

Assignment 4: Frame Relay - Value: 10%

Student Name:	Chris Miele
Class day/time:	12/16/2022

Instructions:

- **IMPORTANT:** The router hostname should be set to **Lastname-RouterX**. So if your last name is Smith and you are setting the hostname for Router2, the hostname should be **Smith-Router2**.
- Use this file to submit your answers. Take screenshots as instructed below. Crop out any irrelevant parts of the screen (**10% penalty if I can't easily read the output in the screenshot**).
- Submit the file in SLATE before the deadline. **You should submit 2 files**; this Word document, and a ZIP file containing all the files in your GNS3 project.

1. Answer the following questions:

Each router has ___ PVCs.

2

2. For each router, show the output of the **show ip interface brief** command:

Output from Router1:

R1


Press RETURN to get started.

```
Miele-Router1#show ip int brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
Serial0/0	unassigned	YES	NVRAM	up	up
Serial0/0.102	30.0.0.1	YES	NVRAM	up	up
Serial0/0.103	20.0.0.1	YES	NVRAM	up	up
Serial0/1	unassigned	YES	NVRAM	administratively down	down
Serial0/2	unassigned	YES	NVRAM	administratively down	down
Serial0/3	unassigned	YES	NVRAM	administratively down	down
Loopback0	11.0.0.1	YES	NVRAM	up	up

```
Miele-Router1#
```

Output from Router2:

 R2

Press RETURN to get started.

Miele-Router2#show ip int brief

Interface	IP-Address	OK?	Method	Status	Protocol
Serial0/0	unassigned	YES	NVRAM	up	up
Serial0/0.201	30.0.0.2	YES	NVRAM	up	up
Serial0/0.203	10.0.0.1	YES	NVRAM	up	up
Serial0/1	unassigned	YES	NVRAM	administratively down	down
Serial0/2	unassigned	YES	NVRAM	administratively down	down
Serial0/3	unassigned	YES	NVRAM	administratively down	down
Loopback0	12.0.0.1	YES	NVRAM	up	up

Miele-Router2#

Output from Router3:

```
R3
Miele-Router3 con0 is now available

Press RETURN to get started.

Miele-Router3#show ip int brief
Interface      IP-Address      OK? Method Status      Protocol
Serial0/0      unassigned      YES NVRAM    up          up
Serial0/0.301   20.0.0.2        YES NVRAM    up          up
Serial0/0.302   10.0.0.2        YES NVRAM    up          up
Serial0/1      unassigned      YES NVRAM    administratively down down
Serial0/2      unassigned      YES NVRAM    administratively down down
Serial0/3      unassigned      YES NVRAM    administratively down down
Loopback0      13.0.0.1        YES NVRAM    up          up
Miele-Router3#
```

3. For each router, show the output of the **show ip route** command:

Output from Router1:

```
R1
Press RETURN to get started.

Miele-Router1#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

C    20.0.0.0/8 is directly connected, Serial0/0.103
R    10.0.0.0/8 [120/1] via 30.0.0.2, 00:00:24, Serial0/0.102
      [120/1] via 20.0.0.2, 00:00:03, Serial0/0.103
C    11.0.0.0/8 is directly connected, Loopback0
R    12.0.0.0/8 [120/1] via 30.0.0.2, 00:00:24, Serial0/0.102
R    13.0.0.0/8 [120/1] via 20.0.0.2, 00:00:03, Serial0/0.103
C    30.0.0.0/8 is directly connected, Serial0/0.102
Miele-Router1#
```

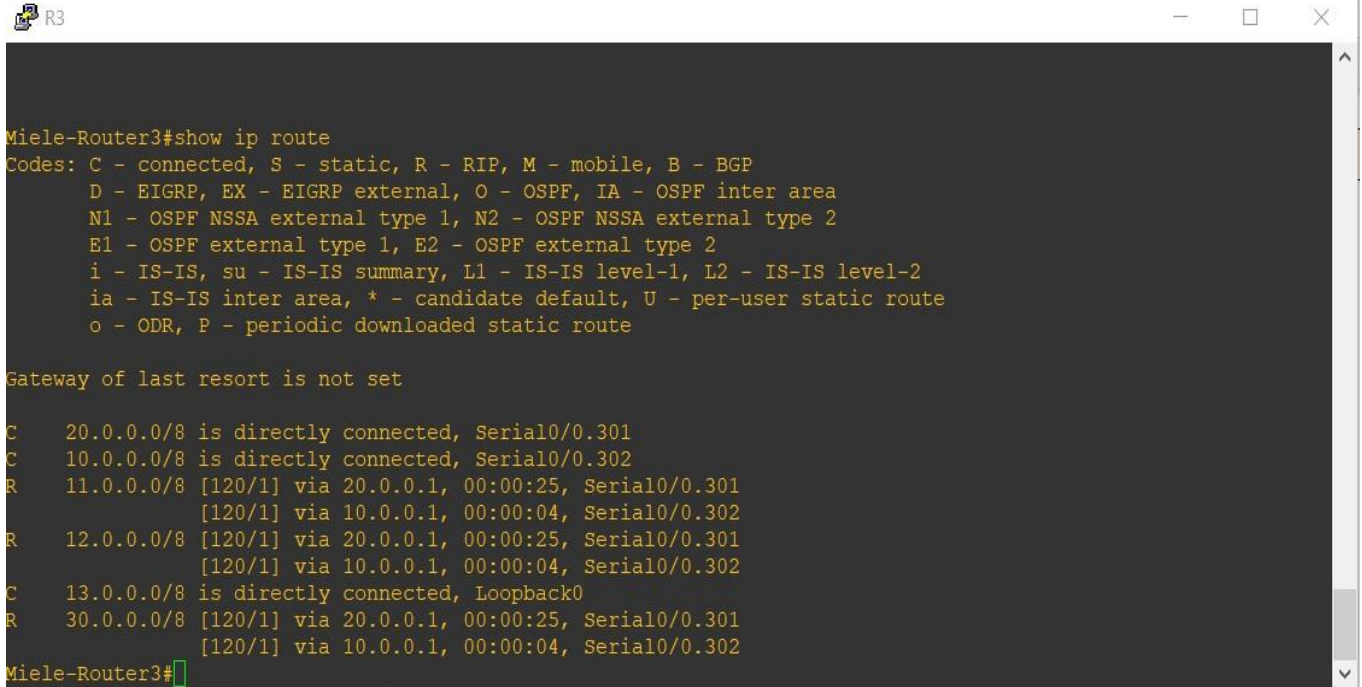
Output from Router2:

```
R2
Miele-Router2#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

R    20.0.0.0/8 [120/1] via 30.0.0.1, 00:00:06, Serial0/0.201
      [120/1] via 10.0.0.2, 00:00:23, Serial0/0.203
C    10.0.0.0/8 is directly connected, Serial0/0.203
R    11.0.0.0/8 [120/1] via 30.0.0.1, 00:00:06, Serial0/0.201
C    12.0.0.0/8 is directly connected, Loopback0
R    13.0.0.0/8 [120/1] via 30.0.0.1, 00:00:06, Serial0/0.201
      [120/1] via 10.0.0.2, 00:00:24, Serial0/0.203
C    30.0.0.0/8 is directly connected, Serial0/0.201
Miele-Router2#
```

Output from Router3:



```
Miele-Router3#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

C    20.0.0.0/8 is directly connected, Serial0/0.301
C    10.0.0.0/8 is directly connected, Serial0/0.302
R    11.0.0.0/8 [120/1] via 20.0.0.1, 00:00:25, Serial0/0.301
       [120/1] via 10.0.0.1, 00:00:04, Serial0/0.302
R    12.0.0.0/8 [120/1] via 20.0.0.1, 00:00:25, Serial0/0.301
       [120/1] via 10.0.0.1, 00:00:04, Serial0/0.302
C    13.0.0.0/8 is directly connected, Loopback0
R    30.0.0.0/8 [120/1] via 20.0.0.1, 00:00:25, Serial0/0.301
       [120/1] via 10.0.0.1, 00:00:04, Serial0/0.302
Miele-Router3#
```

4. For each router, run the **show run** command, and take screenshots of the parts showing the **interface configurations** and the part showing the **RIP configuration**. Do not include the rest of the config file. **There will be a 10% penalty if you simply paste a screenshot of the entire config file.**

Output from Router1:

```
R1
interface Loopback0
 ip address 11.0.0.1 255.0.0.0
!
interface Serial0/0
 no ip address
 encapsulation frame-relay
 serial restart-delay 0
!
interface Serial0/0.102 point-to-point
 ip address 30.0.0.1 255.0.0.0
 frame-relay interface-dlci 102
!
interface Serial0/0.103 point-to-point
 ip address 20.0.0.1 255.0.0.0
 frame-relay interface-dlci 103
!
--More--
```

```
router rip
 network 11.0.0.0
 network 20.0.0.0
 network 30.0.0.0
!
```

Output from Router2:


```
R2
!
interface Loopback0
 ip address 12.0.0.1 255.0.0.0
!
interface Serial0/0
 no ip address
 encapsulation frame-relay
 serial restart-delay 0
!
interface Serial0/0.201 point-to-point
 ip address 30.0.0.2 255.0.0.0
 frame-relay interface-dlci 201
!
interface Serial0/0.203 point-to-point
 ip address 10.0.0.1 255.0.0.0
 frame-relay interface-dlci 203
!
--More--

router rip
 network 10.0.0.0
 network 12.0.0.0
 network 30.0.0.0
!
```

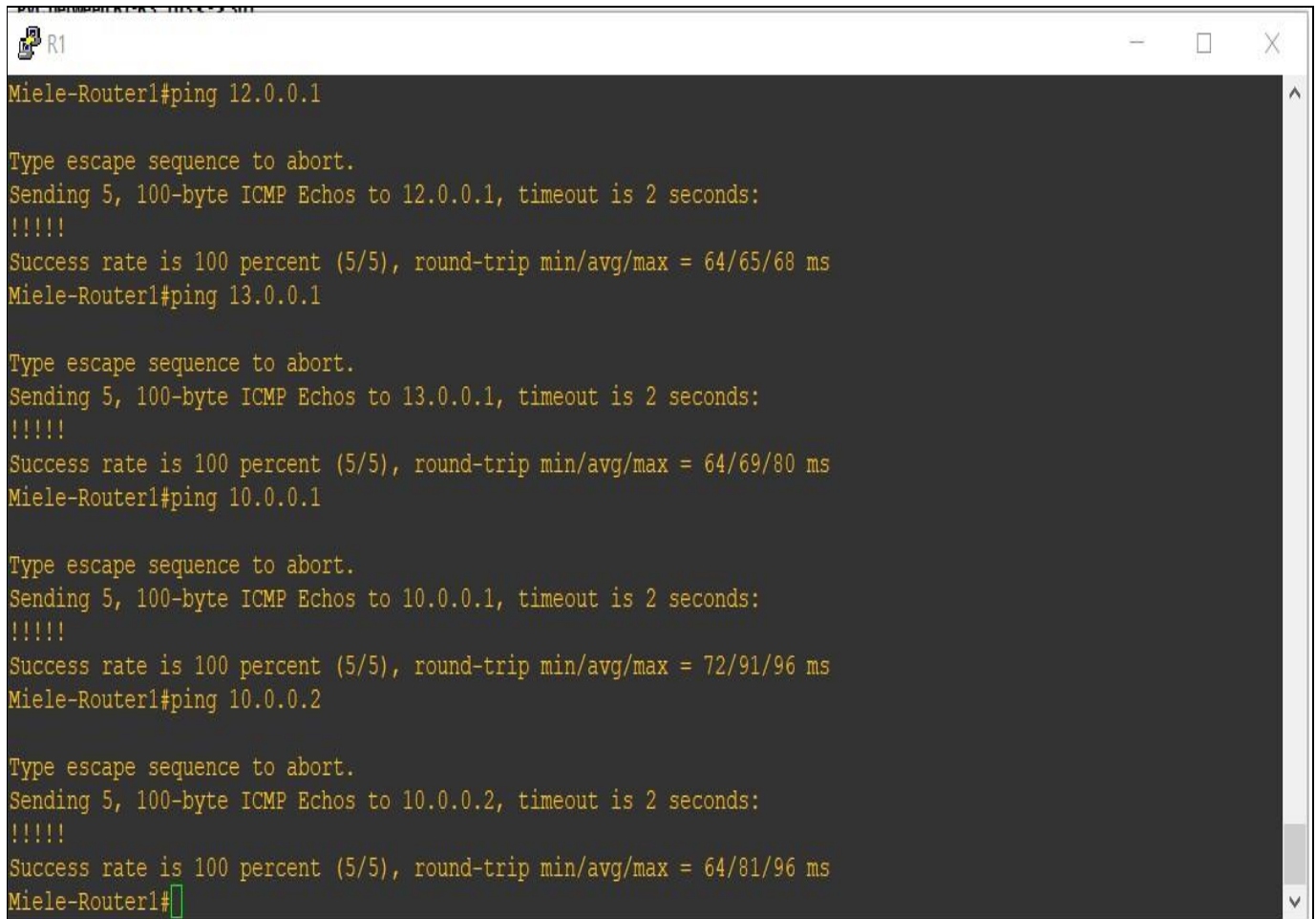
Output from Router3:

```
R3
interface Loopback0
 ip address 13.0.0.1 255.0.0.0
!
interface Serial0/0
 no ip address
 encapsulation frame-relay
 serial restart-delay 0
!
interface Serial0/0.301 point-to-point
 ip address 20.0.0.2 255.0.0.0
 frame-relay interface-dlci 301
!
interface Serial0/0.302 point-to-point
 ip address 10.0.0.2 255.0.0.0
 frame-relay interface-dlci 302
!
--More--

router rip
 network 10.0.0.0
 network 13.0.0.0
 network 20.0.0.0
!
```

Output from Router1:

5. From each router, ping all the interfaces on networks that are not directly connected to the router. For example, from Router1 you should ping 12.0.0.1, 13.0.0.1, 10.0.0.1 and 10.0.0.2. Take one screenshot showing the 4 ping results. **There will be a 10% penalty if the screenshot contains irrelevant information.**



```
R1
Miele-Router1#ping 12.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 12.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/65/68 ms
Miele-Router1#ping 13.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 13.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/69/80 ms
Miele-Router1#ping 10.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 72/91/96 ms
Miele-Router1#ping 10.0.0.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/81/96 ms
Miele-Router1#
```

Output from Router2:

```
R2
Miele-Router2#ping 13.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 13.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 68/89/100 ms
Miele-Router2#ping 11.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 11.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/65/68 ms
Miele-Router2#ping 20.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 20.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 52/80/100 ms
Miele-Router2#ping 20.0.0.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 20.0.0.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 96/96/100 ms
Miele-Router2#
```

Output from Router3:

```
R3
Miele-Router3#ping 12.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 12.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/81/96 ms
Miele-Router3#ping 11.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 11.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 68/84/96 ms
Miele-Router3#ping 30.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.0.0.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/79/100 ms
Miele-Router3#ping 30.0.0.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.0.0.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 96/104/128 ms
Miele-Router3#
```

6. Take a screenshot of your frame relay switch mapping table and the GNS3 network topology. Use the screenshot feature in GNS3 (click File, Take a screenshot).

Frame relay switch mapping table:

Node properties

FR1 configuration

General

Name:

Source

Port:

DLCI:

Destination

Port:

DLCI:

Mapping

Port:DLCI	Port:DLCI
1:102	2:201
1:103	3:301
2:203	3:302

GNS3 Network Topology:

Assignment 4.gns3 - GNS3

File Edit View Control Device Annotate Tools Help

PVC between R1-R2: 102 <-> 201
PVC between R1-R3: 103 <-> 301
PVC between R2-R3: 203 <-> 302

R1 Configuration:

```

hostname Miele-Router1

int loopback 0
ip addr 11.0.0.1 255.0.0.0

int s0/0
encap frame-relay
no ip addr
no shut

int s0/0.102 point-to-point
ip addr 30.0.0.1 255.0.0.0
no shut
frame-relay interface-dlci 102

int s0/0.103 point-to-point
ip addr 20.0.0.1 255.0.0.0
no shut
frame-relay interface-dlci 103

router rip
network 11.0.0.0
network 20.0.0.0
network 30.0.0.0

end

copy running-config startup-config

```

R2 Configuration:

```

hostname Miele-Router2

int loopback 0
ip addr 12.0.0.1 255.0.0.0

int s0/0
encap frame-relay
no ip addr
no shut

int s0/0.201 point-to-point
ip addr 30.0.0.2 255.0.0.0
no shut
frame-relay interface-dlci 201

int s0/0.203 point-to-point
ip addr 10.0.0.1 255.0.0.0
no shut
frame-relay interface-dlci 203

router rip
network 12.0.0.0
network 30.0.0.0
network 10.0.0.0

end

copy running-config startup-config

```

R3 Configuration:

```

hostname Miele-Router3

int loopback 0
ip addr 13.0.0.1 255.0.0.0

int s0/0
encap frame-relay
no ip addr
no shut

int s0/0.301 point-to-point
ip addr 20.0.0.2 255.0.0.0
no shut
frame-relay interface-dlci 301

int s0/0.302 point-to-point
ip addr 10.0.0.2 255.0.0.0
no shut
frame-relay interface-dlci 302

router rip
network 13.0.0.0
network 10.0.0.0
network 20.0.0.0

end

copy running-config startup-config

```

Console

GNS3 management console.
Running GNS3 version 1.5.2 on Windows (64-bit) with Python 3.5.1 Qt 5.6.0.
Copyright (c) 2006-2022 GNS3 Technologies.
Use Help -> GNS3 Doctor to detect common issues.

=>

X: -970.1505037879431 Y: -394.9234482783626 Z: 2.0

1°C Mostly cloudy 10:30 PM 12/16/2022