



## IS-IS Support for Route Tags

The IS-IS Support for Route Tags feature enables you to tag Intermediate System-to-Intermediate System (IS-IS) route prefixes and use those tags in a route map to control IS-IS route redistribution or route leaking. The results are network scalability and faster convergence for device updates.

- [Finding Feature Information, on page 1](#)
- [Prerequisites for IS-IS Support for Route Tags, on page 1](#)
- [Information About IS-IS Support for Route Tags, on page 2](#)
- [How to Configure IS-IS Support for Route Tags, on page 3](#)
- [Configuration Examples for IS-IS Support for Route Tags, on page 12](#)
- [Where to Go Next, on page 15](#)
- [Additional References, on page 15](#)
- [Feature Information for IS-IS Support for Route Tags, on page 16](#)

### 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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

### Prerequisites for IS-IS Support for Route Tags

Because the Intermediate System-to-Intermediate System (IS-IS) route tag will be used in a route map, you must understand how to configure a route map.

To use the route tag, you must configure the **metric-style wide** command. (The **metric-style narrow** command is configured by default.) The tag value is set into sub-TLV 1 for type, length, values (TLV) Type 135.

You must understand the task for which you are using the route tag, such as route redistribution, route summarization, or route leaking.

You should be familiar with the concepts described in the “Overview of IS-IS Fast Convergence” module.

Before you tag any IS-IS routes, you need to make the following decisions:

- Your goal to set values for routes or redistribute routes (or both).
- Where in your network you want to tag routes.
- Where in your network you want to reference the tags.
- Which tagging method you will use. This method determines which task to perform.

## Information About IS-IS Support for Route Tags

### Route Redistribution

Devices are allowed to redistribute external prefixes, or routes, that are learned from any other routing protocol, static configuration, or connected interfaces. The redistributed routes are allowed in either a Level 1 device or a Level 2 device. Level 2 routes injected as Level 1 routes is called route leaking.

### IS-IS Routes Tagged to Control Their Redistribution

You can control the redistribution of Intermediate System-to-Intermediate System (IS-IS) routes by tagging them. The term “route leaking” refers to controlling distribution through tagging of routes.

### How Route Summarization Can Enhance Scalability in IS-IS Networks

Summarization is a key factor that enhances the scalability of a routing protocol. Summarization reduces the number of routing updates that are flooded across areas or routing domains. For example, in multiarea Intermediate System-to-Intermediate System (IS-IS) networks, a good addressing scheme can optimize summarization by not allowing an overly large Level 2 database to be unnecessarily populated with updates that have come from Level 1 areas.

A device can summarize prefixes on redistribution whether the prefixes have come from internal prefixes, local redistribution, or Level 1 device redistribution. Routes that have been leaked from Level 2 to Level 1 and routes that are advertised into Level 2 from Level 1 can also be summarized.

### Benefits of IS-IS Route Tags

The IS-IS Support for Route Tags feature allows you to tag IP addresses of an interface and use the tag to apply administrative policy with a route map.

You can tag Intermediate System-to-Intermediate System (IS-IS) routes to control their redistribution. You can configure a route map to set a tag for an IS-IS IP prefix (route) or match on the tag (perhaps on a different device) to redistribute IS-IS routes. Although the **match tag** and **set tag** commands existed for other protocols before the IS-IS Support for Route Tags feature, they were not implemented for IS-IS, so they did nothing when specified in an IS-IS network.

You can tag a summary route and then use a route map to match the tag and set one or more attributes for the route.

### IS-IS Route Tag Characteristics

An Intermediate System-to-Intermediate System (IS-IS) route tag number can be up to 4 bytes long. The tag value is set into a sub-TLV 1 for type, length, values (TLV) Type 135.

Only one tag can be set to an IS-IS IP route (prefix). The tag is sent in link-state packet (LSP) protocol data units (PDUs) advertising the route. Setting a tag to a route alone does nothing for your network. You can use the route tag at area or Level 1/Level 2 boundaries by matching on the tag and then applying administrative policies such as redistribution, route summarization, or route leaking.

Configuring a tag for an interface (with the **isis tag** command) triggers the generation of new LSPs from the device because the tag is new information for the PDUs.

## IS-IS Route Leaking Based on a Route Tag

You can tag Intermediate System-to-Intermediate System (IS-IS) routes to configure route leaking (redistribution). Because only the appropriate routes are redistributed—or leaked—the results is network scalability and faster convergence for the device update. If you configure route leaking and you want to match on a tag, use a route map (not a distribute list).

There are two general steps to using IS-IS route tags: tagging routes and referencing the tag to set values for the routes or redistribute routes.

There are three ways to tag IS-IS routes: tag routes for networks directly connected to an interface, set a tag in a route map, or tag a summary route. The tagging method is independent of how you use the tag.

After you tag the routes, you can use the tag to set values (such as metric, next hop, and so on) or redistribute routes. You might tag routes on one device, but reference the tag on other devices, depending on what you want to achieve. For example, you could tag the interface on Device A with a tag, match the tag on Device B to set values, and redistribute routes on Device C based on values using a route map.

# How to Configure IS-IS Support for Route Tags

## Tagging Routes for Networks Directly Connected to an Interface

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ip address** *ip-address mask*
5. **ip address** *ip-address mask secondary*
6. **isis tag** *tag-number*
7. **end**
8. **show isis database verbose**
9. **show ip route** [*ip-address [mask] [longer-prefixes] | protocol [process-id] | list [access-list-number | access-list-name]*]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

	Command or Action	Purpose
	Device> enable	
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>interface <i>type number</i></b> <b>Example:</b> Device(config)# interface GigabitEthernet 0/0/0	Configures an interface and enters interface configuration mode.
<b>Step 4</b>	<b>ip address <i>ip-address mask</i></b> <b>Example:</b> Device(config-if)# ip address 10.1.1.1 255.255.255.0	Sets a primary IP address for an interface.
<b>Step 5</b>	<b>ip address <i>ip-address mask secondary</i></b> <b>Example:</b> Device(config-if)# ip address 10.2.2.1 255.255.255.0 secondary	(Optional) Sets a secondary IP address for an interface.
<b>Step 6</b>	<b>isis tag <i>tag-number</i></b> <b>Example:</b> Device(config-if)# isis tag 120	Sets a tag on the IP addresses configured under this interface when those IP prefixes are put into an Intermediate System-to-Intermediate System (IS-IS) link-state packet (LSP). <ul style="list-style-type: none"> <li>The tag must be an integer.</li> </ul>
<b>Step 7</b>	<b>end</b> <b>Example:</b> Device(config-if)# end	(Optional) Exits interface configuration mode and returns to privileged EXEC mode.
<b>Step 8</b>	<b>show isis database verbose</b> <b>Example:</b> Device# show isis database verbose	(Optional) Displays details about the IS-IS link-state database, including the route tag. <ul style="list-style-type: none"> <li>Perform this step if you want to verify the tag.</li> </ul>
<b>Step 9</b>	<b>show ip route [<i>ip-address [mask] [longer-prefixes]</i>]   <i>protocol [process-id]</i>   list [<i>access-list-number   access-list-name</i>]</b> <b>Example:</b> Device# show ip route 10.1.1.1 255.255.255.0	(Optional) Displays the current state of the routing table. <ul style="list-style-type: none"> <li>Perform this step if you want to verify the tag.</li> </ul>

## What to Do Next

Applying the tag does nothing of value for your network until you use the tag by referencing it in a route map, either to set values, to redistribute routes, or to do both. Proceed to the section “Using the Tag to Set Values or Redistribute Routes.”

## Tagging Routes Using a Route Map

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-tag* [**permit** | **deny**] [*sequence-number*]
4. **match tag** *tag-value* [...*tag-value*]
5. Use an additional **match** command for each match criterion that you want.
6. **set tag** *tag-value*
7. Set another value, depending on what else you want to do with the tagged routes.
8. Repeat Step 7 for each value that you want to set.
9. Repeat Steps 3 through 8 for each route-map statement that you want.
10. **end**
11. **show isis database verbose**
12. **show ip route** [*ip-address* [*mask*] [**longer-prefixes**] | *protocol* [*process-id*] | [**list** [*access-list-number* | *access-list-name*]]]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>route-map</b> <i>map-tag</i> [ <b>permit</b>   <b>deny</b> ] [ <i>sequence-number</i> ] <b>Example:</b> Device(config)# route-map static-color permit 15	Defines the conditions for redistributing routes from one routing protocol into another or from one Intermediate System-to-Intermediate System (IS-IS) level to another. <ul style="list-style-type: none"> <li>• This command causes the device to enter route-map configuration mode.</li> </ul>
Step 4	<b>match tag</b> <i>tag-value</i> [... <i>tag-value</i> ] <b>Example:</b>	(Optional) Matches routes tagged with the specified tag numbers.

	Command or Action	Purpose
	<code>Device(config-route-map)# match tag 15</code>	<ul style="list-style-type: none"> <li>If you are setting a tag for the first time, you cannot match on a tag; this step is an option if you are changing tags.</li> </ul>
<b>Step 5</b>	Use an additional <b>match</b> command for each match criterion that you want.	(Optional) See the appropriate <b>match</b> commands in the <i>Cisco IOS IP Routing: Protocol-Independent Command Reference</i> . <ul style="list-style-type: none"> <li>Repeat this step for each match criterion you that want.</li> </ul>
<b>Step 6</b>	<b>set tag tag-value</b> <b>Example:</b> <code>Device(config-route-map)# set tag 10</code>	Specifies the tag number to set.
<b>Step 7</b>	Set another value, depending on what else you want to do with the tagged routes.	(Optional) See the following <b>set</b> commands in the <i>Cisco IOS IP Routing: Protocol-Independent Command Reference</i> . <ul style="list-style-type: none"> <li><b>set level</b></li> <li><b>set metric</b></li> <li><b>set metric-type</b></li> </ul>
<b>Step 8</b>	Repeat Step 7 for each value that you want to set.	(Optional)
<b>Step 9</b>	Repeat Steps 3 through 8 for each route-map statement that you want.	(Optional)
<b>Step 10</b>	<b>end</b> <b>Example:</b> <code>Device(config-route-map)# end</code>	(Optional) Exits configuration mode and returns to privileged EXEC mode.
<b>Step 11</b>	<b>show isis database verbose</b> <b>Example:</b> <code>Device# show isis database verbose</code>	(Optional) Displays details about the IS-IS link-state database, including the route tag. <ul style="list-style-type: none"> <li>Perform this step if you want to verify the tag.</li> </ul>
<b>Step 12</b>	<b>show ip route [ip-address [mask] [longer-prefixes]   protocol [process-id]   [list [access-list-number   access-list-name]]]</b> <b>Example:</b> <code>Device# show ip route 10.1.1.1 255.255.255.0</code>	(Optional) Displays the current state of the routing table. <ul style="list-style-type: none"> <li>Perform this step if you want to verify the tag.</li> </ul>

## What to Do Next

Applying the tag does nothing of value for your network until you use the tag by referencing it in a route map, either to set values, to redistribute routes, or to do both. Proceed to the section “Using the Tag to Set Values and or Redistribute Routes.”

## Tagging a Summary Address

If a tagged route is summarized and the tag is not explicitly configured in the **summary-address** command, the tag is lost.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router isis** [*area-tag*]
4. **metric-style wide**
5. **summary-address** *address mask* [**level-1** | **level-1-2** | **level-2**] [**tag** *tag-number*] [**metric** *metric-value*]
6. **end**
7. **show isis database verbose**
8. **show ip route** [*ip-address* [*mask*] [**longer-prefixes**] | *protocol* [*process-id*] | [**list** [*access-list-number* | *access-list-name*]]]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
Step 3	<b>router isis</b> [ <i>area-tag</i> ] <b>Example:</b> Device(config)# router isis	Enables Intermediate System-to-Intermediate System (IS-IS) as an IP routing protocol and assigns a tag to a process, if required. <ul style="list-style-type: none"> <li>• Enters router configuration mode.</li> </ul>
Step 4	<b>metric-style wide</b> <b>Example:</b> Device(config-router)# metric-style wide	Configures a device running IS-IS so that it generates and accepts type, length, values (TLV) object 135 for IP addresses.
Step 5	<b>summary-address</b> <i>address mask</i> [ <b>level-1</b>   <b>level-1-2</b>   <b>level-2</b> ] [ <b>tag</b> <i>tag-number</i> ] [ <b>metric</b> <i>metric-value</i> ]	Creates aggregate addresses for IS-IS.

	Command or Action	Purpose
	<b>Example:</b>  <pre>Device(config-router)# summary-address 192.168.0.0 255.255.0.0 tag 12345 metric 321</pre>	
<b>Step 6</b>	<b>end</b>  <b>Example:</b>  <pre>Device(config-router)# end</pre>	(Optional) Exits configuration mode and returns to privileged EXEC mode.
<b>Step 7</b>	<b>show isis database verbose</b>  <b>Example:</b>  <pre>Device# show isis database verbose</pre>	(Optional) Displays details about the IS-IS link-state database, including the route tag. <ul style="list-style-type: none"> <li>• Perform this step if you want to verify the tag.</li> </ul>
<b>Step 8</b>	<b>show ip route [ip-address [mask] [longer-prefixes]   protocol [process-id]   [list [access-list-number   access-list-name]]</b>  <b>Example:</b>  <pre>Device# show ip route 10.1.1.1 255.255.255.0</pre>	(Optional) Displays the current state of the routing table. <ul style="list-style-type: none"> <li>• Perform this step if you want to verify the tag.</li> </ul>

## What to Do Next

Applying the tag does nothing of value for your network until you use the tag by referencing it in a route map to set values. It is unlikely that you will redistribute summary routes. Proceed to the “Using the Tag to Set Values or Redistribute Routes” section.

## Using the Tag to Set Values or Redistribute Routes

### Before you begin

You must have already applied a tag on the interface, in a route map, or on a summary route. See the section “Tagging IS-IS Routes to Control Their Distribution.”

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **route-map** *map-tag* [**permit** | **deny**] [*sequence-number*]
4. **match tag** *tag-value*
5. Specify a **match** command for each match criterion that you want.
6. Set a value, depending on what you want to do with the tagged routes.
7. Repeat Step 6 for each value that you want to set.
8. Repeat Steps 3 through 7 for each route-map statement that you want.
9. **exit**
10. **router isis**

11. **metric-style wide**
12. **redistribute** *protocol* [*process-id*] {**level-1** | **level-1-2** | **level-2**} [**metric** *metric-value*] [**metric-type** *type-value*] [**route-map** *map-tag*]

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>route-map</b> <i>map-tag</i> [ <b>permit</b>   <b>deny</b> ] [ <i>sequence-number</i> ] <b>Example:</b> Device(config)# route-map static-color permit 15	Defines the conditions for redistributing routes from one routing protocol into another or from one Intermediate System-to-Intermediate System (IS-IS) level to another. <ul style="list-style-type: none"> <li>• This command causes the device to enter route-map configuration mode.</li> </ul>
<b>Step 4</b>	<b>match tag</b> <i>tag-value</i> <b>Example:</b> Device(config-route-map)# match tag 120	(Optional) Applies the subsequent <b>set</b> commands to routes that match routes tagged with this tag number.
<b>Step 5</b>	Specify a <b>match</b> command for each match criterion that you want.	(Optional) Reference the appropriate <b>match</b> commands in the <i>Cisco IOS IP Routing: Protocol-Independent Command Reference</i> .
<b>Step 6</b>	Set a value, depending on what you want to do with the tagged routes.	(Optional) See the following <b>set</b> commands in the <i>Cisco IOS IP Routing: Protocol-Independent Command Reference</i> . <ul style="list-style-type: none"> <li>• <b>set level</b></li> <li>• <b>set metric</b></li> <li>• <b>set metric-type</b></li> </ul>
<b>Step 7</b>	Repeat Step 6 for each value that you want to set.	(Optional)
<b>Step 8</b>	Repeat Steps 3 through 7 for each route-map statement that you want.	(Optional)
<b>Step 9</b>	<b>exit</b> <b>Example:</b>	(Optional) Returns to global configuration mode.

	Command or Action	Purpose
	<code>Device(config-route-map)# exit</code>	
<b>Step 10</b>	<b>router isis</b> <b>Example:</b> <code>Device(config)# router isis</code>	(Optional) Enables the IS-IS routing protocol, specifies an IS-IS process, and puts the device in router configuration mode.
<b>Step 11</b>	<b>metric-style wide</b> <b>Example:</b> <code>Device(config-router)# metric-style wide</code>	Configures a device running IS-IS so that it generates and accepts type, length, values (TLV) object 135 for IP addresses.
<b>Step 12</b>	<b>redistribute</b> <i>protocol</i> [ <i>process-id</i> ] { <b>level-1</b>   <b>level-1-2</b>   <b>level-2</b> } [ <b>metric</b> <i>metric-value</i> ] [ <b>metric-type</b> <i>type-value</i> ] [ <b>route-map</b> <i>map-tag</i> ] <b>Example:</b> <code>Device(config-router)# redistribute static ip metric 2 route-map static-color</code>	(Optional) Redistributes routes from one routing domain into another routing domain.

## Monitoring IS-IS Network Convergence Time

### SUMMARY STEPS

1. enable
2. configure terminal
3. isis display delimiter [*return count* | *character count*]
4. exit
5. show isis database [*level-1*] [*level-2*] [*I1*] [*I2*] [*detail*] [*lspid*]
6. show isis [*area-tag*] route
7. show isis [*area-tag*] [*ipv6* | \*] spf-log
8. show isis [*process-tag*] topology

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> <code>Device&gt; enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b> <code>Device# configure terminal</code>	Enters global configuration mode.

	Command or Action	Purpose
Step 3	<b>isis display delimiter</b> [return <i>count</i>   character <i>count</i> ] <b>Example:</b> Device(config)# isis display delimiter return 2	Makes output from multiarea displays easier to read by specifying the delimiter to use to separate displays of information.
Step 4	<b>exit</b> <b>Example:</b> Device(config)# exit	Returns to privileged EXEC mode.
Step 5	<b>show isis database</b> [level-1] [level-2] [I1] [I2] [detail] [Ispid] <b>Example:</b> Device# show isis database detail	Displays the Intermediate System-to-Intermediate System (IS-IS) link-state database.
Step 6	<b>show isis</b> [area-tag] route <b>Example:</b> Device# show isis financetag route	Displays the IS-IS Level 1 forwarding table for IS-IS learned routes.
Step 7	<b>show isis</b> [area-tag] [ipv6   *] spf-log <b>Example:</b> Device# show isis spf-log	Displays how often and why the device has run a full shortest path first (SPF) calculation.
Step 8	<b>show isis</b> [process-tag] topology <b>Example:</b> Device# show isis financetag topology	Displays a list of all connected devices in all areas. <ul style="list-style-type: none"> <li>• If a process tag is specified, output is limited to the specified routing process. When “null” is specified for the process tag, the output is displayed only for the device process that has no tag specified. If a process tag is not specified, the output is displayed for all processes.</li> </ul>

### Examples

The following sample output from the **show isis spf-log** command displays this information:

- When the SPF's were executed
- Total elapsed time for the SPF computation
- Number of nodes that make up the topology in the SPF calculation
- Number of triggers that caused the SPF calculation
- Information regarding what triggered the SPF calculation

```
Device# show isis spf-log
```

```

Level 1 SPF log
When      Duration  Nodes  Count  Last trigger LSP  Triggers
00:15:46  3124     40     1      milles.00-00     TLVCODE
00:15:24  3216     41     5      milles.00-00     TLVCODE NEWLSP
00:15:19  3096     41     1      deurze.00-00     TLVCODE
00:14:54  3004     41     2      milles.00-00     ATTACHFLAG LSPHEADER
00:14:49  3384     41     1      milles.00-01     TLVCODE
00:14:23  2932     41     3      milles.00-00     TLVCODE
00:05:18  3140     41     1      PERIODIC
00:03:54  3144     41     1      milles.01-00     TLVCODE
00:03:49  2908     41     1      milles.01-00     TLVCODE
00:03:28  3148     41     3      bakel.00-00     TLVCODE TLVCONTENT
00:03:15  3054     41     1      milles.00-00     TLVCODE
00:02:53  2958     41     1      mortel.00-00     TLVCODE

```

## Configuration Examples for IS-IS Support for Route Tags

### Example: Tagging Routes for Networks Directly Connected to an Interface and Redistributing Them

In this example, two interfaces are tagged with different tag values. By default, these two IP addresses would have been put into the Intermediate System-to-Intermediate System (IS-IS) Level 1 and Level 2 database. However, by using the **redistribute** command with a route map to match tag 110, only IP address 172.16.10.5 255.255.255.0 is put into the Level 2 database.

```

interface GigabitEthernet 1/0/0
 ip address 192.168.129.1 255.255.255.0
 ip router isis
 isis tag 120
interface GigabitEthernet 1/1/0
 ip address 172.16.10.5 255.255.255.0
 ip router isis
 isis tag 110
router isis
 net 49.0001.0001.0001.0001.00
 redistribute isis ip level-1 into level-2 route-map match-tag
 route-map match-tag permit 10
 match tag 110

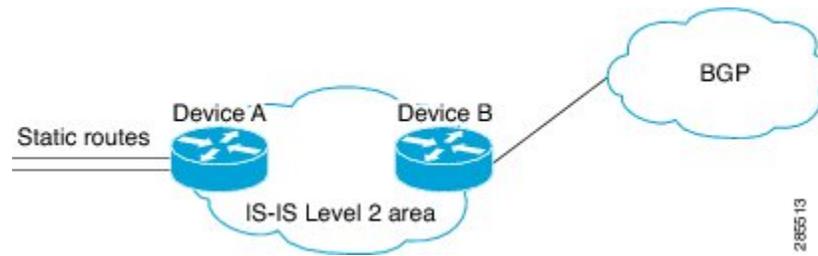
```

### Example: Redistributing IS-IS Routes Using a Route Map

In a scenario using route tags, you might configure some commands on one device and other commands on another device. For example, you might have a route map that matches on a tag and sets a different tag on a device at the edge of a network, and on different devices you might configure the redistribution of routes based on a tag in a different route map.

The figure below illustrates a flat Level 2 Intermediate System-to-Intermediate System (IS-IS) area. On the left edge are static routes from Device A to reach some IP prefixes. Device A redistributes the static routes into IS-IS. Device B runs the Border Gateway Protocol (BGP) and redistributes IS-IS routes into BGP and then uses the tag to apply different administrative policy based on different tag values.

Figure 1: Example of Redistributing IS-IS Routes Using a Route Map



#### Device A

```
router isis
 net 49.0000.0000.0001.00
 metric-style wide
 redistribute static ip route-map set-tag
 !
 route-map set-tag permit 5
  set tag 10
```

#### Device B

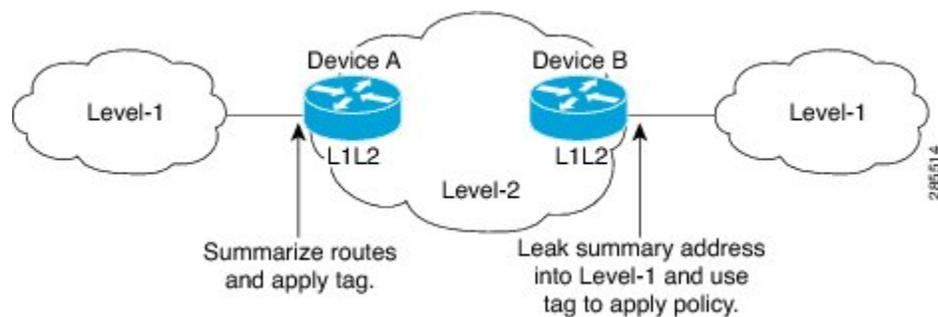
```
router bgp 100
 redistribute isis level-2 route-map tag-policy
 route-map tag-policy permit 20
  match tag 10
  set metric 1000
```

## Example: Tagging a Summary Address and Applying a Route Map

The figure below illustrates two Level 1 areas and one Level 2 area between them. Device A and Device B are Level 1/Level 2 edge devices in the Level 2 area. On edge Device A, a summary address is configured to reduce the number of IP addresses put into the Level 2 Intermediate System-to-Intermediate System (IS-IS) database. Also, a tag value of 100 is set to the summary address.

On Device B, the summary address is leaked into the Level 1 area, and administrative policy is applied based on the tag value.

Figure 2: Tag on a Summary Address



**Device A**

```
router isis
 net 49.0001.0001.0001.00
 metric-style wide
 summary-address 10.0.0.0 255.0.0.0 tag 100
```

**Device B**

```
router isis
 net 49.0002.0002.0002.0002.0
 metric-style wide
 redistribute isis ip level-2 into level-1 route-map match-tag
 route-map match-tag permit 10
 match tag 100
```

**Example: Redistributing IS-IS Routes Using an Access List and a Route Map**

In this example, the first **redistribute isis ip** command controls the redistribution of Level 1 routes into Level 2. Only the routes with the tag of 90 and whose IP prefix is not 192.168.130.5/24 are redistributed from Level 1 into Level 2.

The second **redistribute isis ip** command controls the route leaking from Level 2 into the Level 1 domain. Only the routes tagged with 60 or 50 are redistributed from Level 2 into Level 1.

```
interface GigabitEthernet 1/0/0
 ip address 192.168.130.5 255.255.255.0
 ip router isis
 isis tag 60
 !
interface GigabitEthernet 2/0/0
 ip address 192.168.130.15 255.255.255.0
 ip router isis
 isis tag 90
 !
interface GigabitEthernet 3/0/0
 ip address 192.168.130.25 5 255.255.255.0
 ip router isis
 isis tag 50
 !
router isis
 net 49.0001.0001.0001.0001.00
 metric-style wide
 redistribute isis ip level-1 into level-2 route-map redist1-2
 redistribute isis ip level-2 into level-1 route-map leak2-1
 !
access-list 102 deny ip host 192.168.130.5 host 255.255.255.255
access-list 102 permit ip any any
 !
route-map leak2-1 permit 10
 match tag 60
 !
route-map leak2-1 permit 20
 match tag 50
 !
route-map redist1-2 permit 10
 match ip address 102
 match tag 90
```

## Where to Go Next

To configure features to improve Intermediate System-to-Intermediate System (IS-IS) network convergence times, complete the optional tasks in one or more of the following modules in the *IP Routing: IS-IS Configuration Guide*:

- “Overview of IS-IS Fast Convergence”
- “Reducing Failure Detection Times in IS-IS Networks”
- “Reducing Link Failure and Topology Change Notification Times in IS-IS Networks”

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
IS-IS commands	<a href="#">Cisco IOS IP Routing: IS-IS Command Reference</a>
IS-IS conceptual information	“Integrated IS-IS Routing Protocol Overview” module in the <i>IP Routing: IS-IS Configuration Guide</i>
Improving IS-IS network convergence times	<ul style="list-style-type: none"> <li>• “Overview of IS-IS Fast Convergence” module in the <i>IP Routing: IS-IS Configuration Guide</i></li> <li>• “Reducing Failure Detection Times in IS-IS Networks” module in the <i>IP Routing: IS-IS Configuration Guide</i></li> </ul>

### 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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for IS-IS Support for Route Tags

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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

**Table 1: Feature Information for IS-IS Support for Route Tags**

Feature Name	Releases	Feature Information
IS-IS Support for Route Tags	Cisco IOS XE Release 3.1.0SG	<p>The IS-IS Support for Route Tags feature enables you to tag Intermediate System-to-Intermediate System (IS-IS) route prefixes and use those tags in a route map to control IS-IS route redistribution or route leaking.</p> <p>The following commands were introduced or modified: <b>isis tag</b>, <b>match tag</b>, <b>metric-style wide</b>, <b>router isis</b>, <b>route-map</b>, <b>set tag</b>, <b>show ip route</b>, <b>show isis database verbose</b>, <b>summary-address</b>.</p>