TCOM 515 IP Routing

Lab2: RIP Routing

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Router: Dallas

Team Members: None

1. Introduction

In order for packets to be routed throughout the network, each router must generate a routing table. This routing table serves as a map to direct which interface the packet needs to be sent at. There are three ways the routing table is created.

1. Directly connected interfaces. (C-connected)
2. Static routes. (S-static)
3. Dynamic routing protocols. (O-OSPF/R-RIP/B-BGP)

In this lab, dynamic routing protocol, specifically RIP, will be explored to generate a routing table.

RIP is a Distance Vector routing protocol which uses Bellman-Ford Algorithm. Each node does not know the information about the complete network topology. Each router in the RIP network populates its own routing table based on the information received from its contiguous neighboring routers. Because it each router calculates/populates its own route table then forwards the routing table to its neighbors, it takes much longer for the routing table to converge compared to Link-State routing protocol.

The route table will contain the following information:

1. Destination Address – network address of a subnet
2. Next Hop – interface or IP address of next hop in path
3. Egress interface – the interface to the next hop
4. Type of route – C-Connect, S-Static, R-RIP, O-OSPF
5. Metric – arbitrary number used to help choose the best route. Cost to the next route.
6. Number of Hops – number of hops to the destination.
   <*Information from TCOM515 Lecture1>

2. Purpose

The goal of this lab is stated as follows:

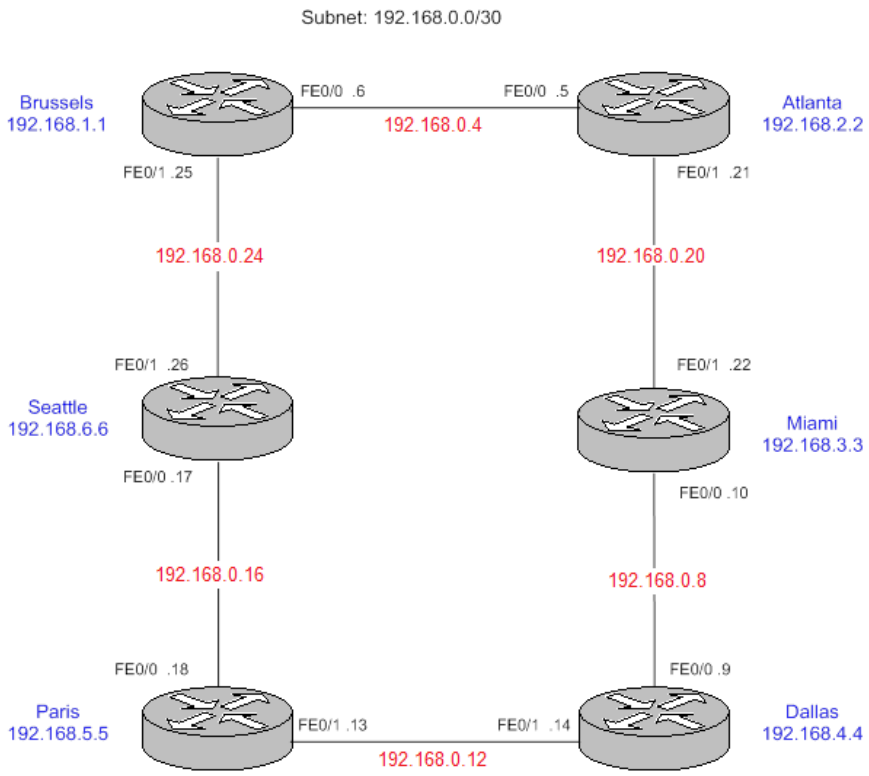
1. Recap from Lab1
   a. Learn to establish hardware(router) connections.
   b. Learn to login to terminal server via telnet
   c. Learn to configure router and its interfaces
      (get familiar with Cisco iOS commands & environment)
   d. Clear router configuration
2. Understand How RIP route tables are created/updated then configure the RIP network.

3. Procedure

1. Make Physical Connectivity Between Devices

The six Cisco 2811 ISRs were set up in the topology shown in figure below. The router that I configured was Dallas (192.168.4.4 – loopback address) and made connection as follows:

- Dallas FE0/0.9 ←→ Miami FE0/0.10
- Dallas FE0/0.14 ←→ Paris FE0/1.13



The management network of the routers were connected through the Cisco 2511 (terminal server) and connected to the PC workstations.

NOTE: The following is the color scheme for this lab report:

- `Input into the command prompt`
- `Output of the command prompt`
- `Comment or syntax of the command`

2. Login to the router.

When I first login the the router, I am in the "USER MODE". The command line shows: `Router>`

Entering "ENABLE MODE":

```
Router>enable
Router#
```

Entering "Global Config Mode":

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
```

Entering "Global Config Mode" of the dallas router:

```
Router(config)#hostname dallas
dallas(config)#
```

Disabling the DNS lookup for our lab purposes. This prevents long waits for ping wait time as it is not expecting a response from the DNS server:

```
dallas(config)#no ip domain lookup
```

Entering the router's "Global Line Configure Mode":

```
dallas(config)#line console 0
dallas(config-line)#
```

```
dallas(config-line)#logging synchronous
```

Exit the router's "Global Line Configure Mode":

```
dallas(config-line)#^Z          % can also enter "end"
dallas#
```

3. Configure the Router

Configuring the physical interfaces. Based on the below table the connections were made as such:

- Dallas 192.168.0.9/30 ←→ Miami 192.168.0.10/30
- Dallas 192.168.0.14/30 ←→ Paris 192.168.0.13/30

Router Name	Loopback0	FastEthernet Interface 0/0 and mask	FastEthernet Interface 0/1 and mask
Brussels	192.168.1.1/32	192.168.0.6/30	192.168.0.25/30
Atlanta	192.168.2.2/32	192.168.0.5/30	192.168.0.21/30
Miami	192.168.3.3/32	**192.168.0.10/30**	192.168.0.22/30
Dallas	**192.168.4.4/32**	**192.168.0.9/30**	**192.168.0.14/30**
Paris	192.168.5.5/32	192.168.0.18/30	**192.168.0.13/30**
Seattle	192.168.6.6/32	192.168.0.17/30	192.168.0.26/30

(Configuring Dallas←→Paris Interface)

Entering the "INTERFACE CONFIGURATION MODE":

```
dallas#config terminal
dallas(config)#
```

Enter INTERFACE CONFIGURATION MODE:

```
dallas(config)#interface FastEthernet0/1
dallas(config-if)#
```

Enter comment on the interface:

```
dallas(config-if)#description Link to DestRouterName NetworkIPAddress
dallas(config-if)#description Link to Paris 192.168.0.13/30
```

Enter Interface IP Address:

```
dallas(config)#ip route SourceRouter_InterfaceIPAddress NetworkMask
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
```

(Note: 255.255.255.252 = /30)

Bring up the interface:

```
dallas(config-if)#no shutdown
*Feb 22 23:56:15.139: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Feb 22 23:56:16.139: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to
up
```

(Configuring Dallas←→Miami Interface)

This process was repeated for the FastEthernet 0/0 to Miami as such:

```
dallas(config-if)#interface FastEthernet 0/0
dallas(config-if)#description Link to miami 192.168.0.10/30
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
dallas(config-if)#no shut
```

```
*Feb 22 23:53:44.807: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up
```

(Configuring Loopback Interface)

Loopback is a logical interface. To configure, type:

```
dallas(config-if)#interface loop 0
*Feb 22 23:56:41.611: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0,changed state to up
```

Assigning IP Address to the loopback Address in format of:

```
dallas(config)#ip route LoopbackIP 255.255.255.255
dallas(config-if)#ip address 192.168.4.4 255.255.255.255
```

Bring up the loopback interface:

```
dallas(config-if)#no shutdown
```

Exit the INTERFACE CONFIGURATION MODE and GLOBLA CONFIGURATION MODE by typing, "end" or "ctrl-z"

```
dallas(config-if)#end
dallas#
```

Checking the interface configuration:

```
dallas#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.0.9     YES manual up                    up
FastEthernet0/1            192.168.0.14    YES manual up                    up
FastEthernet0/0/0          unassigned      YES unset  up                    down
FastEthernet0/0/1          unassigned      YES unset  up                    down
FastEthernet0/0/2          unassigned      YES unset  up                    down
FastEthernet0/0/3          unassigned      YES unset  up                    down
Serial0/1/0                unassigned      YES unset  administratively down down
Serial0/1/1                unassigned      YES unset  administratively down down
Vlan1                      unassigned      YES unset  up                    down
SSLVPN-VIF0                unassigned      NO  unset  up                    up
Loopback0                  192.168.4.4     YES manual up                    up
```

3.1 The interfaces, FastE0/0, FastE0/1 and Loopback0, which were configured, are up.

Pinging my neighbors:

Pinging Miami Interface:

```
dallas#ping 192.168.0.10
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.10, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

Pinging Paris Interface:

```
dallas#ping 192.168.0.13
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.13, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

3.2 Both Paris and Miami interface can be pinged.

Checking my current route table:

```
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
        192.168.4.0/32 is subnetted, 1 subnets
```

```
C       192.168.4.4 is directly connected, Loopback0
        192.168.0.0/30 is subnetted, 2 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
```

3.3 There are only 3 connected and two subnetted entries in my route table.

4. Configure RIP

(Turning on RIP)

In Global Config Mode type:

```
dallas(config)#router rip
dallas(config-router)#version 2
dallas(config-router)#network 192.168.0.0
dallas(config-router)#network 192.168.1.0
dallas(config-router)#network 192.168.2.0
dallas(config-router)#network 192.168.3.0
dallas(config-router)#network 192.168.4.0
dallas(config-router)#network 192.168.5.0
dallas(config-router)#network 192.168.6.0
dallas(config-router)#no auto-summary                  % this command enables classful mode /30
```

Watching RIP advertisements:

```
dallas(config-router)#debug ip rip
*Feb 23 00:21:48.439: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (192.168.0.14)
*Feb 23 00:21:48.439: RIP: build update entries
*Feb 23 00:21:48.439:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:48.439:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:48.439:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:48.439:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:48.439:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
dallas#
*Feb 23 00:21:48.439:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:48.439:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
```

To Stop the RIP advertisement watching process:

```
dallas#no debug ip rip
RIP protocol debugging is off
```

Checking my current route table:

```
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.0.0/30 is subnetted, 6 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:29, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:03, FastEthernet0/1
```

```
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:03, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:29, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:06, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:02, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:03, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:03, FastEthernet0/0
```

4.1 There are 9 (R)RIP Routes and 3 (C)Connected Routes.

4.2 Format of the RIP entry:

```
RIP  DestIP       [AdminDist/HopCount] via NextHopIP,    "How Long the entry has lived", MyInterface
R    192.168.3.3  [120      /1       ] via 192.168.0.10,  00:00:03,                       FastEthernet0/0
```

4.3 The destination address of the RIP updates are my neighboring routers, Paris and Miami. This contains all the list of the routes and how to reach them (Basically my entire route table).

```
*Feb 23 00:21:11.739: RIP: build flash update entries
*Feb 23 00:21:11.739:   192.168.6.0/24 via 0.0.0.0, metric 5, tag 0
 Time:                  DestIP(network)             metric
```

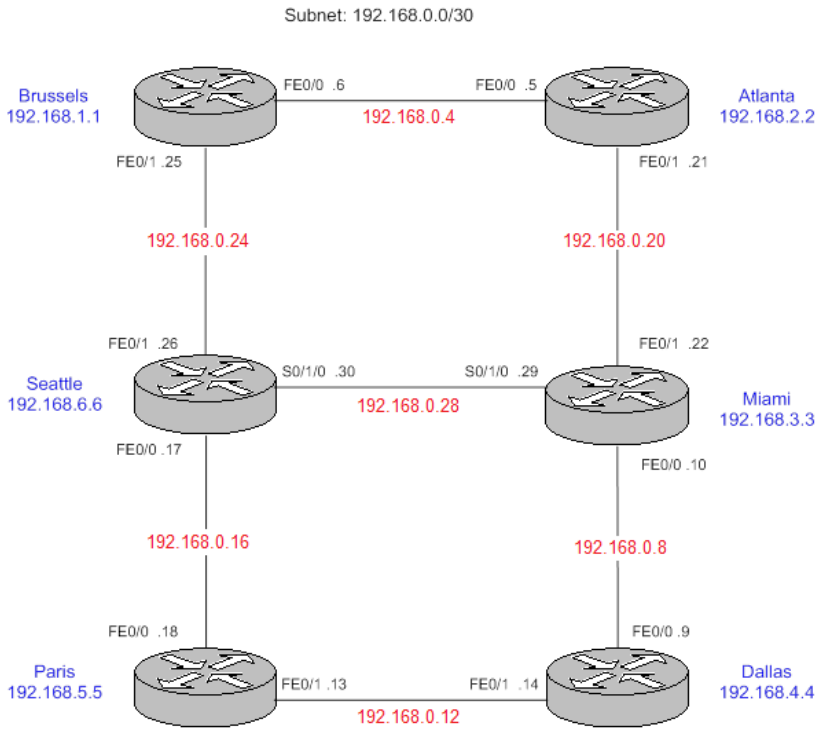
Traceroute Seattle's Loopback:

```
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.13 4 msec 0 msec 0 msec
  2 192.168.0.17 4 msec *  0 msec
```

4.4 The traceroute path was through Paris(192.168.0.13) as this was the closest path to the Seattle's interface based on the equal administrative dist of all links and the smallest hop count. There are 2 hops in this path.

5. Turn up one additional link

Turn up the serial link between Seattle←→Miami as follows:



Monitor RIP Advertising:

```
dallas#debug ip rip
*Feb 23 01:03:55.787: RIP: received v2 update from 192.168.0.13 on FastEthernet0/1
*Feb 23 01:03:55.787:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.0.28/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 01:04:00.339: RIP: received v2 update from 192.168.0.10 on FastEthernet0/0
*Feb 23 01:04:00.339:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:04:00.339:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.6.6/32 via 0.0.0.0 in 2 hops
```

Stop monitoring RIP Advertisement:

```
dallas#no debug ip rip
RIP protocol debugging is off
```

Check the New IP Route Table:

```
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:25, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:25, FastEthernet0/1
                    [120/2] via 192.168.0.10, 00:00:21, FastEthernet0/0
     192.168.0.0/30 is subnetted, 7 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:22, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:27, FastEthernet0/1
                     [120/2] via 192.168.0.10, 00:00:22, FastEthernet0/0
R       192.168.0.28 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:00, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:00, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
```

5.1 The new IP route table shows the new Network(192.168.0.28). It also shows the redundant paths that are available for reaching Seattle Loopback(192.168.6.6) and Network(192.168.0.28).

5.2 The new updates reflect the new network and interfaces that can be reached.

```
*Feb 23 01:03:55.787: RIP: received v2 update from 192.168.0.13 on FastEthernet0/1
*Feb 23 01:03:55.787:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.0.28/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 01:04:00.339: RIP: received v2 update from 192.168.0.10 on FastEthernet0/0
*Feb 23 01:04:00.339:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:04:00.339:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.6.6/32 via 0.0.0.0 in 2 hops
```

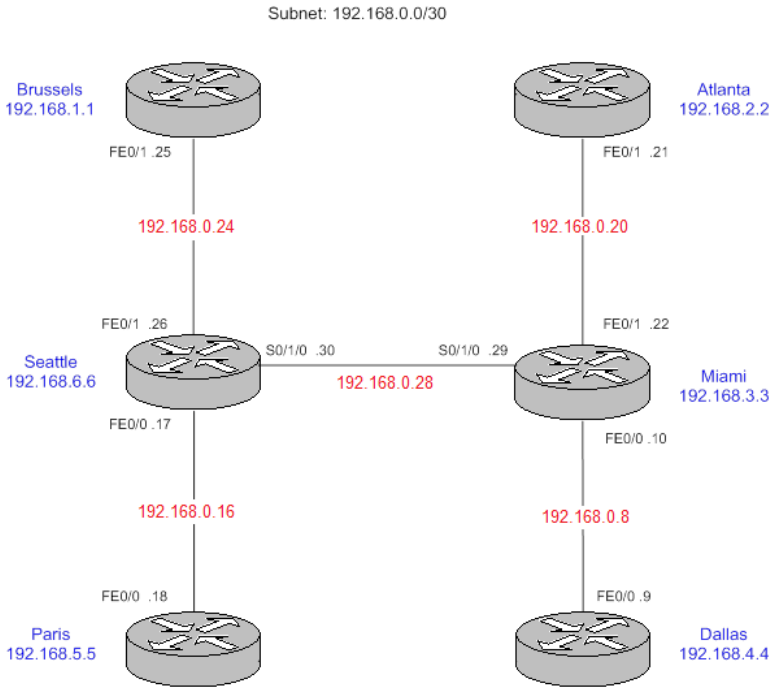
(Pinging Seattle loopback)

```
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.10 0 msec
    192.168.0.13 4 msec
    192.168.0.10 0 msec
  2 192.168.0.17 0 msec
    192.168.0.30 4 msec *
```

5.3 When pinging the Seattle loop back again we notice that the 2nd ICMP packet is taking another route compared ot the 1st and 3rd ICMP packet. This is because there exists two paths with equal administrative distance and the number of hops to this destination.

6. Shut down two existing links

Shut down the two links between Paris←→Dallas and Brussels←→Atlanta as shown in below diagram.



Monitor RIP Advertising with the new configuration and look for RIP advertisements:

```
dallas#debug ip rip
RIP protocol debugging is on
*Feb 23 01:18:14.939: RIP: received v2 update from 192.168.0.10 on FastEthernet0/0
*Feb 23 01:18:14.939:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:14.939:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:14.939:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:14.939:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:18:14.939:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.5.5/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:14.939:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
dallas#
*Feb 23 01:18:23.039: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.0.9)
*Feb 23 01:18:23.039: RIP: build update entries
*Feb 23 01:18:23.039:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
dallas#
*Feb 23 01:18:26.239: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168.4.4)
*Feb 23 01:18:26.239: RIP: build update entries
*Feb 23 01:18:26.239:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:18:26.239:   192.168.0.16/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:18:26.239:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.0.28/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:18:26.239:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
*Feb 23 01:18:26.239:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
dallas#
*Feb 23 01:18:26.239:   192.168.5.5/32 via 0.0.0.0, metric 4, tag 0
*Feb 23 01:18:26.239:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239: RIP: ignored v2 packet from 192.168.4.4 (sourced from oneof our addresses)
dallas#
dallas#
*Feb 23 01:18:44.551: RIP: received v2 update from 192.168.0.10 on FastEthernet0/0
*Feb 23 01:18:44.551:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:44.551:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.5.5/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:44.551:      192.168.6.6/32 via 0.0.0.0 in 2 hops
*Feb 23 01:18:52.511: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (192.168.0.9)
*Feb 23 01:18:52.511: RIP: build update entries
*Feb 23 01:18:52.511:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
```

Stop monitoring RIP Advertisement:

```
dallas#no debug ip rip
RIP protocol debugging is off
```

Check the New IP Route Table:

```
dallas#show ip route
```

6.1 The IP route table now removes the redundant interface to Seattle's Loopback(192.168.6.6) and to network (192.168.0.24). It also removed the networks that have been brought down(192.168.0.4 & 192.168.0.12)

6.2 The new RIP updates reflect the new network and interfaces that can be reached.

6.3 The networks that have been brought down(192.168.0.4 & 192.168.0.12) can no longer be pinged.

```
dallas#
dallas#ping 192.168.0.12
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.12, timeout is 2 seconds:
.....
dallas#
dallas#
dallas#ping 192.168.0.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.4, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```

6.4 Now that the redundant paths to Seattle has been brought down, traceroute only shows one definitive path to Seattle's Loopback interface.

```
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.10 0 msec 0 msec 4 msec
  2 192.168.0.30 8 msec *  8 msec
```

Additional Lab Questions:

1. What was the most important piece of knowledge you took away from this lab?
   - It takes time for the RIP route table to update and converge.
   - RIP is classful routing protocol. To make RIP work with the classful structure we have, we had to use the "no auto-summary" command:

     RIP Commands

     Use the commands in this chapter to configure and monitor Routing Information Protocol (RIP). For RIP configuration information and examples, refer to the "Configuring Routing Information Protocol" chapter of the Cisco IOS *IP and IP Routing Configuration Guide*.

     auto-summary (RIP)

     To restore the default behavior of automatic summarization of subnet routes into network-level routes, use the **auto-summary** command in router configuration mode. To disable this function and send subprefix routing information across classful network boundaries, use the **no** form of this command.

     auto-summary

     no auto-summary

     Source: http://www.cisco.com/en/US/docs/ios/12_1/iproute/command/reference/1rdrip.html#wp1017389

2. What new command did you find most useful and why?
   - Check the New IP Route Table:
     - `dallas#show ip route`
   - Watching RIP advertisements:
     - `dallas(config-router)#debug ip rip`
     - `dallas#debug ip rip` (can be done in any mode)
   - Stop Monitoring RIP advertisements:
     - `dallas(config-router)#no debug ip rip`

3. Identify at least one problem you experienced in this lab. How did you figure out the problem? How did you resolve it?
   - In Part6, when instructed to pull down interface FE0/1 to Paris, I accidently pulled down both FE0/1 to Paris and FE0/0 to Miami. I noticed this rightaway and turned back on the FE0/0 to Miami within a minute. The RIP route table adjusted to reflect this and I was able to ping Seattle as instructed.

4. List and explain the various RIP timers.
   - Update – how often to send updates (sec)
   - Invalid – time(sec) it takes for a route to go stale. If no valid Update in x sec, then the route will be invalid and will go into hold down state.
   - Hold Down – time(sec) in which the route is not discarded, but lower priority route will override this route in the route table.
   - Flush – time(sec) from the last valid update at which the route will be discarded.

iOS Command Prompt Script:

```
2.    Login to the Router
login: student
Password:
% Please answer 'yes' or 'no'.
Would you like to enter the initial configuration dialog? [yes/no]: yes
At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.
Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system
Would you like to enter basic management setup? [yes/no]: no
First, would you like to see the current interface summary? [yes]: yes
Any interface listed with OK? value "NO" does not have a valid configuration
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            unassigned      NO  unset  up                    up
FastEthernet0/1            unassigned      NO  unset  up                    down
FastEthernet0/0/0          unassigned      YES unset  initializing          down
FastEthernet0/0/1          unassigned      YES unset  initializing          down
FastEthernet0/0/2          unassigned      YES unset  initializing          down
FastEthernet0/0/3          unassigned      YES unset  initializing          down
Serial0/1/0                unassigned      NO  unset  down                  down
Serial0/1/1                unassigned      NO  unset  down                  down
Vlan1                      unassigned      YES unset  up                    down
SSLVPN-VIF0                unassigned      NO  unset  up                    up

Configuring global parameters:
  Enter host name [Router]:
  The enable secret is a password used to protect access to
  privileged EXEC and configuration modes. This password, after
  entered, becomes encrypted in the configuration.
  The enable password is used when you do not specify an
  enable secret password, with some older software versions, and
  some boot images.
  The virtual terminal password is used to protect
  access to the router over a network interface.
AutoSecure dialog can be started later using "auto secure" CLI
Configuration aborted, no changes made.
Press RETURN to get started!
*Feb 22 23:04:t0/0, changed state to up
*Feb 22 23:05:18.003: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
*Feb 22 23:05:18.003: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/
0, changed state to down
*Feb 22 23:05:18.003: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/
1, changed state to down
*Feb 22 23:06:23.763: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Feb 22 23:06:25.423: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
*Feb 22 23:07:35.671: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Feb 22 23:11:47.903: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
*Feb 22 23:13:09.971: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
*Feb 22 23:14:43.207: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
*Feb 22 23:14:44.867: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
*Feb 22 23:15:10.851: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
*Feb 22 23:16:08.443: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Feb 22 23:16:10.107: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
*Feb 22 23:17:10.943: %SYS-5-RESTART: System restarted --
Cisco IOS Software, 2800 Software (C2800NM-ADVIPSERVICESK9-M), Version 12.4(20)T
, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
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Compiled Thu 10-Jul-08 22:00 by prod_rel_team
*Feb 22 23:17:10.955: %SNMP-5-COLDSTART: SNMP agent on host Router is undergoing
 a cold start
*Feb 22 23:17:11.183: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 22 23:17:11.187: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Feb 22 23:17:11.187: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 22 23:17:11.187: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Feb 22 23:17:11.707: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state
to administratively down
*Feb 22 23:17:11.711: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state
to administratively down
*Feb 22 23:17:11.711: %LINK-5-CHANGED: Interface Serial0/1/0, changed state to a
dministratively down
*Feb 22 23:17:11.711: %LINK-5-CHANGED: Interface Serial0/1/1, changed state to a
dministratively down
*Feb 22 23:17:11.935: %LINK-3-UPDOWN: Interface FastEthernet0/0/3, changed state
 to up
*Feb 22 23:17:11.935: %LINK-3-UPDOWN: Interface FastEthernet0/0/2, changed state
 to up
*Feb 22 23:17:11.935: %LINK-3-UPDOWN: Interface FastEthernet0/0/1, changed state
 to up
*Feb 22 23:17:11.935: %LINK-3-UPDOWN: Interface FastEthernet0/0/0, changed state
 to up
*Feb 22 23:17:12.707: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Feb 22 23:17:13.171: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/3, changed state to down
*Feb 22 23:17:13.171: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/2, changed state to down
*Feb 22 23:17:13.175: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/1, changed state to down
*Feb 22 23:17:13.175: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/0, changed state to down
Router>
Router>
Router>
Router>
```

```
Router>enable
Router#erase start
% Incomplete command.
Router#
Router#
Router#erase start
% Incomplete command.
Router#enable
Router#erase start
% Incomplete command.
Router#reload
Proceed with reload? [confirm]
*Feb 22 23:19:04.743: %SYS-5-RELOAD: Reload requested  by console. Reload Reason
: Reload Command.
System Bootstrap, Version 12.4(1r) [hqluong 1r], RELEASE SOFTWARE (fc1)
Copyright (c) 2005 by cisco Systems, Inc.
Initializing memory for ECC
.
c2811 processor with 262144 Kbytes of main memory
Main memory is configured to 64 bit mode with ECC enabled
Readonly ROMMON initialized
program load complete, entry point: 0x8000f000, size: 0xc940
program load complete, entry point: 0x8000f000, size: 0xc940
program load complete, entry point: 0x8000f000, size: 0x3539494
Self decompressing the image : ########################################################
########################################################################################
########################################################################################
########################################################################################
######################### [OK]
Smart Init is enabled
smart init is sizing iomem
  ID            MEMORY_REQ                TYPE
0003E7          0X00473800 C2811 Mainboard
000056          0X000C2800 4-port FE Switch HWIC
                0X00264050 Onboard VPN
                0X000021B8 Onboard USB
                0X002C29F0 public buffer pools
                0X00211000 public particle pools
TOTAL:          0X00C6FBF8
If any of the above Memory Requirements are
"UNKNOWN", you may be using an unsupported
configuration or there is a software problem and
system operation may be compromised.
Rounded IOMEM up to: 14Mb.
Using 5 percent iomem. [14Mb/256Mb]
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           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706
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This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
Installed image archive
Cisco 2811 (revision 49.46) with 247808K/14336K bytes of memory.
Processor board ID FTX1035A1KF
6 FastEthernet interfaces
2 Low-speed serial(sync/async) interfaces
1 Virtual Private Network (VPN) Module
DRAM configuration is 64 bits wide with parity enabled.
239K bytes of non-volatile configuration memory.
62720K bytes of ATA CompactFlash (Read/Write)
         --- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]:
Press RETURN to get started!
*Feb 22 23:22:18.643: %ESWMRVL_FLTMG-5-NOTICE: Notice: FPGA Rev 0x71
*Feb 22 23:22:37.515: %VPN_HW-6-INFO_LOC: Crypto engine: onboard 0  State change
d to: Initialized
*Feb 22 23:22:37.519: %VPN_HW-6-INFO_LOC: Crypto engine: onboard 0  State change
d to: Enabled
*Feb 22 23:22:39.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface VoIP-Null0
, changed state to up
*Feb 22 23:22:39.371: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Feb 22 23:22:39.371: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state t
o up
*Feb 22 23:22:39.371: %LINK-3-UPDOWN: Interface Serial0/1/0, changed state to do
wn
*Feb 22 23:22:39.371: %LINK-3-UPDOWN: Interface Serial0/1/1, changed state to do
wn
*Feb 22 23:22:39.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface SSLVPN-VIF
0, changed state to up
*Feb 22 23:22:39.859: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, cha
nged state to down
*Feb 22 23:22:40.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
e
Router>t0/0, changed state to down
*Feb 22 23:22:40.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
*Feb 22 23:22:40.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/
0, changed state to down
```

```
*Feb 22 23:22:40.911: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/
1, changed state to down
*Feb 22 23:23:09.135: %SYS-5-RESTART: System restarted --
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, RELEASE SOFTWARE (fc3)
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Compiled Thu 10-Jul-08 22:00 by prod_rel_team
*Feb 22 23:23:09.143: %SNMP-5-COLDSTART: SNMP agent on host Router is undergoing
 a cold start
*Feb 22 23:23:09.375: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 22 23:23:09.375: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Feb 22 23:23:09.375: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 22 23:23:09.379: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Feb 22 23:23:09.903: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state
to administratively down
*Feb 22 23:23:09.903: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state
to administratively down
*Feb 22 23:23:09.903: %LINK-5-CHANGED: Interface Serial0/1/0, changed state to a
dministratively down
*Feb 22 23:23:09.903: %LINK-5-CHANGED: Interface Serial0/1/1, changed state to a
dministratively down
*Feb 22 23:23:10.131: %LINK-3-UPDOWN: Interface FastEthernet0/0/3, changed state
 to up
*Feb 22 23:23:10.131: %LINK-3-UPDOWN: Interface FastEthernet0/0/2, changed state
 to up
*Feb 22 23:23:10.131: %LINK-3-UPDOWN: Interface FastEthernet0/0/1, changed state
 to up
*Feb 22 23:23:10.131: %LINK-3-UPDOWN: Interface FastEthernet0/0/0, changed state
 to up
*Feb 22 23:23:11.367: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/3, changed state to down
*Feb 22 23:23:11.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/2, changed state to down
*Feb 22 23:23:11.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/1, changed state to down
*Feb 22 23:23:11.371: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0/0, changed state to down
*Feb 22 23:23:12.119: %SYS-6-BOOTTIME: Time taken to reboot after reload =  247
seconds
Router>
Router>
Router>enable                                                          %USER MODE
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname dallas                                         %Global Config Mode
dallas(config)#no ip domain lookup                              %disable DNS Look up
dallas(config)#line console 0                                   %dallas(config-line)
dallas(config-line)#logging synchronous
dallas(config-line)#^Z
dallas#
*Feb 22 23:30:59.023: %SYS-5-CONFIG_I: Configured from console by console


3.    Configuring the Router
dallas#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
dallas(config)#interface 192.168.0.9/30
                          ^
% Invalid input detected at '^' marker.
dallas(config)#interface ?
  Async               Async interface
  Auto-Template       Auto-Template interface
  BVI                 Bridge-Group Virtual Interface
  CDMA-Ix             CDMA Ix interface
  CTunnel             CTunnel interface
  Dialer              Dialer interface
  FastEthernet        FastEthernet IEEE 802.3
  Group-Async         Async Group interface
  Lex                 Lex interface
  Loopback            Loopback interface
  MFR                 Multilink Frame Relay bundle interface
  Multilink           Multilink-group interface
  Null                Null interface
  Port-channel        Ethernet Channel of interfaces
  Serial              Serial
  Tunnel              Tunnel interface
  Vif                 PGM Multicast Host interface
  Virtual-Dot11Radio  Virtual dot11 interface
  Virtual-PPP         Virtual PPP interface
  Virtual-Template    Virtual Template interface
  Virtual-TokenRing   Virtual TokenRing
  Vlan                Vlan IEEE 802.1q
  range               interface range command
  vmi                 Virtual Multipoint Interface

dallas(config)#interface FastEthernet 0/0
dallas(config-if)#description Link to miami 192.168.0.7
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
dallas(config-if)#no shut
dallas(config-if)#
*Feb 22 23:47:16.351: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Feb 22 23:47:17.351: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
dallas(config-if)#interface FastEthernet 0/1
dallas(config-if)#description Link to paris 192.168.0.12
dallas(config-if)#ip address
*Feb 22 23:50:01.011: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
dallas(config-if)#interface FastEthernet 0/1
dallas(config-if)#description Link to paris 192.168.0.13/30
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
% 192.168.0.8 overlaps with FastEthernet0/0
dallas(config-if)#interface FastEthernet 0/0
dallas(config-if)#description Link to miami 18
*Feb 22 23:53:44.807: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
dallas(config-if)#description Link to miami 192.168.0.10/30
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
```

```
dallas(config-if)#no shut
dallas(config-if)#interface FastEthernet0/1                    % Configuring FastEthernet Interface
dallas(config-if)#description Link to paris 192.168.0.13/30
dallas(config-if)#ip address 192.168.0.14 255.255.255.252
dallas(config-if)#no shut
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
*Feb 22 23:56:15.139: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state t
o up
*Feb 22 23:56:16.139: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
dallas(config-if)#interface loop 0
dallas(config-if)#i
*Feb 22 23:56:41.611: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0,
 changed state to up
dallas(config-if)#ip address 192.168.4.4 255.255.255.255
dallas(config-if)#^Z
dallas#
*Feb 22 23:57:02.071: %SYS-5-CONFIG_I: Configured from console by console
dallas#show ip in
dallas#show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
FastEthernet0/0            192.168.0.9     YES manual up                    up
FastEthernet0/1            192.168.0.14    YES manual up                    up
FastEthernet0/0/0          unassigned      YES unset  up                    down
FastEthernet0/0/1          unassigned      YES unset  up                    down
FastEthernet0/0/2          unassigned      YES unset  up                    down
FastEthernet0/0/3          unassigned      YES unset  up                    down
Serial0/1/0                unassigned      YES unset  administratively down down
Serial0/1/1                unassigned      YES unset  administratively down down
Vlan1                      unassigned      YES unset  up                    down
SSLVPN-VIF0                unassigned      NO  unset  up                    up
Loopback0                  192.168.4.4     YES manual up                    up

dallas#ping 192.168.0.10
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.10, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
dallas#
dallas#ping 192.168.0.13
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.13, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
dallas#
dallas#
dallas#
dallas#
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.0.0/30 is subnetted, 2 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
dallas#
dallas#
dallas#
dallas#

dallas#show
% Type "show ?" for a list of subcommands
dallas#show run
Building configuration...
Current configuration : 1311 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname dallas
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
!
no aaa new-model
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
no ip domain lookup
!
no ipv6 cef
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
```

```
!
!
!
!
!
!
!
!
!
!
voice-card 0
 no dspfarm
!
!
!
!
!
archive
 log config
  hidekeys
!
!
!
!
!
!
!
!
!
interface Loopback0
 ip address 192.168.4.4 255.255.255.255
!
interface FastEthernet0/0
 description Link to miami 192.168.0.10/30
 ip address 192.168.0.9 255.255.255.252
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description Link to paris 192.168.0.13/30
 ip address 192.168.0.14 255.255.255.252
 duplex auto
 speed auto
!
interface FastEthernet0/0/0
!
interface FastEthernet0/0/1
!
interface FastEthernet0/0/2
!
interface FastEthernet0/0/3
!
interface Serial0/1/0
 no ip address
 shutdown
 clock rate 125000
!
interface Serial0/1/1
 no ip address
 shutdown
 clock rate 125000
!
interface Vlan1
 no ip address
!
ip forward-protocol nd
no ip http server
no ip http secure-server
!
!
!
!
!
!
!
!
!
!
control-plane
!
!
!
!
!
!
!
!
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 login
!
scheduler allocate 20000 1000
end
dallas#
dallas#
dallas#
```

4. Configure RIP

```
dallas(config)#router rip
dallas(config-router)#version 2
dallas(config-router)#network 192.168.0.0
dallas(config-router)#network 192.168.1.0
dallas(config-router)#network 192.168.2.0
dallas(config-router)#network 192.168.3.0
```

```
dallas(config-router)#network 192.168.4.0
dallas(config-router)#network 192.168.5.0
dallas(config-router)#network 192.168.6.0
dallas(config-router)#no auto-summary
dallas(config-router)#debug ip rip
                      ^
% Invalid input detected at '^' marker.
dallas(config-router)#^Z
dallas#
*Feb 23 00:18:02.867: %SYS-5-CONFIG_I: Configured from console by console
dallas#debug ip rip
RIP protocol debugging is on
dallas#
*Feb 23 00:18:23.987: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:18:23.987:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:18:23.987:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:18:23.987:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:18:23.987:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:18:23.991:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:18:23.991:      192.168.5.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:18:23.991:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:18:23.991:      192.168.6.0/24 via 0.0.0.0 in 2 hops
*Feb 23 00:18:23.991:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:18:24.875: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:18:24.875:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:18:24.875:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:18:24.875:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:18:24.875:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:18:24.875:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:18:24.879:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:18:24.879:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:18:24.879:      192.168.3.3/32 via 0.0.0.0 in 1 hops
dallas#
*Feb 23 00:18:27.495: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:18:27.495: RIP: build update entries
*Feb 23 00:18:27.495:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:27.495:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:27.495:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:27.495:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:27.495:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:27.495:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:27.495:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:18:27.495:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
dallas#
*Feb 23 00:18:27.495:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:27.495:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:27.495:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:27.495:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:27.495:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:27.495:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:27.495:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:27.495: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:18:35.971: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:18:35.971: RIP: build update entries
*Feb 23 00:18:35.971:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:35.971:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:35.971:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:35.971:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:35.971:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:35.971:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:35.971:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
dallas#
*Feb 23 00:18:35.987: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:18:35.987:      192.168.3.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:18:39.371: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:18:39.371: RIP: build update entries
*Feb 23 00:18:39.371:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:39.371:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:39.371:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:39.371:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:39.371:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:39.371:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:39.371:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:39.371:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:18:40.595: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:18:40.595:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:18:44.759: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:18:44.759:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:18:44.763:      192.168.5.0/24 via 0.0.0.0 in 7 hops
*Feb 23 00:18:45.171: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:18:45.171:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:18:45.175:      192.168.2.0/24 via 0.0.0.0 in 8 hops
*Feb 23 00:18:45.175:      192.168.3.0/24 via 0.0.0.0 in 7 hops
dallas#
*Feb 23 00:18:46.763: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (192.168.0.9)
*Feb 23 00:18:46.763: RIP: build flash update entries - suppressing null update
*Feb 23 00:18:46.763: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/1 (192.168.0.14)
*Feb 23 00:18:46.763: RIP: build flash update entries - suppressing null update
*Feb 23 00:18:46.763: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (1
92.168.4.4)
*Feb 23 00:18:46.763: RIP: build flash update entries
*Feb 23 00:18:46.763:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:18:46.763: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
```

```
of our addresses)
dallas#
*Feb 23 00:18:50.619: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:18:50.619:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:18:50.619:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:18:50.619:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:18:50.619:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:18:50.623:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:18:50.623:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:18:50.623:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:18:50.623:      192.168.5.0/24 via 0.0.0.0 in 7 hops
*Feb 23 00:18:50.623:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:18:50.623:      192.168.6.0/24 via 0.0.0.0 in 2 hops
*Feb 23 00:18:50.623:      192.168.6.6/32 via 0.0.0.0 in 2 hops
*Feb 23 00:18:51.111: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:18:51.111:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:18:51.111:      192.168.0.20/30 via
dallas#0.0.0.0 in 1 hops
*Feb 23 00:18:51.111:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:18:51.111:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:18:51.115:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:18:51.115:      192.168.2.0/24 via 0.0.0.0 in 8 hops
*Feb 23 00:18:51.115:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:18:51.115:      192.168.3.0/24 via 0.0.0.0 in 7 hops
*Feb 23 00:18:51.115:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:18:51.115:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:18:57.263: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:18:57.263: RIP: build update entries
*Feb 23 00:18:57.263:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:57.263:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:57.263:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:18:57.263:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:57.263:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:57.263:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:57.263:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:18:57.263:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:18:57.263:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:18:57.263:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:57.263:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:57.263:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:57.263:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:18:57.263:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:18:57.263:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:57.263:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:18:57.267: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:19:05.171: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:19:05.171: RIP: build update entries
*Feb 23 00:19:05.171:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:05.171:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:05.171:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:05.171:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:05.171:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:05.171:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:05.171:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:05.295: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:19:05.295: RIP: build update entries
*Feb 23 00:19:05.295:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:05.295:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:05.295:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:05.295:   192.1
dallas#68.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:19:05.295:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:05.295:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:05.295:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:05.295:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:05.295:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:19:19.107: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:19:19.107:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:19:19.107:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:19:19.111:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:19:19.111:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:19:19.111:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:19:19.111:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:19:19.111:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:19:19.111:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:19:19.111:      192.168.6.0/24 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:19:19.111:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:19:20.567: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:19:20.567:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:19:20.567:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:19:20.567:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:19:20.567:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:19:20.567:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:19:20.567:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:19:20.567:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:19:20.567:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:19:26.615: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:19:26.615: RIP: build update entries
*Feb 23 00:19:26.615:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:26.615:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:26.615:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:26.615:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:26.615:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:26.615:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
```

```
*Feb 23 00:19:26.615:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:19:26.615:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:19:26.615:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:19:26.615:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:26.615:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:26.615:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:26.615:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:26.615:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:26.615:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:26.615:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:26.619: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:19:31.691: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:19:31.691: RIP: build update entries
*Feb 23 00:19:31.691:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:31.691:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:31.691:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:31.691:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:31.691:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:31.691:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:31.691:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:32.739: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:19:32.739: RIP: build update entries
*Feb 23 00:19:32.739:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:32.739:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:32.739:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:32.739:   192.1
dallas#68.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:19:32.739:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:32.739:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:32.739:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:32.739:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:32.739:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:19:47.919: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:19:47.919:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:19:47.919:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:19:47.919:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:19:47.919:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:19:47.919:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:19:47.919:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:19:47.919:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:19:47.919:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:19:47.919:      192.168.6.0/24 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:19:47.919:      192.168.6.6/32 via 0.0.0.0 in 2 hops
*Feb 23 00:19:48.579: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:19:48.579:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:19:48.579:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:19:48.579:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:19:48.579:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:19:48.579:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:19:48.579:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:19:48.579:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:19:48.579:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:19:55.391: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:19:55.391: RIP: build update entries
*Feb 23 00:19:55.391:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:55.391:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:55.391:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:19:55.391:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:55.391:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:55.391:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:55.391:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:19:55.391:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:19:55.391:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:19:55.391:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:55.391:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:55.391:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:55.391:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:19:55.391:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:19:55.391:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:55.391:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:19:55.395: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:20:01.195: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:20:01.195: RIP: build update entries
*Feb 23 00:20:01.195:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:01.195:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:01.195:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:01.195:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:01.195:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:01.195:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:01.195:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
dallas#
*Feb 23 00:20:02.567: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:20:02.567: RIP: build update entries
*Feb 23 00:20:02.567:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:02.567:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:02.567:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:02.567:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:20:02.567:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:02.567:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:02.567:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:02.567:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:20:02.567:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
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*Feb 23 00:20:14.259: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:20:14.259:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:20:14.259:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:20:14.259:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:20:14.259:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:20:14.259:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:20:14.259:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:20:14.259:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:20:14.259:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:20:16.163: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:20:16.163:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:20:16.163:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:20:16.163:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:20:16.163:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:20:16.163:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:20:16.163:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:20:16.163:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:20:16.163:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:20:16.163:      192.168.6.0/24 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:20:16.163:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:20:23.403: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:20:23.403: RIP: build update entries
*Feb 23 00:20:23.403:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:23.403:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:23.403:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:23.403:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:23.403:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:23.403:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:23.403:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:20:23.403:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:20:23.403:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:20:23.403:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:23.403:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:23.403:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:23.403:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:23.403:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:23.403:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:23.403:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:23.407: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:20:27.399: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:20:27.399: RIP: build update entries
*Feb 23 00:20:27.399:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:27.399:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:27.399:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:27.399:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:27.399:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:27.399:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:27.399:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
dallas#
*Feb 23 00:20:31.691: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:20:31.691: RIP: build update entries
*Feb 23 00:20:31.691:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:31.691:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:31.691:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:31.691:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:20:31.691:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:31.691:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:31.691:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:31.691:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:20:31.691:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:20:42.191: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:20:42.191:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.191:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:20:42.191:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:20:42.191:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.191:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.191:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:20:42.191:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:20:42.191:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:20:42.191:      192.168.6.0/24 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:20:42.191:      192.168.6.6/32 via 0.0.0.0 in 2 hops
*Feb 23 00:20:42.495: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:20:42.495:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:20:42.495:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:20:42.495:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.495:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.495:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:20:42.495:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:20:42.495:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:20:42.495:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:20:44.587: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:20:44.587:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
*Feb 23 00:20:52.103: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:20:52.103: RIP: build update entries
*Feb 23 00:20:52.103:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:52.103:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:52.103:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:52.103:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:52.103:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:52.103:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
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*Feb 23 00:20:52.103:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:20:52.103:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:20:52.103:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:20:52.103:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:52.103:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:52.103:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:52.103:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:52.103:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:52.103:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:52.103:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:52.107: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:20:53.523: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:20:53.523: RIP: build update entries
*Feb 23 00:20:53.523:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:53.523:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:53.523:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:53.523:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:53.523:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:53.523:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:53.523:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
dallas#
*Feb 23 00:20:53.727: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:20:53.727:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
*Feb 23 00:20:58.159: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:20:58.159: RIP: build update entries
*Feb 23 00:20:58.159:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:58.159:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:58.159:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:20:58.159:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:20:58.159:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:20:58.159:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:20:58.159:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:20:58.159:   192.168.6.0/24 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:20:58.159:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
*Feb 23 00:21:04.587: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:21:04.587:      192.168.6.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
*Feb 23 00:21:06.587: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (192.168.0.9)
*Feb 23 00:21:06.587: RIP: build flash update entries
*Feb 23 00:21:06.587:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:06.587: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/1 (192.168.0.14)
*Feb 23 00:21:06.587: RIP: build flash update entries
*Feb 23 00:21:06.587:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:06.587: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (1
92.168.4.4)
*Feb 23 00:21:06.587: RIP: build flash update entries
*Feb 23 00:21:06.587:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
dallas#
*Feb 23 00:21:06.587: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
*Feb 23 00:21:07.695: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:21:07.695:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:21:07.695:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:21:07.695:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:21:07.695:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:21:07.695:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:21:07.695:      192.168.2.0/24 via 0.0.0.0 in 4 hops
*Feb 23 00:21:07.695:      192.168.3.0/24 via 0.0.0.0 in 5 hops
*Feb 23 00:21:07.695:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:07.695:      192.168.5.5/32 via 0.0.0.0 in 1 hops
dallas#
*Feb 23 00:21:07.695:      192.168.6.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:07.699:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 00:21:09.735: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:21:09.735:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:21:09.735:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:21:09.735:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:21:09.735:      192.168.1.0/24 via 0.0.0.0 in 3 hops
*Feb 23 00:21:09.735:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:21:09.735:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:21:09.735:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:21:09.735:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:09.735:      192.168.5.0/24 via 0.0.0.0 in 5 hops
dallas#
*Feb 23 00:21:09.735:      192.168.6.0/24 via 0.0.0.0 in 4 hops
dallas#
*Feb 23 00:21:11.739: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (192.168.0.9)
*Feb 23 00:21:11.739: RIP: build flash update entries - suppressing null update
*Feb 23 00:21:11.739: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/1 (192.168.0.14)
*Feb 23 00:21:11.739: RIP: build flash update entries
*Feb 23 00:21:11.739:   192.168.6.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:21:11.739: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (1
92.168.4.4)
*Feb 23 00:21:11.739: RIP: build flash update entries
*Feb 23 00:21:11.739:   192.168.6.0/24 via 0.0.0.0, metric 5, tag 0
dallas#
*Feb 23 00:21:11.739: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:21:12.807: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:21:12.807:      192.168.6.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
```

```
*Feb 23 00:21:14.807: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (192.168.0.9)
*Feb 23 00:21:14.807: RIP: build flash update entries
*Feb 23 00:21:14.807:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:14.807: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/1 (192.168.0.14)
*Feb 23 00:21:14.807: RIP: build flash update entries
*Feb 23 00:21:14.807:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:14.807: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (1
92.168.4.4)
*Feb 23 00:21:14.807: RIP: build flash update entries
*Feb 23 00:21:14.807:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
dallas#
*Feb 23 00:21:14.807: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:21:17.655: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:21:17.655: RIP: build update entries
*Feb 23 00:21:17.655:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:17.655:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:17.655:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:17.655:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:17.655:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:17.655:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:17.655:   192.168.1.0/24 via 0.0.0.0, metric 4, tag 0
*Feb 23 00:21:17.655:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:21:17.655:   192.168.2.0/24 via 0.0.0.0, metric 5, tag 0
*Feb 23 00:21:17.655:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:17.655:   192.168.3.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:21:17.655:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:17.655:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:21:17.655:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:17.655:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:17.655:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:17.659: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:21:19.947: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:21:19.947: RIP: build update entries
*Feb 23 00:21:19.947:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:19.947:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:19.947:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:19.947:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:19.947:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:19.947:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:19.947:   192.168.5.0/24 via 0.0.0.0, metric 6, tag 0
*Feb 23 00:21:19.947:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
dallas#
*Feb 23 00:21:22.807: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:21:22.807:      192.168.1.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:22.807:      192.168.5.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:22.811: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:21:22.811:      192.168.1.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:22.811:      192.168.2.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:22.811:      192.168.3.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
*Feb 23 00:21:24.807: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/0 (192.168.0.9)
*Feb 23 00:21:24.807: RIP: build flash update entries
*Feb 23 00:21:24.807:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807: RIP: sending v2 flash update to 224.0.0.9 via FastEthernet
0/1 (192.168.0.14)
*Feb 23 00:21:24.807: RIP: build flash update entries
*Feb 23 00:21:24.807:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807: RIP: sending v2 flash update to 224.0.0.9 via Loopback0 (1
92.168.4.4)
*Feb 23 00:21:24.807: RIP: build flash upda
dallas#te entries
*Feb 23 00:21:24.807:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.807:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:24.811: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
*Feb 23 00:21:25.363: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:21:25.363: RIP: build update entries
*Feb 23 00:21:25.363:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:25.363:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:25.363:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:25.363:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:25.363:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:25.363:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:25.363:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:25.363:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:25.363:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:25.363:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:25.363:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#
dallas#
*Feb 23 00:21:26.811: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 00:21:26.811:      192.168.2.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:26.811:      192.168.3.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:26.811: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 00:21:26.811:      192.168.5.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
dallas#
*Feb 23 00:21:36.467: RIP: received v2 update from 192.168.0.10 on FastEthernet0
```

```
/0
*Feb 23 00:21:36.467:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 00:21:36.467:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 00:21:36.467:      192.168.0.24/30 via 0.0.0.0 in 3 hops
*Feb 23 00:21:36.467:      192.168.1.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.467:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:21:36.467:      192.168.2.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.467:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 00:21:36.467:      192.168.3.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.467:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 00:21:36.467:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.467:      192.168.5.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.467:      192.168.6.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.695: RIP: re
dallas#ceived v2 update from 192.168.0.13 on FastEthernet0/1
*Feb 23 00:21:36.695:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 00:21:36.695:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 00:21:36.695:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 00:21:36.695:      192.168.1.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.695:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 00:21:36.695:      192.168.2.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.695:      192.168.3.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.695:      192.168.4.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.699:      192.168.5.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.699:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 00:21:36.699:      192.168.6.0/24 via 0.0.0.0 in 16 hops  (inaccessible)
*Feb 23 00:21:36.699:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
dallas#
*Feb 23 00:21:44.991: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 00:21:44.991: RIP: build update entries
*Feb 23 00:21:44.991:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:44.991:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:44.991:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:44.991:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:44.991:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:44.991:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:44.991:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:44.991:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 00:21:44.991:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:44.991:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:44.991:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:44.991:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:44.991:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:44.991:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:44.991:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:44.991:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:44.995: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 00:21:48.439: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 00:21:48.439: RIP: build update entries
*Feb 23 00:21:48.439:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:48.439:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:48.439:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:48.439:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:48.439:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
dallas#
*Feb 23 00:21:48.439:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:48.439:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:48.439:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
dallas#
*Feb 23 00:21:52.503: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 00:21:52.503: RIP: build update entries
*Feb 23 00:21:52.503:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:52.503:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:52.503:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 00:21:52.503:   192.168.1.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:52.503:   192.168.2.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:52.503:   192.168.3.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:52.503:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 00:21:52.503:   192.168.5.0/24 via 0.0.0.0, metric 16, tag 0
dallas#
*Feb 23 00:21:52.503:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 00:21:52.503:   192.168.6.0/24 via 0.0.0.0, metric 16, tag 0
*Feb 23 00:21:52.503:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
dallas#no debug ip rip
RIP protocol debugging is off
dallas#
dallas#
dallas#
dallas#
dallas#
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.0.0/30 is subnetted, 6 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:02, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:03, FastEthernet0/1
```

```
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:03, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:02, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:05, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:04, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:04, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:04, FastEthernet0/0
dallas#
dallas#
dallas#
dallas#
dallas#
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:02, FastEthernet0/1
     192.168.0.0/30 is subnetted, 6 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:29, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:03, FastEthernet0/1
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:03, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:29, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:06, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:02, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:03, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:03, FastEthernet0/0
dallas#
dallas#
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.13 4 msec 0 msec 0 msec
  2 192.168.0.17 4 msec *  0 msec
dallas#
dallas#
dallas#
dallas#
dallas con0 is now available
Press RETURN to get started.
dallas>
dallas>
dallas>enable
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.13 0 msec 0 msec 4 msec
  2 192.168.0.17 0 msec *  0 msec
dallas#
dallas#
dallas#
dallas#
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:28, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:28, FastEthernet0/1
     192.168.0.0/30 is subnetted, 6 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:15, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:29, FastEthernet0/1
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:29, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:15, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:04, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:26, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:26, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:26, FastEthernet0/0
dallas#
dallas#
dallas#
dallas#debug ip rip
RIP protocol debugging is on
dallas#
*Feb 23 01:03:29.595: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 01:03:29.595:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 01:03:29.595:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:29.595:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:29.595:      192.168.0.28/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:29.595:      192.168.1.1/32 via 0.0.0.0 in 3 hops
```

```
*Feb 23 01:03:29.595:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 01:03:29.595:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 01:03:33.703: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 01:03:33.703:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:33.703:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:33.703:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:33.703:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:33.703:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:33.703:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:03:33.703:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:03:33.703:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:03:33.703:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
*Feb 23 01:03:44.275: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 01:03:44.275: RIP: build update entries
*Feb 23 01:03:44.275:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:44.275:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:03:44.275:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:03:44.275:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:44.275:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:44.275:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:44.275:   192.168.0.28/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:44.275:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
dallas#
*Feb 23 01:03:44.275:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:44.275:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:44.275:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:44.275:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:44.275: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
*Feb 23 01:03:47.463: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/1 (1
92.168.0.14)
*Feb 23 01:03:47.463: RIP: build update entries
*Feb 23 01:03:47.463:   192.168.0.4/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:47.463:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:03:47.463:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:47.463:   192.168.0.28/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:47.463:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:03:47.463:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:47.463:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
dallas#
*Feb 23 01:03:53.699: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 01:03:53.699: RIP: build update entries
*Feb 23 01:03:53.699:   192.168.0.12/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:03:53.699:   192.168.0.16/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:03:53.699:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:03:53.699:   192.168.5.5/32 via 0.0.0.0, metric 2, tag 0
dallas#
*Feb 23 01:03:55.787: RIP: received v2 update from 192.168.0.13 on FastEthernet0
/1
*Feb 23 01:03:55.787:      192.168.0.4/30 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.0.16/30 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.0.28/30 via 0.0.0.0 in 2 hops
*Feb 23 01:03:55.787:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:03:55.787:      192.168.5.5/32 via 0.0.0.0 in 1 hops
*Feb 23 01:03:55.787:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#no
*Feb 23 01:04:00.339: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 01:04:00.339:      192.168.0.4/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:04:00.339:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:04:00.339:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:04:00.339:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#no debug ip rip
RIP protocol debugging is off
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/1] via 192.168.0.13, 00:00:25, FastEthernet0/1
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.13, 00:00:25, FastEthernet0/1
                    [120/2] via 192.168.0.10, 00:00:21, FastEthernet0/0
     192.168.0.0/30 is subnetted, 7 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
C       192.168.0.12 is directly connected, FastEthernet0/1
R       192.168.0.4 [120/2] via 192.168.0.10, 00:00:22, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.13, 00:00:27, FastEthernet0/1
                     [120/2] via 192.168.0.10, 00:00:22, FastEthernet0/0
R       192.168.0.28 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
R       192.168.0.16 [120/1] via 192.168.0.13, 00:00:00, FastEthernet0/1
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.13, 00:00:00, FastEthernet0/1
                    [120/3] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:24, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:24, FastEthernet0/0
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
```

```
Tracing the route to 192.168.6.6
  1 192.168.0.10 0 msec
    192.168.0.13 4 msec
    192.168.0.10 0 msec
  2 192.168.0.17 0 msec
    192.168.0.30 4 msec *
dallas#
dallas#
dallas#
dallas#
dallas#
dallas#
```

5. Shut down two existing links

```
dallas#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
dallas(config)#
dallas(config)#^Z
dallas#
dallas#
dallas#
*Feb 23 01:11:21.859: %SYS-5-CONFIG_I: Configured from console by console
dallas#
dallas#config t
Enter configuration commands, one per line.  End with CNTL/Z.
dallas(config)#interface FastEthernet0/0
dallas(config-if)#?
dallas(config-if)#shutdown
dallas(config-if)#
*Feb 23 01:12:18.191: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state
to administratively down
*Feb 23 01:12:19.191: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
dallas(config-if)#interface FastEthernet0/1
*Feb 23 01:12:31.563: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
dallas(config-if)#interface FastEthernet0/1
dallas(config-if)#shutdown
dallas(config-if)#
*Feb 23 01:13:04.759: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state
to administratively down
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#interface FastEthernet0/0
dallas(config-if)#ip address 192.168.0.9 255.255.255.252
dallas(config-if)#no shutdown
dallas(config-if)#
*Feb 23 01:15:05.171: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Feb 23 01:15:06.171: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#
dallas(config-if)#^Z
dallas#
*Feb 23 01:16:29.495: %SYS-5-CONFIG_I: Configured from console by console
dallas#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route
Gateway of last resort is not set
     192.168.4.0/32 is subnetted, 1 subnets
C       192.168.4.4 is directly connected, Loopback0
     192.168.5.0/32 is subnetted, 1 subnets
R       192.168.5.5 [120/3] via 192.168.0.10, 00:00:08, FastEthernet0/0
     192.168.6.0/32 is subnetted, 1 subnets
R       192.168.6.6 [120/2] via 192.168.0.10, 00:00:08, FastEthernet0/0
     192.168.0.0/30 is subnetted, 5 subnets
C       192.168.0.8 is directly connected, FastEthernet0/0
R       192.168.0.24 [120/2] via 192.168.0.10, 00:00:08, FastEthernet0/0
R       192.168.0.28 [120/1] via 192.168.0.10, 00:00:09, FastEthernet0/0
R       192.168.0.16 [120/2] via 192.168.0.10, 00:00:09, FastEthernet0/0
R       192.168.0.20 [120/1] via 192.168.0.10, 00:00:09, FastEthernet0/0
     192.168.1.0/32 is subnetted, 1 subnets
R       192.168.1.1 [120/3] via 192.168.0.10, 00:00:11, FastEthernet0/0
     192.168.2.0/32 is subnetted, 1 subnets
R       192.168.2.2 [120/2] via 192.168.0.10, 00:00:11, FastEthernet0/0
     192.168.3.0/32 is subnetted, 1 subnets
R       192.168.3.3 [120/1] via 192.168.0.10, 00:00:11, FastEthernet0/0
dallas#
dallas#
dallas#
```

6. Section 6 Shut down two existing Links

```
dallas#
dallas#
dallas#debug ip rip
RIP protocol debugging is on
dallas#
dallas#
dallas#
*Feb 23 01:18:14.939: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 01:18:14.939:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:14.939:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:14.939:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:14.939:      192.168.2.2/32 via 0.0.0.0 in 2 hops
```

```
*Feb 23 01:18:14.939:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:18:14.939:      192.168.5.5/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:14.939:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#
dallas#
dallas#
dallas#
*Feb 23 01:18:23.039: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 01:18:23.039: RIP: build update entries
*Feb 23 01:18:23.039:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
dallas#
*Feb 23 01:18:26.239: RIP: sending v2 update to 224.0.0.9 via Loopback0 (192.168
.4.4)
*Feb 23 01:18:26.239: RIP: build update entries
*Feb 23 01:18:26.239:   192.168.0.8/30 via 0.0.0.0, metric 1, tag 0
*Feb 23 01:18:26.239:   192.168.0.16/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.0.20/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:18:26.239:   192.168.0.24/30 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.0.28/30 via 0.0.0.0, metric 2, tag 0
*Feb 23 01:18:26.239:   192.168.1.1/32 via 0.0.0.0, metric 4, tag 0
*Feb 23 01:18:26.239:   192.168.2.2/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239:   192.168.3.3/32 via 0.0.0.0, metric 2, tag 0
dallas#
*Feb 23 01:18:26.239:   192.168.5.5/32 via 0.0.0.0, metric 4, tag 0
*Feb 23 01:18:26.239:   192.168.6.6/32 via 0.0.0.0, metric 3, tag 0
*Feb 23 01:18:26.239: RIP: ignored v2 packet from 192.168.4.4 (sourced from one
of our addresses)
dallas#
dallas#
dallas#
dallas#
*Feb 23 01:18:44.551: RIP: received v2 update from 192.168.0.10 on FastEthernet0
/0
*Feb 23 01:18:44.551:      192.168.0.16/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.0.20/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.0.24/30 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.0.28/30 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.1.1/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:44.551:      192.168.2.2/32 via 0.0.0.0 in 2 hops
*Feb 23 01:18:44.551:      192.168.3.3/32 via 0.0.0.0 in 1 hops
*Feb 23 01:18:44.551:      192.168.5.5/32 via 0.0.0.0 in 3 hops
*Feb 23 01:18:44.551:      192.168.6.6/32 via 0.0.0.0 in 2 hops
dallas#no debug
*Feb 23 01:18:52.511: RIP: sending v2 update to 224.0.0.9 via FastEthernet0/0 (1
92.168.0.9)
*Feb 23 01:18:52.511: RIP: build update entries
*Feb 23 01:18:52.511:   192.168.4.4/32 via 0.0.0.0, metric 1, tag 0
dallas#no debug ip rip
RIP protocol debugging is off
dallas#
dallas#
dallas#
dallas#
dallas#
dallas#traceroute 192.168.6.6
Type escape sequence to abort.
Tracing the route to 192.168.6.6
  1 192.168.0.10 0 msec 0 msec 4 msec
  2 192.168.0.30 8 msec *  8 msec
dallas#
dallas#
dallas#ping 192.168.0.12
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.12, timeout is 2 seconds:
.....
dallas#
dallas#
dallas#ping 192.168.0.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.4, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```