

Exercise 4: Configuration of IP Address in Router And Switch

Objective: To demonstrate the configuration of IP Address in router and switch

Pre-requisite: IP Address, Range of IP Address and Classes of IP Address

Components:

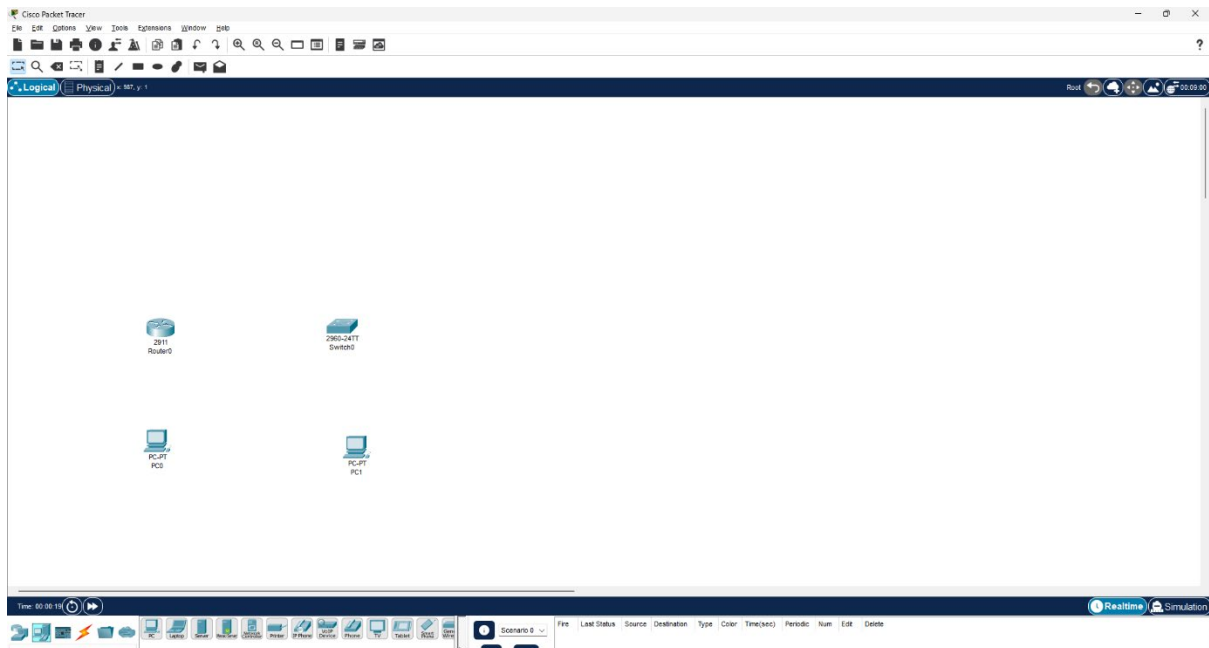
| Devices | Required Nos |
|--------------------------|--------------|
| PCs | 2 |
| Copper Straight Through | 2 |
| Copper cross-over Cables | 1 |
| Router | 1 |
| Switch | 1 |

Addressing Table:

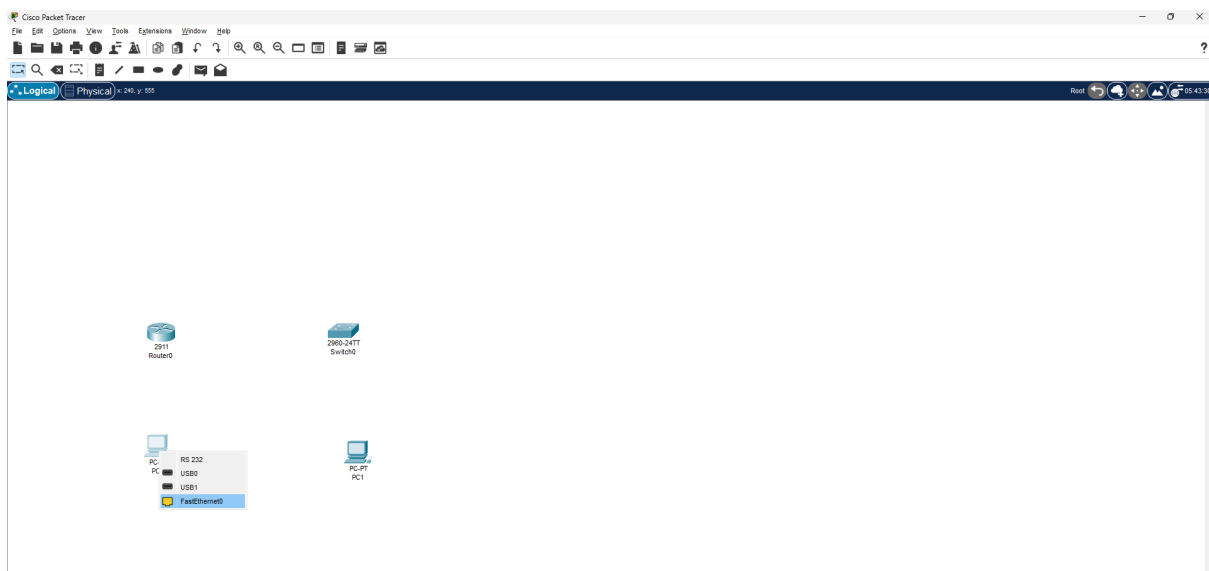
| Device | Interface | IP Address | Subnet Mask | Gateway |
|---------|-------------|-------------|---------------|-------------|
| PC0 | Fa0/0 | 192.168.0.2 | 255.255.255.0 | 192.168.0.1 |
| PC1 | Fa0/0 | 192.168.1.3 | 255.255.255.0 | 192.168.1.1 |
| Router0 | Gigabit 0/0 | 192.168.0.1 | 255.255.255.0 | - |
| | Gigabit 0/1 | 192.168.1.1 | 255.255.255.0 | - |
| Switch | VLAN 1 | 192.168.1.2 | 255.255.255.0 | 192.168.1.1 |

Procedure:

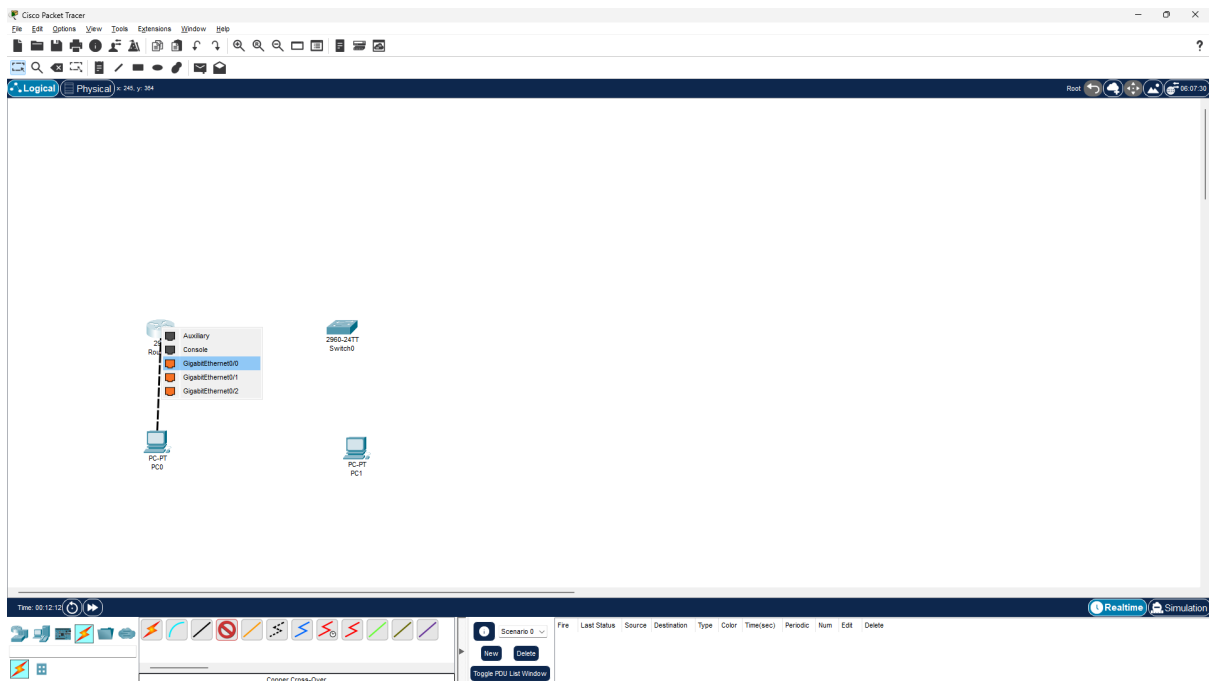
Step 1: Drag 2 PCs , a router and a switch in the console area.



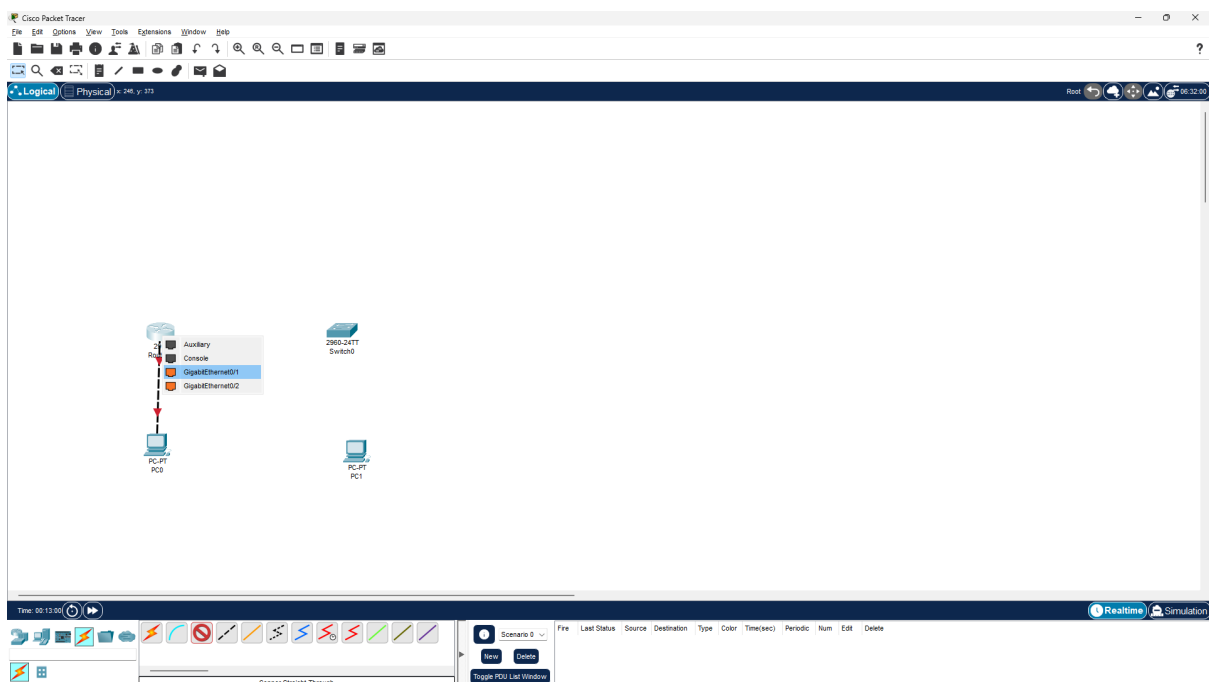
Step 2: Select Connectivity & Copper cross-over cable. Click on PC0 to get the interface options. Select Fa0/0



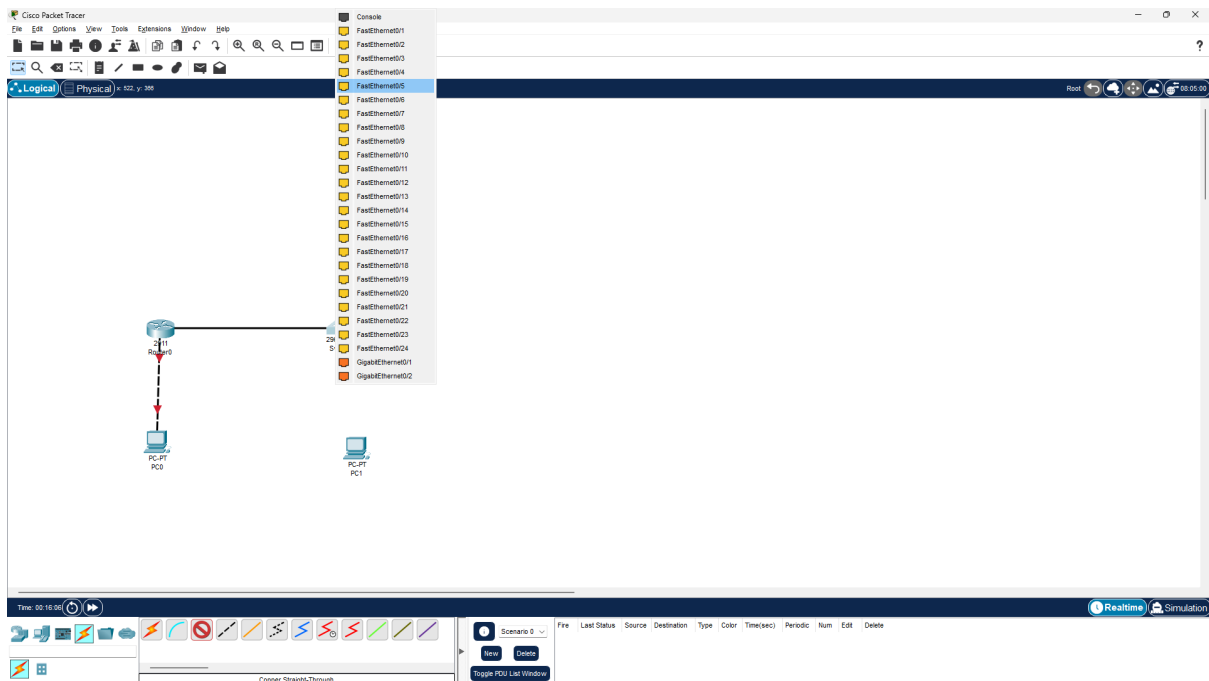
Step 3: Click on router0 to get the interface options and select GigabitEthernet0/0.



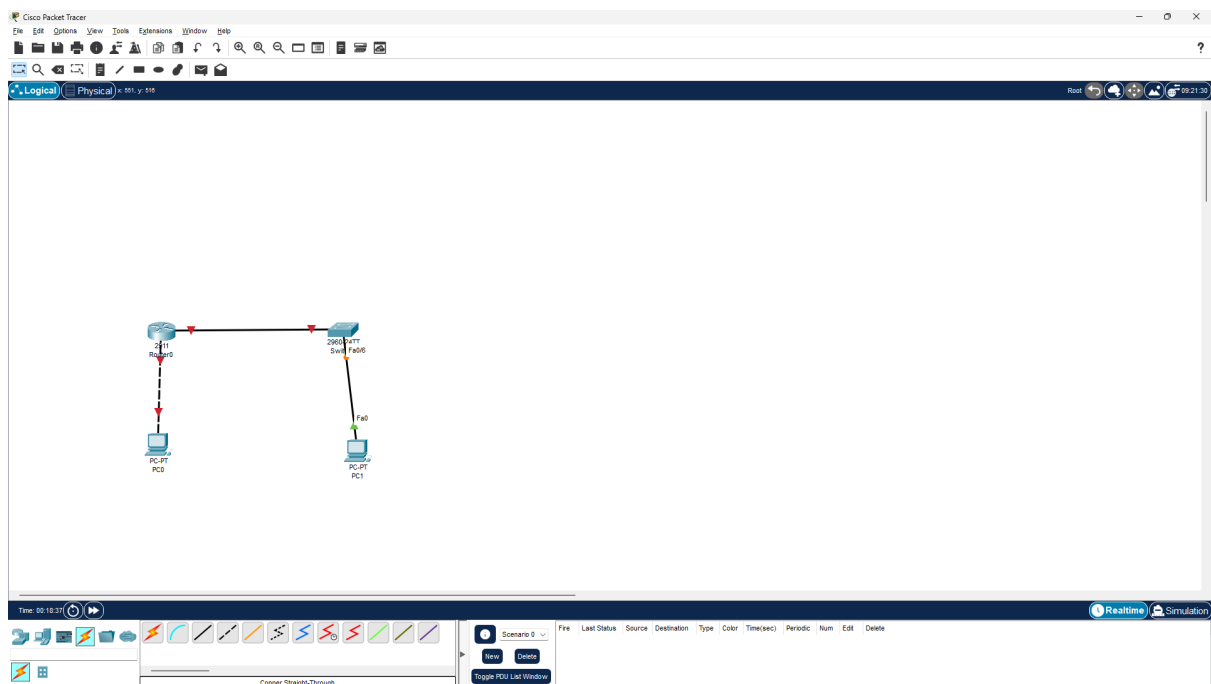
Step 4: Now PC0 and Router0 are physically connected. Again select copper Straight cable and again click on Router0 to get the interface options and select GigabitEthernet0/1.



Step 5: Click on Switch router0 to get the interface options and select FastEthernet0/5.



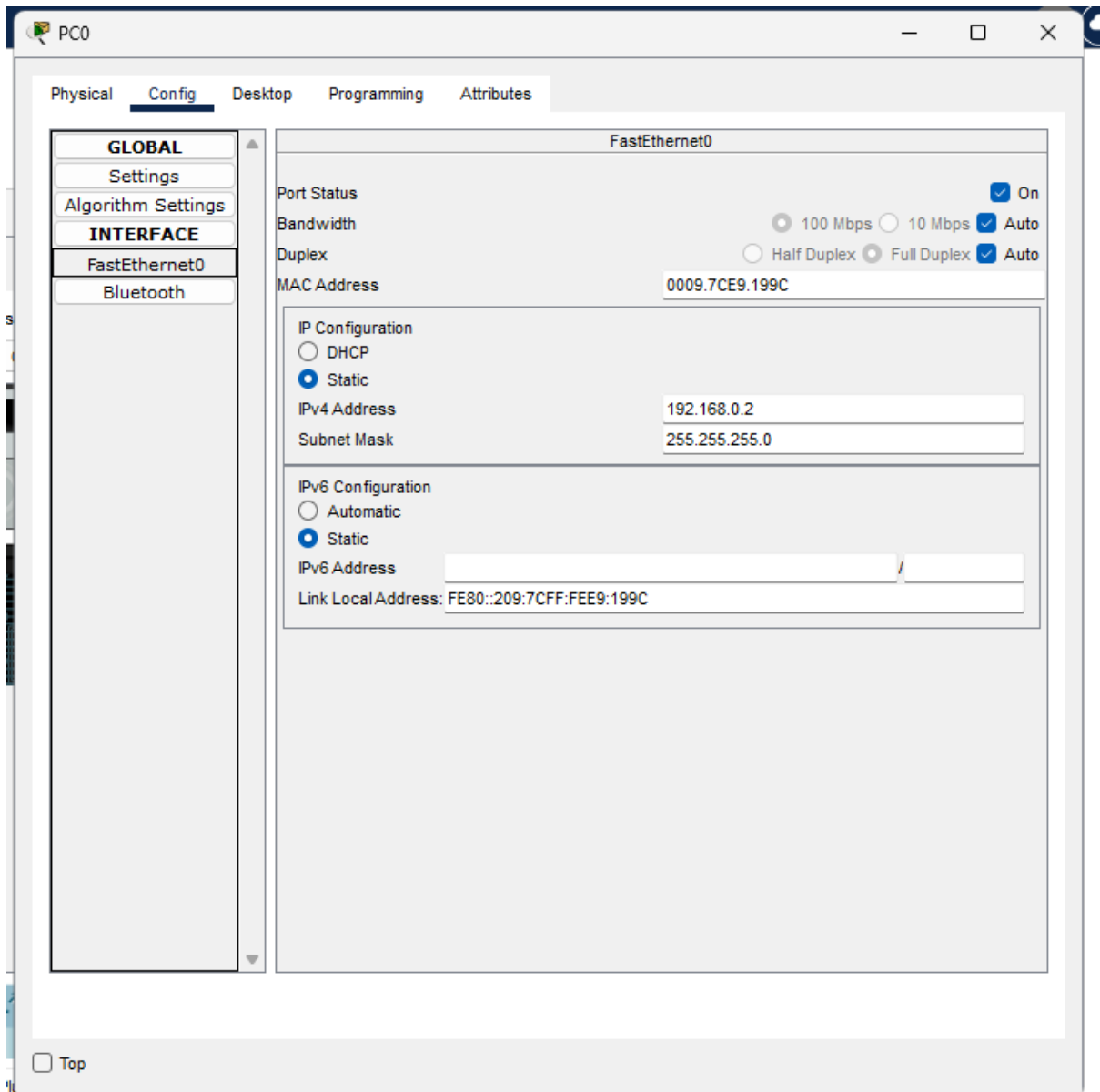
Step 7: Click on PC1 to get the interface options and select Fa0/0. And Connect it to FastEthernet0/6 port on the Switch similar to PC-0.



Step 8: Now the PCs are physically connected through Router and Switch.

To establish logical connectivity,

- Click on PC0.
- Select Config tab.
- Click on FastEthernet0/0 in the left pane.
- Configure the ip address 192.168.0.2 and subnet mask 255.255.255.0



Step 9: Repeat the same procedure for PC1 and Configure the ip address 192.168.1.3 and subnet mask 255.255.255.0

The screenshot shows the configuration window for PC1. The 'Config' tab is selected, and the 'FastEthernet0' interface is chosen from the left sidebar. The interface settings are as follows:

- Port Status:** ☒ On
- Bandwidth:** ☐ 100 Mbps ☐ 10 Mbps ☒ Auto
- Duplex:** ☐ Half Duplex ☒ Full Duplex ☒ Auto
- MAC Address:** 0001.6425.B23A
- IP Configuration:**
 - ☐ DHCP
 - ☒ Static
 - IPv4 Address:** 192.168.1.3
 - Subnet Mask:** 255.255.255.0
- IPv6 Configuration:**
 - ☐ Automatic
 - ☒ Static
 - IPv6 Address:** (empty field)
 - Link Local Address:** FE80::201:64FF:FE25:B23A

At the bottom left, there is a checkbox labeled 'Top' which is currently unchecked.

Step 10: Router configuration

- Click on Router0 and select CLI.
- Press ENTER to start configuring Router1.
- Type enable to activate the privileged mode.
- Type config t(configure terminal) to access the configuration menu.
- Configure interfaces of Router1:
 - Type interface FastEthernet0/0 to access FastEthernet0/0 and Configure the FastEthernet0/0 interface with the IP address 192.168.10.1 and Subnet mask 255.255.255.0.
 - Type interface FastEthernet0/1 to access GigabitEthernet0/0 and Configure the FastEthernet0/1 interface with IP address 192.168.20.1 and Subnet mask 255.255.255.0.
 - Type no shutdown to finish.

```
Router0
Physical Config CLI Attributes
IOS Command Line Interface

Software image at FLASH sec: 282.227-7013.
cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706

Cisco IOS Software, C290 Software (C290-UNIVERSALK9-M), Version 15.1(4)M3, RELEASE SOFTWARE (fc2) Technical Support: http://www.cisco.com/techsupport
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Compiled Wed 18-Jul-07 04:50 by pt_team
Image test-base: 002100F919, data-base: 0024720940

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A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wol/export/crypto/cool/stgqr.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco CISC02911/F0 (revision 1.0) with 491820K/32768K bytes of memory.
Processor board ID FTU1X40003
3 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
16384 bytes of non-volatile configuration memory.
149568 bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

ALERT:GOTO-0-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ALERT:GOTO-0-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router#enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/1
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#
```

Step 11: Switch Configuration

1. Console into the switch and enable privileged EXEC mode.

```
Switch> enable
```

2. Enter configuration mode.

```
Switch# config terminal
```

3. Assign a device name to the switch.

```
Switch(config)# hostname S1
```

4. Configure and activate the VLAN interface on the switch S1.

```
S1(config)# interface vlan 1
```

```
S1(config-if)# ip address 192.168.1.2 255.255.255.0
```

```
S1(config-if)# no shutdown
```

```
S1(config-if)# exit
```

5. Configure the default gateway for the switch S1.

```
S1(config)# ip default-gateway 192.168.1.1
```

```
S1(config-if)# exit
```


Switch0

Physical
Config
CLI
Attributes

```

Processor board ID FOC1010X104
Last reset from power-on
1 Virtual Ethernet interface
24 FastEthernet interfaces
2 Gigabit Ethernet interfaces
The password-recovery mechanism is enabled.
64K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address       : 00:0A:F3:50:6A:5C
Motherboard assembly number     : 73-10390-03
Power supply part number        : 341-0097-02
Motherboard serial number       : FOC10093R12
Power supply serial number      : AZS1007032H
Model revision number           : B0
Motherboard revision number     : B0
Model number                    : WS-C2960-24TT-L
System serial number            : FOC1010X104
Top Assembly Part Number        : 800-27221-02
Top Assembly Revision Number    : A0
Version ID                     : V02
CLEI Code Number                : COM3L00BRA
Hardware Board Revision Number  : 0x01

Switch Ports Model          SW Version  SW Image
-----
*    1 26    WS-C2960-24TT-L   15.0(2)SE4   C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnnguyen

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to up

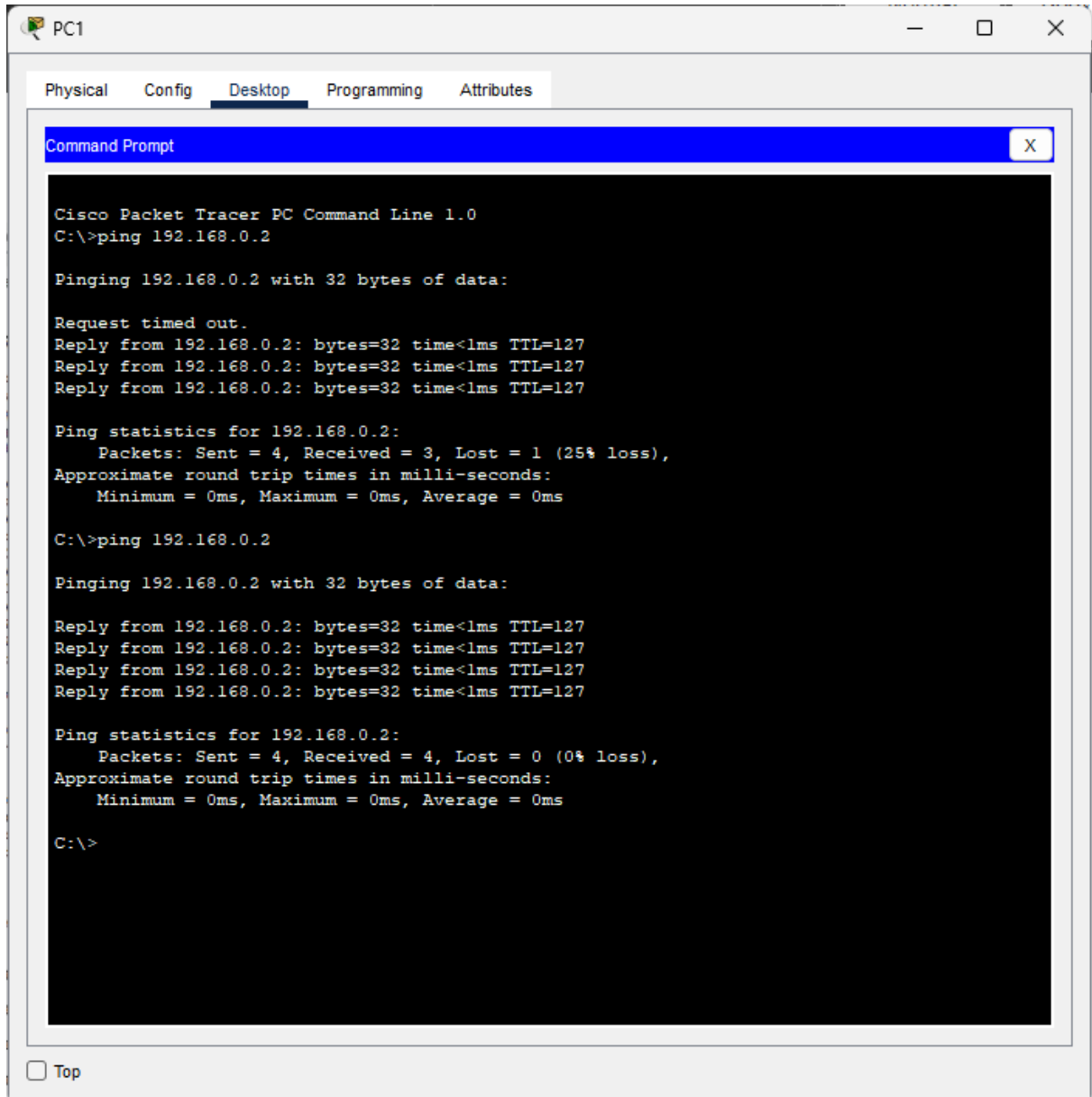
S1>
S1>
S1>
S1>
S1>enable
S1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#hostname S1
S1(config)#interface vlan1
S1(config-if)#ip address 192.168.1.2 255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#exit
S1(config)#ip default-gateway 192.168.1.1
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console

```

☐ Top

Step 12: Now both the PCs are physically and logically connected. To check the logical connectivity,

- Click on PC1.
- Select Desktop tab.
- Click on Command Prompt icon.
- Type ping 192.168.0.2 to fetch the output as follows



The screenshot shows the PC1 Desktop tab in Cisco Packet Tracer. A Command Prompt window is open, displaying the results of a ping command to 192.168.0.2. The output shows that the first ping attempt failed with a 'Request timed out' message, while the subsequent three attempts were successful, all receiving replies within 1ms and with a TTL of 127. The final ping statistics for 192.168.0.2 indicate that 4 packets were sent, 3 were received, and 1 was lost (25% loss), with all round trip times being 0ms.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time<1ms TTL=127
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127
Reply from 192.168.0.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```