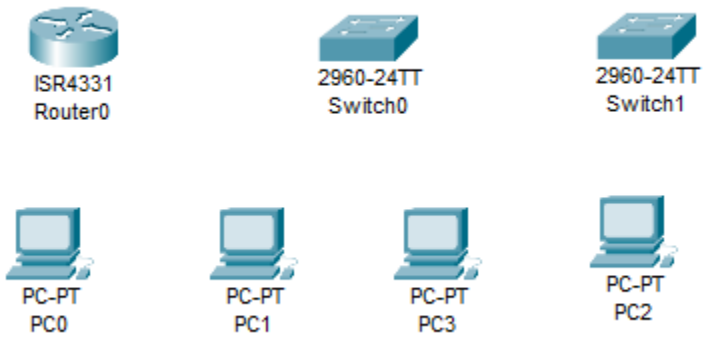
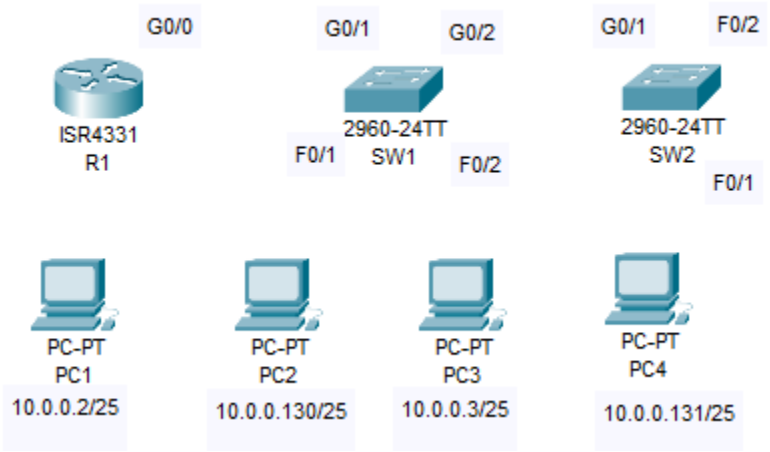
Inter-VLAN Routing Activity Documentation

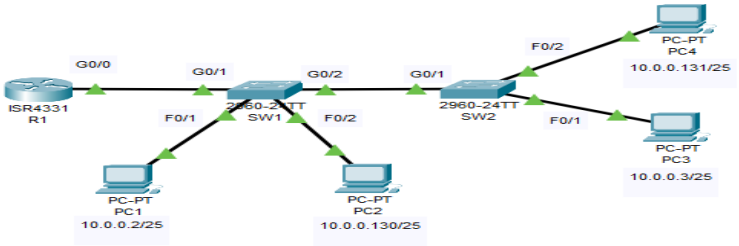
1. Set up the required desired device for the activity.



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

SW1

Physical Config CLI Attributes

IOS Command Line Interface

```
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

Physical Config CLI Attributes

IOS Command Line Interface

```
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

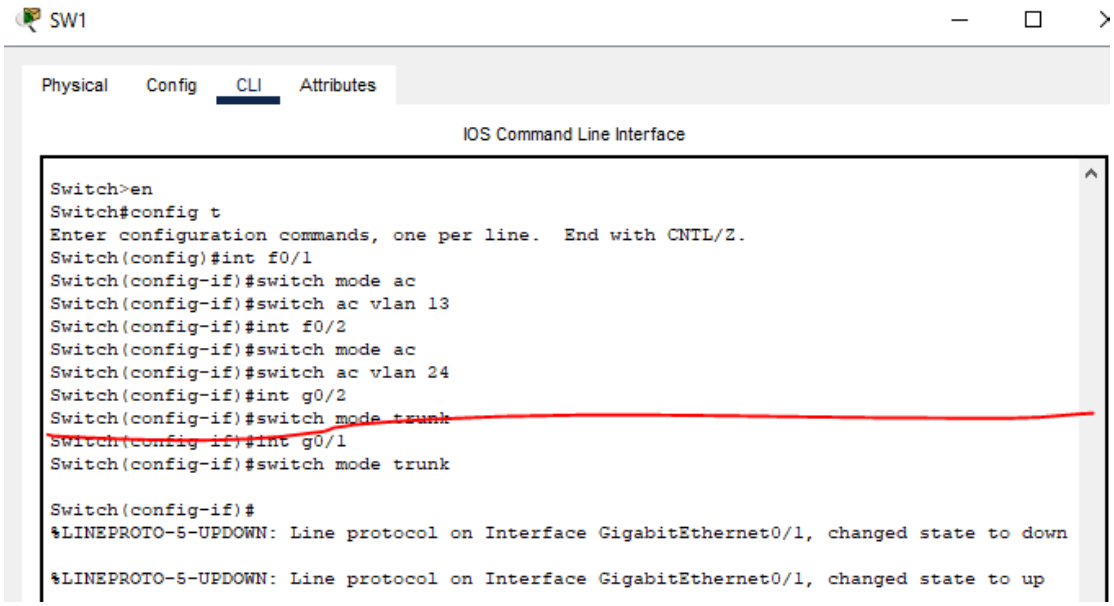
R1

Physical Config CLI Attributes

IOS Command Line Interface

```
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 802.10, 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



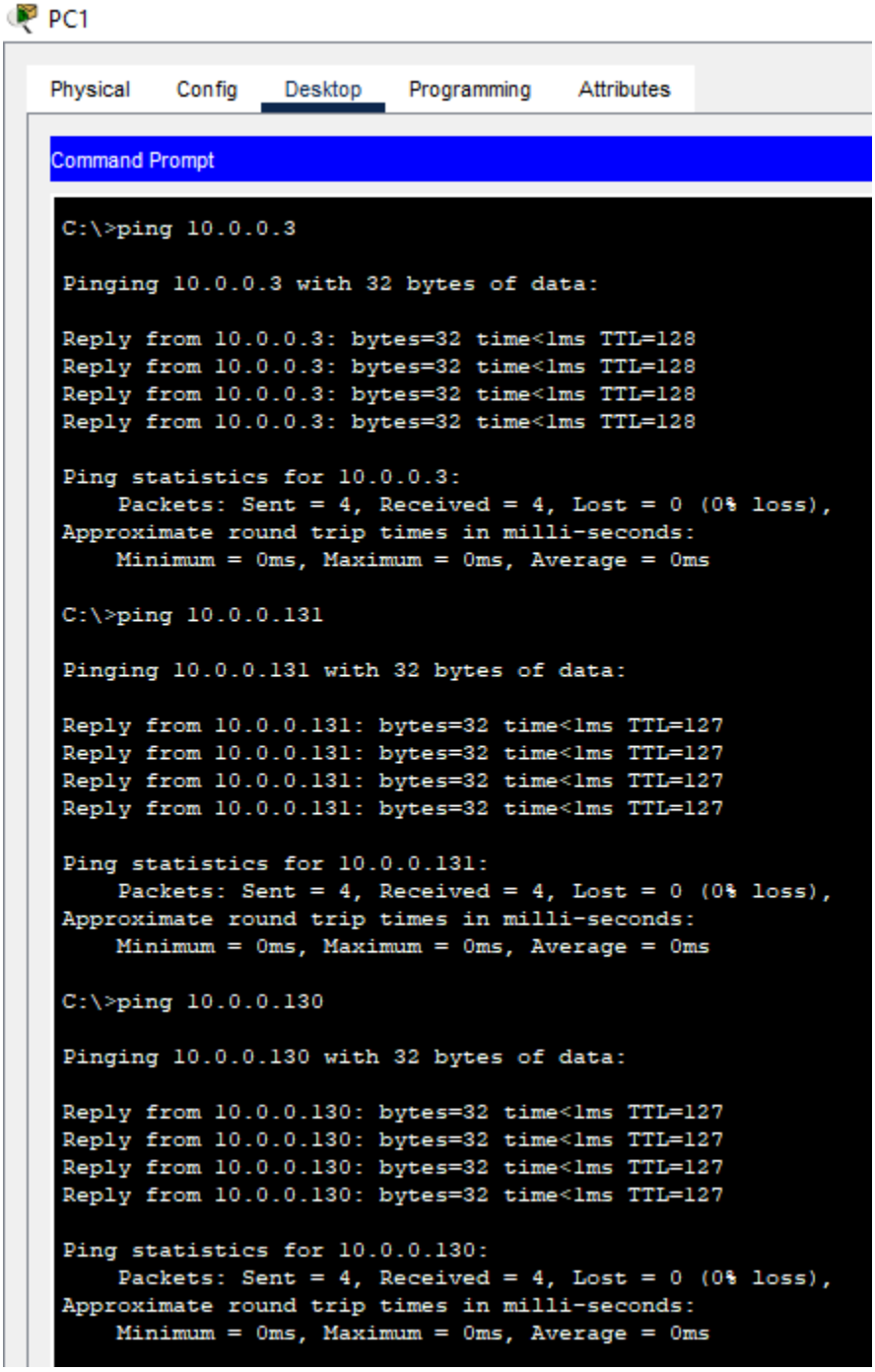
Then I set the default gateway for each PCs

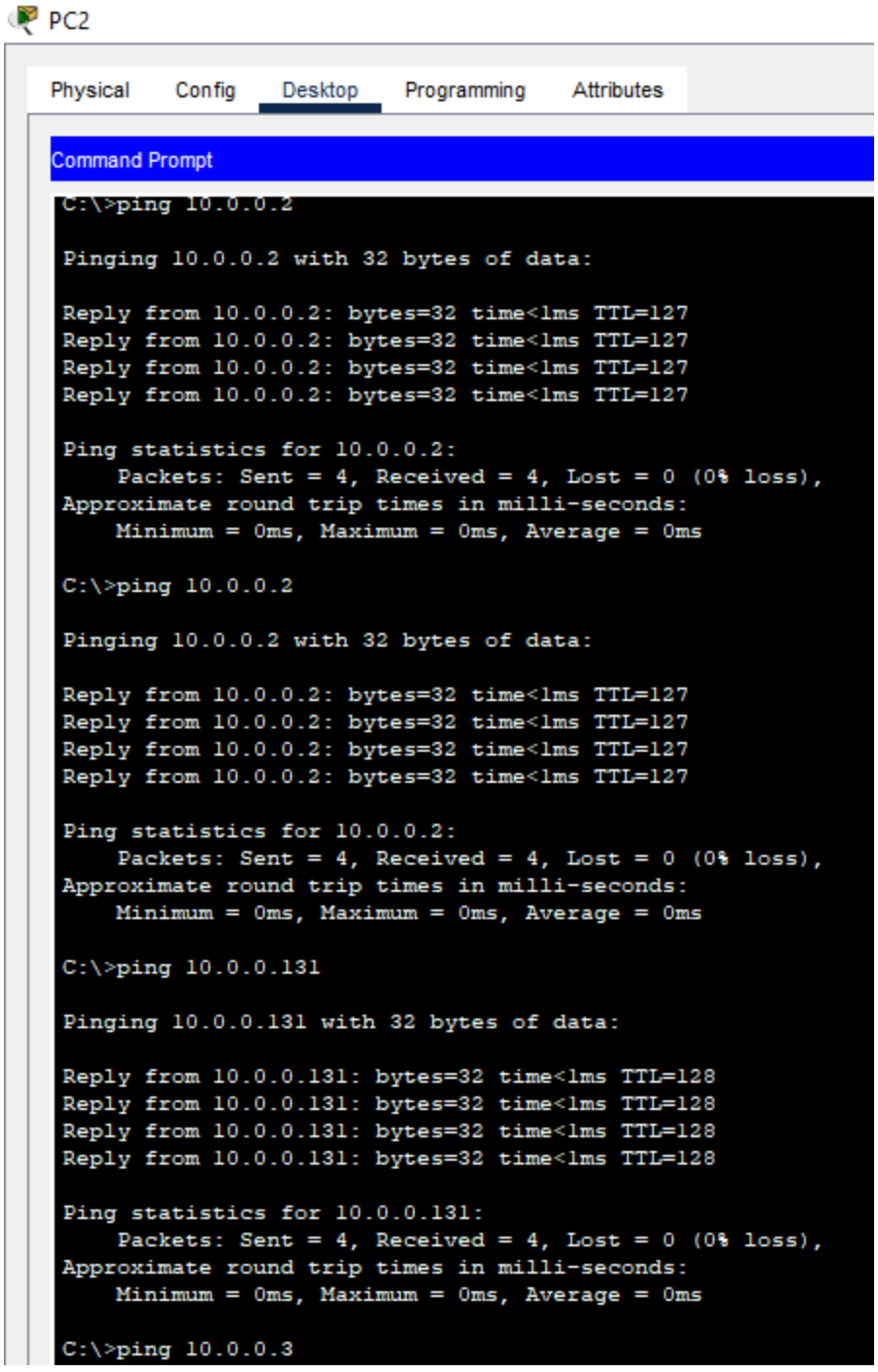
PC 1 and PC 3 to 10.0.0.1

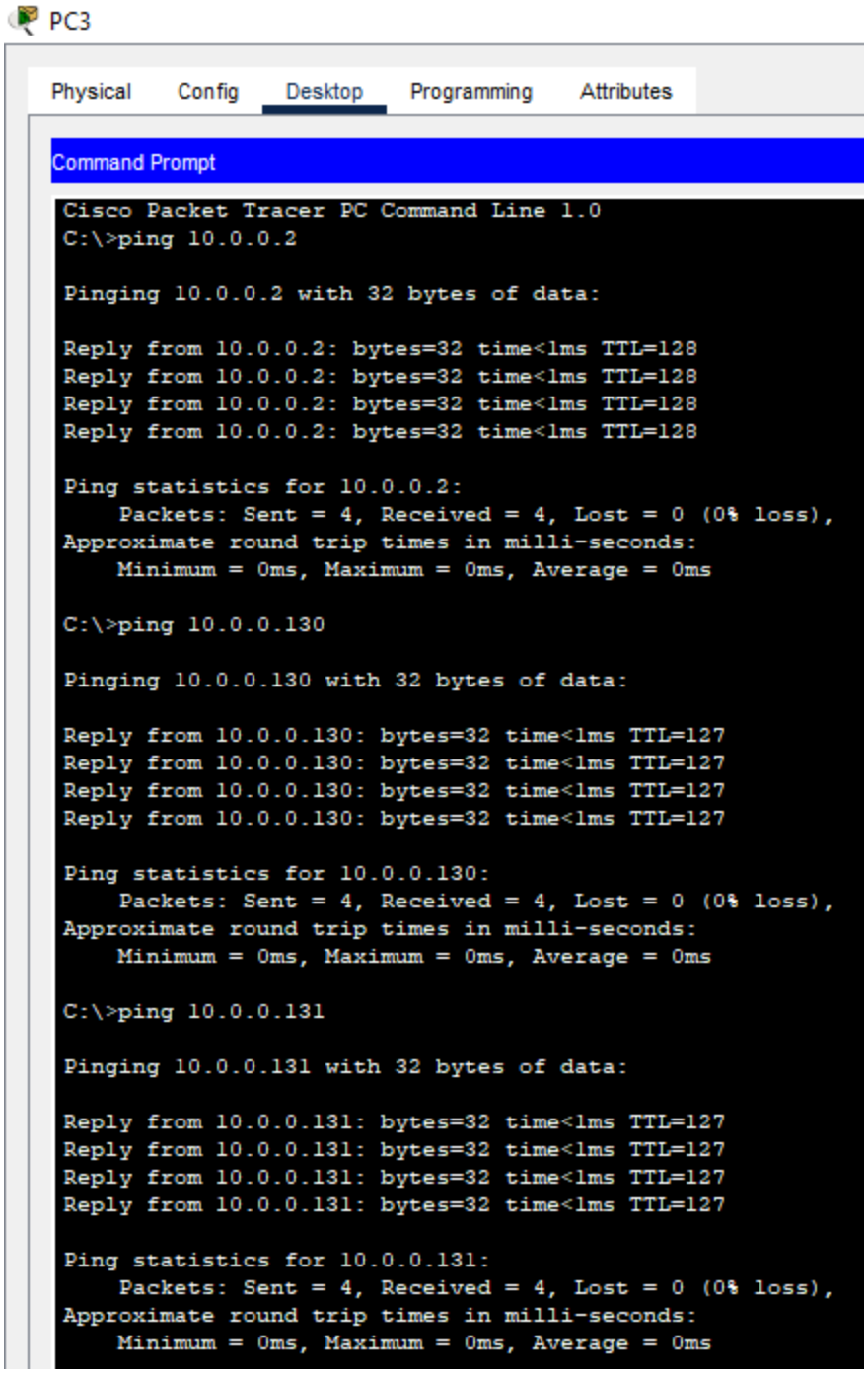
PC 2 and 4 to 10.0.0.129

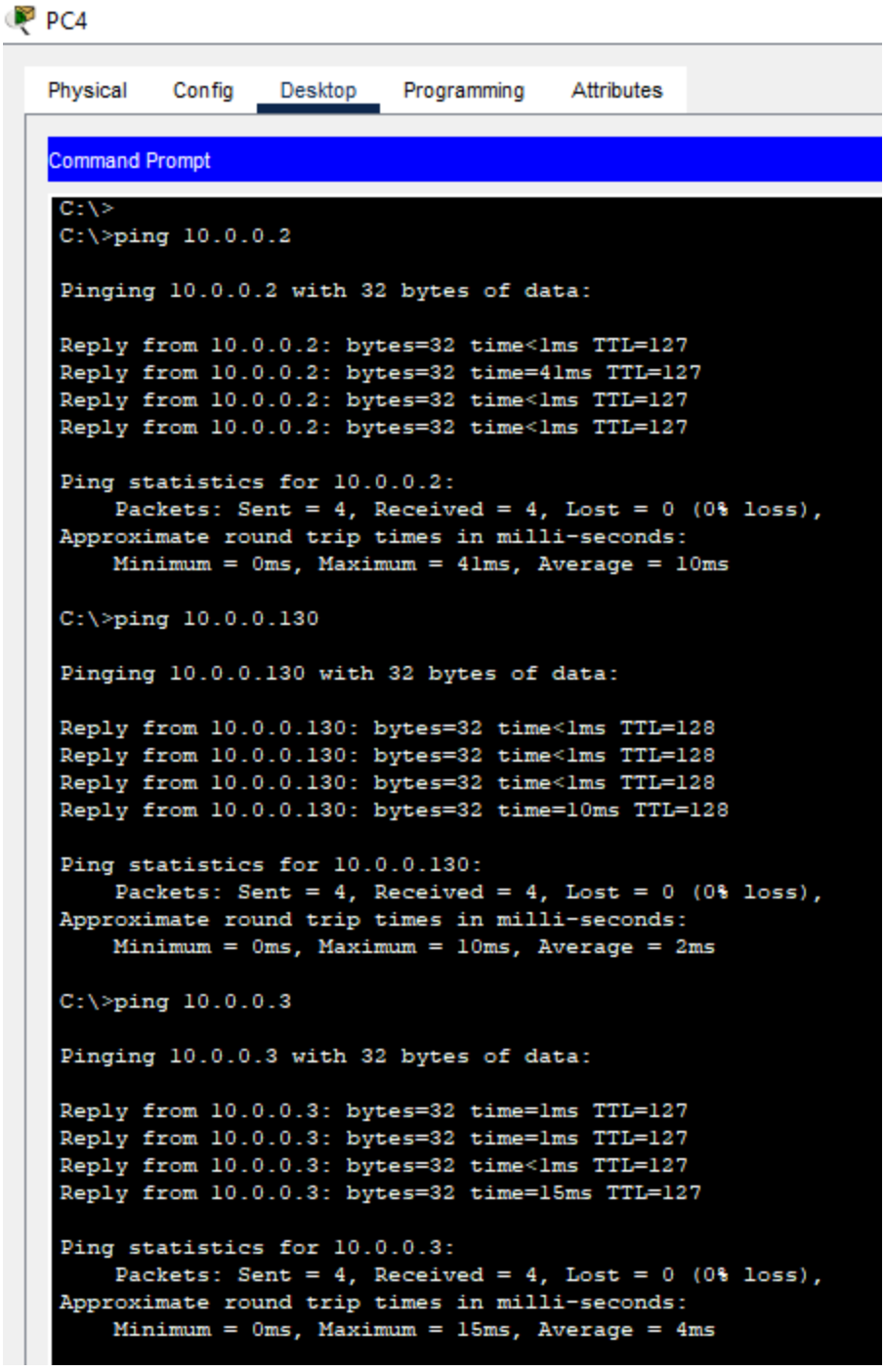
4. Troubleshooting: Testing Pings

   All Ping should work.




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



References

FREE CCNA Lab 007: Inter-VLAN Routing

https://www.youtube.com/watch?v=3II2RwiXImg

FREE CCNA Lab 008: Inter-VLAN Routing (Router on a Stick)
https://youtu.be/iIDkr4Kq7io?feature=shared