

Lab 02 - Count to Infinity Problem in RIP

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Question.1

R Identifies that the route was learned dynamically from another router using the RIP routing protocol. **C** Identifies that the address in the routing table belongs to a directly connected router.

NOTE: I guess there's something wrong with router0 and router1 routing tables. I configured them multiple times but found no difference. I guess they both should have an R entry.

Question.2

RIP uses hop count as the metric to determine the best path. Here, metric = 1 refers to the directly connected networks(addresses) that can be reached immediately through one hop. metric = 2 refers to addresses learned through RIP protocol and can be reached through 2 hops.

Question.3

Before Saturation, Router2 sends updates to all interfaces in its routing table and receives updates from ones that are active only. It realizes that FastEthernet0/0 is down when the metric reaches 16. (RIP limits the maximum hop count to 15 so when it reaches 16 it means that the interface is possibly down.)

Question.4

After Saturation, addresses routed using RIP are set as possibly down. That shows in the routing table of Router2. It should also show in Router1 but because there was something wrong with the initial routing table I can't show that difference.

```

      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - IS-IS, 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

C    192.168.12.0/24 is directly connected, Serial2/0
C    192.168.13.0/24 is directly connected, Serial3/0

Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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

C    192.168.12.0/24 is directly connected, Serial2/0
C    192.168.13.0/24 is directly connected, Serial3/0

Router#

```

Figure 1: Q1. Router0 Routing Table

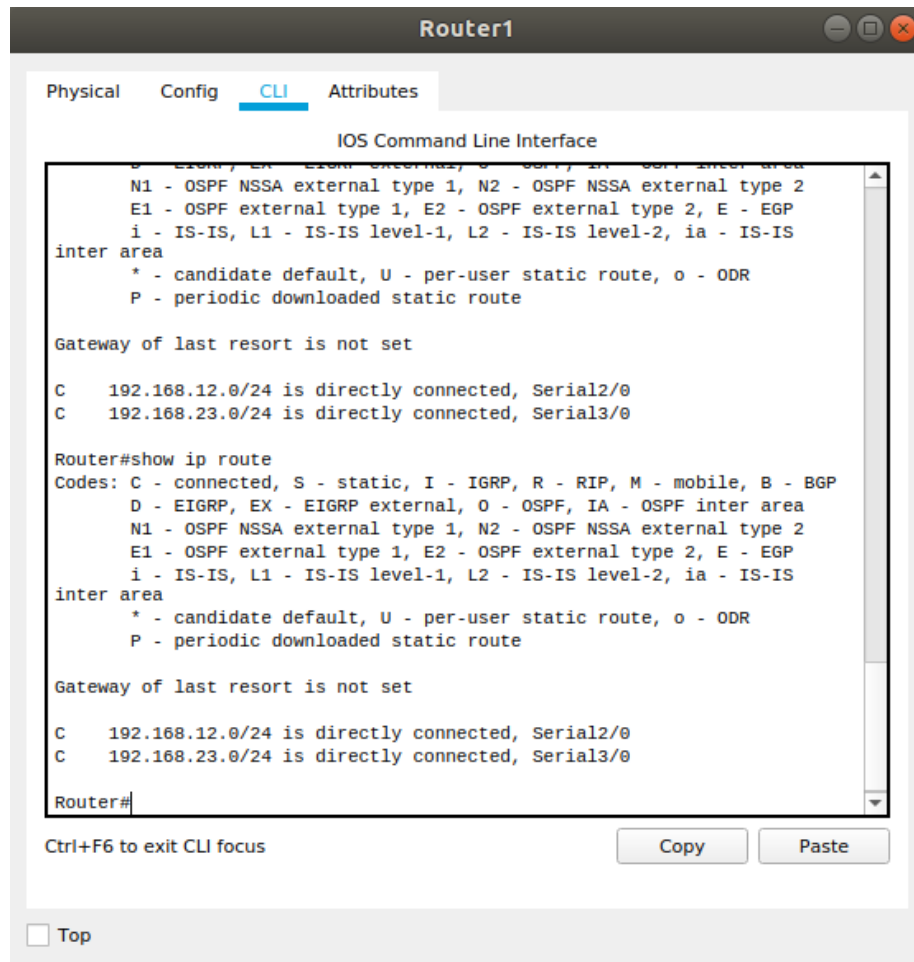


Figure 2: Q1. Router1 Routing Table

The screenshot shows a window titled "Router2" with tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the IOS Command Line Interface. The user has entered the command `network 192.168.34.0` in configuration mode, which has been applied to interface `FastEthernet0/0`. The user has then exited configuration mode and entered the `show ip route` command. The output shows the routing table with four entries: three directly connected networks (192.168.13.0/24, 192.168.23.0/24, and 192.168.34.0/24) and one static route (192.168.44.0/24) pointing to 192.168.34.2. The window also includes a "Copy" button, a "Paste" button, and a "Top" link.

```
Router2
Physical Config CLI Attributes
IOS Command Line Interface
Router(config-router)#network 192.168.34.0
Router(config-router)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed
state to up
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
       i - IS-IS, 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

C    192.168.13.0/24 is directly connected, Serial2/0
C    192.168.23.0/24 is directly connected, Serial3/0
C    192.168.34.0/24 is directly connected, FastEthernet0/0
R    192.168.44.0/24 [120/1] via 192.168.34.2, 00:00:16, FastEthernet0/0
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

Figure 3: Q1. Router2 Routing Table

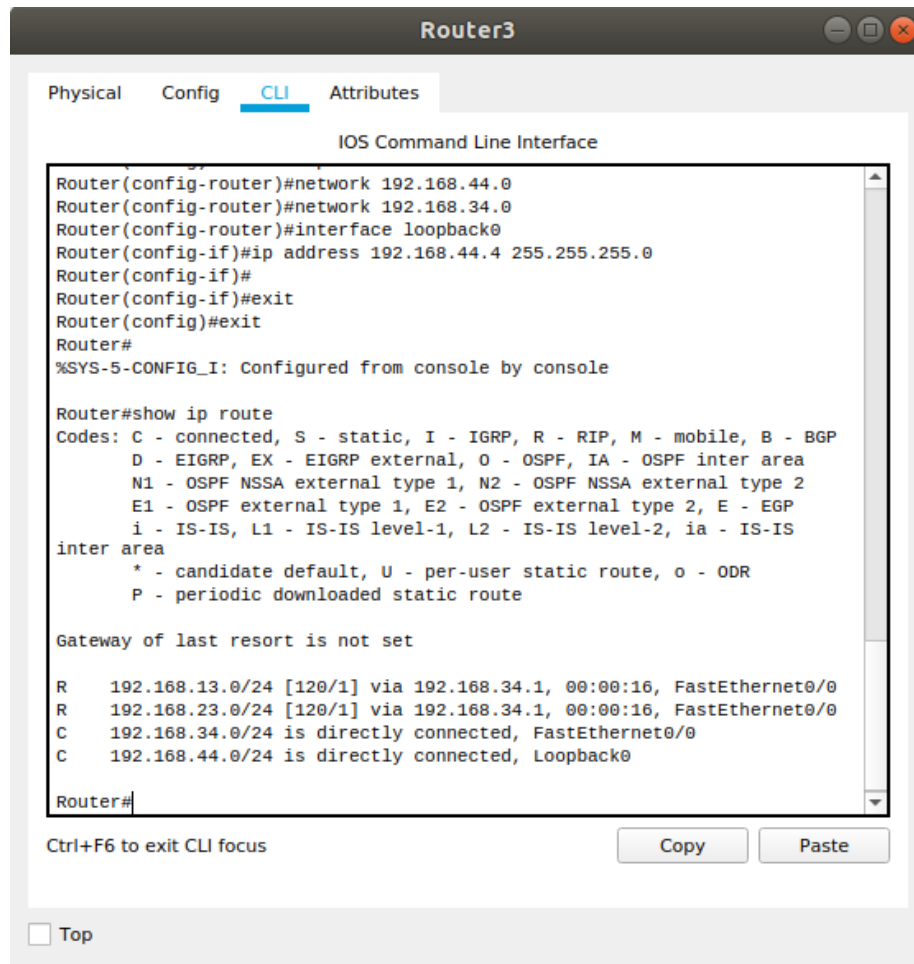


Figure 4: Q1. Router3 Routing Table

```

Candidate default, 0 - per user static route, 0 - con
P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.13.0/24 is directly connected, Serial2/0
C    192.168.23.0/24 is directly connected, Serial3/0
C    192.168.34.0/24 is directly connected, FastEthernet0/0
R    192.168.44.0/24 [120/1] via 192.168.34.2, 00:00:16, FastEthernet0/0

Router#debug ip rip
RIP protocol debugging is on
Router#RIP: sending v1 update to 255.255.255.255 via Serial2/0
(192.168.13.2)
RIP: build update entries
    network 192.168.23.0 metric 1
    network 192.168.34.0 metric 1
    network 192.168.44.0 metric 2
RIP: sending v1 update to 255.255.255.255 via Serial3/0 (192.168.23.2)
RIP: build update entries
    network 192.168.13.0 metric 1
    network 192.168.34.0 metric 1
    network 192.168.44.0 metric 2
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0
(192.168.34.1)
RIP: build update entries
    network 192.168.13.0 metric 1
    network 192.168.23.0 metric 1

```

Figure 5: Q2. Router2 RIP updates

```
Router(config-if)#ip access-group 1 in
^
% Invalid input detected at '^' marker.

Router(config-if)#ip access-group 1 in
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#debug ip rip
RIP protocol debugging is on
Router#RIP: sending v1 update to 255.255.255.255 via Serial2/0
(192.168.13.2)
RIP: build update entries
    network 192.168.23.0 metric 1
    network 192.168.34.0 metric 1
    network 192.168.44.0 metric 2
RIP: sending v1 update to 255.255.255.255 via Serial3/0 (192.168.23.2)
RIP: build update entries
    network 192.168.13.0 metric 1
    network 192.168.34.0 metric 1
    network 192.168.44.0 metric 2
RIP: sending v1 update to 255.255.255.255 via FastEthernet0/0
(192.168.34.1)
RIP: build update entries
    network 192.168.13.0 metric 1
    network 192.168.23.0 metric 1
```

Figure 6: Q3. Router2 RIP updates before Saturation

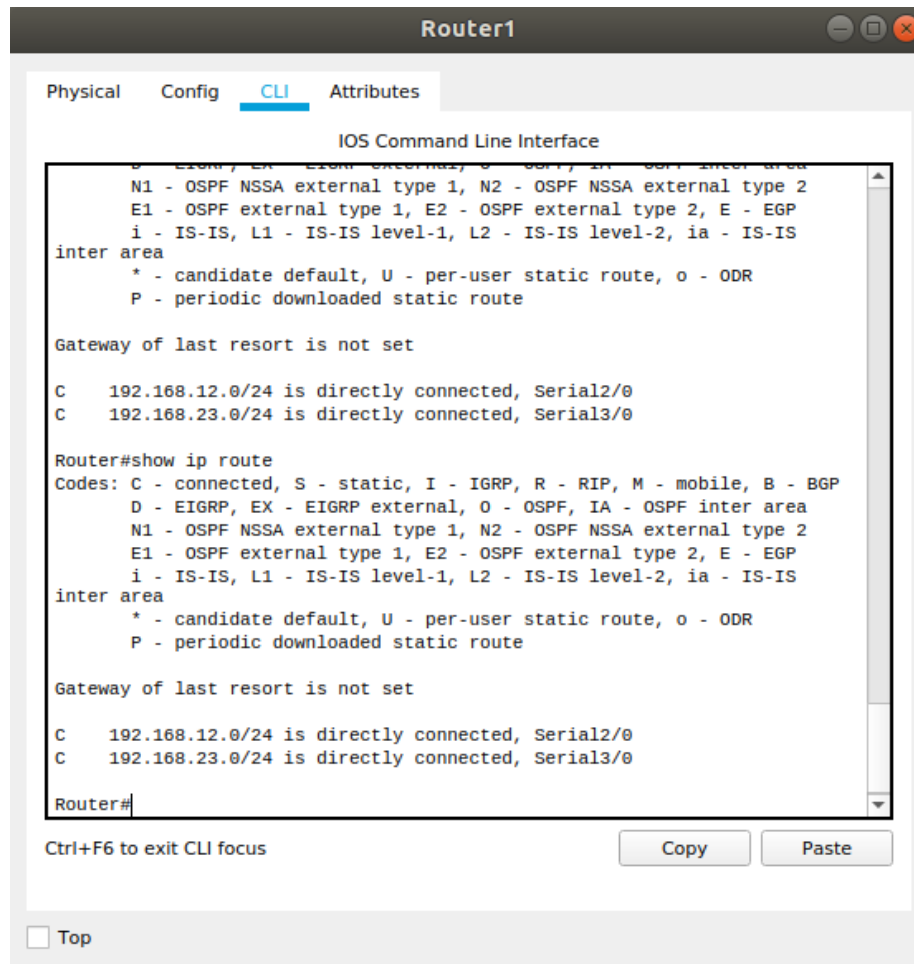


Figure 7: Q4. Router1 routing table after Saturation

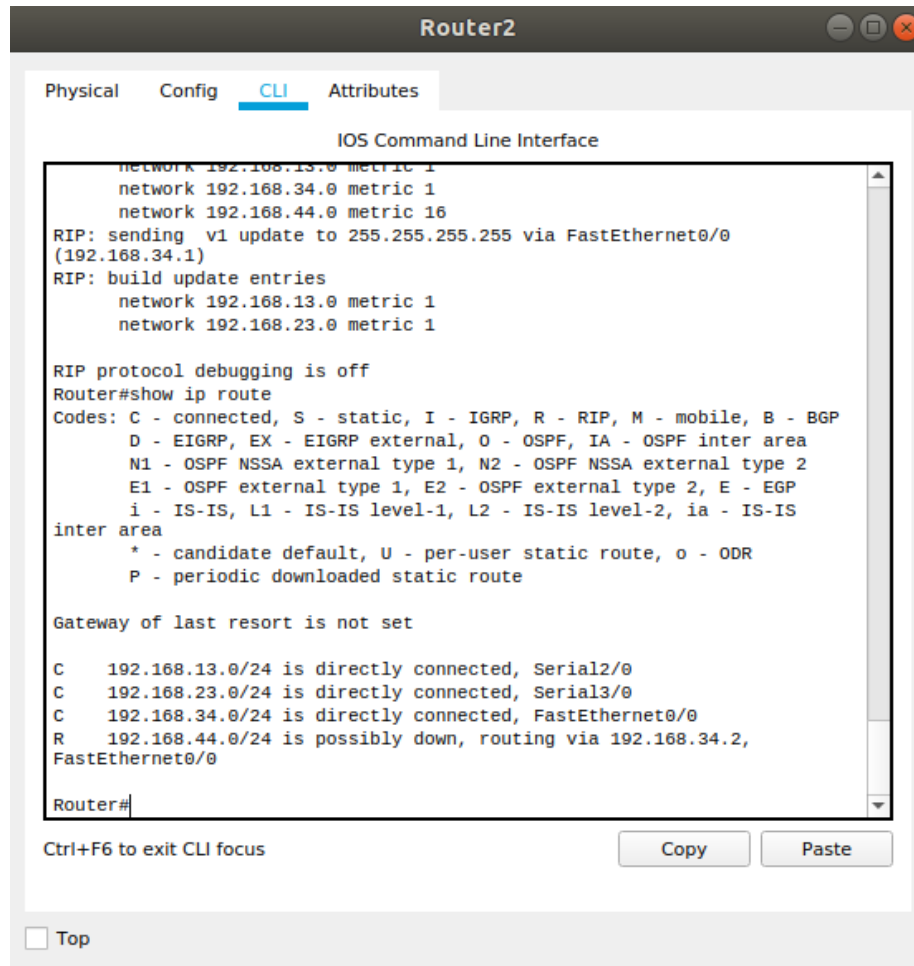


Figure 8: Q4. Router2 routing table after Saturation