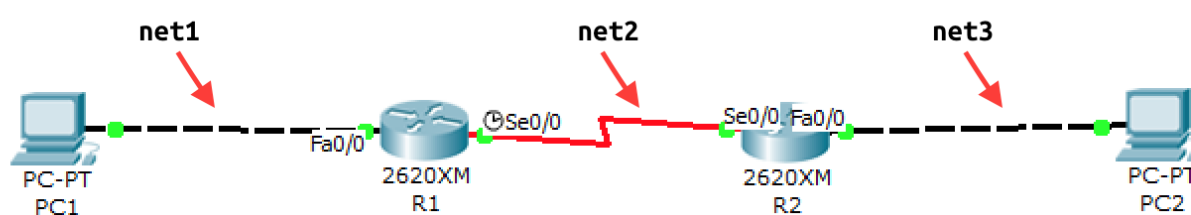


lab5

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- [github lab link](#)

part1

task1



- net1 :
 - ip/mask: 176.141.64.0/26
 - ip: 176.141.64.0
 - mask: 255.255.255.192
- net2 :
 - ip/mask: 176.141.0.0/26
 - ip: 176.141.0.0
 - mask: 255.255.255.192
- net3 :
 - ip/mask: 176.141.128.0/26
 - ip: 176.141.128.0
 - mask: 255.255.255.192

task2

Routers Serial config

- R1 with net2

```
Router>enable
Router#config t
Router(config)#hostname R1
R1(config)#interface serial 0/0
R1(config-if)#ip address 176.141.0.1 255.255.255.192
R1(config-if)#clock rate 64000
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
```

- R2 with net2

```
Router>enable
Router#config t
Router(config)#hostname R2
R2(config)#interface serial 0/0
R2(config-if)#ip address 176.141.0.2 255.255.255.192
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
```

- check connection R1 -> R2 :

```
R1#ping 176.141.0.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 176.141.0.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 15/28/46 ms
```

- check connection R2 -> R1 :

```
R2#ping 176.141.0.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 176.141.0.1, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 31/31/32 ms
```

Routers FastEthernet config

- R1 with net1

```
R1(config)#interface FastEthernet 0/0
R1(config-if)#ip address 176.141.64.2 255.255.255.192
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#do copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

- R2 with net3

```
R2(config)#interface FastEthernet 0/0
R2(config-if)#ip address 176.141.128.2 255.255.255.192
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#do copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

- check connection PC1 -> R1 :

```
PC>ipconfig
IP Address.....: 176.141.64.1
Subnet Mask.....: 255.255.255.192
Default Gateway.....: 176.141.64.2

PC>ping 176.141.64.2
Pinging 176.141.64.2 with 32 bytes of data:
Reply from 176.141.64.2: bytes=32 time=63ms TTL=255
Reply from 176.141.64.2: bytes=32 time=31ms TTL=255
Reply from 176.141.64.2: bytes=32 time=31ms TTL=255
Reply from 176.141.64.2: bytes=32 time=31ms TTL=255

Ping statistics for 176.141.64.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 31ms, Maximum = 63ms, Average = 39ms
```

- check connection PC2 -> R2 :

```
PC>ipconfig
IP Address.....: 176.141.128.1
Subnet Mask.....: 255.255.255.192
Default Gateway.....: 176.141.128.2

PC>ping 176.141.128.2
Pinging 176.141.128.2 with 32 bytes of data:
Reply from 176.141.128.2: bytes=32 time=62ms TTL=255
Reply from 176.141.128.2: bytes=32 time=31ms TTL=255
Reply from 176.141.128.2: bytes=32 time=32ms TTL=255
Reply from 176.141.128.2: bytes=32 time=31ms TTL=255

Ping statistics for 176.141.128.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 31ms, Maximum = 62ms, Average = 39ms
```

task 3

- set default gateway for R1 (net1 & net2)

```
R1(config)#ip route 0.0.0.0 0.0.0.0 176.141.0.2
R1(config)#ip route 176.141.64.0 255.255.255.192 176.141.0.2
```

```
R1#show ip route
Gateway of last resort is 176.141.0.2 to network 0.0.0.0
    176.141.0.0/26 is subnetted, 2 subnets
C       176.141.0.0 is directly connected, Serial0/0
C       176.141.64.0 is directly connected, FastEthernet0/0
S*     0.0.0.0/0 [1/0] via 176.141.0.2
```

- set default gateway for R2 (net2 & net3)

```
R2(config)#ip route 0.0.0.0 0.0.0.0 176.141.0.1
R2(config)#ip route 176.141.128.0 255.255.255.192 176.141.0.1
```

```
R2#show ip route
Gateway of last resort is 176.141.0.1 to network 0.0.0.0
    176.141.0.0/26 is subnetted, 2 subnets
C       176.141.0.0 is directly connected, Serial0/0
C       176.141.128.0 is directly connected, FastEthernet0/0
S*     0.0.0.0/0 [1/0] via 176.141.0.1
```

- check connection PC1 -> PC2 :

```
PC>ipconfig
IP Address.....: 176.141.128.1
Subnet Mask.....: 255.255.255.192
Default Gateway.....: 176.141.128.2
```

```
PC>ping 176.141.64.1
Pinging 176.141.64.1 with 32 bytes of data:
Reply from 176.141.64.1: bytes=32 time=94ms TTL=126
Reply from 176.141.64.1: bytes=32 time=93ms TTL=126
Reply from 176.141.64.1: bytes=32 time=94ms TTL=126
Reply from 176.141.64.1: bytes=32 time=93ms TTL=126
```

```
Ping statistics for 176.141.64.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 93ms, Maximum = 94ms, Average = 93ms
```

- check connection PC2 -> PC1 :

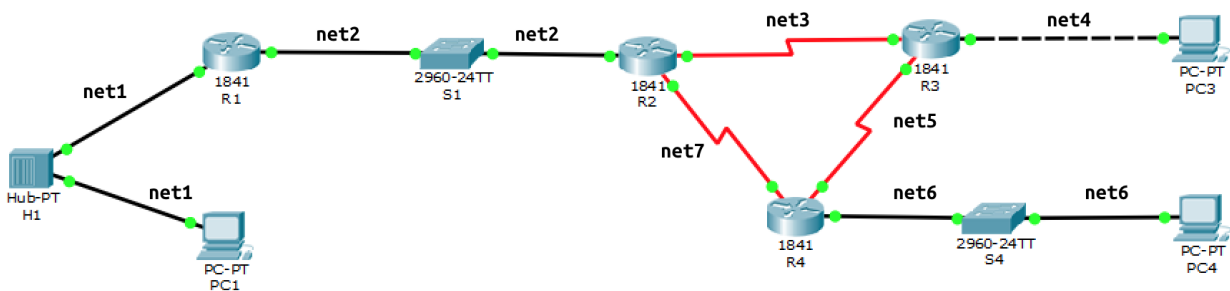
```
PC>ipconfig
IP Address.....: 176.141.64.1
Subnet Mask.....: 255.255.255.192
Default Gateway.....: 176.141.64.2
```

```
PC>ping 176.141.128.1
Pinging 176.141.128.1 with 32 bytes of data:
Reply from 176.141.128.1: bytes=32 time=94ms TTL=126
Reply from 176.141.128.1: bytes=32 time=94ms TTL=126
Reply from 176.141.128.1: bytes=32 time=94ms TTL=126
Reply from 176.141.128.1: bytes=32 time=93ms TTL=126
```

```
Ping statistics for 176.141.128.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 93ms, Maximum = 94ms, Average = 93ms
```

part2

task1



- net1 - 192.168.1.0/24
- net2 - 192.168.2.0/24
- net3 - 192.168.3.0/24
- net4 - 192.168.4.0/24
- net5 - 192.168.5.0/24
- net6 - 192.168.6.0/24
- net7 - 192.168.7.0/24

task2

- PC1 config

```
Link-local IPv6 Address.....: FE80::20D:BDFF:FE14:59EC
IP Address.....: 192.168.1.10
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.1.1
```

- PC3 config

```
Link-local IPv6 Address.....: FE80::260:47FF:FE6A:C31C
IP Address.....: 192.168.4.10
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.4.1
```

- **PC4 config**

```
Link-local IPv6 Address.....: FE80::260:47FF:FE4E:857A
IP Address.....: 192.168.6.10
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.6.1
```

- **R1 FastEthernet config**

```
R1(config)#interface FastEthernet 0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown
```

```
R1(config)#interface FastEthernet 0/1
R1(config-if)#ip address 192.168.2.1 255.255.255.0
R1(config-if)#no shutdown
```

- **R2 FastEthernet & Serial config**

```
R2(config)#interface FastEthernet 0/0
R2(config-if)#ip address 192.168.2.2 255.255.255.0
R2(config-if)#no shutdown
```

```
R2(config)#interface serial 0/0
R2(config-if)#ip address 192.168.7.1 255.255.255.0
R2(config-if)#no shutdown
```

```
R2(config)#interface serial 0/1
R2(config-if)#ip address 192.168.3.1 255.255.255.0
R2(config-if)#no shutdown
```

- **R3 FastEthernet & Serial config**


```
R3(config)#interface FastEthernet 0/0
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no shutdown
```

```
R3(config)#interface serial 0/0
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no shutdown
```

```
R3(config)#interface serial 0/1
R3(config-if)#ip address 192.168.3.2 255.255.255.0
R3(config-if)#no shutdown
```

- **R4** FastEthernet & Serial config

```
R4(config)#interface FastEthernet 0/0
R4(config-if)#ip address 192.168.6.1 255.255.255.0
R4(config-if)#no shutdown
```

```
R4(config)#interface serial 0/0
R4(config-if)#ip address 192.168.7.2 255.255.255.0
R4(config-if)#no shutdown
```

```
R4(config)#interface serial 0/1
R4(config-if)#ip address 192.168.5.2 255.255.255.0
R4(config-if)#no shutdown
```

task3

- set static routes for **R1**

```
R1(config)#ip route 192.168.4.0 255.255.255.0 192.168.2.2
R1(config)#ip route 192.168.6.0 255.255.255.0 192.168.2.2
```

- set static routes for **R2**

```
R2(config)#ip route 192.168.1.0 255.255.255.0 192.168.2.1
R2(config)#ip route 192.168.4.0 255.255.255.0 192.168.3.2
R2(config)#ip route 192.168.6.0 255.255.255.0 192.168.7.2
```

- set static routes for R3

```
R3(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.1
R3(config)#ip route 192.168.6.0 255.255.255.0 192.168.5.2
```

- set static routes for R4

```
R4(config)#ip route 192.168.1.0 255.255.255.0 192.168.7.1
R4(config)#ip route 192.168.4.0 255.255.255.0 192.168.5.1
```

task4

- show ip route for R1

```
C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1
S    192.168.4.0/24 [1/0] via 192.168.2.2
S    192.168.6.0/24 [1/0] via 192.168.2.2
S*   0.0.0.0/0 [1/0] via 192.168.2.2
```

- show ip route for R2

```
S    192.168.1.0/24 [1/0] via 192.168.2.1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
C    192.168.3.0/24 is directly connected, Serial0/0/1
S    192.168.4.0/24 [1/0] via 192.168.3.2
S    192.168.6.0/24 [1/0] via 192.168.7.2
C    192.168.7.0/24 is directly connected, Serial0/0/0
```

- show ip route for R3

```
S 192.168.1.0/24 [1/0] via 192.168.3.1
C 192.168.3.0/24 is directly connected, Serial0/0/1
C 192.168.4.0/24 is directly connected, FastEthernet0/0
C 192.168.5.0/24 is directly connected, Serial0/0/0
S 192.168.6.0/24 [1/0] via 192.168.5.2
```

- `show ip route` for R4

```
S 192.168.1.0/24 [1/0] via 192.168.7.1
S 192.168.4.0/24 [1/0] via 192.168.5.1
C 192.168.5.0/24 is directly connected, Serial0/0/0
C 192.168.6.0/24 is directly connected, FastEthernet0/0
C 192.168.7.0/24 is directly connected, Serial0/0/1
```

task5

PC1 -> **PC3**

- `ping 192.168.4.10`

```
Pinging 192.168.4.10 with 32 bytes of data:
Reply from 192.168.4.10: bytes=32 time=1ms TTL=125
Reply from 192.168.4.10: bytes=32 time=1ms TTL=125
Reply from 192.168.4.10: bytes=32 time=1ms TTL=125
Reply from 192.168.4.10: bytes=32 time=1ms TTL=125
Ping statistics for 192.168.4.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

- `tracert 192.168.4.10`

```
Tracing route to 192.168.4.10 over a maximum of 30 hops:
```

1	0 ms	0 ms	0 ms	192.168.1.1
2	0 ms	0 ms	0 ms	192.168.2.2
3	0 ms	1 ms	0 ms	192.168.3.2
4	0 ms	0 ms	0 ms	192.168.4.10

```
Trace complete.
```

PC1 -> PC4

- `ping 192.168.6.10`

```
Pinging 192.168.6.10 with 32 bytes of data:
```

```
Reply from 192.168.6.10: bytes=32 time=1ms TTL=125
```

```
Reply from 192.168.6.10: bytes=32 time=1ms TTL=125
```

```
Reply from 192.168.6.10: bytes=32 time=1ms TTL=125
```

```
Reply from 192.168.6.10: bytes=32 time=2ms TTL=125
```

```
Ping statistics for 192.168.6.10:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

- `tracert 192.168.6.10`

```
Tracing route to 192.168.6.10 over a maximum of 30 hops:
```

1	0 ms	0 ms	0 ms	192.168.1.1
2	0 ms	0 ms	0 ms	192.168.2.2
3	0 ms	0 ms	1 ms	192.168.7.2
4	1 ms	0 ms	0 ms	192.168.6.10

```
Trace complete.
```

PC3 -> PC1

- `ping 192.168.1.10`

```
Pinging 192.168.1.10 with 32 bytes of data:
Reply from 192.168.1.10: bytes=32 time=1ms TTL=125
Reply from 192.168.1.10: bytes=32 time=3ms TTL=125
Reply from 192.168.1.10: bytes=32 time=8ms TTL=125
Reply from 192.168.1.10: bytes=32 time=3ms TTL=125
Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 8ms, Average = 3ms
```

- `tracert 192.168.1.10`

```
Tracing route to 192.168.1.10 over a maximum of 30 hops:
  0  0 ms    0 ms    0 ms    192.168.4.1
  1  0 ms    0 ms    1 ms    192.168.3.1
  2  0 ms    1 ms    1 ms    192.168.2.1
  3  0 ms    1 ms   14 ms   192.168.1.10
Trace complete.
```

PC3 -> PC4

- `ping 192.168.6.10`

```
Pinging 192.168.6.10 with 32 bytes of data:
Reply from 192.168.6.10: bytes=32 time=6ms TTL=126
Reply from 192.168.6.10: bytes=32 time=1ms TTL=126
Reply from 192.168.6.10: bytes=32 time=4ms TTL=126
Reply from 192.168.6.10: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.6.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 6ms, Average = 3ms
```

- `tracert 192.168.6.10`

```
Tracing route to 192.168.6.10 over a maximum of 30 hops:
```

1	0 ms	0 ms	0 ms	192.168.4.1
2	1 ms	2 ms	1 ms	192.168.5.2
3	1 ms	0 ms	1 ms	192.168.6.10

```
Trace complete.
```

PC4 -> PC1

- `ping 192.168.1.10`

```
Pinging 192.168.1.10 with 32 bytes of data:
```

```
Reply from 192.168.1.10: bytes=32 time=1ms TTL=125
```

```
Reply from 192.168.1.10: bytes=32 time=1ms TTL=125
```

```
Reply from 192.168.1.10: bytes=32 time=6ms TTL=125
```

```
Reply from 192.168.1.10: bytes=32 time=1ms TTL=125
```

```
Ping statistics for 192.168.1.10:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 1ms, Maximum = 6ms, Average = 2ms
```

- `tracert 192.168.1.10`

```
Tracing route to 192.168.1.10 over a maximum of 30 hops:
```

1	0 ms	0 ms	0 ms	192.168.6.1
2	0 ms	1 ms	1 ms	192.168.7.1
3	0 ms	0 ms	0 ms	192.168.2.1
4	0 ms	1 ms	0 ms	192.168.1.10

```
Trace complete.
```

PC4 -> PC3

- `ping 192.168.4.10`

```
Pinging 192.168.4.10 with 32 bytes of data:
```

```
Reply from 192.168.4.10: bytes=32 time=2ms TTL=126
```

```
Reply from 192.168.4.10: bytes=32 time=2ms TTL=126
```

```
Reply from 192.168.4.10: bytes=32 time=1ms TTL=126
```

```
Reply from 192.168.4.10: bytes=32 time=1ms TTL=126
```

```
Ping statistics for 192.168.4.10:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

- `tracert 192.168.4.10`

```
Tracing route to 192.168.4.10 over a maximum of 30 hops:
```

1	0 ms	0 ms	1 ms	192.168.6.1
2	1 ms	0 ms	0 ms	192.168.5.1
3	0 ms	0 ms	1 ms	192.168.4.10

```
Trace complete.
```