tag</b>                   | Redistributes routes in the routing table that match the specified tags.                                                                                               |
|                  | <b>route-map (IP)</b>              | Defines the conditions for redistributing routes from one routing protocol into another, or enables policy routing.                                                    |
|                  | <b>set as-path</b>                 | Modifies an autonomous system path for BGP routes.                                                                                                                     |
|                  | <b>set automatic-tag</b>           | Automatically computes the tag value.                                                                                                                                  |
|                  | <b>set community</b>               | Sets the BGP communities attribute.                                                                                                                                    |
|                  | <b>set level (IP)</b>              | Indicates where to import routes.                                                                                                                                      |
|                  | <b>set local-preference</b>        | Specifies a preference value for the autonomous system path.                                                                                                           |
|                  | <b>set metric (BGP, OSPF, RIP)</b> | Sets the metric value for a routing protocol.                                                                                                                          |
|                  | <b>set metric-type</b>             | Sets the metric type for the destination routing protocol.                                                                                                             |
|                  | <b>set next-hop</b>                | Specifies the address of the next hop.                                                                                                                                 |
|                  | <b>set tag (IP)</b>                | Sets a tag value of the destination routing protocol.                                                                                                                  |
|                  | <b>set weight</b>                  | Specifies the BGP weight for the routing table.                                                                                                                        |

# show ip eigrp topology

To display entries in the Enhanced Interior Gateway Routing Protocol (EIGRP) topology table, use the **show ip eigrp topology** command in privileged EXEC mode.

```
show ip eigrp topology [autonomous-system-number | ip-address [mask] | name [interfaces]]
[active | all-links | pending | summary | zero-successors]
```

| Syntax Description              |                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>autonomous-system-number</i> | (Optional) Autonomous system number.                                                                                                                         |
| <i>ip-address</i>               | (Optional) IP address. When specified with a mask, a detailed description of the entry is provided.                                                          |
| <i>mask</i>                     | (Optional) Subnet mask. The mask is entered as a slash mark followed by the prefix length.                                                                   |
| <i>name</i>                     | (Optional) EIGRP-IPv4 topology table name. This name is the topology identifier and shows the topology-related information for Multi-Topology Routing (MTR). |
| <b>interfaces</b>               | (Optional) Displays information about interfaces, on which EIGRP is configured, in a topology.                                                               |
| <b>active</b>                   | (Optional) Displays only active entries in the EIGRP topology table.                                                                                         |
| <b>all-links</b>                | (Optional) Displays all entries in the EIGRP topology table.                                                                                                 |
| <b>pending</b>                  | (Optional) Displays all entries in the EIGRP topology table that are waiting for an update from a neighbor or are waiting to reply to a neighbor.            |
| <b>summary</b>                  | (Optional) Displays a summary of the EIGRP topology table.                                                                                                   |
| <b>zero-successors</b>          | (Optional) Displays available routes in the EIGRP topology table.                                                                                            |

**Command Default** If this command is used without any keywords or arguments, then only routes that are feasible successors are displayed.

**Command Modes** Privileged EXEC

| Command History | Release     | Modification                                                                      |
|-----------------|-------------|-----------------------------------------------------------------------------------|
|                 | 10.0        | This command was introduced.                                                      |
|                 | 12.3(8)T    | This command was enhanced to display internal and external EIGRP routes.          |
|                 | 12.2(33)SRA | This command was integrated into Cisco IOS Release 12.2(33)SRA.                   |
|                 | 12.2(33)SRB | The <i>name</i> argument and <b>interfaces</b> keyword were added to support MTR. |
|                 | 12.2(33)SXH | This command was integrated into Cisco IOS Release 12.2(33)SXH.                   |

**Usage Guidelines**

The **show ip eigrp topology** command can be used without any keywords or arguments. If this command is used without any keywords or arguments, then only routes that are feasible successors are displayed. The **show ip eigrp topology** command can be used to determine Diffusing Update Algorithm (DUAL) states and to debug possible DUAL problems. The **show ip eigrp topology name** command option indicates that the output displayed will be for a named service topology for MTR.

**Examples**

The following is sample output from the **show ip eigrp topology** command:

```
Router# show ip eigrp topology

IP-EIGRP Topology Table for process 77

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
 r - Reply status

P 10.16.90.0 255.255.255.0, 2 successors, FD is 0
 via 10.16.80.28 (46251776/46226176), Ethernet0
 via 10.16.81.28 (46251776/46226176), Ethernet1
 via 10.16.80.31 (46277376/46251776), Serial0
P 10.16.81.0 255.255.255.0, 1 successors, FD is 307200
 via Connected, Ethernet1
 via 10.16.81.28 (307200/281600), Ethernet1
 via 10.16.80.28 (307200/281600), Ethernet0
 via 10.16.80.31 (332800/307200), Serial0
```

In the following examples, EIGRP metrics for specified internal and external routes are displayed:

```
Router# show ip eigrp topology 10.2.1.0/24

IP-EIGRP (AS 1): Topology entry for 10.2.1.0/24

State is Passive, Query origin flag is 1, 1 Successor(s), FD is 281600 Routing Descriptor
Blocks:
0.0.0.0 (Ethernet0/0), from Connected, Send flag is 0x0 Composite metric is (281600/0),
Route is Internal !This is the internal route.
Vector metric: Minimum bandwidth is 10000 Kbit
Total delay is 1000 microseconds
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 0

Router# show ip eigrp topology 10.4.80.0/20

IP-EIGRP (AS 1): Topology entry for 10.4.80.0/20

State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
Routing Descriptor Blocks:
10.2.1.1 (Ethernet0/0), from 10.2.1.1, Send flag is 0x0
Composite metric is (409600/128256), Route is External !This is the external route.
Vector metric:
Minimum bandwidth is 10000 Kbit
Total delay is 6000 microseconds
Reliability is 255/255
Load is 1/255
Minimum MTU is 1500
Hop count is 1
External data:
Originating router is 10.89.245.1
AS number of route is 0
External protocol is Connected, external metric is 0
```

Administrator tag is 0 (0x00000000)

Table 1 describes the significant fields shown in the displays.

**Table 1** *show ip eigrp topology Field Descriptions*

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Codes               | State of this topology table entry. Passive and Active refer to the EIGRP state with respect to this destination; Update, Query, and Reply refer to the type of packet that is being sent.                                                                                                                                                                                                                                                                                                         |
| P – Passive         | No EIGRP computations are being performed for this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| A – Active          | EIGRP computations are being performed for this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| U – Update          | Indicates that an update packet was sent to this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Q – Query           | Indicates that a query packet was sent to this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| R – Reply           | Indicates that a reply packet was sent to this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| r – Reply status    | Flag that is set after the software has sent a query and is waiting for a reply.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 10.16.90.0          | Destination IP network number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 255.255.255.0       | Destination subnet mask.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| successors          | Number of successors. This number corresponds to the number of next hops in the IP routing table. If “successors” is capitalized, then the route or next hop is in a transition state.                                                                                                                                                                                                                                                                                                             |
| FD                  | Feasible distance. The feasible distance is the best metric to reach the destination or the best metric that was known when the route went active. This value is used in the feasibility condition check. If the reported distance of the router (the metric after the slash) is less than the feasible distance, the feasibility condition is met and that path is a feasible successor. Once the software determines it has a feasible successor, it need not send a query for that destination. |
| via                 | IP address of the peer that told the software about this destination. The first <i>n</i> of these entries, where <i>n</i> is the number of successors, is the current successors. The remaining entries on the list are feasible successors.                                                                                                                                                                                                                                                       |
| (46251776/46226176) | The first number is the EIGRP metric that represents the cost to the destination. The second number is the EIGRP metric that this peer advertised.                                                                                                                                                                                                                                                                                                                                                 |
| Ethernet0           | Interface from which this information was learned.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Serial0             | Interface from which this information was learned.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

# Feature Information for EIGRP Support for Route Map Filtering

Table 2 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.



## Note

Table 2 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

**Table 2** Feature Information for EIGRP Support for Route Map Filtering

| Feature Name                          | Releases                               | Feature Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EIGRP Support for Route Map Filtering | 12.2(33)SRA<br>12.2(33)SXH<br>12.3(8)T | The EIGRP Support for Route Map Filtering feature enables EIGRP to interoperate with other protocols by filtering inbound and outbound traffic based on complex route map options. In addition to the existing route map facility, several extended filtering options are introduced to provide EIGRP-specific match choices.<br><br>The following commands were introduced or modified by this feature: <b>match metric (IP)</b> , <b>match source-protocol</b> , <b>show ip eigrp topology</b> . |

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