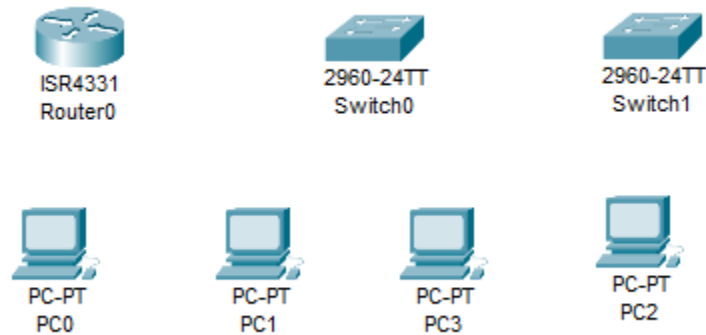
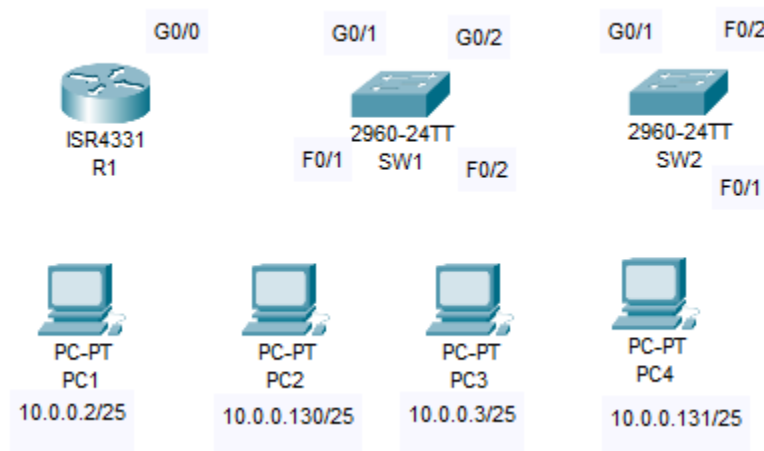


Inter-VLAN Routing Activity Documentation

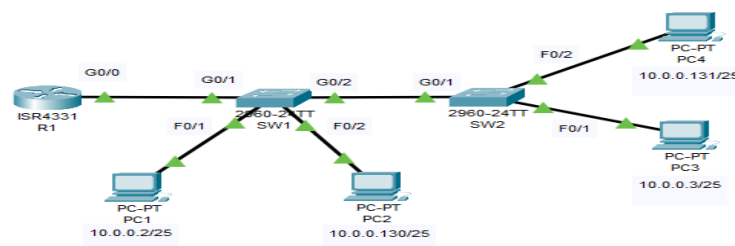
1. Set up the required desired device for the activity.



2. Put labels.



3. Connect using copper straight through. I follow the configured wires. I configured the router and configured the IP addresses of each PCs. Reference is FREE CCNA Lab 007: Inter-VLAN Routing.



Note: PC1 can ping PC3 while it cannot ping PC2 and P4

PC3 can ping PC1 while it cannot ping PC4 and P2

PC2 can ping PC4 while it cannot ping PC1 and P3

PC4 can ping PC2 while it cannot ping PC3 and P1

Findings: *Computer in same vlan can communicate but inter vlan is not working.*

Switch 1 and 2 Config

SW1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int f0/1
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 13
% Access VLAN does not exist. Creating vlan 13
Switch(config-if)#int f0/2
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 24
% Access VLAN does not exist. Creating vlan 24
```

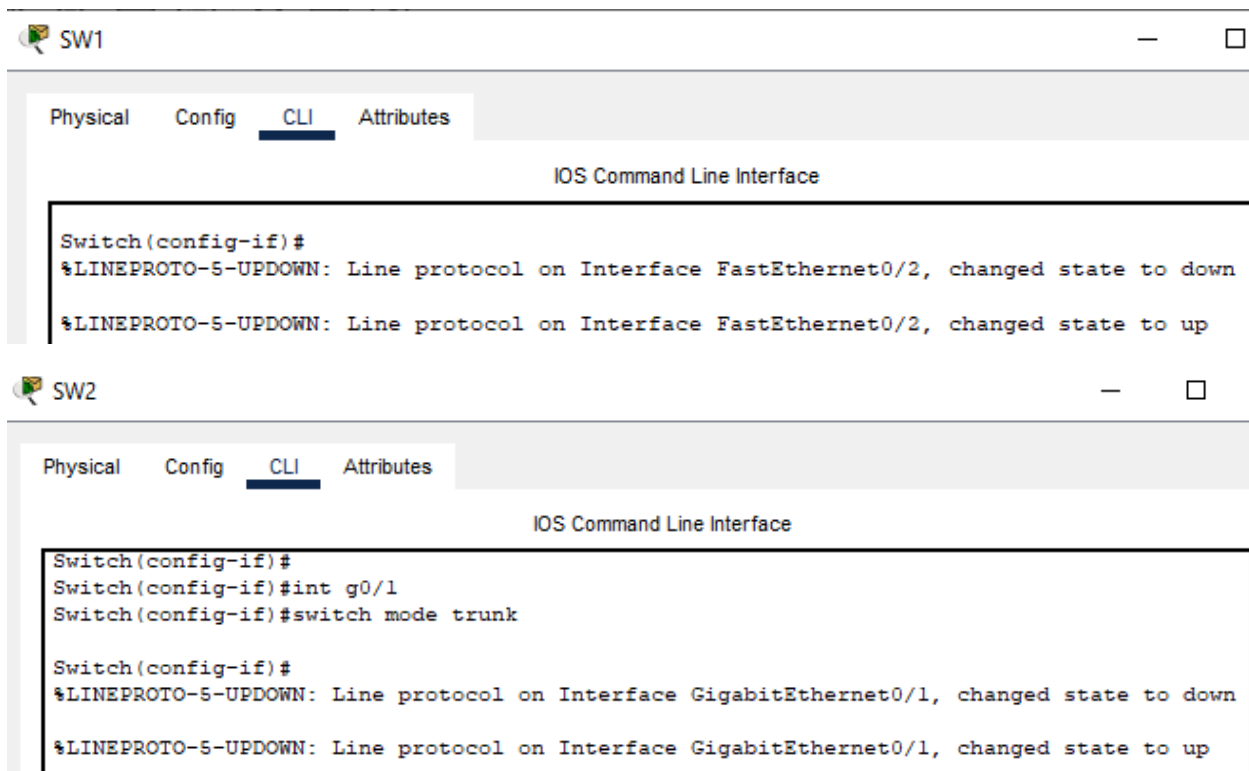
SW2

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int f0/1
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 13
% Access VLAN does not exist. Creating vlan 13
Switch(config-if)#int f0/2
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 24
% Access VLAN does not exist. Creating vlan 24
```

Trunk Config



The image shows two network device windows, SW1 and SW2, both in the 'CLI' tab. SW1 shows the configuration of FastEthernet0/2 as a trunk. SW2 shows the configuration of GigabitEthernet0/1 as a trunk.

SW1 CLI:

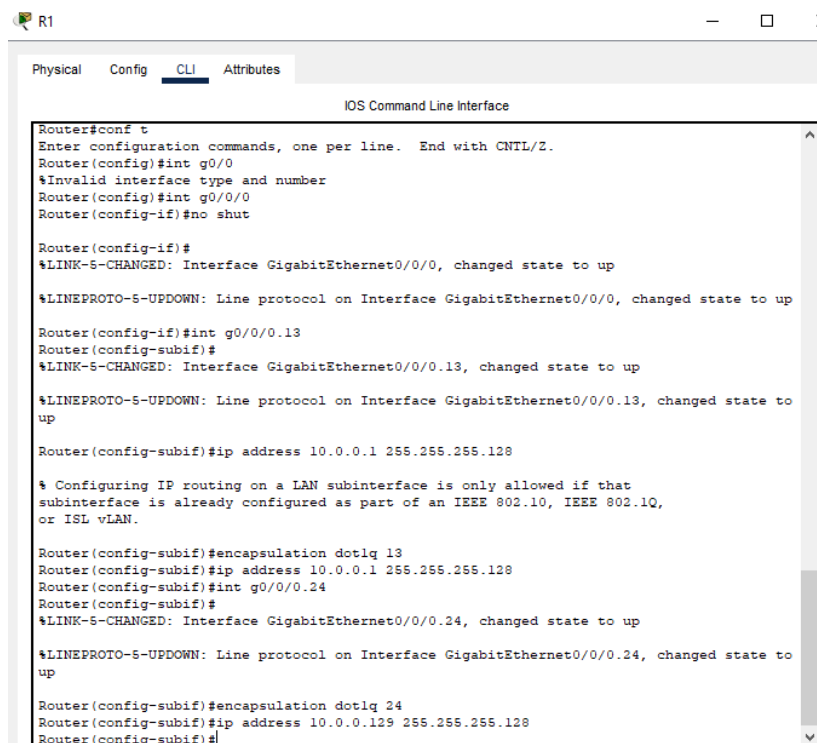
```
Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
```

SW2 CLI:

```
Switch(config-if)#
Switch(config-if)#int g0/1
Switch(config-if)#switch mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
```

Creating Sub Interfaces in Router



The image shows a network device window R1 in the 'CLI' tab. It displays the configuration of subinterfaces on GigabitEthernet0/0.

R1 CLI:

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int g0/0
%Invalid interface type and number
Router(config)#int g0/0/0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed state to up

Router(config-if)#int g0/0/0.13
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.13, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.13, changed state to up

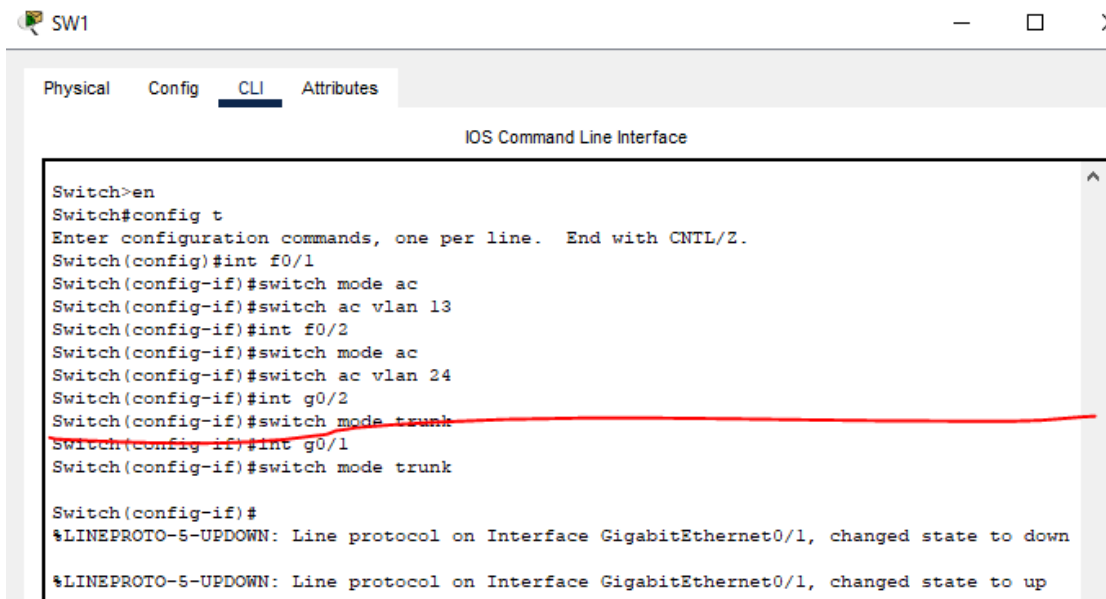
Router(config-subif)#ip address 10.0.0.1 255.255.255.128

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.1Q, IEEE 802.1Q,
or ISL vLAN.

Router(config-subif)#encapsulation dot1q 13
Router(config-subif)#ip address 10.0.0.1 255.255.255.128
Router(config-subif)#int g0/0/0.24
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.24, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.24, changed state to up

Router(config-subif)#encapsulation dot1q 24
Router(config-subif)#ip address 10.0.0.129 255.255.255.128
Router(config-subif)#
```

Making Trunk in Switch 1



SW1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int f0/1
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 13
Switch(config-if)#int f0/2
Switch(config-if)#switch mode ac
Switch(config-if)#switch ac vlan 24
Switch(config-if)#int g0/2
Switch(config-if)#switch mode trunk
Switch(config-if)#int g0/1
Switch(config-if)#switch mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
```

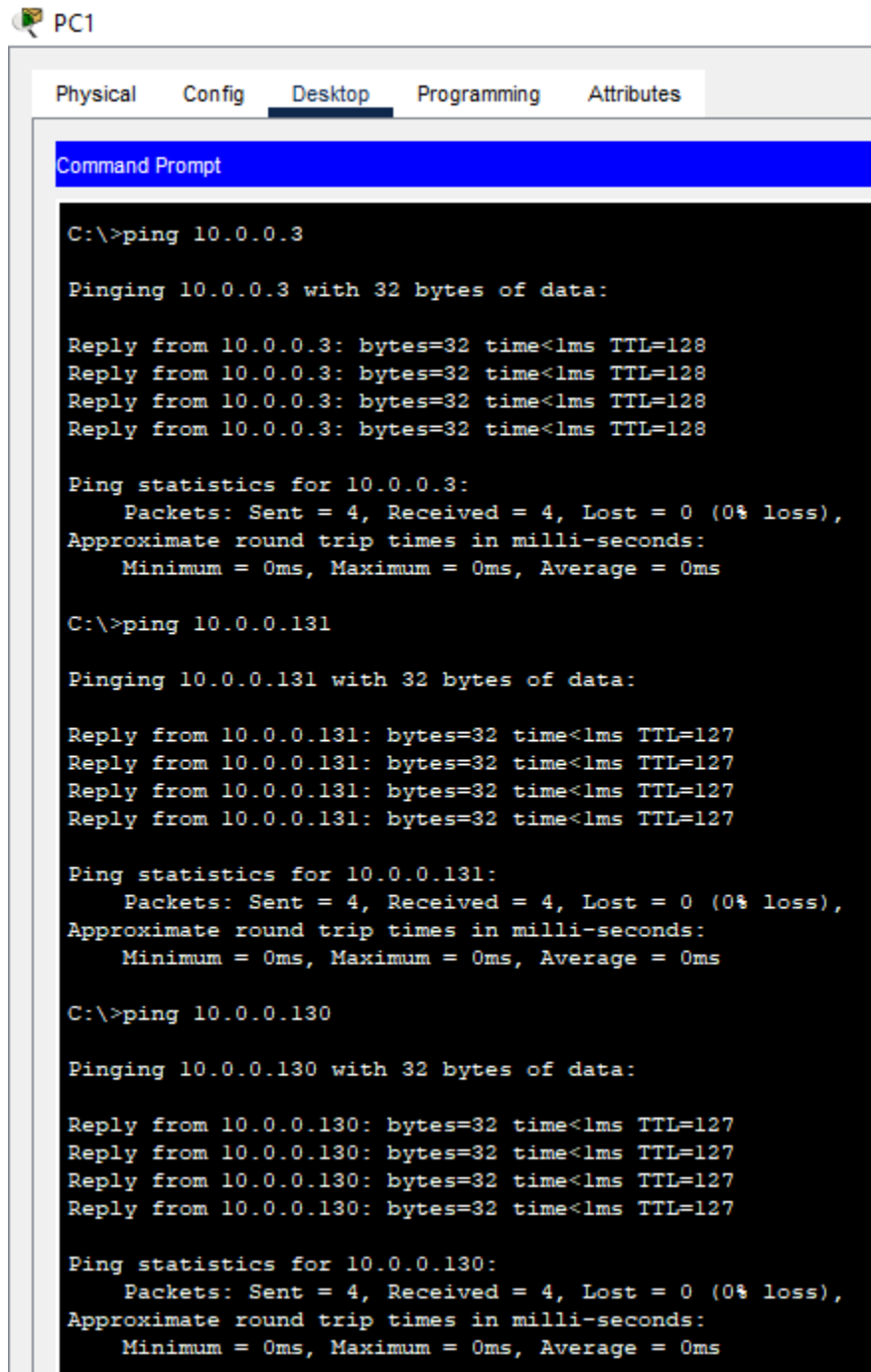
Then I set the default gateway for each PCs

PC 1 and PC 3 to 10.0.0.1

PC 2 and 4 to 10.0.0.129

4. Troubleshooting: Testing Pings

All Ping should work.



The screenshot shows a Windows PC interface with a taskbar at the top containing icons for PC1, File Explorer, and Chrome. The 'Desktop' tab is selected in the top navigation bar. Below the navigation bar is a 'Command Prompt' window. The command prompt displays the following text:

```
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.131

Pinging 10.0.0.131 with 32 bytes of data:

Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127

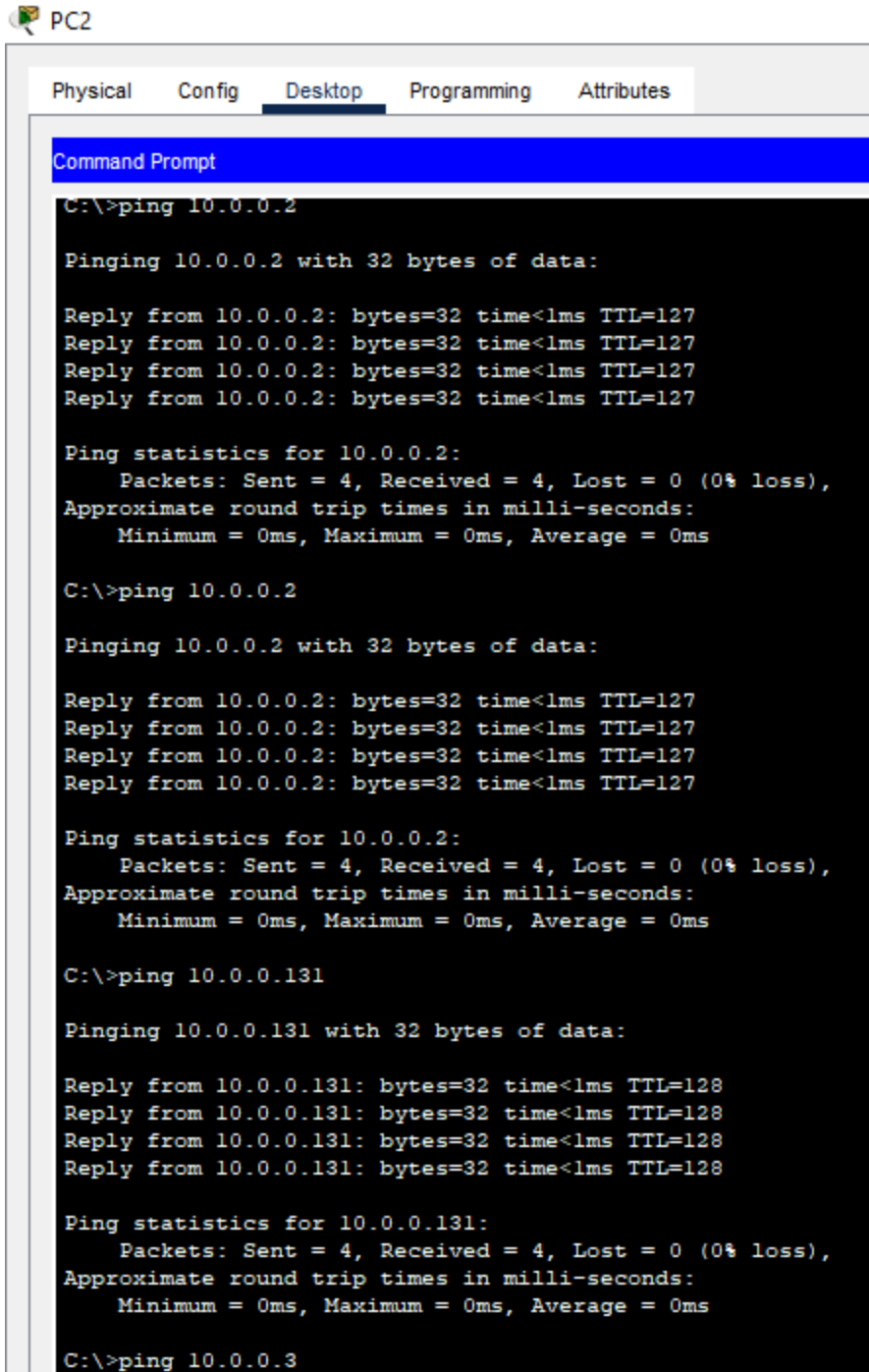
Ping statistics for 10.0.0.131:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.130

Pinging 10.0.0.130 with 32 bytes of data:

Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```



PC2

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

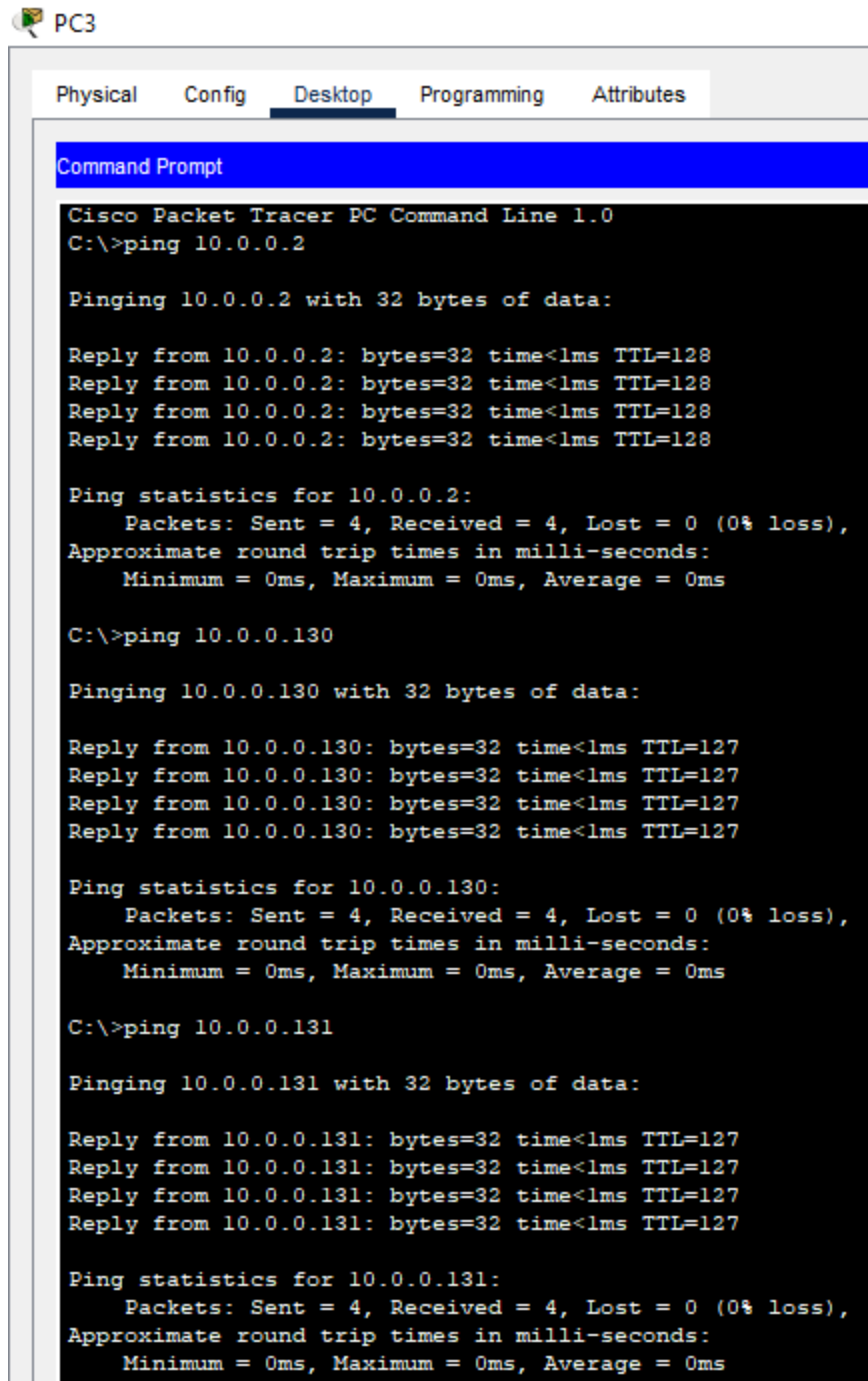
C:\>ping 10.0.0.131

Pinging 10.0.0.131 with 32 bytes of data:

Reply from 10.0.0.131: bytes=32 time<1ms TTL=128
Reply from 10.0.0.131: bytes=32 time<1ms TTL=128
Reply from 10.0.0.131: bytes=32 time<1ms TTL=128
Reply from 10.0.0.131: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.131:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.3
```



PC3

Physical Config **Desktop** Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.130

Pinging 10.0.0.130 with 32 bytes of data:

Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127
Reply from 10.0.0.130: bytes=32 time<1ms TTL=127

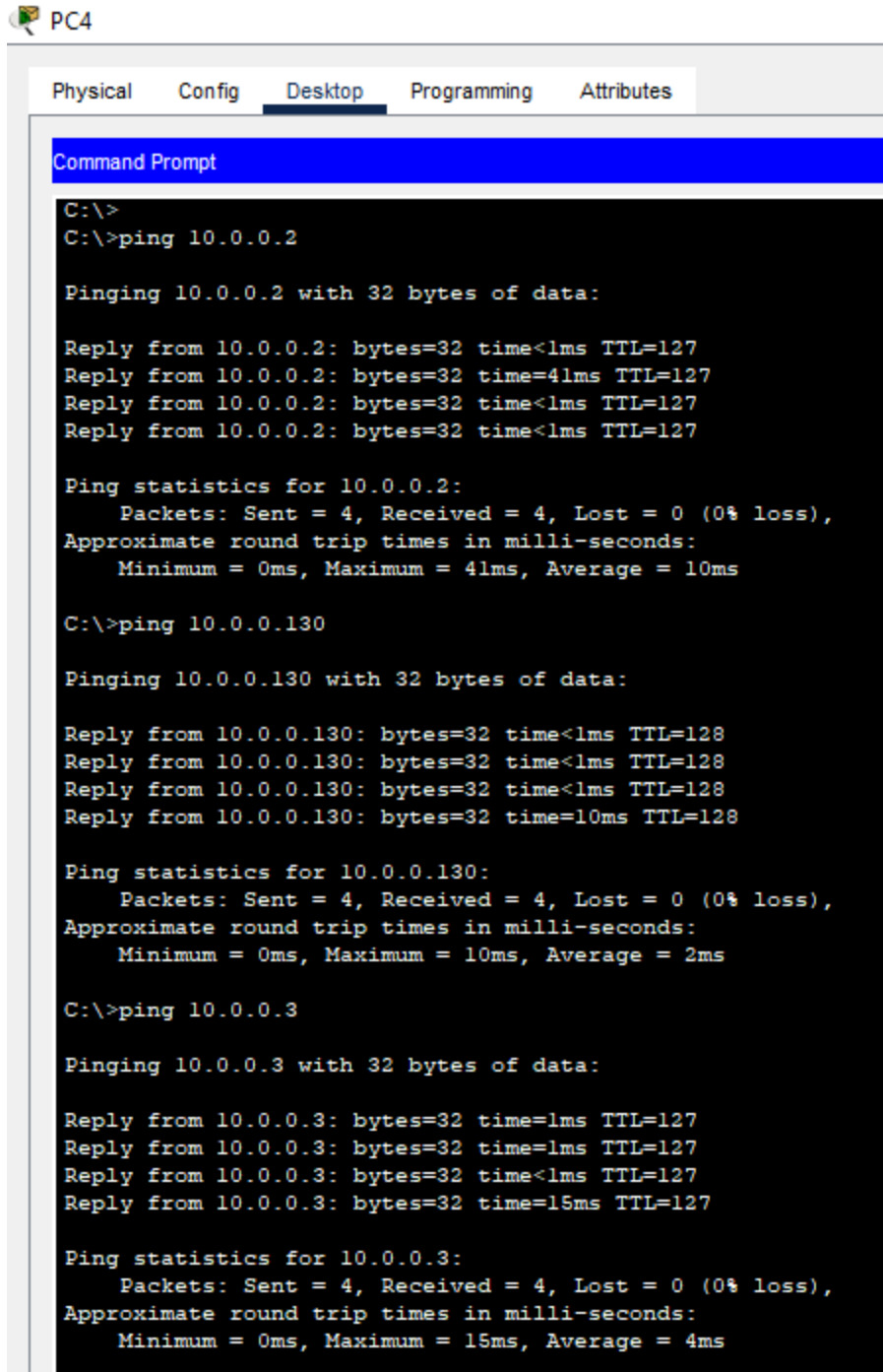
Ping statistics for 10.0.0.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 10.0.0.131

Pinging 10.0.0.131 with 32 bytes of data:

Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127
Reply from 10.0.0.131: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.131:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```



The screenshot shows a PC4 desktop environment with a taskbar at the top containing icons for Physical, Config, Desktop (selected), Programming, and Attributes. A Command Prompt window is open, displaying the following text:

```
C:\>
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time=41ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127
Reply from 10.0.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 41ms, Average = 10ms

C:\>ping 10.0.0.130

Pinging 10.0.0.130 with 32 bytes of data:

Reply from 10.0.0.130: bytes=32 time<1ms TTL=128
Reply from 10.0.0.130: bytes=32 time<1ms TTL=128
Reply from 10.0.0.130: bytes=32 time<1ms TTL=128
Reply from 10.0.0.130: bytes=32 time=10ms TTL=128

Ping statistics for 10.0.0.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=1ms TTL=127
Reply from 10.0.0.3: bytes=32 time=1ms TTL=127
Reply from 10.0.0.3: bytes=32 time<1ms TTL=127
Reply from 10.0.0.3: bytes=32 time=15ms TTL=127

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 4ms
```

References

FREE CCNA Lab 007: Inter-VLAN Routing

<https://www.youtube.com/watch?v=3lI2RwiXlmg>

FREE CCNA Lab 008: Inter-VLAN Routing (Router on a Stick)

<https://youtu.be/iIDkr4Kq7io?feature=shared>