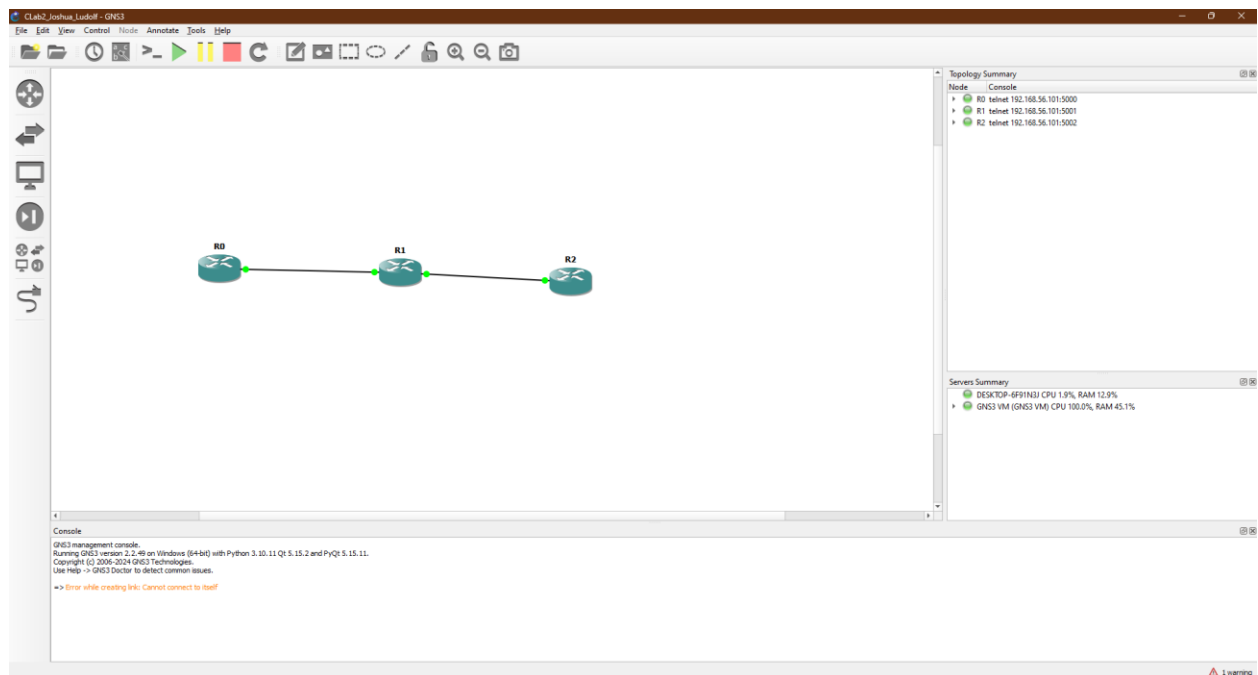


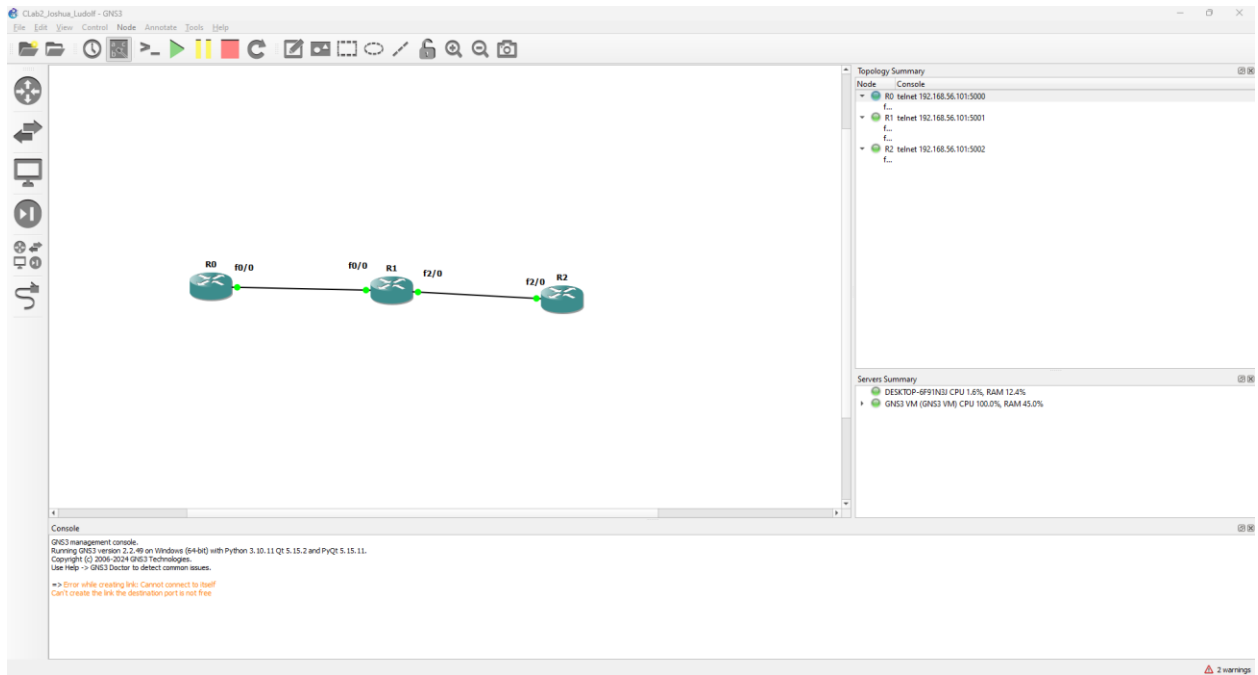
CLab #2 Configuring RIP

CSCI 4406 – Computer Networks
Joshua Ludolf

Creating Topology that utilizes 3 routers: R0, R1, & R2. R0 links to R1 by using the F 0/0 to F 1/0. R1 links to R2 by using the fast ethernet (f 1/0) to fast ethernet (F 0/0).



All three routers turned on so I can demonstrate RIP, a routing interface that will allow R0 to communicate to R2 with a loopback interface.



Configured R1

```
R1#
R1#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface f0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.252
R1(config-if)#no shutdown
R1(config-if)#inter
*Sep  6 00:16:09.739: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Sep  6 00:16:10.739: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R1(config-if)#interface f2/0
R1(config-if)#ip address 192.168.2.1 255.255.255.252
R1(config-if)#no shutdown
R1(config-if)#
*Sep  6 00:16:51.507: %LINK-3-UPDOWN: Interface FastEthernet2/0, changed state to up
*Sep  6 00:16:52.507: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to up
R1(config-if)#exit
R1(config)#exit
R1#
*Sep  6 00:16:58.255: %SYS-5-CONFIG_I: Configured from console by console
R1#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, FastEthernet0/0
L       192.168.1.1/32 is directly connected, FastEthernet0/0
      192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/30 is directly connected, FastEthernet2/0
L       192.168.2.1/32 is directly connected, FastEthernet2/0
R1#
```

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Configured R2

```

R1
R2
R3
+
-
□
X

*Sep 6 00:14:56.715: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Sep
R2#6 00:14:56.719: %LINK-5-CHANGED: Interface FastEthernet2/0, changed state to administratively down
*Sep 6 00:14:56.723: %LINK-5-CHANGED: Interface FastEthernet2/1, changed state to administratively down
*Sep 6 00:14:56.727: %LINK-5-CHANGED: Interface GigabitEthernet3/0, changed state to administratively down
*Sep 6 00:14:56.851: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Sep 6 00:14:56.851: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Sep 6 00:14:57.715: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
*Sep 6 00:14:57.719: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to down
*Sep 6 00:14:57.723: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to down
*Sep 6 00:14:57.735: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet3/0, changed state to down
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface f0/0
R2(config-if)#ip address 192.168.1.2 255.255.255.252
R2(config-if)#no shutdown
R2(config-if)#exit
*Sep 6 00:18:36.455: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Sep 6 00:18:37.455: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#exit
R2(config)#exit
R2#show
*Sep 6 00:18:40.395: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
        + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, FastEthernet0/0
L       192.168.1.2/32 is directly connected, FastEthernet0/0
R2#
```

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Configured R3

```

R1 R2 R3
*Sep 6 00:14:55.903: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Sep 6 00:14:55.907: %LINK-5-CHANGED: Interface FastEthernet2/0, changed state to administratively down
*Sep 6 00:14:55.911: %LINK-5-CHANGED: Interface FastEthernet2/1, changed state to administratively down
*Sep 6 00:14:55.915: %LINK-5-CHANGED: Interface GigabitEthernet3/0, changed state to administratively down
*Sep 6 00:14:56.167: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Sep 6 00:14:56.171: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Sep 6 00:14:56.951: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
*Sep 6 00:14:56.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/0, changed state to down
*Sep 6 00:14:56.959: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet2/1, changed state to down
*Sep 6 00:14:56.963: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet3/0, changed state to down
R3#
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#interface f0/0
R3(config-if)#ip address 192.168.2.2 255.255.255.252
R3(config-if)#no shutdown
R3(config-if)#
*Sep 6 00:20:08.731: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Sep 6 00:20:09.731: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R3(config-if)#exit
R3(config)#exit
R3#
*Sep 6 00:20:14.079: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set

192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.2.0/30 is directly connected, FastEthernet0/0
L    192.168.2.2/32 is directly connected, FastEthernet0/0
R3#
```

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Testing the connections

```

R1#ping 192.168.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 56/62/64 ms
R1#ping 192.168.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 36/47/56 ms
R1#
```

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```
R2#ping 192.168.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 28/75/232 ms
R2#ping 192.168.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R2#
```

```
R3#ping 192.168.2.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 40/115/360 ms
R3#ping 192.168.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R3#
```

Performing RIP

```
R1#configure
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
R1(config-router)#exit
R1(config)#exit
R1#show
*Sep  6 00:25:29.175: %SYS-5-CONFIG_I: Configured from console by console
R1#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

    192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, FastEthernet0/0
L       192.168.1.1/32 is directly connected, FastEthernet0/0
    192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/30 is directly connected, FastEthernet2/0
L       192.168.2.1/32 is directly connected, FastEthernet2/0
R1#
```

```

R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 192.168.1.0
R2(config-router)#network 192.168.2.0
R2(config-router)#exit
R2(config)#exit
R2#show
*Sep  6 00:26:31.951: %SYS-5-CONFIG_I: Configured from console by console
R2#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/30 is directly connected, FastEthernet0/0
L       192.168.1.2/32 is directly connected, FastEthernet0/0
R       192.168.2.0/24 [120/1] via 192.168.1.1, 00:00:15, FastEthernet0/0
R2#

```

```

R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 192.168.1.0
R3(config-router)#network 192.168.2.0
R3(config-router)#exit
R3(config)#exit
R3#show ip route
*Sep  6 00:27:39.443: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/30 is directly connected, FastEthernet0/0
L       192.168.2.2/32 is directly connected, FastEthernet0/0
R3#

```

R2 & R3 can ping each other now

```
R2#ping 192.168.2.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 76/173/524 ms
R2#
```

```
R3#ping 192.168.1.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/132/272 ms
R3#
```

From this lab, I learned that the Routing Interface Protocol allows us to traffic beyond local networks. Although I didn't see R in router 1 (R1) and router 3 (R3). Additionally, I learned that it's very important to keep track of which router you are manipulating as it will definitely give unexpected results.