

# Subnetting Derbyshire Branch Office



## Networking H/618/5219

AC 2.3: Apply subnetting to different IP addresses.

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### Scenario

**VividBrush Creations** now has an additional network which has been created for a new branch in Derbyshire. As their IT Administrator, you have been requested to apply subnetting to ensure the network is efficient.

**Task 1)** Use the "Subnetting Derbyshire Branch Office (2.3).pkt" file within Cisco Packet Tracker, and apply subnetting using the instruction file named "Instructions - Subnetting Derbyshire Branch Office (2.3).pdf", based on the following:-

Office 1	Office 2
<p>Potentially up to 136 hosts, therefore: -</p> <ul style="list-style-type: none"><li>● IP addresses from 192.168.1.1 to 192.168.1.254</li><li>● 4 PCs at present</li><li>● Subnet mask in binary is 11111111 11111111 11111111 00000000</li><li>● Subnet mask in dotted decimal is 255.255.255.0</li><li>● Router1 (FastEthernet0/0) with IP address 192.168.1.1 and subnet mask 255.255.255.0</li><li>● Router1 (Serial3/0) with IP address 192.168.2.129 and subnet mask 255.255.255.252</li></ul>	<p>Potentially up to 95 hosts, therefore: -</p> <ul style="list-style-type: none"><li>● IP addresses from 192.168.2.1 to 192.168.2.126</li><li>● 4 PCs at present</li><li>● Subnet mask in binary is 11111111 11111111 11111111 10000000</li><li>● Subnet mask in dotted decimal is 255.255.255.128</li><li>● Router0 (FastEthernet0/0) with IP address 192.168.2.126 and subnet mask 255.255.255.128</li><li>● Router0 (Serial3/0) with IP address 192.168.2.130 and subnet mask 255.255.255.252</li></ul>

**Task 2)** Once all subnetting has been applied, from PC0 ping PC7 ensuring you get a successful response. If unsuccessful, ensure you fix the issue as this means subnetting has not been applied correctly.

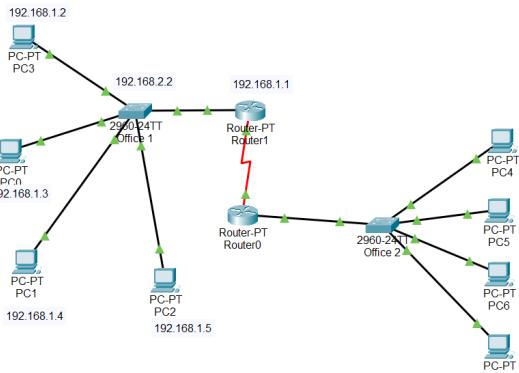
**Task 3)** Complete this document.

**Task 1)** Use the "Subnetting Derbyshire Branch Office (2.3).pkt" file within Cisco Packet Tracker, and apply subnetting using the instruction file named "Instructions - Subnetting Derbyshire Branch Office (2.3).pdf".

# Subnetting Derbyshire Branch Office



Screenshot of network map will be sufficient for this.



Annotation(s):

This is a screenshot of my network map showing active and direct connections between both offices.

**Task 2) Once all subnetting has been applied, from PC0 ping PC7 ensuring you get a successful response. If unsuccessful, ensure you fix the issue as this means subnetting has not been applied correctly.**

Screenshot of successful ping results will be sufficient for this.

```
C:\>ping 192.168.1.2

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms

C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:
Reply from 192.168.1.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.5

Pinging 192.168.1.5 with 32 bytes of data:
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Annotation(s):

This is a successful ping from PC0 to PC1, PC2, and PC7

# Subnetting Derbyshire Branch Office



```
PC4 - □ X
Physical Config Desktop Programming Attributes
Command Prompt X
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.2.11

Pinging 192.168.2.11 with 32 bytes of data:

Reply from 192.168.2.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.2.12

Pinging 192.168.2.12 with 32 bytes of data:

Reply from 192.168.2.12: bytes=32 time<1ms TTL=128
Reply from 192.168.2.12: bytes=32 time=1ms TTL=128
Reply from 192.168.2.12: bytes=32 time<1ms TTL=128
Reply from 192.168.2.12: bytes=32 time=12ms TTL=128

Ping statistics for 192.168.2.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 5ms

C:\>ping 192.168.2.13

Pinging 192.168.2.13 with 32 bytes of data:

Reply from 192.168.2.13: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

This is a successful ping from PC4 to PC5, PC6, and PC7

```
PC0 - □ X
Physical Config Desktop Programming Attributes
Command Prompt X
Pinging 192.168.1.4 with 32 bytes of data.

Reply from 192.168.1.4: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.5

Pinging 192.168.1.5 with 32 bytes of data:

Reply from 192.168.1.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.2.13

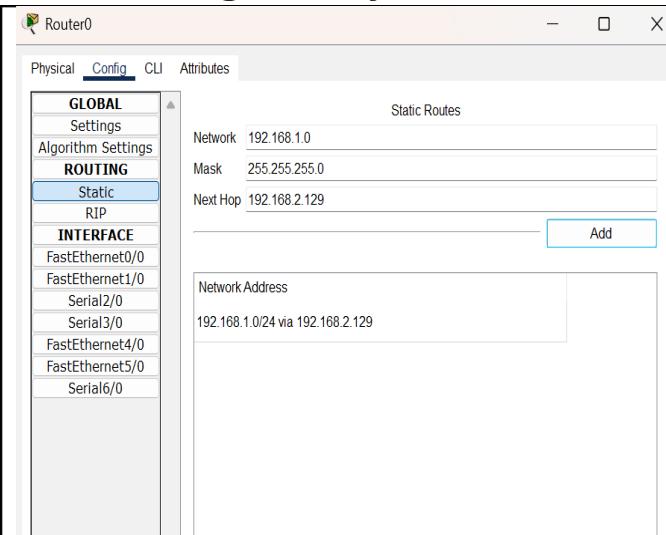
Pinging 192.168.2.13 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Request timed out.
Reply from 192.168.1.1: Destination host unreachable.

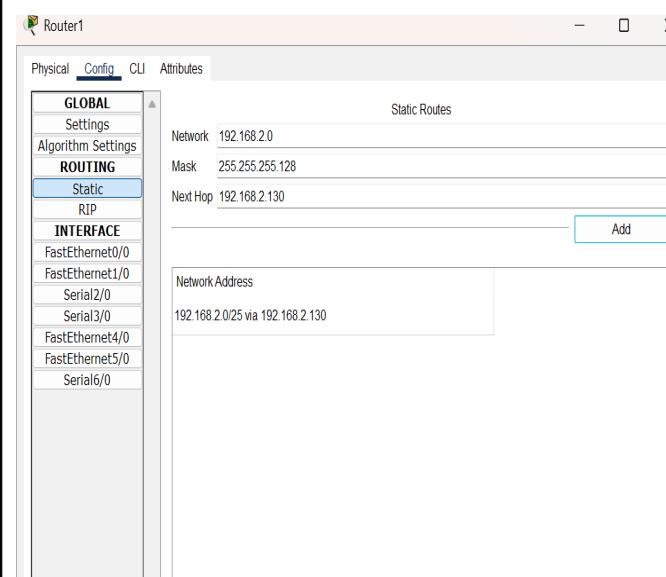
Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

An attempt to ping PC7 from PC1 was unsuccessful as shown in the bottom part of the screenshot.

# Subnetting Derbyshire Branch Office



To rectify this, I configured the Static Routes of both Router1 and Router1.



Repeated the same steps for Router1. Under settings, I clicked Static, filled 192.168.2.0 for Network, 255.255.255.128 for Mask, and 192.168.2.130 for Next Hop, then Add. After that, a message popped up in the box under with a Network Address 192.168.2.0/25 via 192.168.2.130.

# Subnetting Derbyshire Branch Office



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 192.168.2.13
Pinging 192.168.2.13 with 32 bytes of data:
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Request timed out.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.2.13
Pinging 192.168.2.13 with 32 bytes of data:
Request timed out.
Reply from 192.168.2.13: bytes=32 time=11ms TTL=126
Reply from 192.168.2.13: bytes=32 time=17ms TTL=126
Reply from 192.168.2.13: bytes=32 time=18ms TTL=126

Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 18ms, Average = 15ms

C:\>ping 192.168.2.13
Pinging 192.168.2.13 with 32 bytes of data:
Reply from 192.168.2.13: bytes=32 time=2ms TTL=126
Reply from 192.168.2.13: bytes=32 time=15ms TTL=126
Reply from 192.168.2.13: bytes=32 time=22ms TTL=126
Reply from 192.168.2.13: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 22ms, Average = 12ms
```

Then I went back to PC1 and ping PC7. As shown in the screenshot, the first attempt successfully received 3 sent packets out of 4 with one timing out. A second attempt shows all 4 packets sent were received.

```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 192.168.2.13
Round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 18ms, Average = 15ms

C:\>ping 192.168.2.13
Pinging 192.168.2.13 with 32 bytes of data:
Reply from 192.168.2.13: bytes=32 time=2ms TTL=126
Reply from 192.168.2.13: bytes=32 time=15ms TTL=126
Reply from 192.168.2.13: bytes=32 time=22ms TTL=126
Reply from 192.168.2.13: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.2.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 22ms, Average = 12ms

C:\>ping 192.168.2.12
Pinging 192.168.2.12 with 32 bytes of data:
Request timed out.
Reply from 192.168.2.12: bytes=32 time=10ms TTL=126
Reply from 192.168.2.12: bytes=32 time=10ms TTL=126
Reply from 192.168.2.12: bytes=32 time=17ms TTL=126

Ping statistics for 192.168.2.12:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 17ms, Average = 12ms

C:\>ping 192.168.2.11
Pinging 192.168.2.11 with 32 bytes of data:
Request timed out.
Reply from 192.168.2.11: bytes=32 time=23ms TTL=126
Reply from 192.168.2.11: bytes=32 time=15ms TTL=126
Reply from 192.168.2.11: bytes=32 time=9ms TTL=126

Ping statistics for 192.168.2.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 9ms, Maximum = 23ms, Average = 15ms

C:\>
```

This is a successful ping from PC0 to all other PCs at office2 i.e PC4, PC5, and PC6.