CHAPTER 8

RIP

This chapter provides information and commands concerning the following topics:

- The **ip classless** command
- RIP routing: mandatory commands
- RIP routing: optional commands
- Troubleshooting RIP issues
- Configuration example: RIPv2 routing

The ip classless Command

`Router(config)#ip classless`	Instructs Cisco IOS Software to forward packets destined for an unknown subnet to the best supernet route
`Router(config)#no ip classless`	Turns off the **ip classless** command

NOTE: A supernet route is a route that covers a range of subnets with a single entry.

NOTE: The **ip classless** command is enabled by default in Cisco IOS Software Release 11.3 and later.

RIP Routing: Mandatory Commands

`Router(config)#router rip`	Enables RIP as a routing protocol.
`Router(config-router)#network` *`w.x.y.z`*	*w.x.y.z* is the network number of the *directly connected* network you want to advertise.

NOTE: You need to advertise only the classful network number, not a subnet:

```
Router(config-router)#network 172.16.0.0
```

not

```
Router(config-router)#network 172.16.10.0
```

```
If you advertise a subnet, you will not receive an error message,
because the router will automatically convert the subnet to the
classful network address.
```

RIP Routing: Optional Commands

`Router(config)#no router rip`	Turns off the RIP routing process.
`Router(config-router)#no network` *w.x.y.z*	Removes network *w.x.y.z* from the RIP routing process.
`Router(config-router)#version 2`	RIP will now send and receive RIPv2 packets globally.
`Router(config-router)#version 1`	RIP will now send and receive RIPv1 packets only.
`Router(config-if)#ip rip send version 1`	The interface will send only RIPv1 packets.
`Router(config-if)#ip rip send version 2`	The interface will send only RIPv2 packets.
`Router(config-if)#ip rip send version 1 2`	The interface will send both RIPv1 and RIPv2 packets.
`Router(config-if)#ip rip receive version 1`	The interface will receive only RIPv1 packets.
`Router(config-if)#ip rip receive version 2`	The interface will receive only RIPv2 packets.
`Router(config-if)#ip rip receive version 1 2`	The interface will receive both RIPv1 and RIPv2 packets.
`Router(config-router)#no auto-summary`	RIPv2 summarizes networks at the classful boundary. This command turns auto-summarization off.

`Router(config-router)#passive-interface s0/0/0`	RIP updates will not be sent out this interface.
`Router(config-router)#neighbor a.b.c.d`	Defines a specific neighbor with which to exchange information.
`Router(config-router)#no ip split-horizon`	Turns off split horizon (on by default).
`Router(config-router)#ip split-horizon`	Reenables split horizon.
`Router(config-router)#timers basic 30 90 180 270 360`	Changes timers in RIP: 30 = Update timer (in seconds) 90 = Invalid timer (in seconds) 180 = Hold-down timer (in seconds) 270 = Flush timer (in seconds) 360 = Sleep time (in milliseconds)
`Router(config-router)#maximum-paths x`	Limits the number of paths for load balancing to *x* (4 = default, 6 = maximum).
`Router(config-router)#default-information originate`	Generates a default route into RIP.

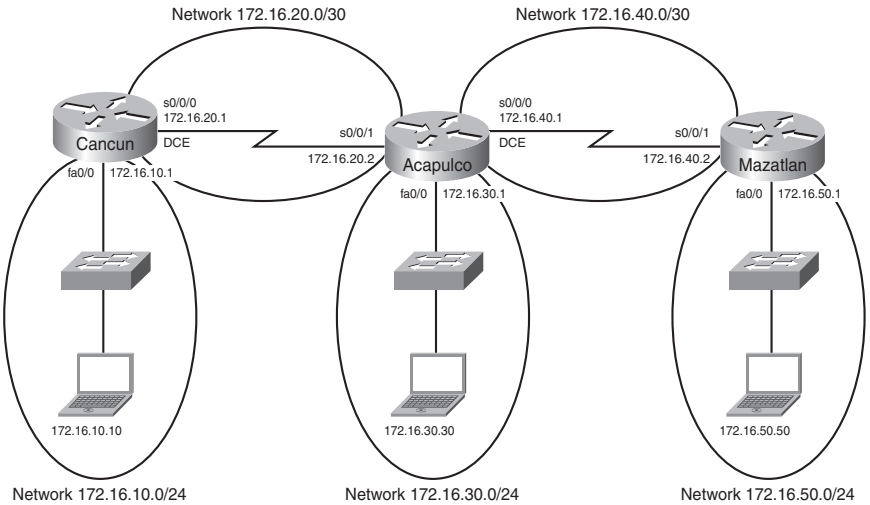
Troubleshooting RIP Issues

`Router#debug ip rip`	Displays all RIP activity in real time
`Router#show ip rip database`	Displays contents of the RIP database

Configuration Example: RIPv2 Routing

Figure 8-1 illustrates the network topology for the configuration that follows, which shows how to configure RIPv2 using the commands covered in this chapter.

Figure 8-7 Network Topology for RIPv2 Routing Configuration



NOTE: The host name, password, and interfaces have all been configured as per the configuration example in Chapter 6, "Configuring a Single Cisco Router."

Cancun Router

`Cancun>enable`	Moves to privileged mode
`Cancun#configure terminal`	Moves to global configuration mode
`Cancun(config)#router rip`	Enables RIP routing
`Cancun(config-router)#version 2`	Enables RIPv2
`Cancun(config-router)#network 172.16.0.0`	Advertises directly connected networks (classful address only)
`Cancun(config-router)#no auto-summary`	Turns off auto-summarization

`Cancun(config-router)#exit`	Returns to global configuration mode
`Cancun(config)#exit`	Returns to privileged mode
`Cancun#copy run start`	Saves the configuration to NVRAM

Acapulco Router

`Acapulco>enable`	Moves to privileged mode
`Acapulco#configure terminal`	Moves to global configuration mode
`Acapulco(config)#router rip`	Enables RIP routing
`Acapulco(config-router)#version 2`	Enables RIPv2
`Acapulco(config-router)#network 172.16.0.0`	Advertises directly connected networks (classful address only)
`Acapulco(config-router)#no auto-summary`	Turns off auto-summarization
`Acapulco(config-router)#exit`	Moves to global configuration mode
`Acapulco(config)#exit`	Returns to privileged mode
`Acapulco#copy running-config startup-config`	Saves the configuration to NVRAM

Mazatlan Router

`Mazatlan>enable`	Moves to privileged mode
`Mazatlan#configure terminal`	Moves to global configuration mode
`Mazatlan(config)#router rip`	Enables RIP routing
`Mazatlan(config-router)#version 2`	Enables RIPv2
`Mazatlan(config-router)#network 172.16.0.0`	Advertises directly connected networks (classful address only)

`Mazatlan(config-router)#no auto-summary`	Turns off auto-summarization
`Mazatlan(config-router)#exit`	Moves to global configuration mode
`Mazatlan(config)#exit`	Returns to privileged mode
`Mazatlan#copy running-config startup-config`	Saves the configuration to NVRAM