

CN Experiments

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Installation-

1)Create Account

Create Account

* indicates required field

Email *

Password *

New password must include at least one:

- ✓ Includes 12-60 characters
- ✓ Number
- ✓ Special character
- ✓ Lowercase letter
- ✓ Uppercase letter
- ✓ Not your username

First name *

Last name *

Country or region *

2) Verify Email



Verification email sent

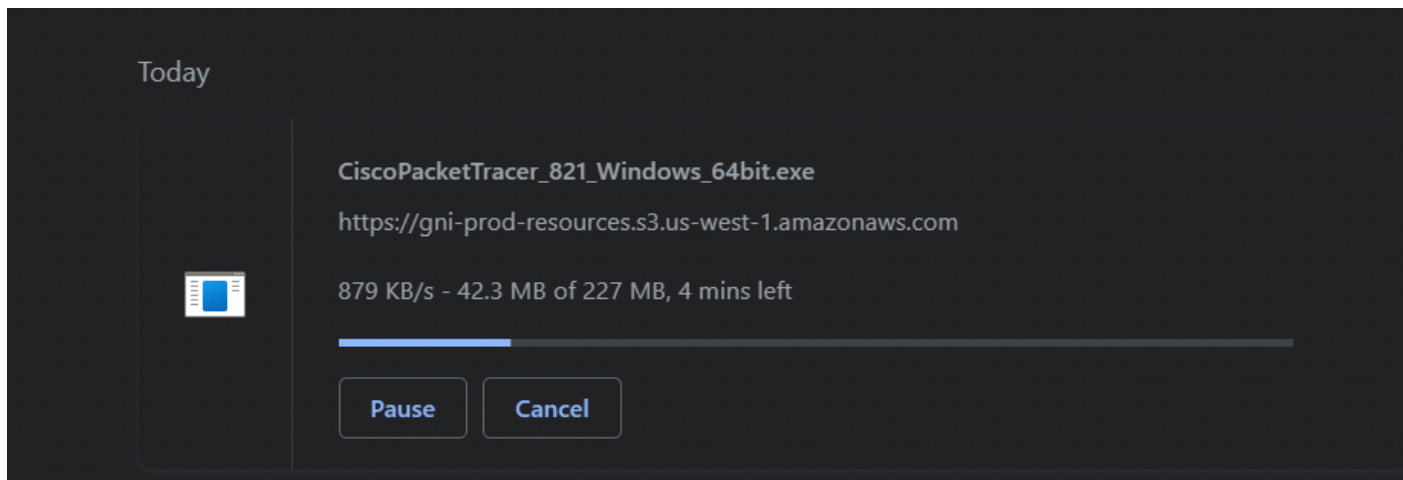
12213139@nitkkr.ac.in

To finish signing in, check your email.

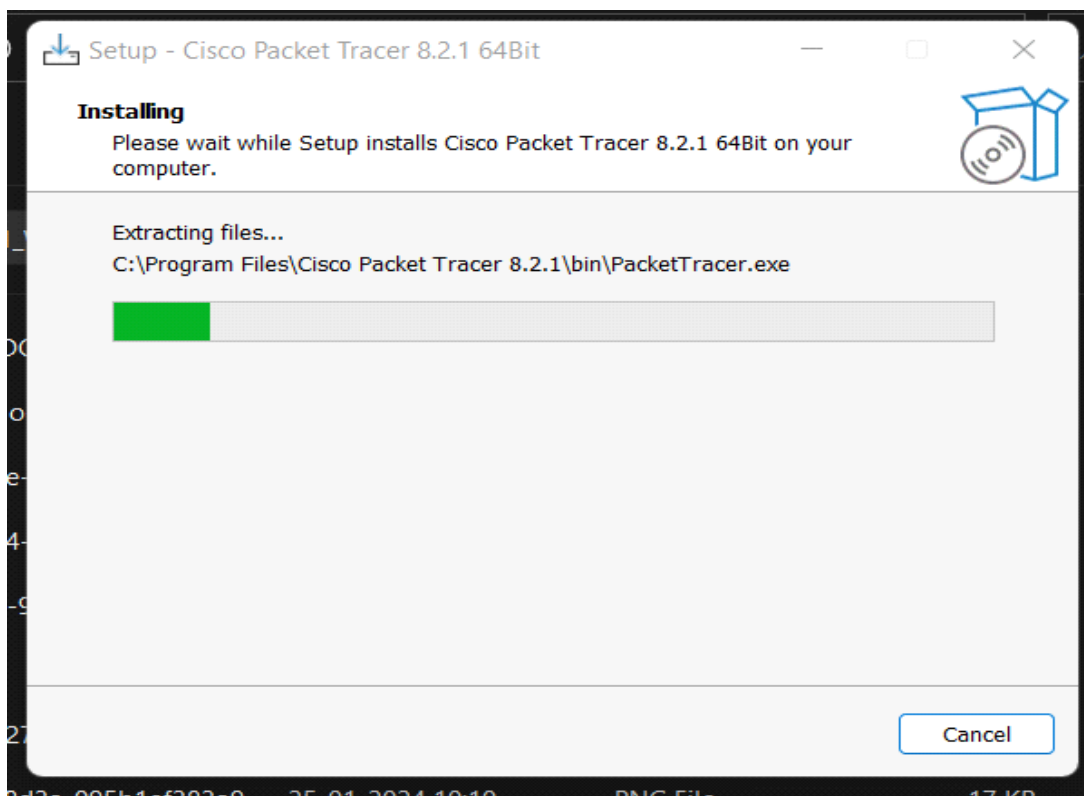
[Back to log in](#)

[Contact support](#) [Privacy](#) [Terms & Conditions](#) [Cookies](#) [Trademarks](#)

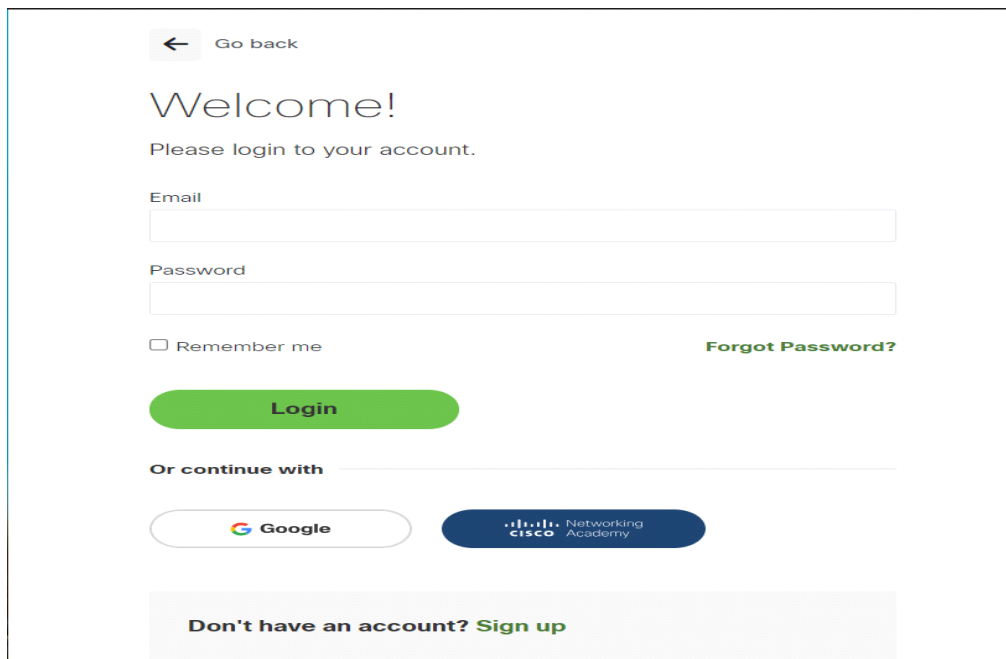
3) Downloading CiscoPacketTracer



4) Installing Cisco Packet Tracer



5) Login into Account



← Go back

Welcome!

Please login to your account.

Email

Password

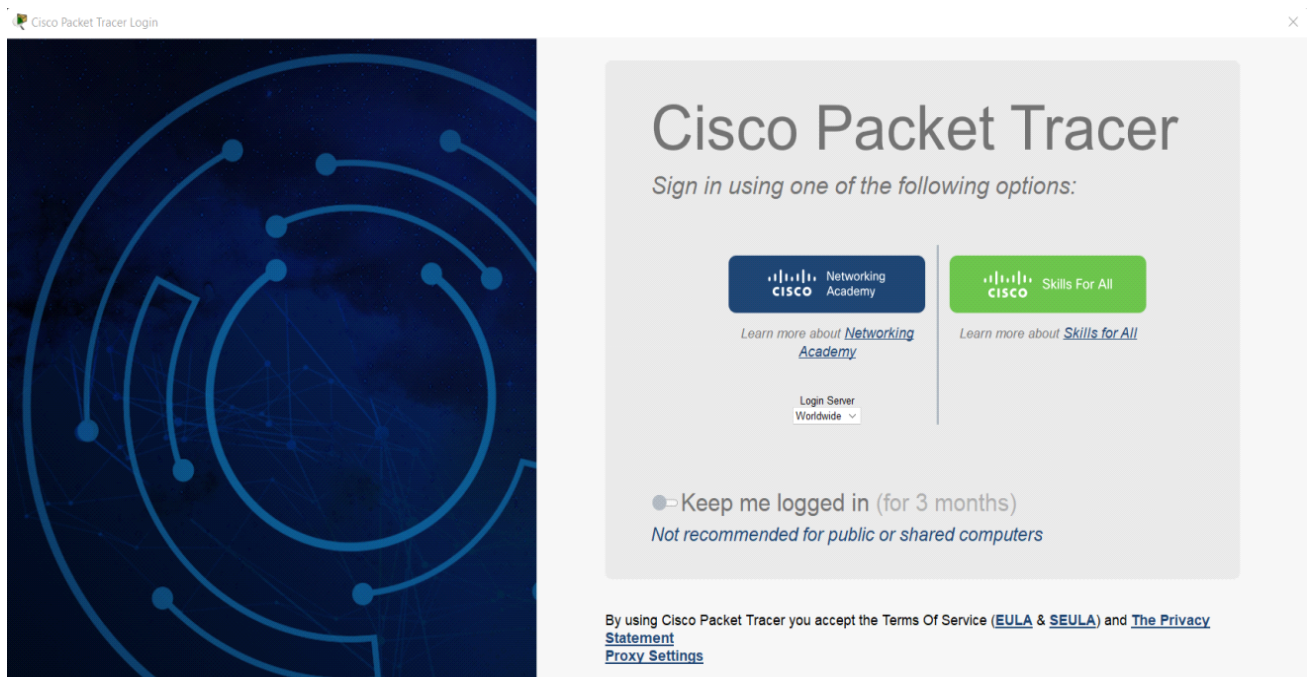
☐ Remember me [Forgot Password?](#)

Login

Or continue with

Google Networking Academy

Don't have an account? [Sign up](#)



Cisco Packet Tracer Login

Cisco Packet Tracer

Sign in using one of the following options:

Networking Academy Skills For All

Learn more about [Networking Academy](#) Learn more about [Skills for All](#)

Login Server Worldwide

☒ Keep me logged in (for 3 months)
Not recommended for public or shared computers

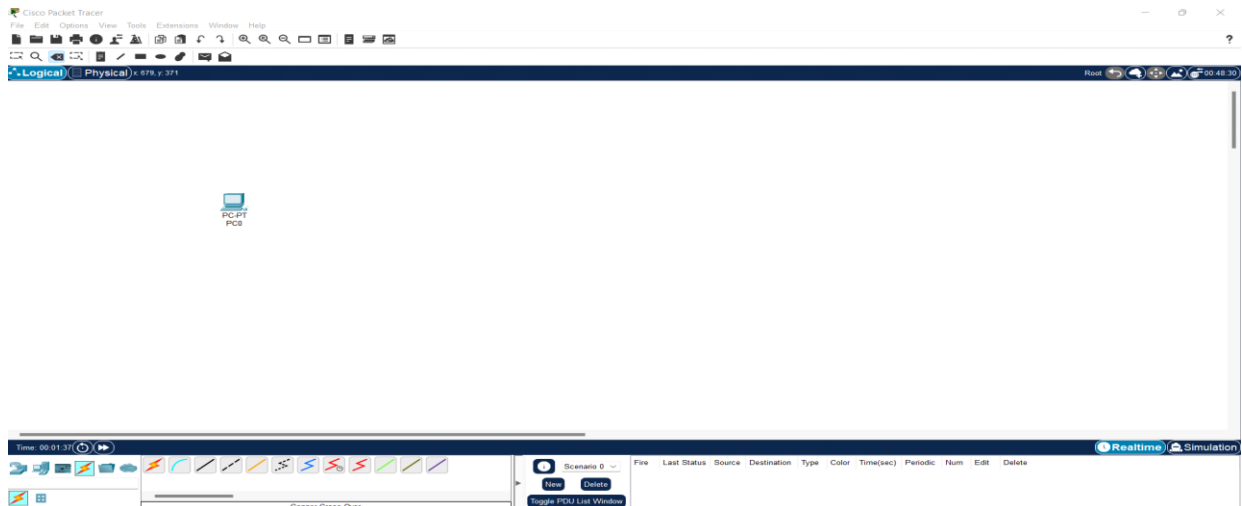
By using Cisco Packet Tracer you accept the Terms Of Service ([EULA](#) & [SEULA](#)) and [The Privacy Statement](#)
[Proxy Settings](#)

Sign in for Cisco Packet Tracer by clicking-
[Skills For All](#)

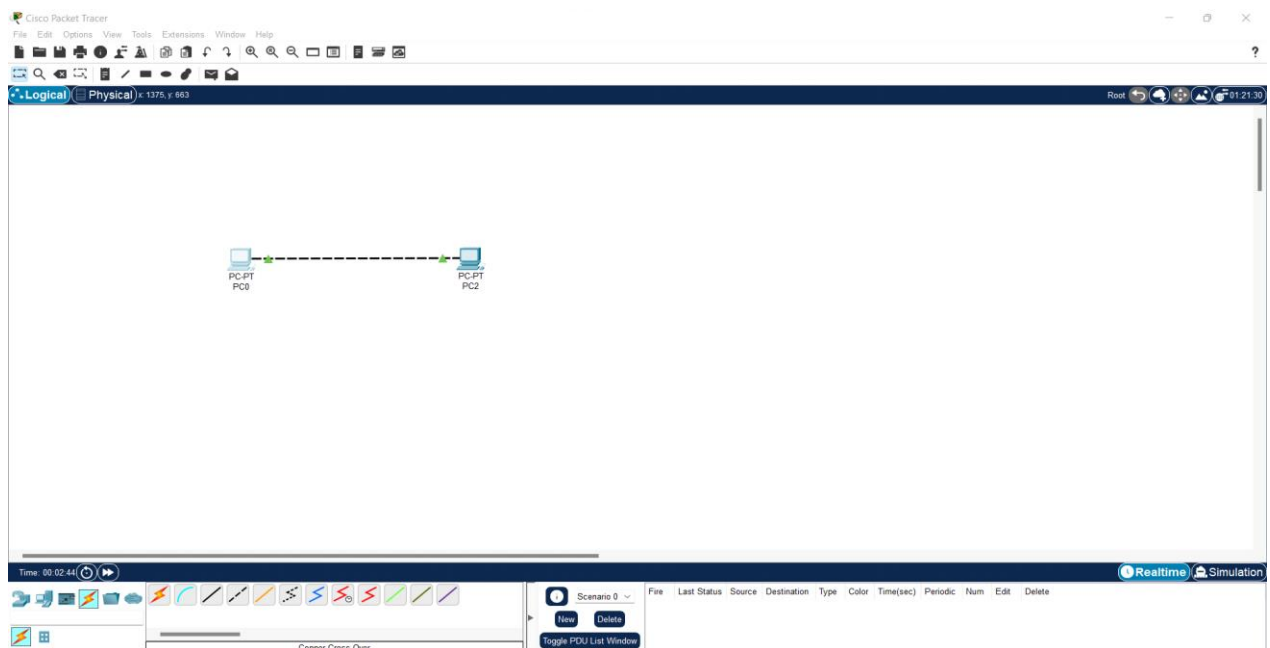
Implementing Topologies

1)Point to Point

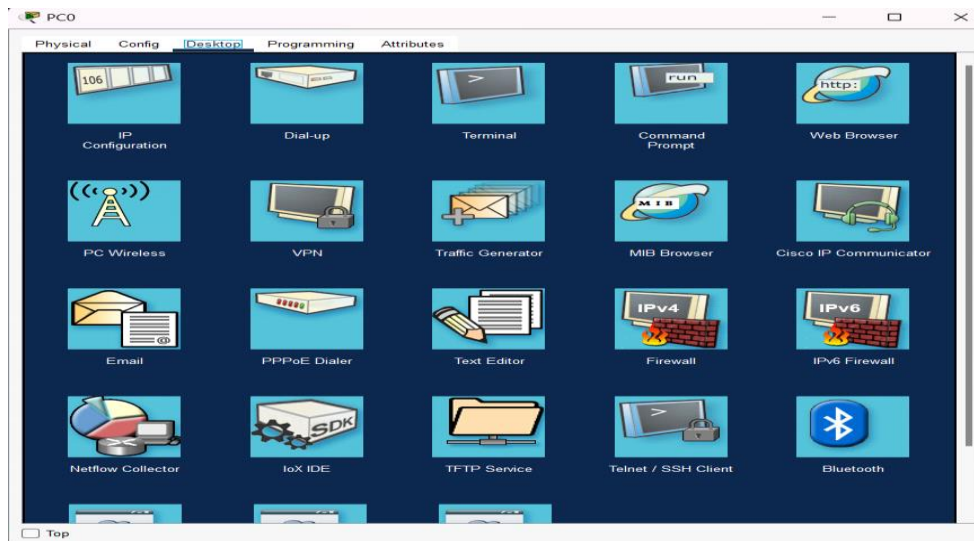
1)Take First PC as PC0



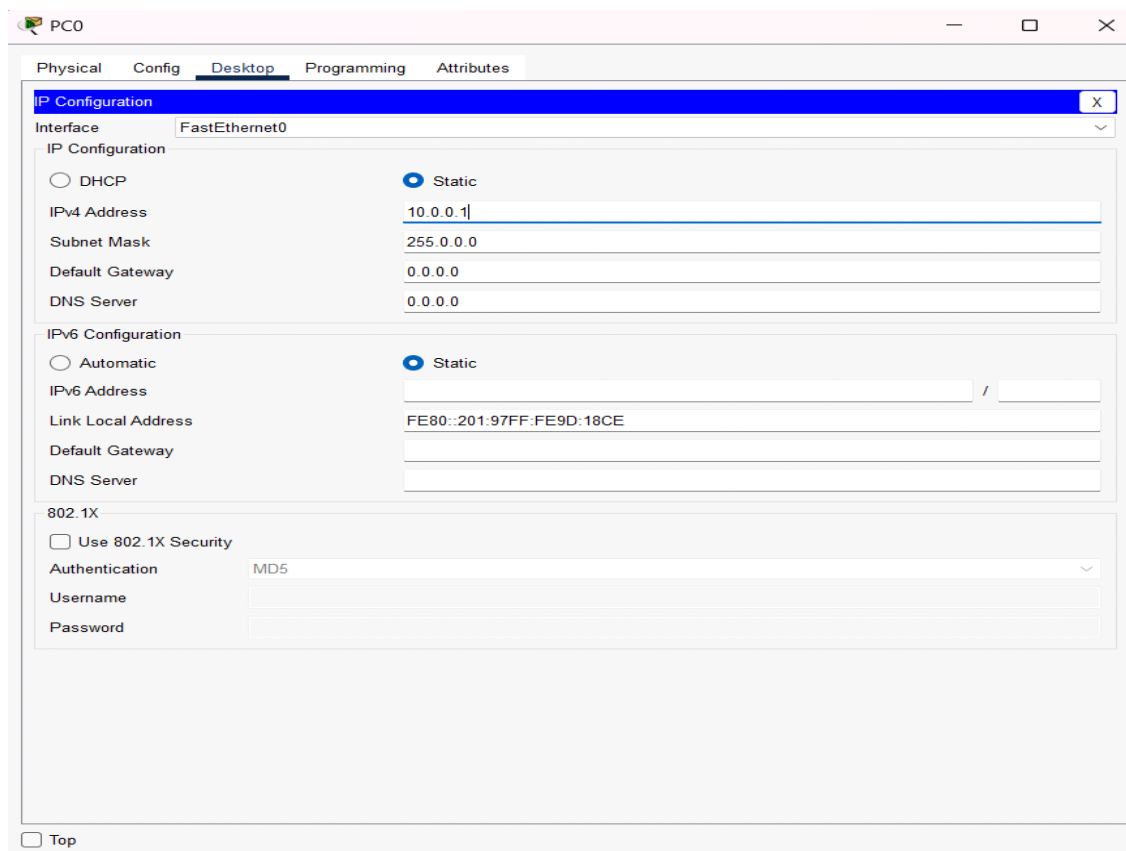
2)Take Second PC as PC1 and connect it with PC0 through cross over cable



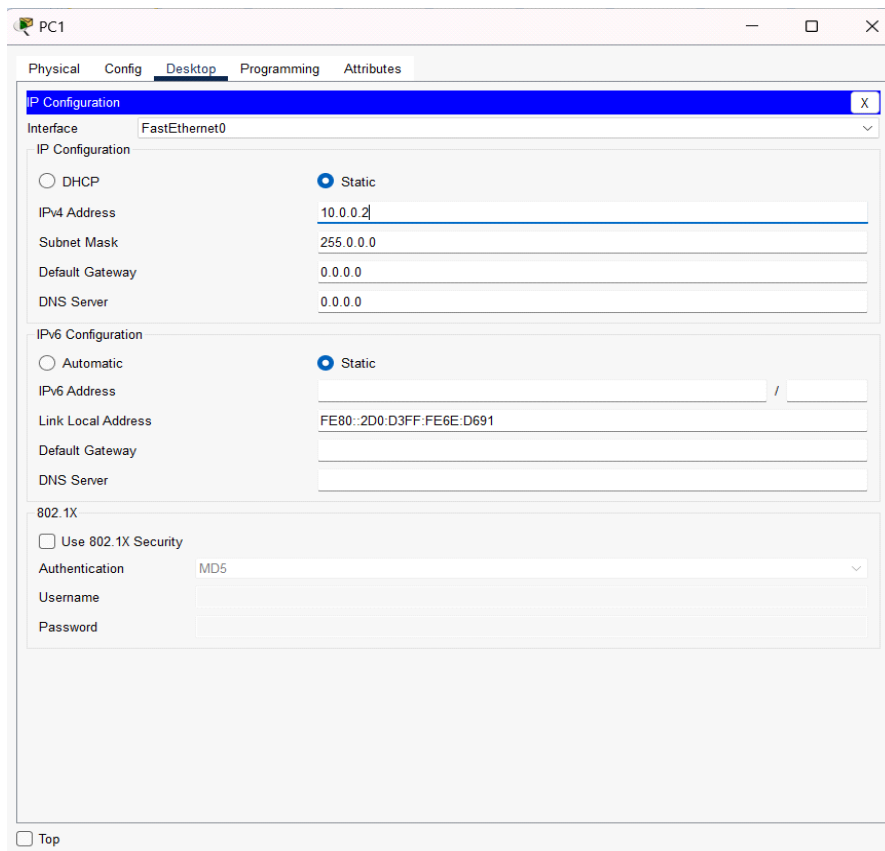
3) Configuring IP address of PC0



4) Setting 10.0.0.1 as IPv4 Address of PC0



5) Setting 10.0.0.2 as IPV4 Address of PC1



IPv4 Address through - Ipconfig Command on PC1

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: FE80::2D0:D3FF:FE6E:D691
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 10.0.0.2
    Subnet Mask . . . . .: 255.0.0.0
    Default Gateway . . . . .: ::
                                   0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address . . . . .: ::
    IPv6 Address . . . . .: ::
    IPv4 Address . . . . .: 0.0.0.0
    Subnet Mask . . . . .: 0.0.0.0
    Default Gateway . . . . .: ::
                                   0.0.0.0
```

IPv4 Address through - Ipconfig Command on PC0

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address.....: FE80::201:97FF:FE9D:18CE
    IPv6 Address.....: ::
    IPv4 Address.....: 10.0.0.1
    Subnet Mask.....: 255.0.0.0
    Default Gateway.....: ::
                           0.0.0.0

Bluetooth Connection:

    Connection-specific DNS Suffix...:
    Link-local IPv6 Address.....: ::
    IPv6 Address.....: ::
    IPv4 Address.....: 0.0.0.0
    Subnet Mask.....: 0.0.0.0
    Default Gateway.....: ::
                           0.0.0.0
```

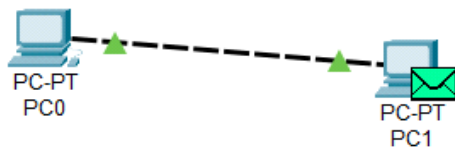
6)Ping PC0 to PC1 through command – ping 10.0.0.2

```
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=4ms TTL=128
Reply from 10.0.0.2: bytes=32 time=2ms TTL=128
Reply from 10.0.0.2: bytes=32 time=2ms TTL=128
Reply from 10.0.0.2: bytes=32 time=2ms 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 = 2ms, Maximum = 4ms, Average = 2ms
```

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.002	--
	0.003	PC0
	0.004	PC1
	1.006	--
	1.007	PC0
	1.008	PC1
	2.010	--
	2.011	PC0
	2.012	PC1
	3.014	--
	3.015	PC0
Visible	3.016	PC1

Reset Simulation
☒ Constant Delay
Captured to: 3.016 s

Play Controls

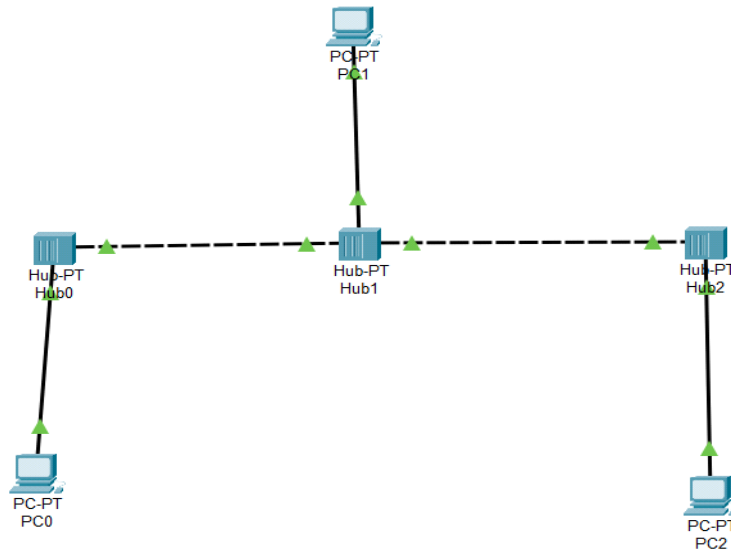
Event List Filters - Visible Events
ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPSec, ISAKMP, IoT, IoT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters
Show All/None

Event List
Realtime
Simulation

2)Bus Topology

Step01- Creating Circuit Diagram



Step02: Configuring IPv4 address of all PCs

Pc0

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 20.0.0.1

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::201:96FF:FE15:3BDD

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

PC1-

PC1

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 20.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::203:E4FF:FE70:73A9

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

PC2-

PC2

Physical Config Desktop Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 20.0.0.3

Subnet Mask 255.0.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::202:4AFF:FEC2:9BD0

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

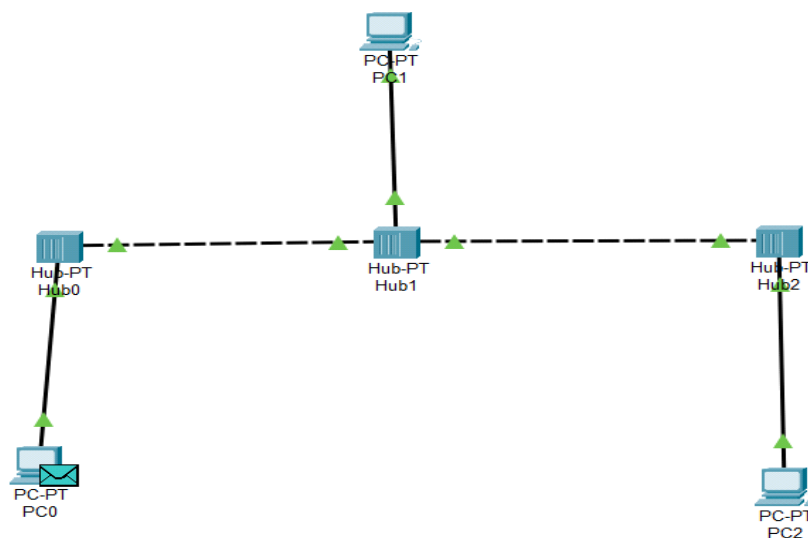
```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 20.0.0.3



















Pinging 20.0.0.3 with 32 bytes of data:

Reply from 20.0.0.3: bytes=32 time=1ms TTL=128
Reply from 20.0.0.3: bytes=32 time=1ms TTL=128
Reply from 20.0.0.3: bytes=32 time=1ms TTL=128
Reply from 20.0.0.3: bytes=32 time=13ms TTL=128












Ping statistics for 20.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 13ms, Average = 4ms
C:\>
```



Step-3) Sending Package from PC0 to PC2 using command – ping 20.0.0.3 in command prompt of PC0



Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	 ICMP
	0.001	PC0	Hub0	 ICMP
	0.002	Hub0	Hub1	 ICMP
	0.003	Hub1	Hub2	 ICMP
	0.003	Hub1	PC1	 ICMP
	0.004	Hub2	PC2	 ICMP
	0.005	PC2	Hub2	 ICMP
	0.006	Hub2	Hub1	 ICMP
	0.007	Hub1	Hub0	 ICMP
	0.007	Hub1	PC1	 ICMP
	0.008	Hub0	PC0	 ICMP
	1.009	--	PC0	 ICMP
	1.010	PC0	Hub0	 ICMP
	1.011	Hub0	Hub1	 ICMP
	1.012	Hub1	Hub2	 ICMP
	1.012	Hub1	PC1	 ICMP
	1.013	Hub2	PC2	 ICMP
	1.014	PC2	Hub2	 ICMP

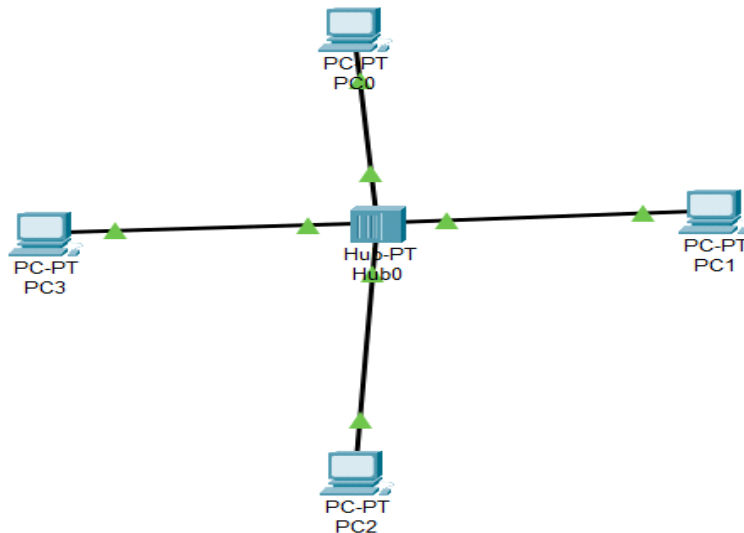
Simulator

	1.015	Hub2	Hub1	 ICMP
	1.016	Hub1	Hub0	 ICMP
	1.016	Hub1	PC1	 ICMP
	1.017	Hub0	PC0	 ICMP
	2.020	--	PC0	 ICMP
	2.021	PC0	Hub0	 ICMP
	2.022	Hub0	Hub1	 ICMP
	2.023	Hub1	Hub2	 ICMP
	2.023	Hub1	PC1	 ICMP
	2.024	Hub2	PC2	 ICMP
	2.025	PC2	Hub2	 ICMP
	2.026	Hub2	Hub1	 ICMP
	2.027	Hub1	Hub0	 ICMP
	2.027	Hub1	PC1	 ICMP
	2.028	Hub0	PC0	 ICMP
	3.032	--	PC0	 ICMP
	3.033	PC0	Hub0	 ICMP

	3.034	Hub0	Hub1	 ICMP
	3.035	Hub1	Hub2	 ICMP
	3.035	Hub1	PC1	 ICMP
	3.036	Hub2	PC2	 ICMP
	3.037	PC2	Hub2	 ICMP
	3.038	Hub2	Hub1	 ICMP
	3.039	Hub1	Hub0	 ICMP
	3.039	Hub1	PC1	 ICMP
Visible	3.040	Hub0	PC0	 ICMP

2) Star Topology using Hub

Step01: Creating circuit diagram



Step02:Configuring IPv4 address of all PCs

PC0:

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::20D:BDFE:FE33:B330

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

PC1:

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.1

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:58FF:FE85:C1D4

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

PC2:

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.4

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::290:CFF:FE45:EB82

Default Gateway:

DNS Server:

802.1X

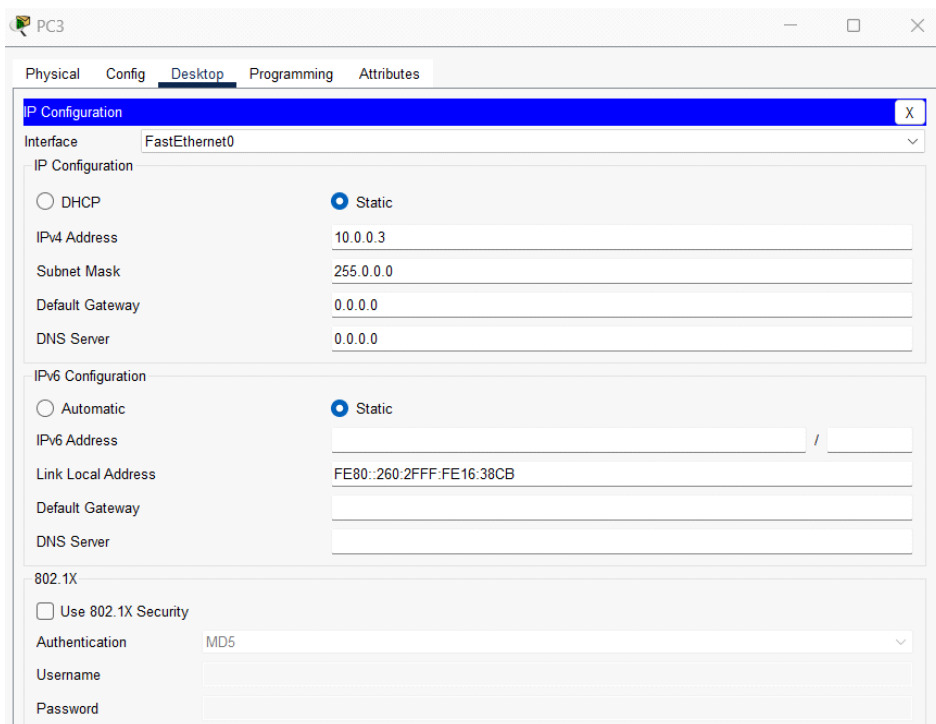
☐ Use 802.1X Security

Authentication: MD5

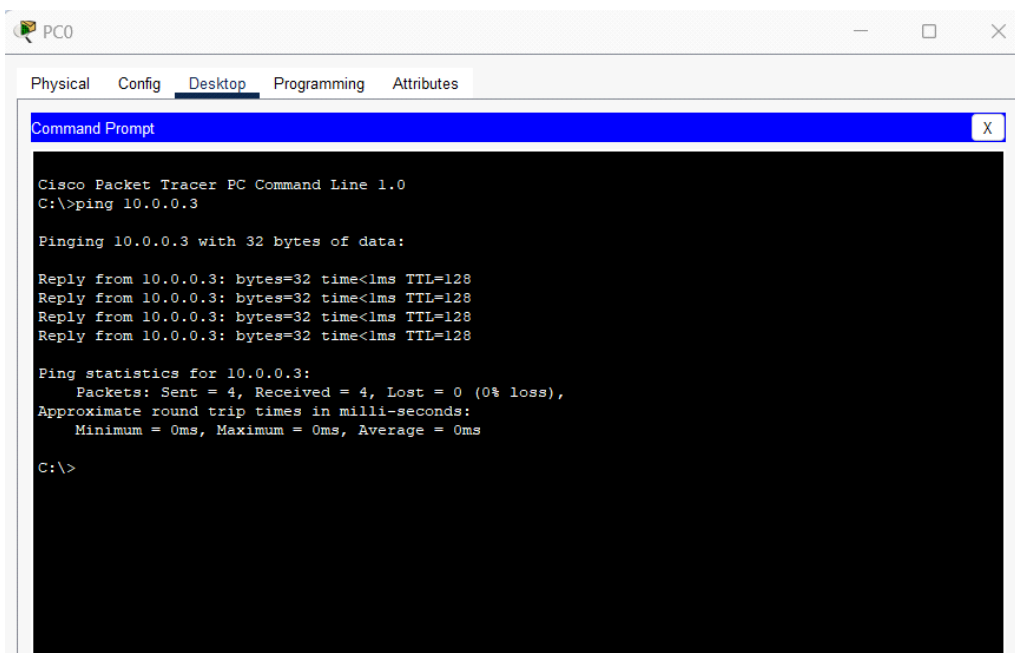
Username:

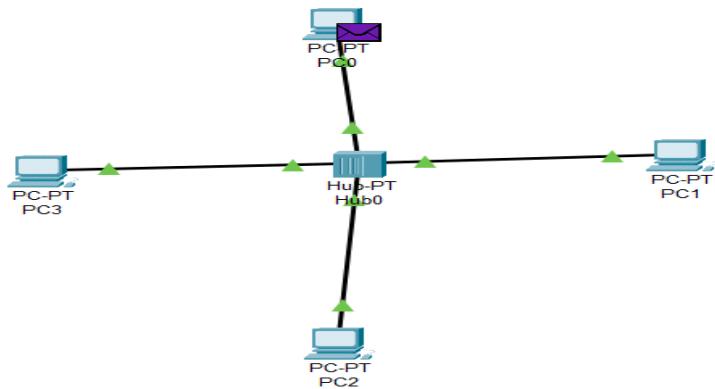
Password:

PC3-



Step03: Sending Package from PC0 to PC3 using command – ping 10.0.0.3 in command prompt of PC0





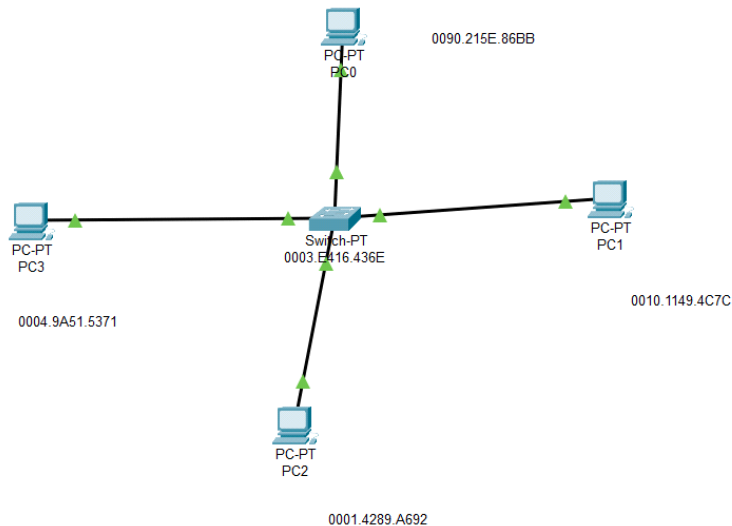
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Hub0	ICMP
	0.002	Hub0	PC1	ICMP
	0.002	Hub0	PC2	ICMP
	0.002	Hub0	PC3	ICMP
	0.003	PC3	Hub0	ICMP
	0.004	Hub0	PC0	ICMP
	0.004	Hub0	PC1	ICMP
	0.004	Hub0	PC2	ICMP
	1.005	--	PC0	ICMP
	1.006	PC0	Hub0	ICMP
	1.007	Hub0	PC1	ICMP
	1.007	Hub0	PC2	ICMP
	1.007	Hub0	PC3	ICMP
	1.008	PC3	Hub0	ICMP
	1.009	Hub0	PC0	ICMP
	1.009	Hub0	PC1	ICMP

Vis.	Time(sec)	Last Device	At Device	Type
	1.009	Hub0	PC2	ICMP
	2.012	--	PC0	ICMP
	2.013	PC0	Hub0	ICMP
	2.014	Hub0	PC1	ICMP
	2.014	Hub0	PC2	ICMP
	2.014	Hub0	PC3	ICMP
	2.015	PC3	Hub0	ICMP
	2.016	Hub0	PC0	ICMP
	2.016	Hub0	PC1	ICMP
	2.016	Hub0	PC2	ICMP
	3.016	--	PC0	ICMP
	3.017	PC0	Hub0	ICMP
	3.018	Hub0	PC1	ICMP
	3.018	Hub0	PC2	ICMP
	3.018	Hub0	PC3	ICMP
	3.019	PC3	Hub0	ICMP
Visible	3.020	Hub0	PC0	ICMP

Visible	3.020	Hub0	PC1	ICMP
Visible	3.020	Hub0	PC2	ICMP

3)Star Topology using Switch

Step01: Creating circuit diagram



Step02: Configuring IPv4 address of all PCs

Pc0:

PC0

Physical Config **Desktop** Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.3

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::290:21FF:FE5E:86BB

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Pc1:

PC1

PhysicalConfigDesktopProgrammingAttributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

DHCP

Static

IPv4 Address10.0.0.1

Subnet Mask255.0.0.0

Default Gateway0.0.0.0

DNS Server0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local AddressFE80::210:11FF:FE49:4C7C

Default Gateway

DNS Server

802.1X

Use 802.1X Security

AuthenticationMD5

Username

Password

Pc2:

PC2

PhysicalConfigDesktopProgrammingAttributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

DHCP

Static

IPv4 Address10.0.0.2

Subnet Mask255.0.0.0

Default Gateway0.0.0.0

DNS Server0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local AddressFE80::201:42FF:FE89:A692

Default Gateway

DNS Server

802.1X

Use 802.1X Security

AuthenticationMD5

Username

Password

Pc3:

PC3

PhysicalConfigDesktopProgrammingAttributes

IP Configuration

InterfaceFastEthernet0

IP Configuration

DHCP

Static

IPv4 Address10.0.0.4

Subnet Mask255.0.0.0

Default Gateway0.0.0.0

DNS Server0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local AddressFE80::204:9AFF:FE51:5371

Default Gateway

DNS Server

802.1X

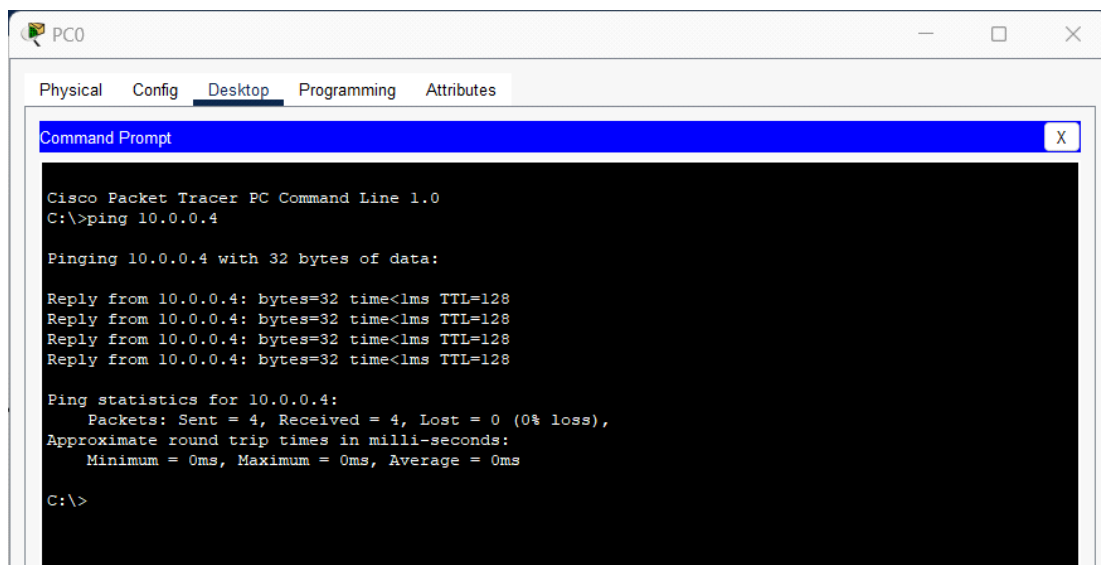
Use 802.1X Security

AuthenticationMD5

Username

Password

Step03: Sending Package from PC0 to PC3 using command – ping 10.0.0.4 in command prompt of PC0



Initial Mac address table

```
Switch>
Switch>show mac-address
          Mac Address Table
-----
```

Vlan	Mac Address	Type	Ports
----	-----	-----	-----

After transfer of package

```
Switch>show mac-address
          Mac Address Table
-----
```

Vlan	Mac Address	Type	Ports
----	-----	-----	-----
1	0004.9a51.5371	DYNAMIC	Fa2/1
1	0090.215e.86bb	DYNAMIC	Fa3/1

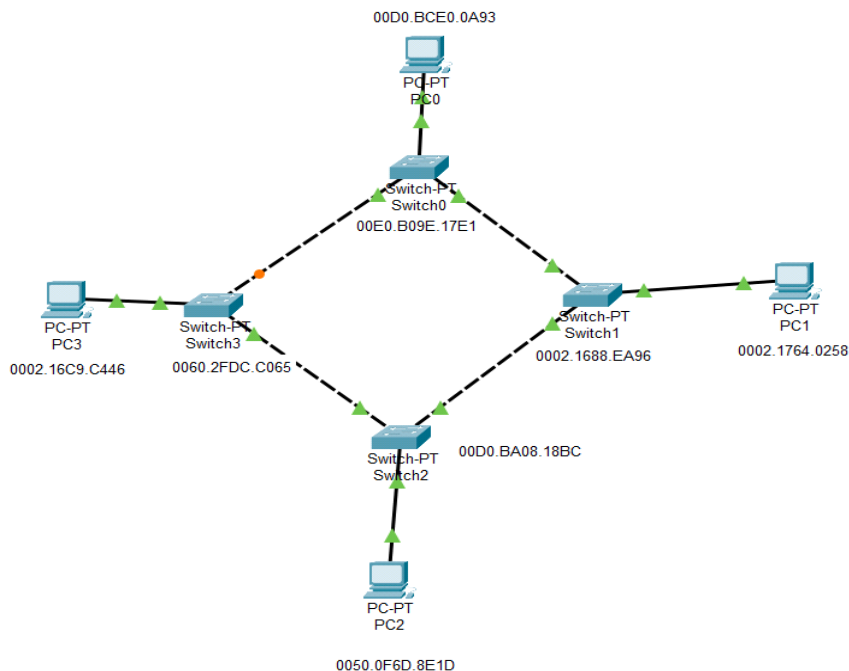
Simulation

Simulation Panel				
Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.001	PC0	Switch	ICMP
	0.002	Switch	PC1	ICMP
	0.002	Switch	PC2	ICMP
	0.002	Switch	PC3	ICMP
	0.003	PC3	Switch	ICMP
	0.004	Switch	PC0	ICMP
	1.004	--	PC0	ICMP
	1.005	PC0	Switch	ICMP
	1.006	Switch	PC3	ICMP
	1.007	PC3	Switch	ICMP
	1.008	Switch	PC0	ICMP
	1.996	--	Switch	STP
	1.997	Switch	PC2	STP
	1.997	Switch	PC3	STP
	1.997	Switch	PC0	STP

	1.997	Switch	PC1	STP
	2.012	--	PC0	ICMF
	2.013	PC0	Switch	ICMF
	2.014	Switch	PC3	ICMF
	2.015	PC3	Switch	ICMF
	2.016	Switch	PC0	ICMF
	3.019	--	PC0	ICMF
	3.020	PC0	Switch	ICMF
	3.021	Switch	PC3	ICMF
	3.022	PC3	Switch	ICMF
Visible	3.023	Switch	PC0	ICMF

3)Ring Topology

Step01: Creating circuit diagram



Step02: Configuring IPv4 address of all PCs

PC0

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.2

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::2D0:BCFF:FEE0:A93

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Pc1:

PC1

Physical Config Desktop Programming Attributes

IP Configuration [X]

Interface: FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 10.0.0.1

Subnet Mask: 255.0.0.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::202:17FF:FE64:258

Default Gateway:

DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

Pc2:

The screenshot shows the 'PC2' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is highlighted in blue. Below it, the 'Interface' is set to 'FastEthernet0'. The 'IP Configuration' section shows 'Static' selected, with the following values: IPv4 Address: 10.0.0.4, Subnet Mask: 255.0.0.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. The 'IPv6 Configuration' section shows 'Static' selected, with the following values: IPv6 Address: (empty), Link Local Address: FE80::250:FFF:FE6D:8E1D, Default Gateway: (empty), and DNS Server: (empty). The '802.1X' section shows 'Use 802.1X Security' unchecked, with 'Authentication' set to 'MD5', 'Username' set to (empty), and 'Password' set to (empty).

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.4

Subnet Mask 255.0.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::250:FFF:FE6D:8E1D

Default Gateway

DNS Server

802.1X

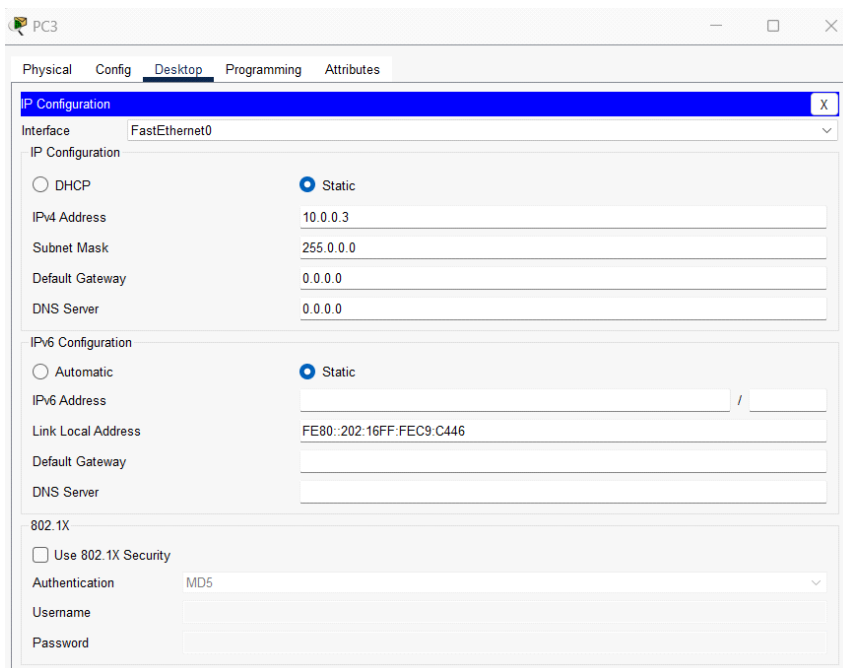
☐ Use 802.1X Security

Authentication MD5

Username

Password

Pc3:



Step03: Sending Package from PC0 to PC2 using command – ping 10.0.0.4 in command prompt of PC0

Initial mac-address table of switch0

```
Switch>show mac-address
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       000a.f3e7.be20   DYNAMIC Fa1/1
Switch>
```

Initial mac-address table of switch1

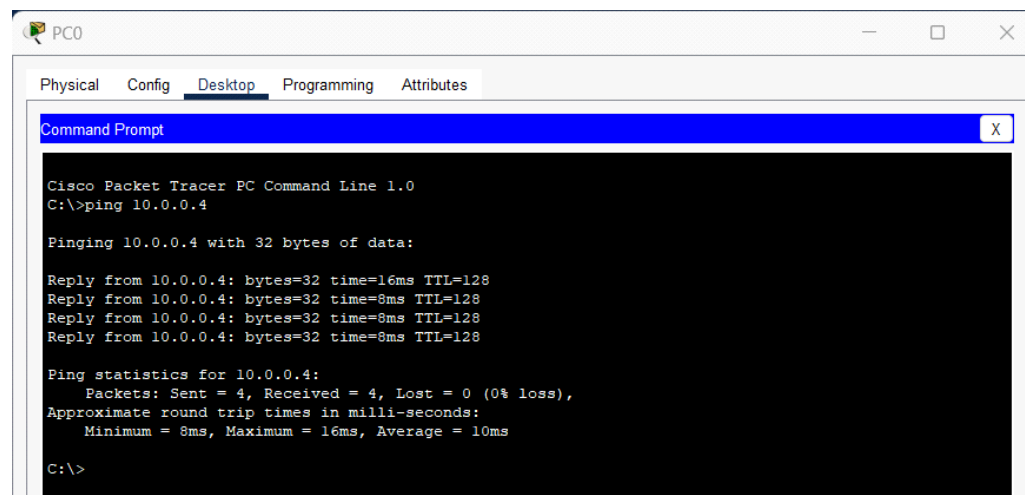
```
Switch>show mac-address
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0002.164e.ddca   DYNAMIC Fa1/1
1       000b.bed8.b811   DYNAMIC Fa0/1
Switch>
```


Initial mac-address table of switch2

```
Switch>show mac-address
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0002.179a.bdba   DYNAMIC Fa0/1
1       00d0.bc25.dd8b   DYNAMIC Fa1/1
Switch>
```

```
Switch>show mac-address
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
1       0003.e44e.9235   DYNAMIC Fa1/1
Switch>
```

Initial mac-address table of switch2



Simulation Panel

Event List				
Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC0	ICMP
	0.000	--	PC0	ARP
	0.001	PC0	Switch0	ARP
	0.002	Switch0	Switch3	ARP
	0.002	Switch0	Switch1	ARP
	0.003	Switch1	Switch2	ARP
	0.003	Switch1	PC1	ARP
	0.004	Switch2	Switch3	ARP
	0.004	Switch2	PC2	ARP
	0.005	Switch3	PC3	ARP
	0.005	PC2	Switch2	ARP
	0.006	Switch2	Switch1	ARP
	0.007	Switch1	Switch0	ARP
	0.008	Switch0	PC0	ARP
	0.008	--	PC0	ICMP
	0.009	PC0	Switch0	ICMP
	0.010	Switch0	Switch1	ICMP

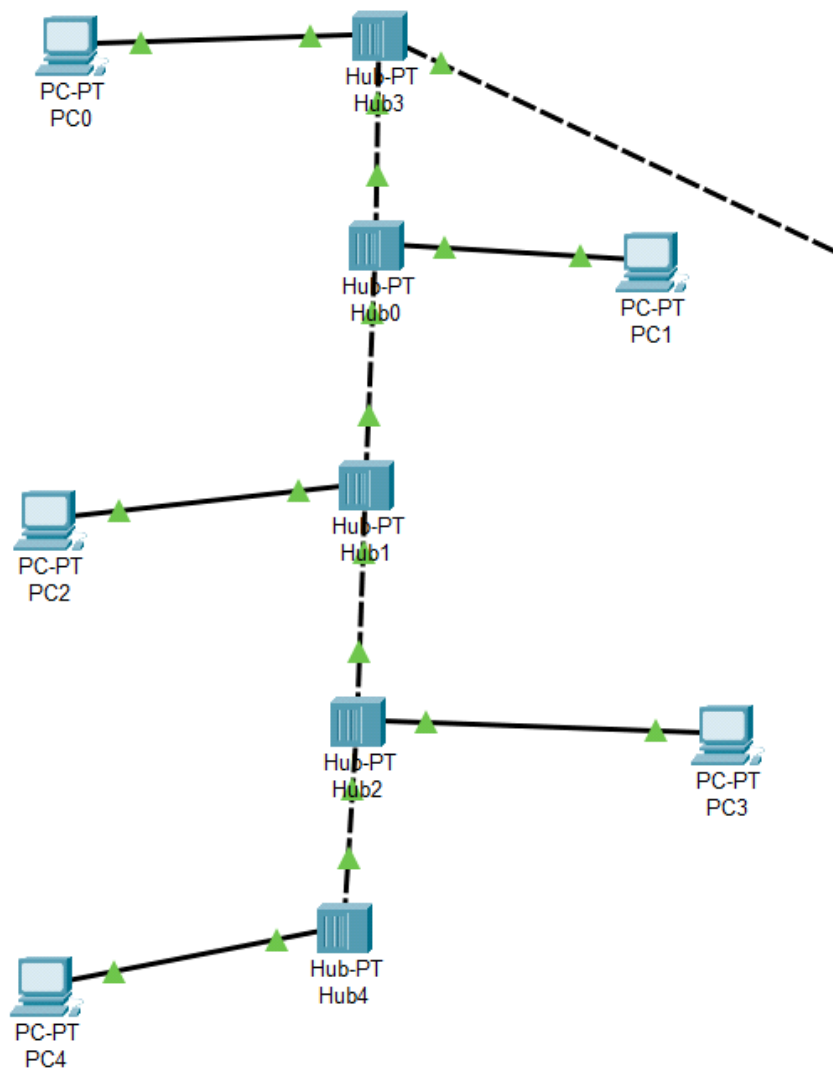
	0.011	Switch1	Switch2	ICMP
	0.012	Switch2	PC2	ICMP
	0.013	PC2	Switch2	ICMP
	0.014	Switch2	Switch1	ICMP
	0.015	Switch1	Switch0	ICMP
	0.016	Switch0	PC0	ICMP
	0.466	--	Switch1	STP
	0.467	Switch1	Switch2	STP
	0.467	Switch1	Switch0	STP
	0.467	Switch1	PC1	STP
	0.468	Switch2	Switch3	STP
	0.468	Switch2	PC2	STP
	0.468	Switch0	PC0	STP
	0.468	Switch0	Switch3	STP
	0.469	Switch3	PC3	STP
	1.016	--	PC0	ICMP
	1.017	PC0	Switch0	ICMP

	1.018	Switch0	Switch1	ICMP
	1.019	Switch1	Switch2	ICMP
	1.020	Switch2	PC2	ICMP
	1.021	PC2	Switch2	ICMP
	1.022	Switch2	Switch1	ICMP
	1.023	Switch1	Switch0	ICMP
	1.024	Switch0	PC0	ICMP
	2.028	--	PC0	ICMP
	2.029	PC0	Switch0	ICMP
	2.030	Switch0	Switch1	ICMP
	2.031	Switch1	Switch2	ICMP
	2.032	Switch2	PC2	ICMP
	2.033	PC2	Switch2	ICMP
	2.034	Switch2	Switch1	ICMP
	2.035	Switch1	Switch0	ICMP
	2.036	Switch0	PC0	ICMP
	2.464	--	Switch1	STP

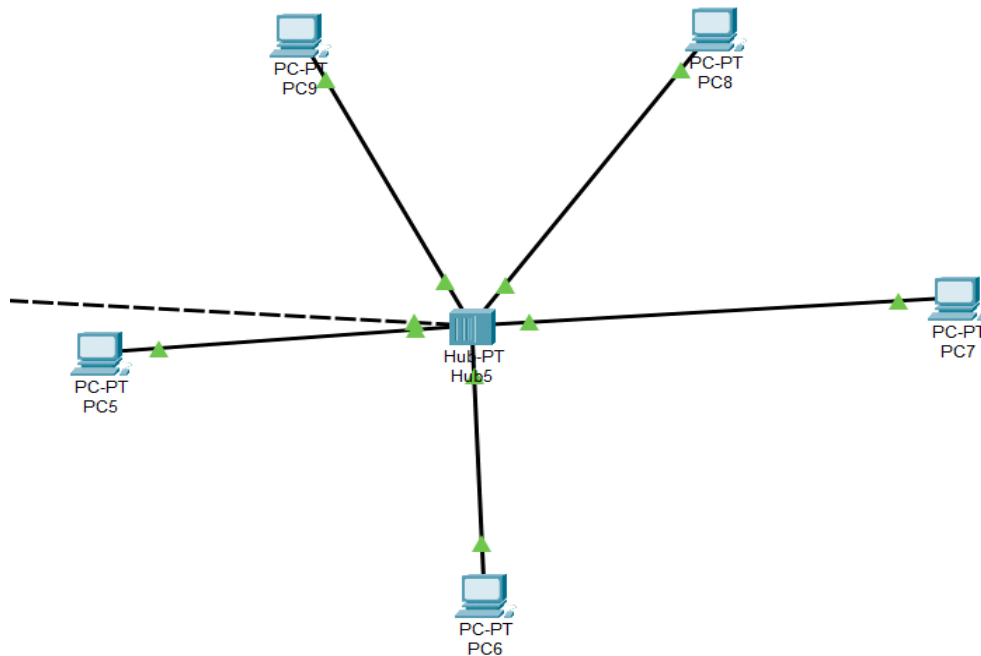
	2.465	Switch1	Switch2	STP
	2.465	Switch1	Switch0	STP
	2.465	Switch1	PC1	STP
	2.466	Switch2	Switch3	STP
	2.466	Switch2	PC2	STP
	2.466	Switch0	PC0	STP
	2.466	Switch0	Switch3	STP
	2.467	Switch3	PC3	STP
	3.040	--	PC0	ICMP
	3.041	PC0	Switch0	ICMP
	3.042	Switch0	Switch1	ICMP
	3.043	Switch1	Switch2	ICMP
	3.044	Switch2	PC2	ICMP
	3.045	PC2	Switch2	ICMP
	3.046	Switch2	Switch1	ICMP
	3.047	Switch1	Switch0	ICMP
	3.048	Switch0	PC0	ICMP

4) Hybrid Topology using Switch

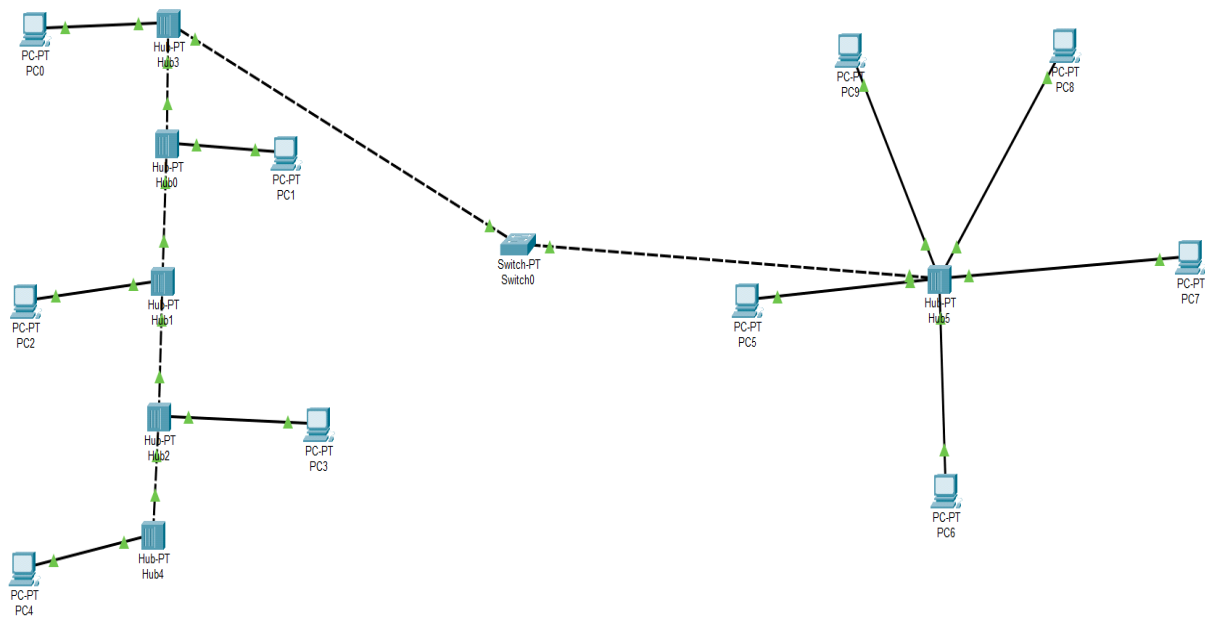
Step01: Creating Connection for Bus topology with 5 PCs and 5 Hubs



Step02: Creating Connection for Star Topology with 5 PCs and 1 Hub

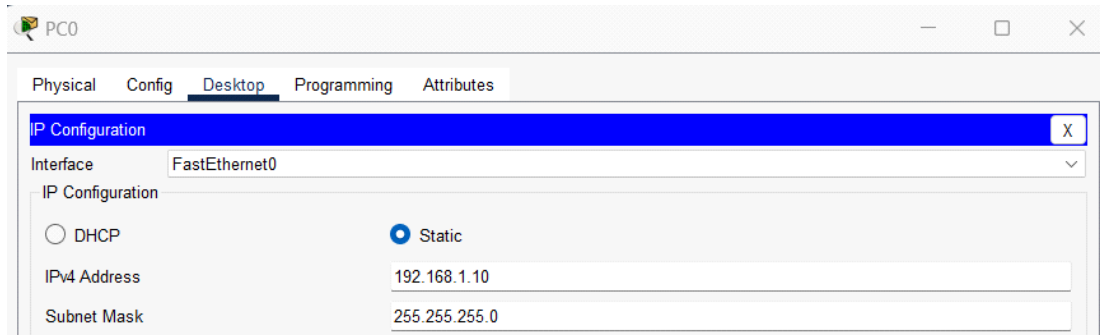


Step03: Connect both Topology Via PT-Switch



Step-4) Now Configure IP address of all the PCs in BUS topology as-

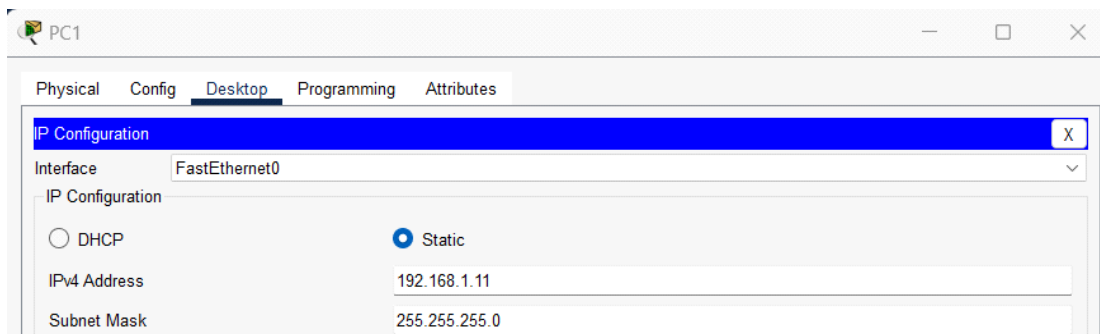
Pc0:



PC0 configuration window showing IP Configuration for FastEthernet0. The configuration is set to Static IP. The IPv4 Address is 192.168.1.10 and the Subnet Mask is 255.255.255.0.

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.10
Subnet Mask	255.255.255.0

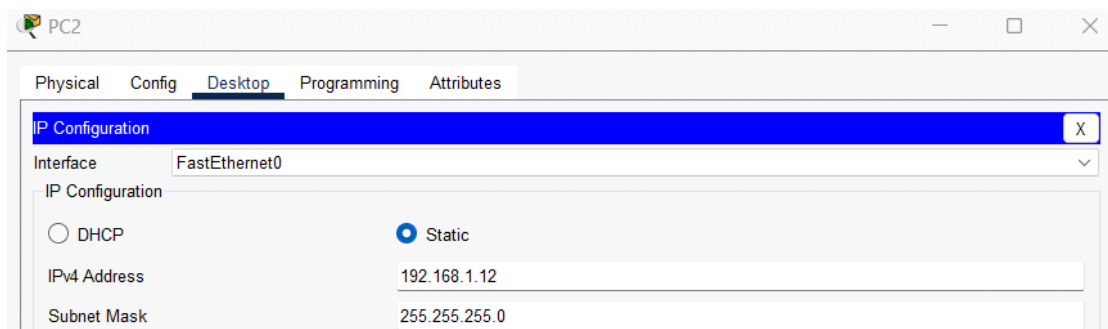
Pc1:



PC1 configuration window showing IP Configuration for FastEthernet0. The configuration is set to Static IP. The IPv4 Address is 192.168.1.11 and the Subnet Mask is 255.255.255.0.

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.11
Subnet Mask	255.255.255.0

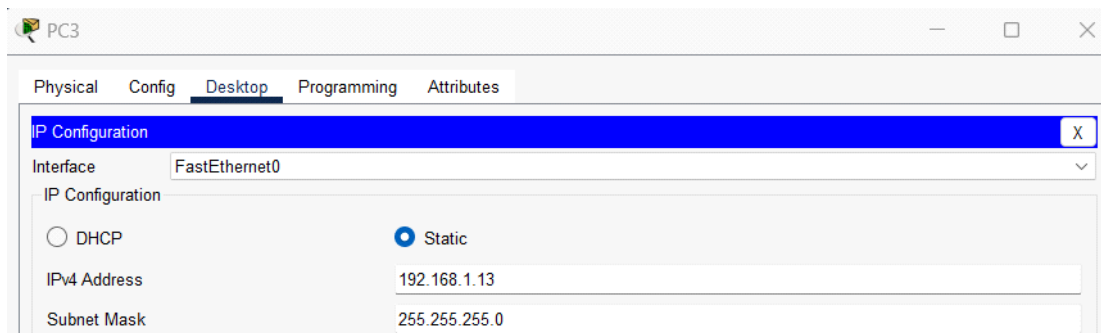
Pc2:



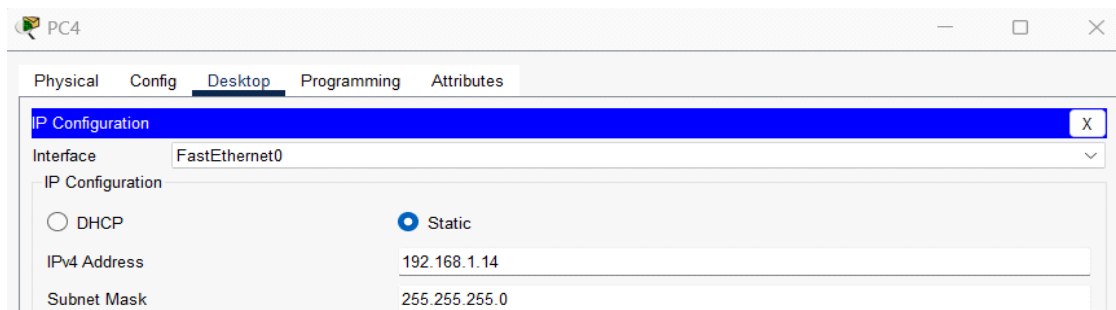
PC2 configuration window showing IP Configuration for FastEthernet0. The configuration is set to Static IP. The IPv4 Address is 192.168.1.12 and the Subnet Mask is 255.255.255.0.

Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.12
Subnet Mask	255.255.255.0

Pc3:

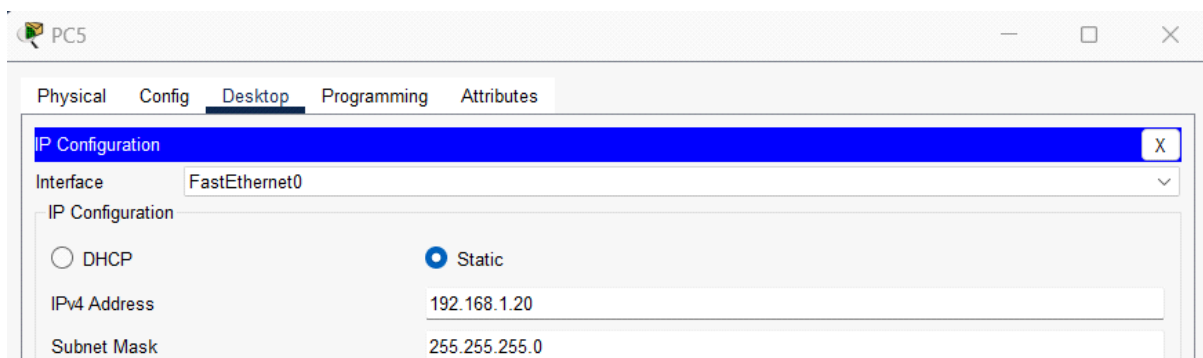


Pc4:

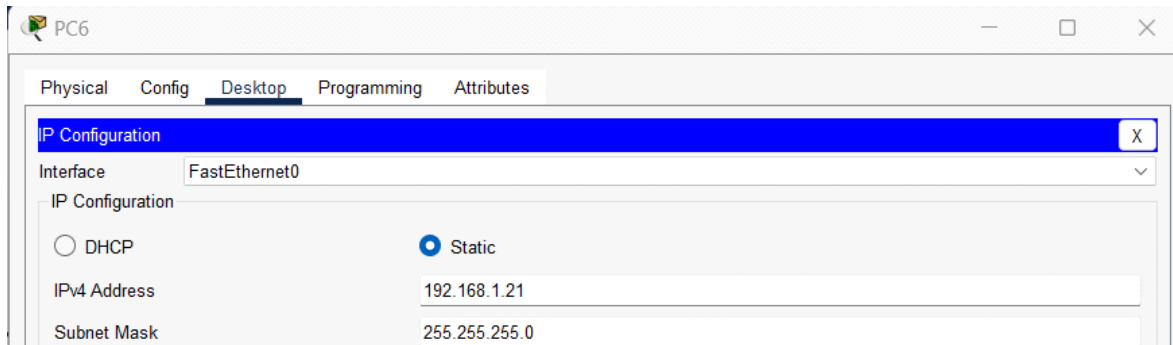


Step-5) Now Configure IP address of all PCs in Star Topology as-

Pc5:



Pc6:



PC6

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

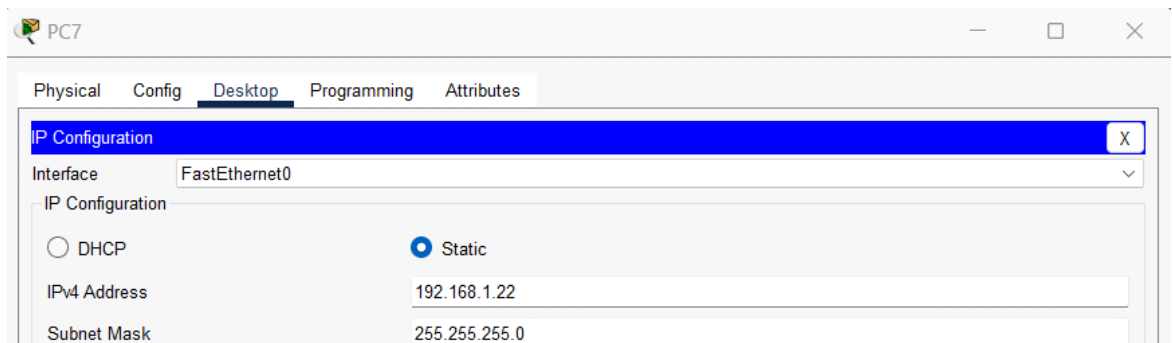
IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.21

Subnet Mask 255.255.255.0

Pc7:



PC7

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

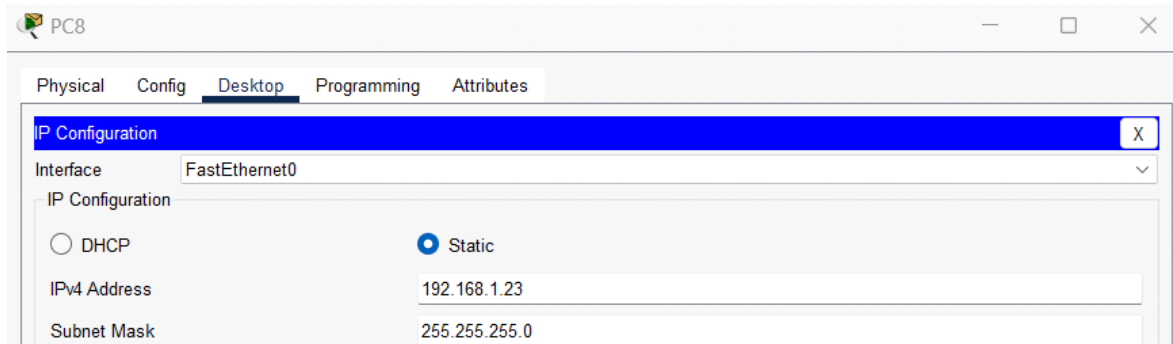
IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.22

Subnet Mask 255.255.255.0

Pc8:



PC8

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

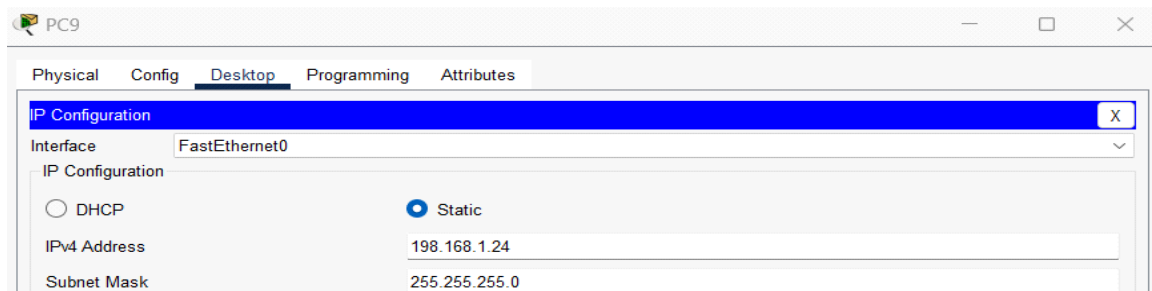
IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.23

Subnet Mask 255.255.255.0

Pc9:



PC9

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 198.168.1.24

Subnet Mask 255.255.255.0

Note- Here all PCs are having same Network Id of Class C IP address

Step06: Sending Packet from PC2 to PC7

Initial Mac Address Table of Switch

```
Switch>show mac-address-table
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -

```

Final Mac Address Table of Switch

```
Switch>show mac-address-table
      Mac Address Table
-----
Vlan    Mac Address      Type    Ports
----    -
      1    0001.426b.4056    DYNAMIC Fa0/1
      1    00e0.b024.b6aa    DYNAMIC Fa1/1
Switch>
```

```
C:\>ping 192.168.1.22

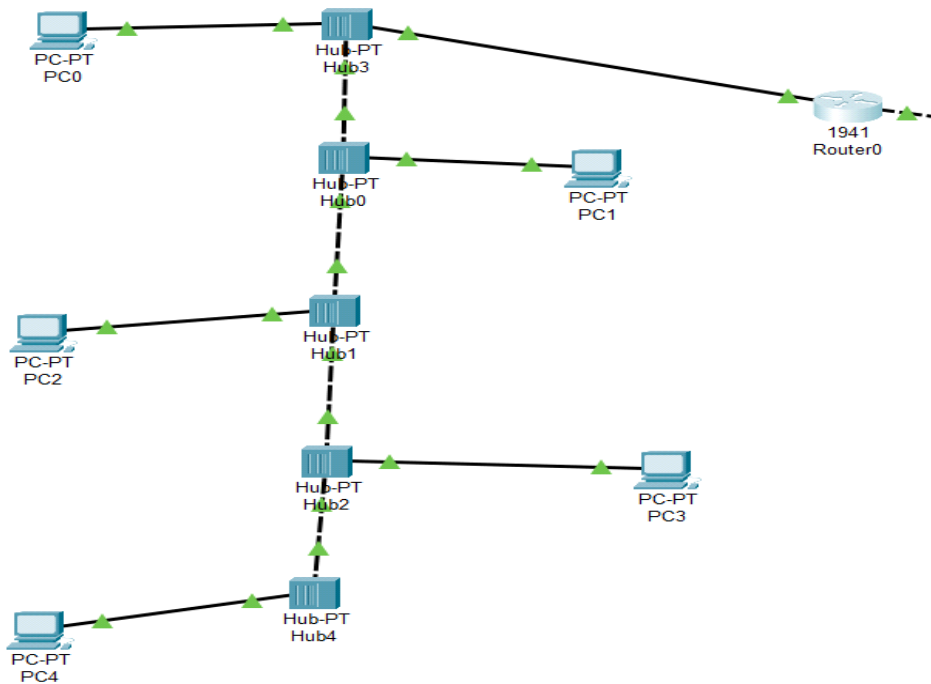
Pinging 192.168.1.22 with 32 bytes of data:

Reply from 192.168.1.22: bytes=32 time<1ms TTL=128
Reply from 192.168.1.22: bytes=32 time<1ms TTL=128
Reply from 192.168.1.22: bytes=32 time<1ms TTL=128
Reply from 192.168.1.22: bytes=32 time=2ms TTL=128

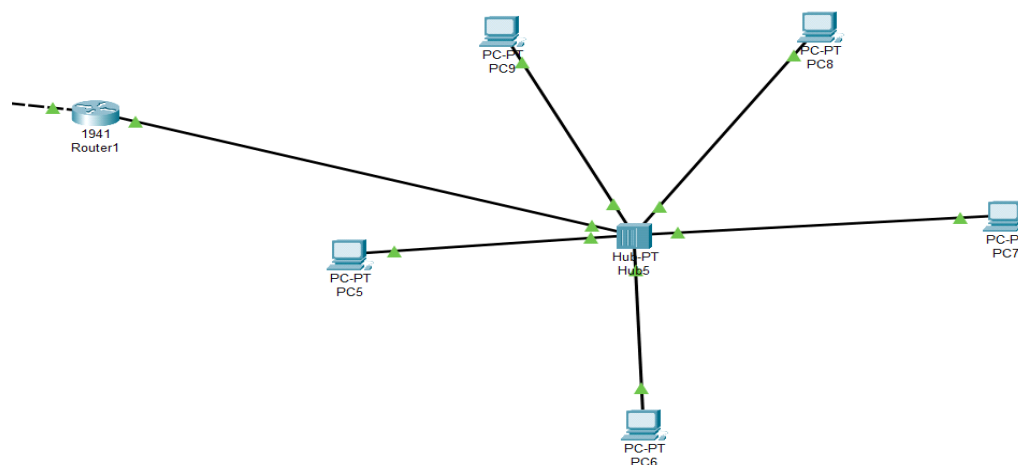
Ping statistics for 192.168.1.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
```


Exp-2) Static Routing between Bus Topology and Star Topology

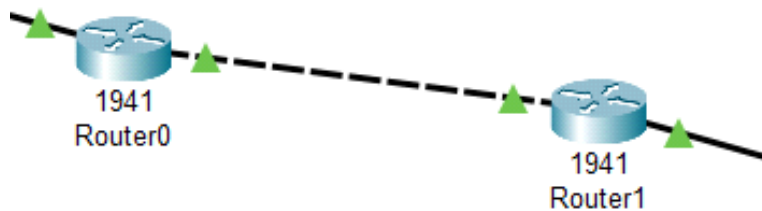
Step01: Create Connections for Bus Topology and connects its one Hub to 1941 router through gigabitEthernet port



Step-2) Create Connections for Star Topology and connects its hub to another 1941 router through GigabitEthernet Port



Step-3) Connect both of these router with cross-over cable



Step-4) Configure IP address to router0 at its GigabitEthernet0/0 and GigabitEthernet0/1 port

GigabitEthernet 0/0 -

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip address 192.168.1.254 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

GigabitEthernet 0/1 –

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip address 172.16.0.1 255.255.0.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Step05: Configure IP address to router1 at its GigabitEthernet0/0 and GigabitEthernet0/1 port

GigabitEthernet 0/0 –

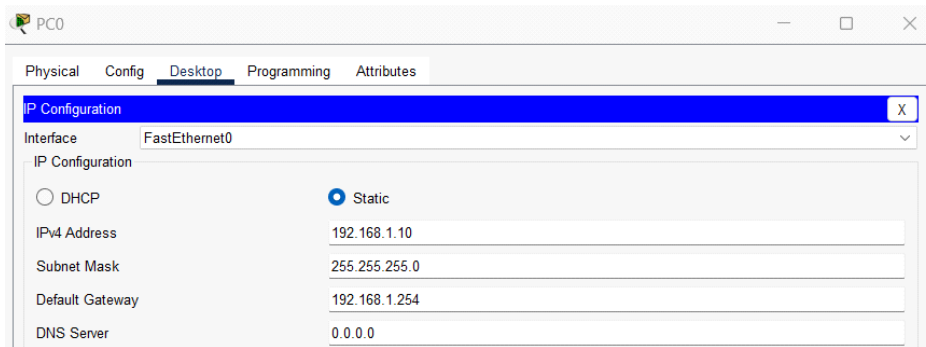
```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip address 172.16.0.2 255.255.0.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

GigabitEthernet 0/1 –

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.2.254 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Step-6) Configure IP address of all PCs of Bus topology and default gateway as 192.168.1.254

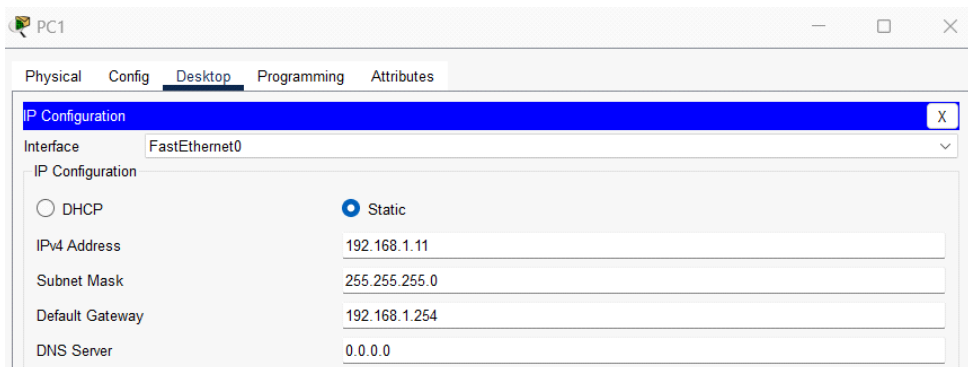
Pc0:



The screenshot shows the configuration window for PC0. The 'Desktop' tab is selected. Under 'IP Configuration', the 'Interface' is 'FastEthernet0'. The 'Static' radio button is selected. The fields are filled with: IPv4 Address: 192.168.1.10, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.1.254, and DNS Server: 0.0.0.0.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.10
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
DNS Server	0.0.0.0

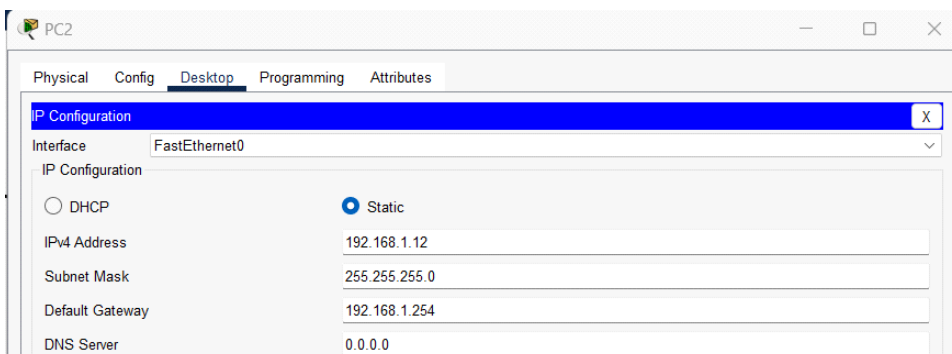
Pc1:



The screenshot shows the configuration window for PC1. The 'Desktop' tab is selected. Under 'IP Configuration', the 'Interface' is 'FastEthernet0'. The 'Static' radio button is selected. The fields are filled with: IPv4 Address: 192.168.1.11, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.1.254, and DNS Server: 0.0.0.0.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.11
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
DNS Server	0.0.0.0

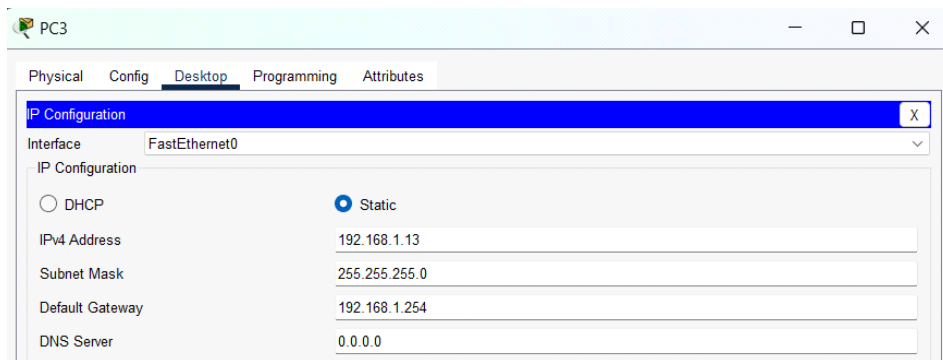
Pc2:



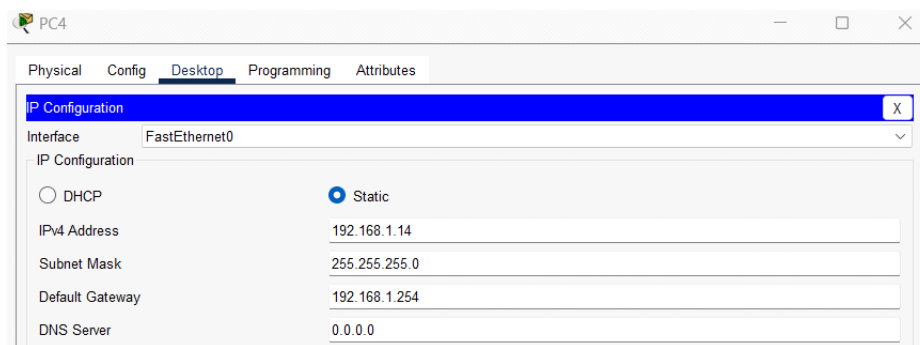
The screenshot shows the configuration window for PC2. The 'Desktop' tab is selected. Under 'IP Configuration', the 'Interface' is 'FastEthernet0'. The 'Static' radio button is selected. The fields are filled with: IPv4 Address: 192.168.1.12, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.1.254, and DNS Server: 0.0.0.0.

Field	Value
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.12
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
DNS Server	0.0.0.0

Pc3:

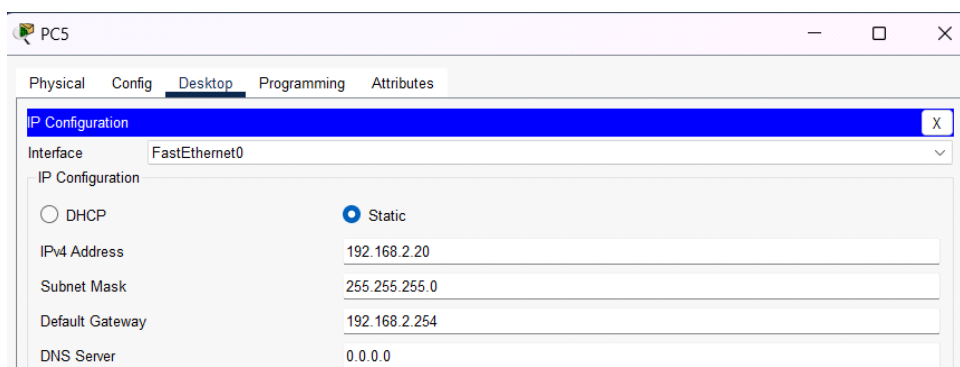


Pc4:

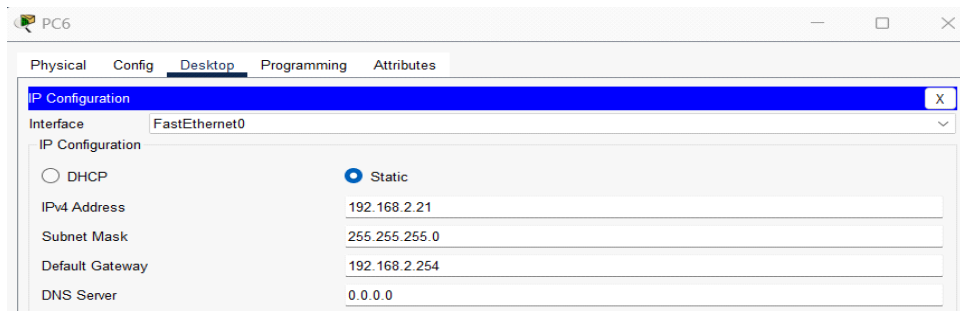


Step07: Configure IP address of all PCs of Star topology and default gateway as 192.168.2.254

Pc5:



Pc6:



PC6

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

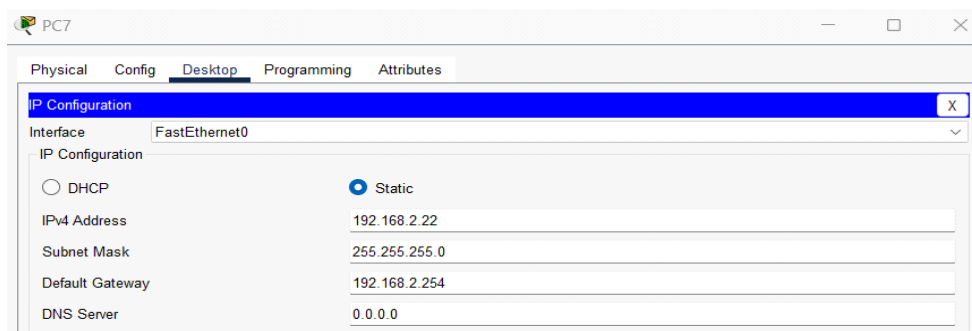
IPv4 Address 192.168.2.21

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.254

DNS Server 0.0.0.0

Pc7:



PC7

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

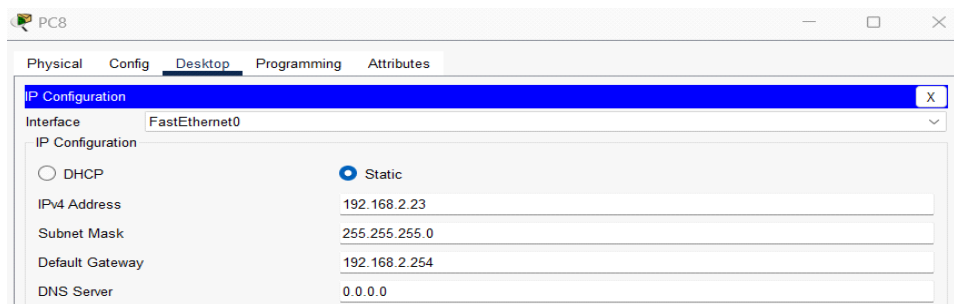
IPv4 Address 192.168.2.22

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.254

DNS Server 0.0.0.0

Pc8:



PC8

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

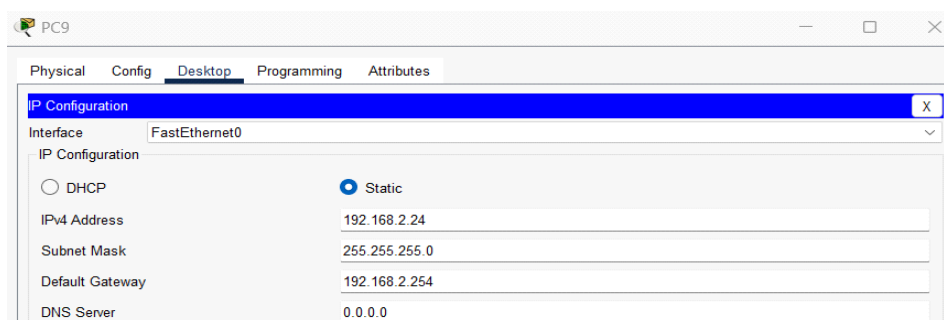
IPv4 Address 192.168.2.23

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.254

DNS Server 0.0.0.0

Pc9:



PC9

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.2.24

Subnet Mask 255.255.255.0

Default Gateway 192.168.2.254

DNS Server 0.0.0.0

Step08: Sending Packet from PC0 to PC5

```
Cisco Packet Tracer PC Command Line 1.0
C:\>oing 192.168.2.20
Invalid Command.

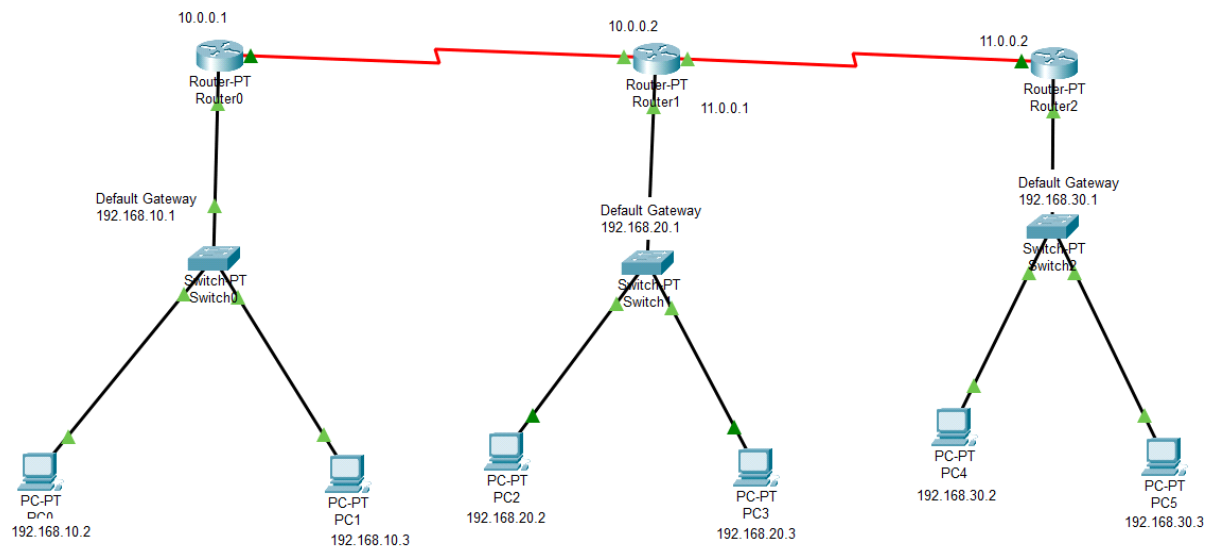
C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

Reply from 192.168.2.20: bytes=32 time=15ms TTL=126
Reply from 192.168.2.20: bytes=32 time=10ms TTL=126
Reply from 192.168.2.20: bytes=32 time=10ms TTL=126
Reply from 192.168.2.20: bytes=32 time=10ms TTL=126

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 10ms, Maximum = 15ms, Average = 11ms
```

Exp-3) RIP with 3 Routers



Step01: Create Connection using 3 Routers, 3 Switches and 6 PCs

Step02: Configure IP address of PCs

PC0- 192.168.10.2 Default Gateway-192.168.10.1

PC1-192.168.10.3 Default Gateway-192.168.10.1

PC2-192.168.20.2 Default Gateway-192.168.20.1

PC3-192.168.20.3 Default Gateway-192.168.20.1

PC4-192.168.30.2 Default Gateway-192.168.30.1

PC5-192.168.30.3 Default Gateway-192.168.30.1

Step03:Configure IP address to router0 at its fastEthernet0/0 and Serial 2/0 port

FastEthernet0/0 –

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastEthernet0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Serial2/0 –

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial2/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Step04: Configure IP address to router1 at its fastEthernet0/0 and Serial 2/0 port and Serial 3/0 port

FastEthernet 0/0 –

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface fastethernet0/0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#exit
```

Serial 2/0 –

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial2/0
Router(config-if)#ip address 10.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Serial 3/0

```
Router>
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial3/0
Router(config-if)#ip address 11.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Step-5) Configure RIP protocol In Routers

Router0-

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.10.0
Router(config-router)#network 10.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Router1-

```
Router>
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.20.0
Router(config-router)#network 10.0.0.0
Router(config-router)#network 11.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Router2-

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#network 192.168.30.0
Router(config-router)#network 11.0.0.0
Router(config-router)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Step06: Sending Package from PC1 to PC4

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Reply from 192.168.30.2: bytes=32 time=12ms TTL=125
Reply from 192.168.30.2: bytes=32 time=12ms TTL=125
Reply from 192.168.30.2: bytes=32 time=12ms TTL=125
Reply from 192.168.30.2: bytes=32 time=12ms TTL=125

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 12ms, Maximum = 12ms, Average = 12ms

C:\>
```

Event List

Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC1	ICMP
	0.001	PC1	Switch0	ICMP
	0.002	Switch0	Router0	ICMP
	0.003	Router0	Router1	ICMP
	0.004	Router1	Router2	ICMP
	0.005	Router2	Switch2	ICMP
	0.006	Switch2	PC4	ICMP
	0.007	PC4	Switch2	ICMP
	0.008	Switch2	Router2	ICMP
	0.009	Router2	Router1	ICMP
	0.010	Router1	Router0	ICMP
	0.011	Router0	Switch0	ICMP
	0.012	Switch0	PC1	ICMP
	1.012	--	PC1	ICMP
	1.013	PC1	Switch0	ICMP
	1.014	Switch0	Router0	ICMP
	1.015	Router0	Router1	ICMP

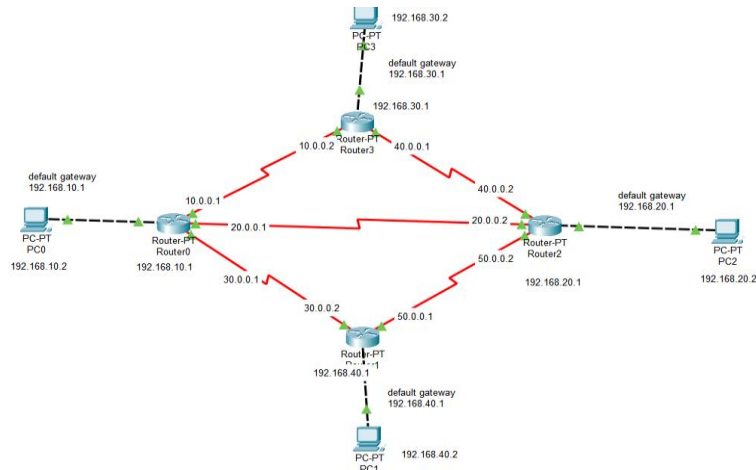
1.016	Router1	Router2	ICMP
1.017	Router2	Switch2	ICMP
1.018	Switch2	PC4	ICMP
1.019	PC4	Switch2	ICMP
1.020	Switch2	Router2	ICMP
1.021	Router2	Router1	ICMP
1.022	Router1	Router0	ICMP
1.023	Router0	Switch0	ICMP
1.024	Switch0	PC1	ICMP
1.306	--	Router2	RIPv1
1.306	--	Router2	RIPv1
1.307	Router2	Switch2	RIPv1
1.307	Router2	Router1	RIPv1
1.308	Switch2	PC4	RIPv1
1.308	Switch2	PC5	RIPv1
1.353	--	Switch1	STP
1.354	Switch1	PC2	STP

2.031	PC4	Switch2	ICMP
2.032	Switch2	Router2	ICMP
2.033	Router2	Router1	ICMP
2.034	Router1	Router0	ICMP
2.035	Router0	Switch0	ICMP
2.036	Switch0	PC1	ICMP
3.040	--	PC1	ICMP
3.041	PC1	Switch0	ICMP
3.042	Switch0	Router0	ICMP
3.043	Router0	Router1	ICMP
3.044	Router1	Router2	ICMP
3.045	Router2	Switch2	ICMP
3.046	Switch2	PC4	ICMP
3.047	PC4	Switch2	ICMP
3.048	Switch2	Router2	ICMP
3.049	Router2	Router1	ICMP
3.050	Router1	Router0	ICMP

3.052	Switch0	PC1	ICMP
1.354	Switch1	PC3	STP
1.354	Switch1	Router1	STP
1.550	--	Switch0	STP
1.551	Switch0	PC0	STP
1.551	Switch0	PC1	STP
1.551	Switch0	Router0	STP
1.998	--	Switch2	STP
1.999	Switch2	PC4	STP
1.999	Switch2	Router2	STP
1.999	Switch2	PC5	STP
2.024	--	PC1	ICMP
2.025	PC1	Switch0	ICMP
2.026	Switch0	Router0	ICMP
2.027	Router0	Router1	ICMP
2.028	Router1	Router2	ICMP
2.029	Router2	Switch2	ICMP
2.030	Switch2	PC4	ICMP

Exp-4) RIP with 4 Routers

Step01: Connections



Step02: Provide IP address to all PCs

PC0 – 192.168.10.2

PC1- 192.168.40.2

PC3- 192.168.20.2

PC4- 192.168.30.2

Step03: RIP Configuration in all Routers Routing table

Router0-

```
Router>en
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, Serial2/0
C    20.0.0.0/8 is directly connected, Serial6/0
C    30.0.0.0/8 is directly connected, Serial3/0
R    40.0.0.0/8 [120/1] via 10.0.0.2, 00:00:11, Serial2/0
          [120/1] via 20.0.0.2, 00:00:05, Serial6/0
R    50.0.0.0/8 [120/1] via 30.0.0.2, 00:00:25, Serial3/0
          [120/1] via 20.0.0.2, 00:00:05, Serial6/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0
R    192.168.20.0/24 [120/1] via 20.0.0.2, 00:00:05, Serial6/0
R    192.168.30.0/24 [120/1] via 10.0.0.2, 00:00:11, Serial2/0
R    192.168.40.0/24 [120/1] via 30.0.0.2, 00:00:25, Serial3/0

Router#
```

Router1-

```
Router>en
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
R   10.0.0.0/8 [120/1] via 30.0.0.1, 00:00:05, Serial2/0
R   20.0.0.0/8 [120/1] via 30.0.0.1, 00:00:05, Serial2/0
      [120/1] via 50.0.0.2, 00:00:12, Serial3/0
C   30.0.0.0/8 is directly connected, Serial2/0
R   40.0.0.0/8 [120/1] via 50.0.0.2, 00:00:12, Serial3/0
C   50.0.0.0/8 is directly connected, Serial3/0
R  192.168.10.0/24 [120/1] via 30.0.0.1, 00:00:05, Serial2/0
R  192.168.20.0/24 [120/1] via 50.0.0.2, 00:00:12, Serial3/0
R  192.168.30.0/24 [120/2] via 30.0.0.1, 00:00:05, Serial2/0
      [120/2] via 50.0.0.2, 00:00:12, Serial3/0
C  192.168.40.0/24 is directly connected, FastEthernet0/0
```

Router2-

```
Router>en
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

```
R   10.0.0.0/8 [120/1] via 20.0.0.1, 00:00:11, Serial6/0
      [120/1] via 40.0.0.1, 00:00:06, Serial2/0
C   20.0.0.0/8 is directly connected, Serial6/0
R   30.0.0.0/8 [120/1] via 20.0.0.1, 00:00:11, Serial6/0
      [120/1] via 50.0.0.1, 00:00:12, Serial3/0
C   40.0.0.0/8 is directly connected, Serial2/0
C   50.0.0.0/8 is directly connected, Serial3/0
R  192.168.10.0/24 [120/1] via 20.0.0.1, 00:00:11, Serial6/0
C  192.168.20.0/24 is directly connected, FastEthernet0/0
R  192.168.30.0/24 [120/1] via 40.0.0.1, 00:00:06, Serial2/0
R  192.168.40.0/24 [120/1] via 50.0.0.1, 00:00:12, Serial3/0
```





Router3-

```
Router>en
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

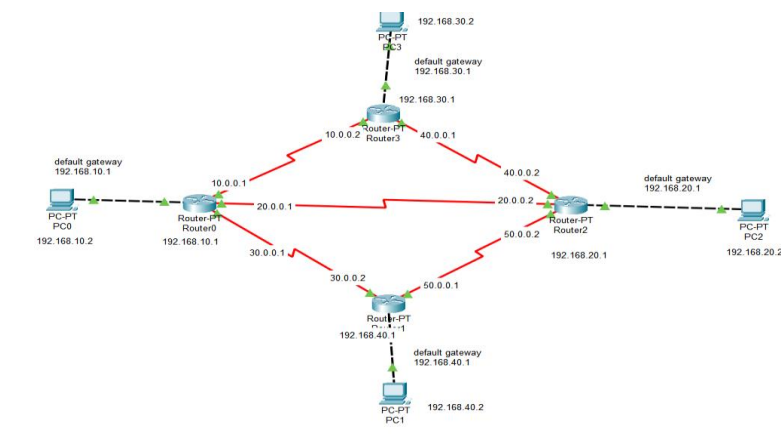
Gateway of last resort is not set

```
C   10.0.0.0/8 is directly connected, Serial2/0
R   20.0.0.0/8 [120/1] via 10.0.0.1, 00:00:01, Serial2/0
      [120/1] via 40.0.0.2, 00:00:00, Serial3/0
R   30.0.0.0/8 [120/1] via 10.0.0.1, 00:00:01, Serial2/0
C   40.0.0.0/8 is directly connected, Serial3/0
R   50.0.0.0/8 [120/1] via 40.0.0.2, 00:00:00, Serial3/0
R  192.168.10.0/24 [120/1] via 10.0.0.1, 00:00:01, Serial2/0
R  192.168.20.0/24 [120/1] via 40.0.0.2, 00:00:00, Serial3/0
C  192.168.30.0/24 is directly connected, FastEthernet0/0
R  192.168.40.0/24 [120/2] via 10.0.0.1, 00:00:01, Serial2/0
      [120/2] via 40.0.0.2, 00:00:00, Serial3/0
```

Message Transfer Successful.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	PC0	PC2	IC...		0.000	N	0	(...	(delete)
	Successful	PC0	PC2	IC...		0.000	N	1	(...	(delete)

Exp-5) OSPF Protocol



Command line for Router 0 :

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 192.168.1.0 0.0.0.255 area 0
Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#
```

Command line for Router 2 :

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#network 192.168.3.0 0.0.0.255 area 0
^
% Invalid input detected at '^' marker.

Router(config)#router ospf 2
Router(config-router)#network 192.168.3.0 0.0.0.255 area 0
Router(config-router)#network 192.168.7.0 0.0.0.255 area 0
Router(config-router)#exit
01:06:44: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.7.2 on Serial7/0 from LOADING to FULL, Loading Done
```

Packet dropped successfully :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC2	IC...		0.000	N	0	(...	(delete)

IP Route Table for router 0 :

```
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

O    192.168.1.0/24 [110/65] via 192.168.7.2, 00:02:41, Serial7/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
C    192.168.7.0/24 is directly connected, Serial7/0
C    192.168.8.0/24 is directly connected, Serial3/0
C    192.168.9.0/24 is directly connected, Serial2/0
```

Router#

IP Route Table for router 2:

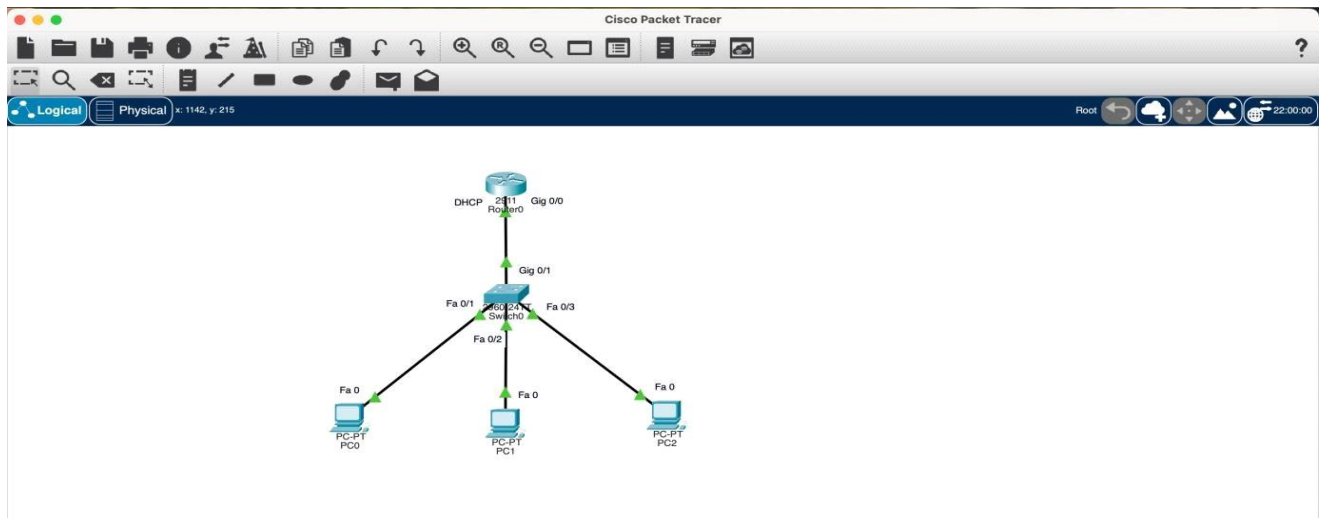
```
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
O    192.168.3.0/24 [110/65] via 192.168.7.3, 00:02:14, Serial7/0
C    192.168.5.0/24 is directly connected, Serial2/0
C    192.168.6.0/24 is directly connected, Serial3/0
C    192.168.7.0/24 is directly connected, Serial7/0
```

Router#

Exp-6) DHCP Protocol



Command Line Interface :

```
DHCP_Router#en
DHCP_Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DHCP_Router(config)#hostname DHCP_Router
DHCP_Router(config)#ip dhcp pool DHCP
DHCP_Router(dhcp-config)#network 10.0.0.0 255.0.0.0
DHCP_Router(dhcp-config)#default-router 10.0.0.1
DHCP_Router(dhcp-config)#exit
DHCP_Router(config)#
```

A range of IP addresses is excluded from the addresses defined in the subnet mask of the DHCP pool.

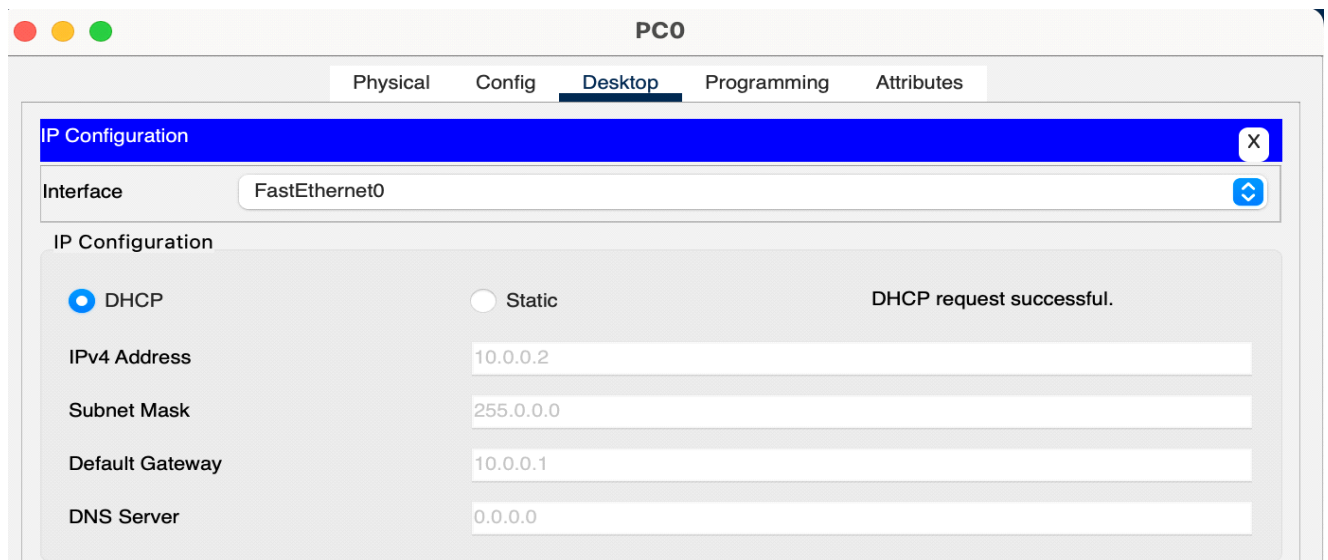
```
DHCP_Router(config)#ip dhcp excluded-address 10.0.0.2 10.0.255.7
DHCP_Router(config)#
```

The interface of the router connected with the switch is assigned with the IP address

defined as the default router during the DHCP configuration.

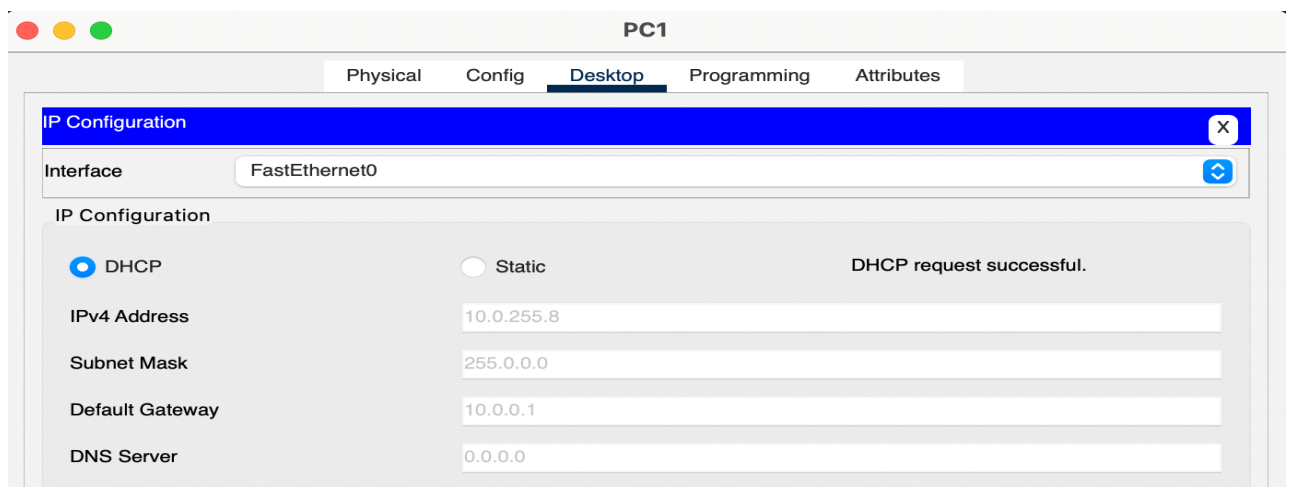
```
DHCP_Router(config)#interface GigabitEthernet 0/0
DHCP_Router(config-if)#ip address 10.0.0.1 255.0.0.0
DHCP_Router(config-if)#no shutdown
```

Desktop settings of a host system are accessed and the DHCP option is selected.



The screenshot shows the 'PC0' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing the 'Interface' as 'FastEthernet0'. Under 'IP Configuration', the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The 'DHCP request successful.' message is displayed. The fields for 'IPv4 Address', 'Subnet Mask', 'Default Gateway', and 'DNS Server' are populated with the values 10.0.0.2, 255.0.0.0, 10.0.0.1, and 0.0.0.0 respectively.

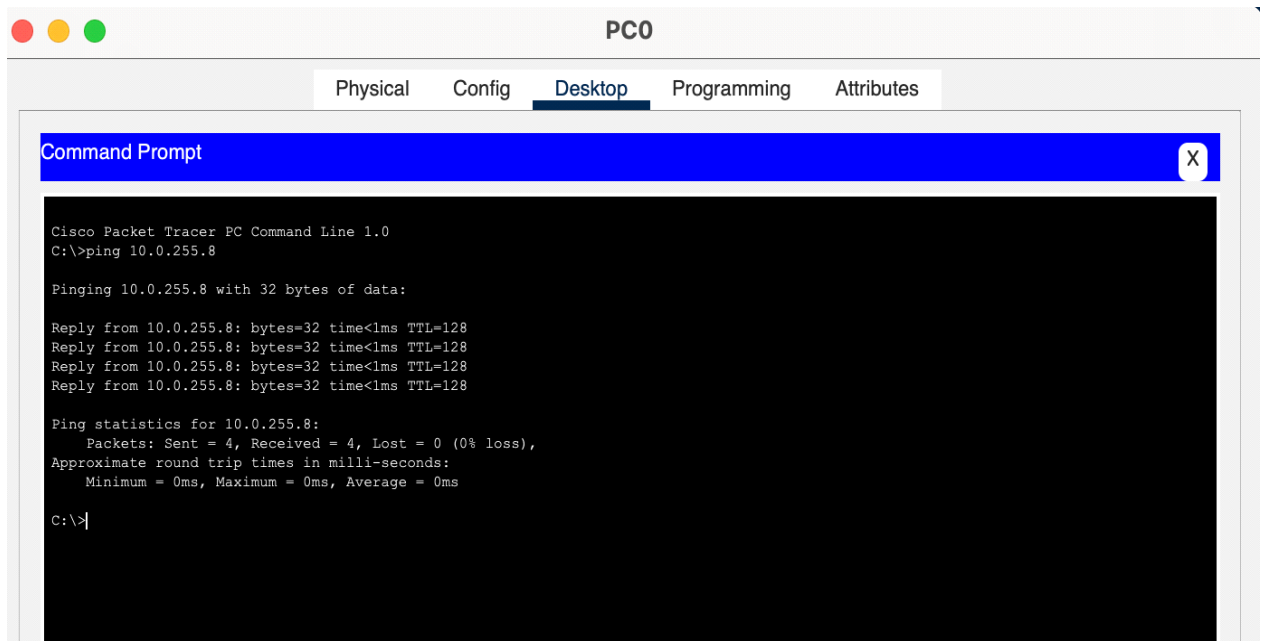
Field	Value
Interface	FastEthernet0
IP Configuration	
DHCP	<input checked="" type="radio"/>
Static	<input type="radio"/>
IPv4 Address	10.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	0.0.0.0



The screenshot shows the 'PC1' configuration window with the 'Desktop' tab selected. The 'IP Configuration' section is active, showing the 'Interface' as 'FastEthernet0'. Under 'IP Configuration', the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The 'DHCP request successful.' message is displayed. The fields for 'IPv4 Address', 'Subnet Mask', 'Default Gateway', and 'DNS Server' are populated with the values 10.0.255.8, 255.0.0.0, 10.0.0.1, and 0.0.0.0 respectively.

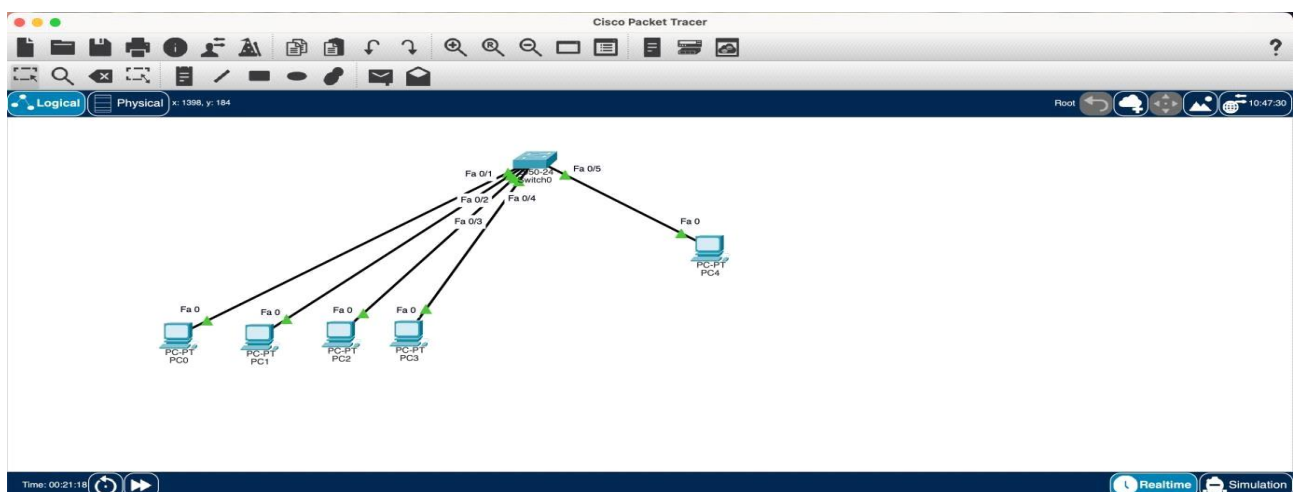
Field	Value
Interface	FastEthernet0
IP Configuration	
DHCP	<input checked="" type="radio"/>
Static	<input type="radio"/>
IPv4 Address	10.0.255.8
Subnet Mask	255.0.0.0
Default Gateway	10.0.0.1
DNS Server	0.0.0.0

To check the connectivity between the host systems, the 'ping' command is used to exchangedata packets.



Packet dropped successfully :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	IC...		0.000	N	0	(...	(delete)



Exp-7) Telnet Configuration

Command Line Interface for Switch :

```
Switch>
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.10.100 255.255.255.0
Switch(config-if)#no shutdown

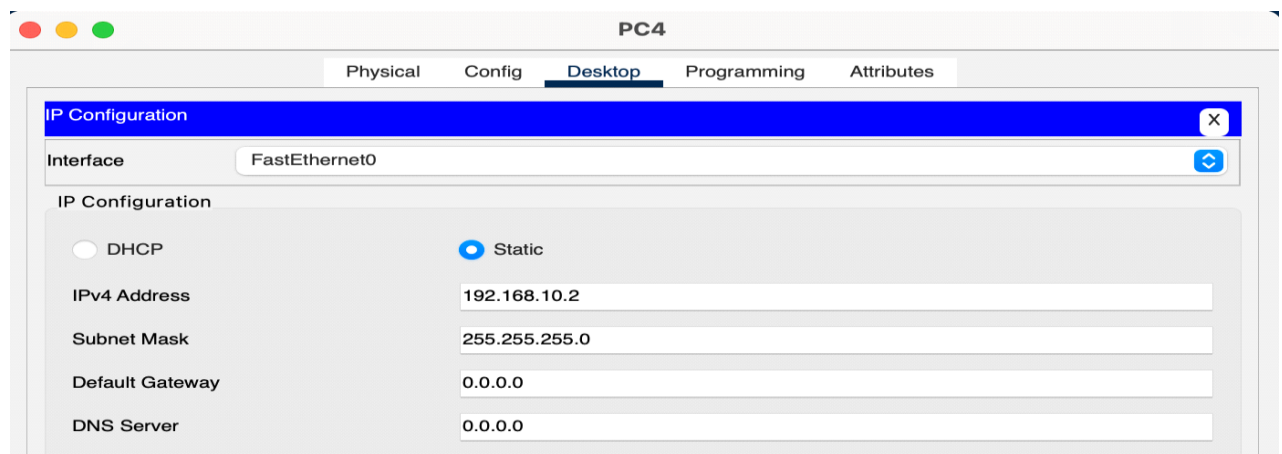
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

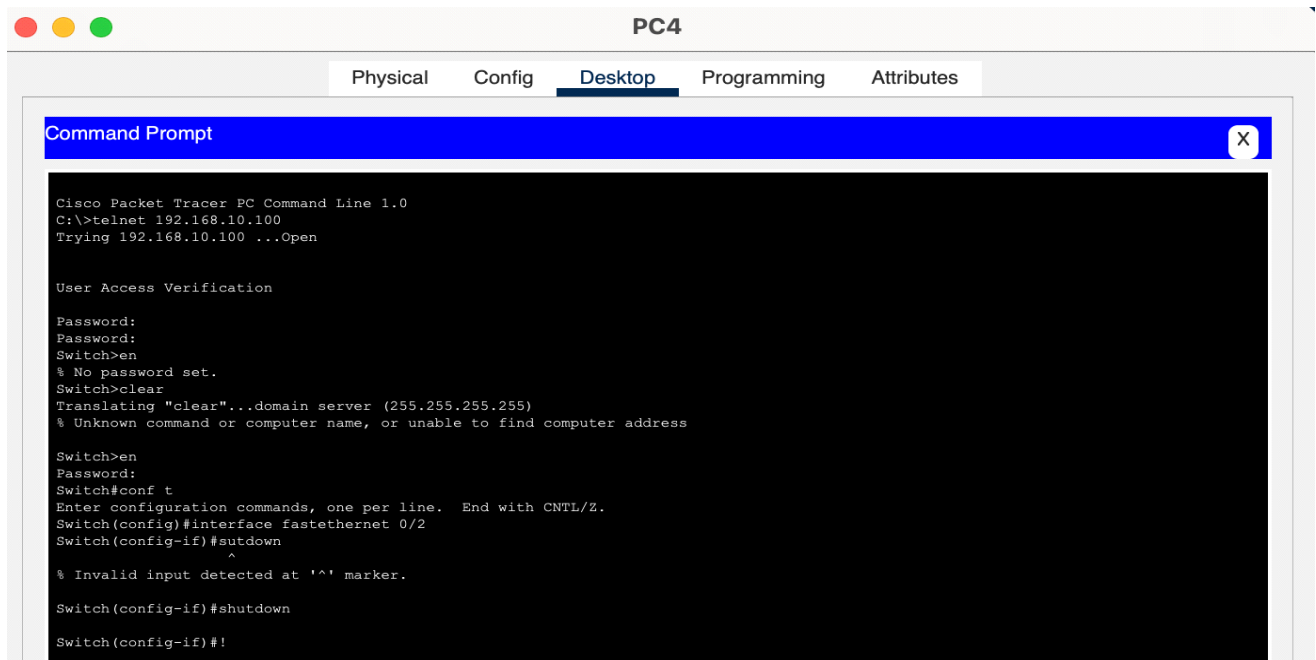
Switch(config-if)#exit
Switch(config)#line vty 0 15
Switch(config-line)#password telnet@1234
Switch(config-line)#login
Switch(config-line)#exit
Switch(config)#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
```

Assigning IP address for PC 4 as it the administrator PC :



Command Prompt of Administrator PC(PC-4): It shows Telnet has been configured.



The screenshot shows a Cisco Packet Tracer window titled "PC4" with tabs for Physical, Config, Desktop, Programming, and Attributes. The "Desktop" tab is active, displaying a "Command Prompt" window. The command prompt shows the following text:

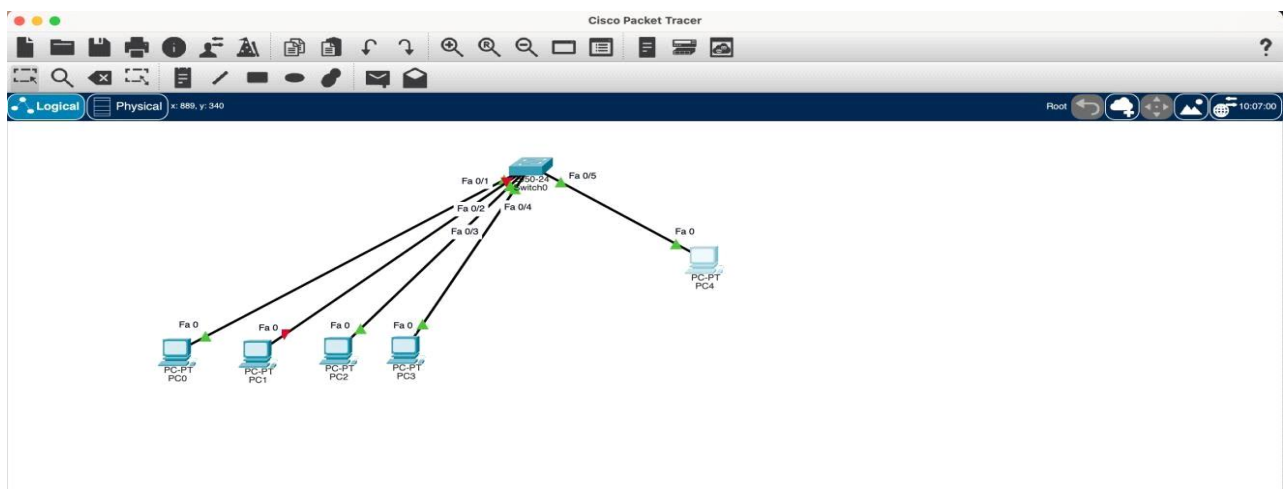
```
Cisco Packet Tracer PC Command Line 1.0
C:\>telnet 192.168.10.100
Trying 192.168.10.100 ...Open

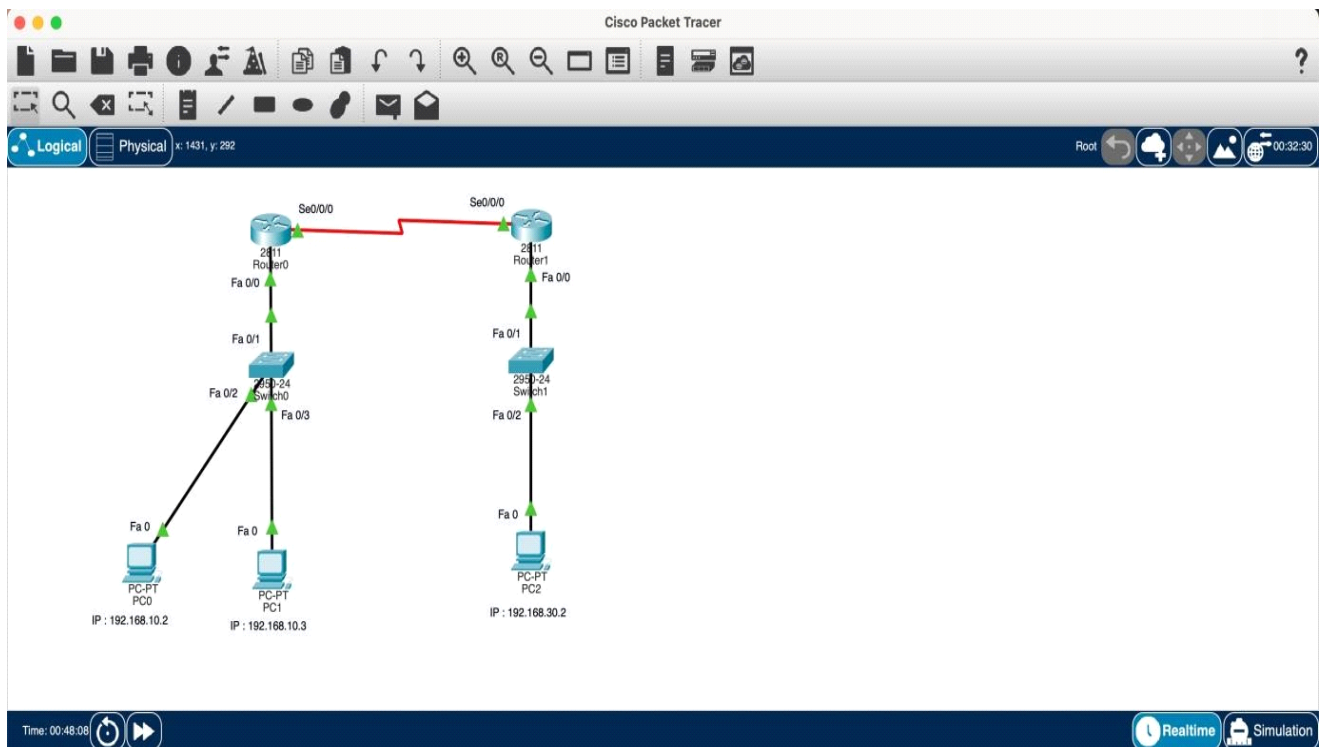
User Access Verification

Password:
Password:
Switch>en
% No password set.
Switch>clear
Translating "clear"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Switch>en
Password:
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fastethernet 0/2
Switch(config-if)#shutdown
^
% Invalid input detected at '^' marker.
Switch(config-if)#shutdown
Switch(config-if)#!
```

When “shutdown” program ran for FastEthernet 0/2.





Exp-8) SSH Configuration

Command Line Interface for Router 0 :



The screenshot shows a terminal window titled "Router0" with tabs for "Physical", "Config", "CLI" (selected), and "Attributes". The main area is labeled "IOS Command Line Interface". The terminal output shows the following commands and responses:

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#username admin password admin
Router(config)#hostname Router-A
Router-A(config)#ip domain-name test.local
Router-A(config)#ip ssh version 2
Please create RSA keys (of at least 768 bits size) to enable SSH v2.
Router-A(config)#crypto key generate rsa
The name for the keys will be: Router-A.test.local
Choose the size of the key modulus in the range of 360 to 4096 for your
  General Purpose Keys. Choosing a key modulus greater than 512 may take
  a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

Router-A(config)#line vty 0 15
*Mar 1 0:8:49.2: %SSH-5-ENABLED: SSH 2 has been enabled
Router-A(config-line)#trans
% Incomplete command.
Router-A(config-line)#transport input ssh
Router-A(config-line)#
Router-A(config-line)#login local
Router-A(config-line)#exit
Router-A(config)#
Router-A(config)#interface serial 0/0/0
Router-A(config-if)#ip address 10.0.0.2 255.255.255.252
Router-A(config-if)#clock rate 72000
Router-A(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router-A(config-if)#exit
Router-A(config)#
Router-A(config)#interface fastethernet 0/0
Router-A(config-if)#ip address 192.168.10.1 255.255.255.0
Router-A(config-if)#no shutdown

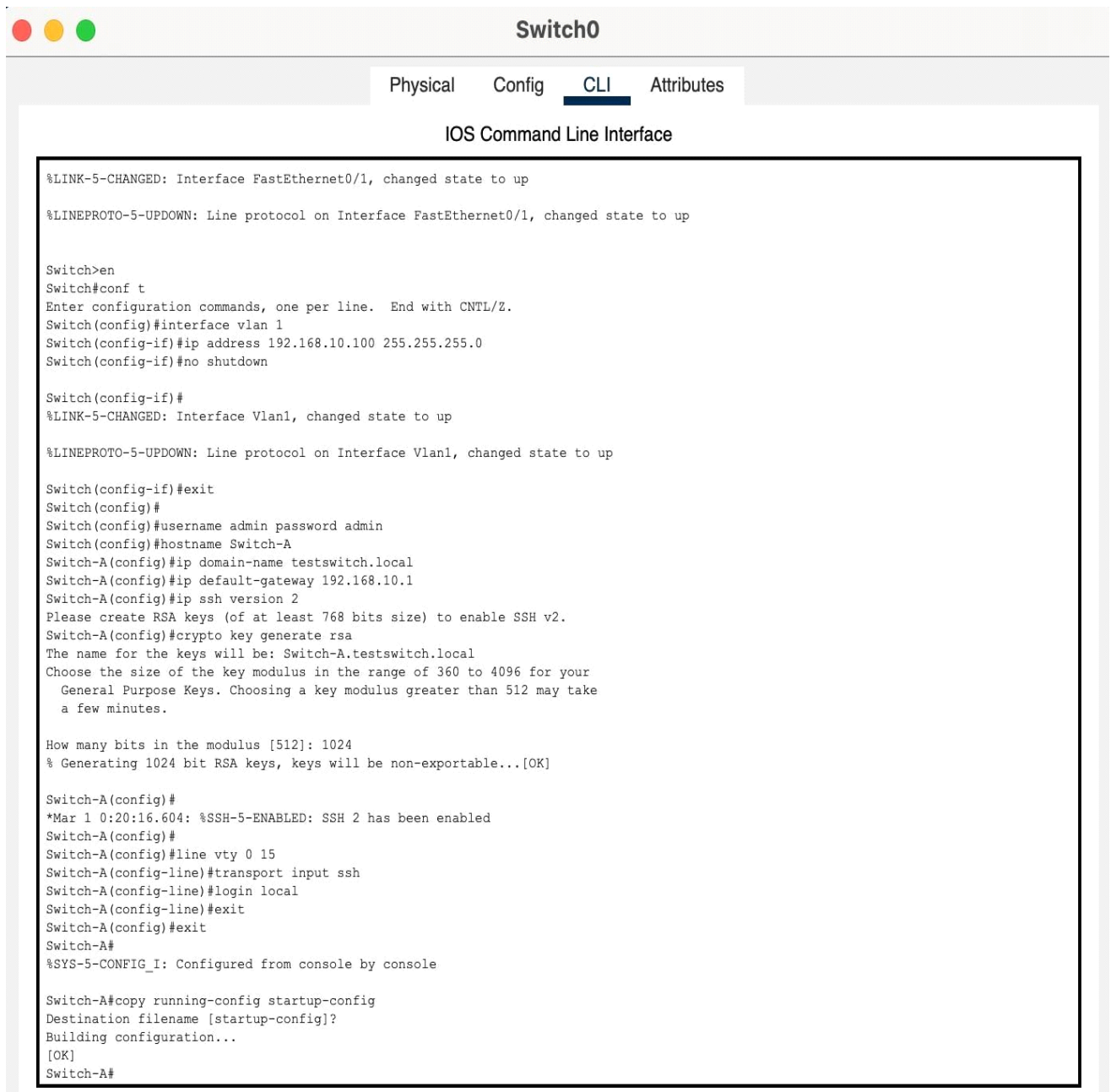
Router-A(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router-A(config-if)#exit
Router-A(config)#exit
Router-A#
%SYS-5-CONFIG_I: Configured from console by console

Router-A#copy running-config startup-config
Destination filename [startup-config]?
```

Command Line Interface for Switch 0 :



The screenshot shows a terminal window titled "Switch0" with tabs for "Physical", "Config", "CLI" (selected), and "Attributes". The main content area is titled "IOS Command Line Interface" and displays the following text:

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#ip address 192.168.10.100 255.255.255.0
Switch(config-if)#no shutdown

Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

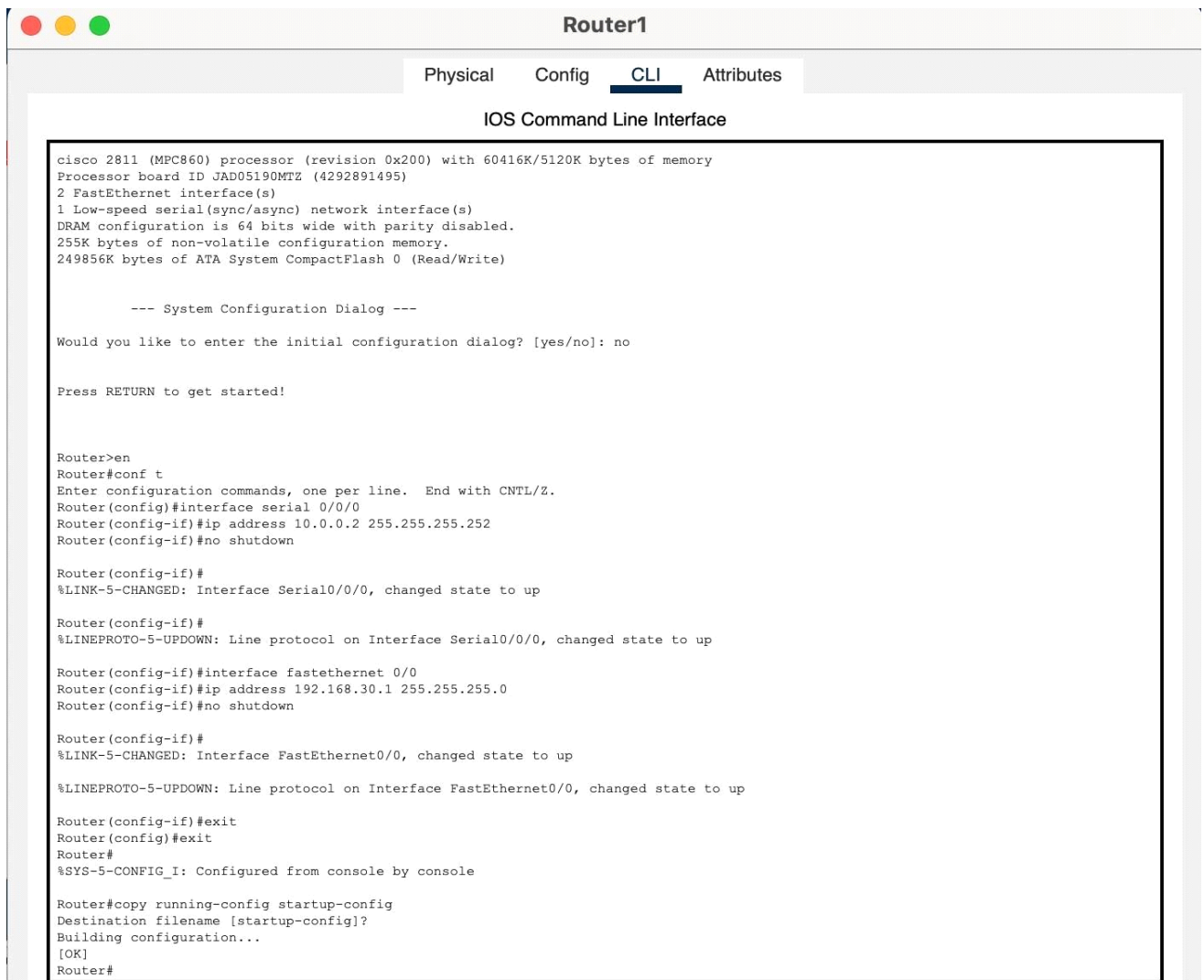
Switch(config-if)#exit
Switch(config)#
Switch(config)#username admin password admin
Switch(config)#hostname Switch-A
Switch-A(config)#ip domain-name testswitch.local
Switch-A(config)#ip default-gateway 192.168.10.1
Switch-A(config)#ip ssh version 2
Please create RSA keys (of at least 768 bits size) to enable SSH v2.
Switch-A(config)#crypto key generate rsa
The name for the keys will be: Switch-A.testswitch.local
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

How many bits in the modulus [512]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

Switch-A(config)#
*Mar 1 0:20:16.604: %SSH-5-ENABLED: SSH 2 has been enabled
Switch-A(config)#
Switch-A(config)#line vty 0 15
Switch-A(config-line)#transport input ssh
Switch-A(config-line)#login local
Switch-A(config-line)#exit
Switch-A(config)#exit
Switch-A#
%SYS-5-CONFIG_I: Configured from console by console

Switch-A#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch-A#
```


Command Line Interface for Router 1 :



The screenshot shows a terminal window titled "Router1" with tabs for "Physical", "Config", "CLI" (selected), and "Attributes". The main content area is titled "IOS Command Line Interface". It displays the router's system information, a system configuration dialog, and the configuration of two interfaces: Serial0/0/0 and FastEthernet0/0. The configuration includes setting IP addresses and enabling the interfaces. The process concludes with saving the running configuration to the startup configuration.

```
cisco 2811 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory
Processor board ID JAD05190MTZ (4292891495)
2 FastEthernet interface(s)
1 Low-speed serial(sync/async) network interface(s)
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 0/0/0
Router(config-if)#ip address 10.0.0.2 255.255.255.252
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router(config-if)#interface fastethernet 0/0
Router(config-if)#ip address 192.168.30.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
```

Enable Password for Router 0 :

```
Router-A>
Router-A>en
Router-A#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router-A(config)#enable password admin
Router-A(config)#exit
Router-A#
%SYS-5-CONFIG_I: Configured from console by console

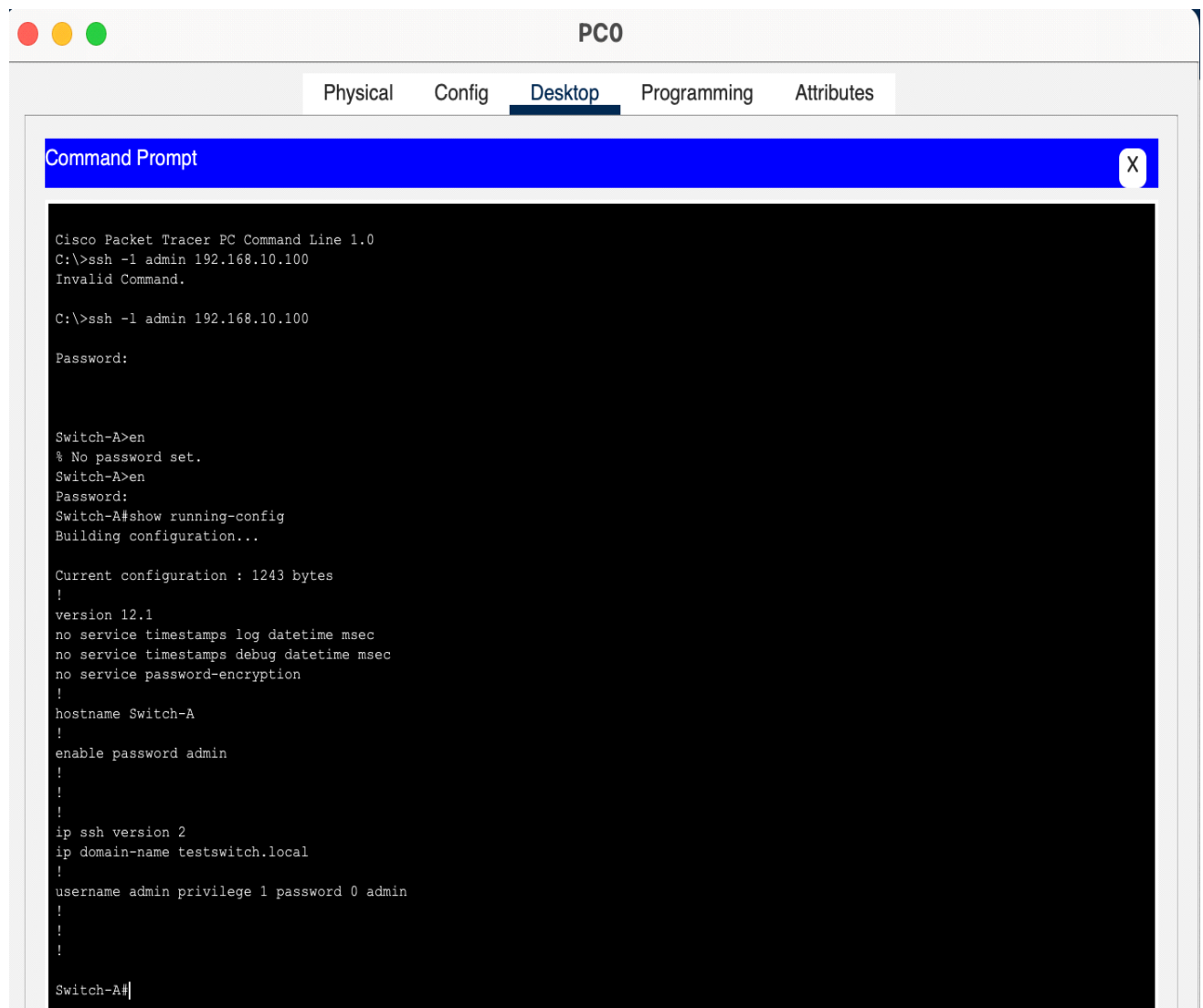
Router-A#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router-A#
```

Enable Password for Switch 0 :

```
Switch-A>en
Switch-A#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch-A(config)#enable password admin
Switch-A(config)#exit
Switch-A#
%SYS-5-CONFIG_I: Configured from console by console

Switch-A#exit
```

Establishing connection between Router 0 and Switch 0 using PC 0 and PC 1 :



Static Configuration between Router 0 and Router 1 :

For Router 0

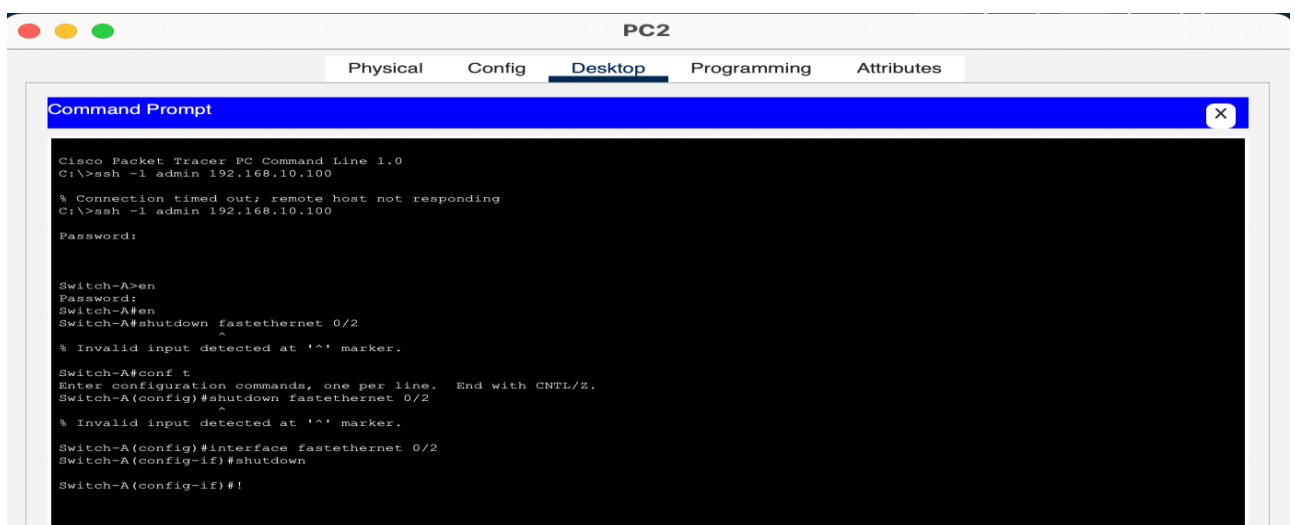
```
Router-A#
Router-A#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router-A(config)#ip route 192.168.30.0 255.255.255.0 10.0.0.2
%Invalid next hop address (it's this router)
Router-A(config)#interface serial 0/0/0
Router-A(config-if)#ip address 10.0.0.1 255.255.255.252
Router-A(config-if)#exit
Router-A(config)#exit
Router-A#
%SYS-5-CONFIG_I: Configured from console by console

Router-A#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router-A(config)#ip route 192.168.30.0 255.255.255.0 10.0.0.2
Router-A(config)#exit
Router-A#
%SYS-5-CONFIG_I: Configured from console by console
```

For Router 1

```
Router>
Router>en
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.10.0 255.255.255.0 10.0.0.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

SSH is successfully configured :



Packet dropped successfully :

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	PC0	PC2	IC...		0.000	N	0	(...	(delete)
	Failed	PC0	PC2	IC...		0.000	N	1	(...	(delete)
	Successful	PC0	PC2	IC...		0.000	N	2	(...	(delete)

-----Thank you sir-----