

## **Tunnel Route Selection**

The Tunnel Route Selection feature allows the tunnel transport to be routed using a subset of the routing table. When there are equal-cost routes to a tunnel destination, normal tunnel transport behavior is to use one of the available routes chosen at random. The Tunnel Route Selection feature allows the explicit configuration of the outgoing interface for the tunnel transport.

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# **Prerequisites for Tunnel Route Selection**

Tunnel interfaces are configured.

## **Restrictions for Tunnel Route Selection**

This feature is supported in the following tunnel modes only:

- Generic Routing Encapsulation (GRE) IP
- GRE Multipoint
- IP in IP
- Mobile User Datagram Protocol (UDP)

This feature is not supported on a tunnel when the tunnel transport is a GRE Multipoint tunnel.

#### **Supported Configuration**

```
interface tunnel 0
  tunnel mode gre multipoint
  tunnel route-via tunnel 1
```

```
interface tunnel 1
  tunnel mode gre ip
```

#### **Unsupported Configuration**

```
interface tunnel 0
  tunnel mode gre multipoint
  tunnel route-via tunnel 1
interface tunnel 1
  tunnel mode gre multipoint
```

### **Information About Tunnel Route Selection**

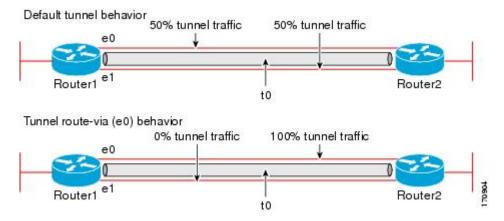
### **Tunnel Transport Behavior**

The Tunnel Route Selection feature allows the tunnel transport to be routed using a subset of the routing table by specifying the outgoing interface of the tunnel transport.

The Tunnel Route Selection feature is not the same as an implementation of policy-based routing for the tunnel transport. The Tunnel Route Selection feature will forward traffic using only a subset of the route table, and it cannot introduce routing loops into the network.

The figure below compares default tunnel behavior with the Tunnel Route Selection behavior.

Figure 1: Tunnel Route Selection Traffic



# **How to Configure Tunnel Route Selection**

### **Configuring Tunnel Route Selection**

Perform the following steps to specify the outgoing interface of the tunnel transport to route the tunnel transport using a subset of the routing table.

#### **SUMMARY STEPS**

- 1. enable
- 2. configure terminal
- 3. interface tunnel interface-number
- **4.** tunnel route-via interface-type interface-number {mandatory | preferred}
- 5. end

#### **DETAILED STEPS**

	Command or Action	Purpose	
Step 1	enable	Enables privileged EXEC mode.	
	Example:	• Enter your password if prompted.	
	Router> enable		
Step 2	configure terminal	Enters global configuration mode.	
	Example:		
	Router# configure terminal		
Step 3	interface tunnel interface-number	Configures a tunnel interface and enters interface	
	Example:	configuration mode.	
	Router(config)# interface tunnel 0		
Step 4	tunnel route-via interface-type interface-number {mandatory   preferred}	Specifies the outgoing interface to be used by the tunnel transport.	
	Example:		
	Router(config-if)# tunnel route-via ethernet0 mandatory		
Step 5	end	Returns to privileged EXEC mode.	
	Example:		
	Router(config-if) # end		

### **Troubleshooting Tips**

To troubleshoot your configuration, use the **debug tunnel route-via** command in privileged EXEC mode. The following is sample output from the **debug tunnel route-via** command after the **tunnel route-via** command was used to route the tunnel transport explicitly using a subset of the routing table.

```
Router# debug tunnel route-via
Tunnel route-via debugging is on
Router#

*May 23 08:40:53.707: TUN-VIA: Tunnel0 candidate route-via Ethernet0/0, next hop 10.73.2.1

*May 23 08:40:53.707: TUN-VIA: Tunnel0 route-via action is forward

*May 23 08:41:03.719: TUN-VIA: Tunnel0 candidate route-via Ethernet0/0, next hop 10.73.2.1
```

```
*May 23 08:41:03.719: TUN-VIA: TunnelO route-via action is forward Router# undebug tunnel route-via
Tunnel route-via debugging is off
```

#### What to Do Next

You can verify the tunnel route selection configuration. To verify your configuration, use the **show interfaces tunnel** command in privileged EXEC mode. The following example shows that the tunnel transport is routed using a subset of the routing table by specifying the outgoing interface of the tunnel transport.

```
Router# show running-config interface tunnel 0
Building configuration...
Current configuration : 147 bytes
!
interface Tunnel0
ip unnumbered Loopback0
tunnel source Loopback0
tunnel destination 10.73.0.102
tunnel route-via Ethernet0 preferred
end
Router# show interfaces tunnel 0 | include route-via
```

Tunnel route-via feature is on [Ethernet0, preferred]

# **Configuration Examples for Tunnel Route Selection**

### **Example Configuring Tunnel Route Selection**

The following example shows Tunnel 0 configured to use Ethernet interface 0 as its preferred outgoing transport interface. Traffic that exits the router using the tunnel 0 interface will be sent out of Ethernet interface 0 if there is a route to the tunnel destination out of Ethernet interface 0. If there is no route out of Ethernet interface 0, the traffic will be forwarded as if the Tunnel Route Selection feature were not configured.

If the **tunnel route-via** *interface-type interface-number* **mandatory** command is configured, and there is no route to the tunnel destination using that interface, a point-to-point tunnel interface will go into a down state.

```
Router> enable
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface tunnel 0
Router(config-if)# tunnel route-via ethernet0 preferred
Router(config-if)# end
Router# show running-config interface tunnel 0
Building configuration...
Current configuration: 147 bytes
!
interface Tunnel0
ip unnumbered Loopback0
tunnel source Loopback0
tunnel destination 10.73.0.102
tunnel route-via Ethernet0 preferred
end
```

## **Additional References**

#### **Related Documents**

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Interface commands	Cisco IOS Interface and Hardware Component Command Reference
Configuration commands	Cisco IOS Configuration Fundamentals 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.	

# **Feature Information for Tunnel Route Selection**

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 <a href="https://www.cisco.com/go/cfn">www.cisco.com/go/cfn</a>. An account on Cisco.com is not required.

Table 1: Feature Information for Tunnel Route Selection

Feature Name	Releases	Feature Information
Tunnel Route Selection	12.4(11)T 15.0(1)M Cisco IOS Release 3.9S	The Tunnel Route Selection feature allows the tunnel transport to be routed using a subset of the routing table. When there are equal-cost routes to a tunnel destination, normal tunnel transport behavior is to use one of the available routes chosen at random. The Tunnel Route Selection feature allows the explicit configuration of the outgoing interface for the tunnel transport. The following commands were introduced or modified: debug tunnel route-via, tunnel route-via, show interfaces tunnel.

**Feature Information for Tunnel Route Selection**