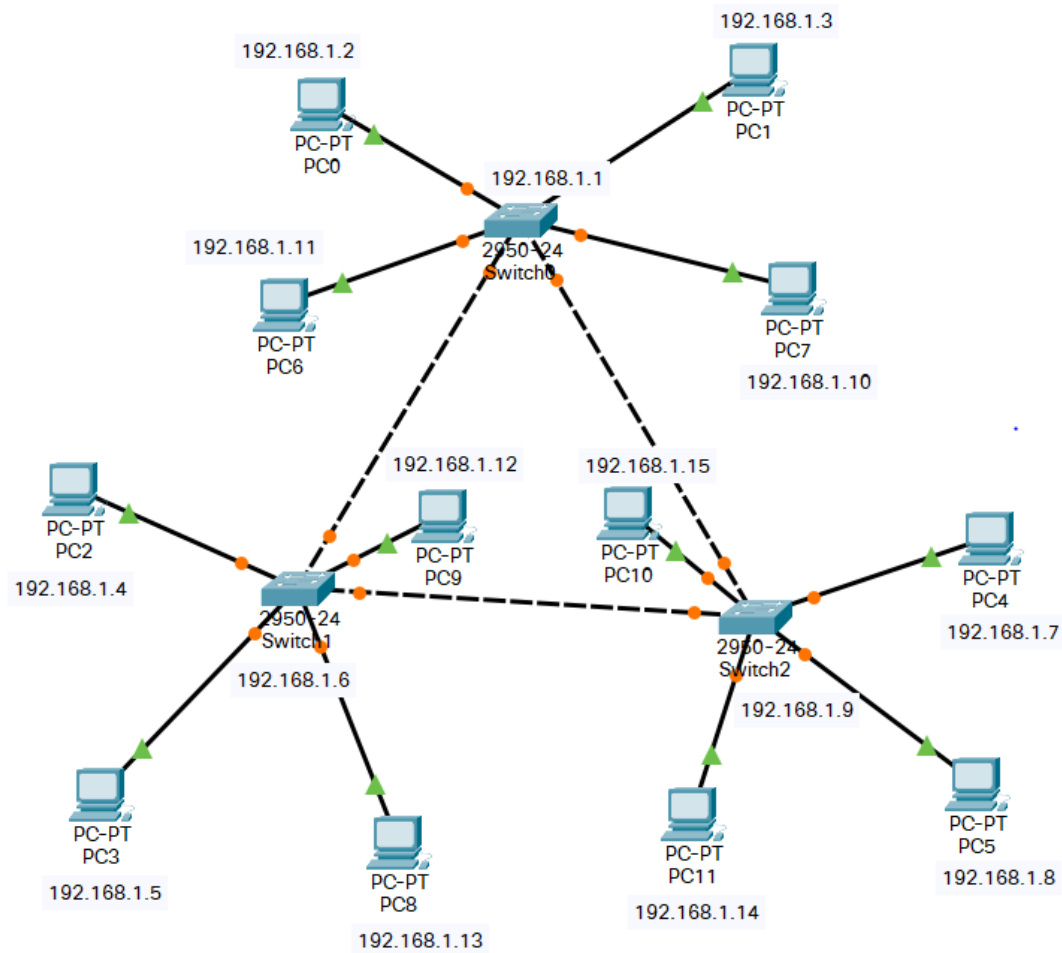# CSE3501 - Information Security Analysis and Audit

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19BCE1027

EXPERIMENT 2-SWITCH CONFIGURATION

Step 1:Create Topology using PC devices and switches.

Step 2:Assign IPv4 addresses to all PC devices.

PC5 — □ ✕

Physical   Config   Desktop   Programming   Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status   ☑ On
Bandwidth   ◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex   ○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address   0090.21CB.7739

IP Configuration
○ DHCP
◉ Static
IPv4 Address   192.168.1.8
Subnet Mask   255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address   /
Link Local Address: FE80::290:21FF:FECB:7739

☐ Top

PC11 — □ ✕

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status   ☑ On

Bandwidth   ⦿ 100 Mbps ◯ 10 Mbps ☑ Auto

Duplex   ◯ Half Duplex ⦿ Full Duplex ☑ Auto

MAC Address   0002.1765.462C

IP Configuration
◯ DHCP
⦿ Static

IPv4 Address   192.168.1.15

Subnet Mask   255.255.255.0

IPv6 Configuration
◯ Automatic
⦿ Static

IPv6 Address   /

Link Local Address: FE80::202:17FF:FE65:462C

☐ Top

PC10

Physical | Config | Desktop | Programming | Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status ☑ On

Bandwidth ◉ 100 Mbps ○ 10 Mbps ☑ Auto

Duplex ○ Half Duplex ◉ Full Duplex ☑ Auto

MAC Address 0001.432E.903E

IP Configuration
- ○ DHCP
- ◉ Static

IPv4 Address 192.168.1.14

Subnet Mask 255.255.255.0

IPv6 Configuration
- ○ Automatic
- ◉ Static

IPv6 Address /

Link Local Address: FE80::201:43FF:FE2E:903E

☐ Top

PC9 — ☐ ✕

Physical   Config   Desktop   Programming   Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status		☑ On
Bandwidth	◉ 100 Mbps ◯ 10 Mbps	☑ Auto
Duplex	◯ Half Duplex ◉ Full Duplex	☑ Auto
MAC Address	0004.9ACD.09D6	

IP Configuration
◯ DHCP
◉ Static

IPv4 Address   192.168.1.12

Subnet Mask   255.255.255.0

IPv6 Configuration
◯ Automatic
◉ Static

IPv6 Address   [   ] / [   ]

Link Local Address: FE80::204:9AFF:FECD:9D6

☐ Top

PC8 — ☐ ✕

Physical   Config   Desktop   Programming   Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status ☑ On
Bandwidth ◉ 100 Mbps ◯ 10 Mbps ☑ Auto
Duplex ◯ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address 0001.97D0.E94D

IP Configuration
◯ DHCP
◉ Static
IPv4 Address 192.168.1.13
Subnet Mask 255.255.255.0

IPv6 Configuration
◯ Automatic
◉ Static
IPv6 Address _____ / ____
Link Local Address: FE80::201:97FF:FED0:E94D

☐ Top

PC3　　　　　　　　　　　　　　　　　　　　　　　　　—　　□　　✕

Physical　　Config　　Desktop　　Programming　　Attributes

| GLOBAL |
| Settings |
| Algorithm Settings |
| **INTERFACE** |
| FastEthernet0 |
| Bluetooth |

FastEthernet0

Port Status　　　　　　　　　　　　　　　　　　　　　　　　　☑ On
Bandwidth　　　　　　　　　　　　◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex　　　　　　　　　　　　　○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address　　　　　　　　　　　　0060.3E44.4183

IP Configuration
○ DHCP
◉ Static
IPv4 Address　　　　　　　　192.168.1.5
Subnet Mask　　　　　　　　255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address　　　　　　　　　　　　　　　　　　　/
Link Local Address: FE80::260:3EFF:FE44:4183

☐ Top

PC2

Physical   Config   Desktop   Programming   Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status   ☑ On
Bandwidth   ◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex   ○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address   0001.C99C.9C64

IP Configuration
○ DHCP
◉ Static
IPv4 Address   192.168.1.4
Subnet Mask   255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address   _____ / _____
Link Local Address: FE80::201:C9FF:FE9C:9C64

☐ Top

PC6 — □ ✕

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status   ☑ On
Bandwidth   ⦿ 100 Mbps ◯ 10 Mbps ☑ Auto
Duplex   ◯ Half Duplex ⦿ Full Duplex ☑ Auto
MAC Address   000C.8540.C13C

IP Configuration
◯ DHCP
⦿ Static
IPv4 Address   192.168.1.10
Subnet Mask   255.255.255.0

IPv6 Configuration
◯ Automatic
⦿ Static
IPv6 Address   /
Link Local Address: FE80::20C:85FF:FE40:C13C

☐ Top

PC7 — □ ✕

GLOBAL

Settings

Algorithm Settings

INTERFACE

FastEthernet0

Bluetooth

FastEthernet0

Port Status   ☑ On
Bandwidth   ◉ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex   ○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address   00D0.58A5.001C

IP Configuration
○ DHCP
◉ Static
IPv4 Address   192.168.1.11
Subnet Mask   255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address   /
Link Local Address: FE80::2D0:58FF:FEA5:1C

☐ Top

PC1

Physical   Config   Desktop   Programming   Attributes

| GLOBAL |
| Settings |
| Algorithm Settings |
| **INTERFACE** |
| FastEthernet0 |
| Bluetooth |

FastEthernet0

Port Status   ☑ On

Bandwidth   ○ 100 Mbps   ○ 10 Mbps   ☑ Auto

Duplex   ○ Half Duplex   ○ Full Duplex   ☑ Auto

MAC Address   0010.11B0.82A6

IP Configuration
- ○ DHCP
- ◉ Static

IPv4 Address   192.168.1.3

Subnet Mask   255.255.255.0

IPv6 Configuration
- ○ Automatic
- ◉ Static

IPv6 Address   _____ / __

Link Local Address: FE80::210:11FF:FEB0:82A6

☐ Top

PC0

— □ ✕

Physical | Config | Desktop | Programming | Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

FastEthernet0

Port Status ☑ On
Bandwidth ○ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex ○ Half Duplex ◉ Full Duplex ☑ Auto
MAC Address 00D0.FF62.7934

IP Configuration
○ DHCP
◉ Static
IPv4 Address 192.168.1.2
Subnet Mask 255.255.255.0

IPv6 Configuration
○ Automatic
◉ Static
IPv6 Address [   ] / [   ]
Link Local Address: FE80::2D0:FFFF:FE62:7934

☐ Top

PC4

Physical | Config | Desktop | Programming | Attributes

GLOBAL
- Settings
- Algorithm Settings

INTERFACE
- FastEthernet0
- Bluetooth

FastEthernet0

Port Status ☑ On
Bandwidth ⦿ 100 Mbps ◯ 10 Mbps ☑ Auto
Duplex ◯ Half Duplex ⦿ Full Duplex ☑ Auto
MAC Address `00D0.FFB6.5C69`

IP Configuration
- ◯ DHCP
- ⦿ Static

IPv4 Address `192.168.1.7`
Subnet Mask `255.255.255.0`

IPv6 Configuration
- ◯ Automatic
- ⦿ Static

IPv6 Address `_____/____`
Link Local Address: `FE80::2D0:FFFF:FEB6:5C69`

☐ Top

Step 3-Configure switches using CLI.

Switch1 — □ ✕

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed
state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, 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


Switch>en
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname s1
s1(config)#hostname s2
s2(config)#interface vlan1
s2(config-if)#ip add 192.168.1.6 255.255.0.0
s2(config-if)#no shut

s2(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Ctrl+F6 to exit CLI focus   Copy   Paste

☐ Top

Switch0

— ☐ ✕

Physical   Config   CLI   Attributes

IOS Command Line Interface

```
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/4, changed
state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, 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


Switch>en
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname s1
s1(config)#interface vlan1
s1(config-if)#ip add 192.168.1.1 255.255.0.0
s1(config-if)#no shut

s1(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Ctrl+F6 to exit CLI focus   Copy   Paste

☐ Top

Physical   Config   CLI   Attributes

IOS Command Line Interface

```
state to up

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, 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


Switch>en
Switch#hostname s3
                ^
% Invalid input detected at '^' marker.

Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname s3
s3(config)#interface vlan1
s3(config-if)#ip add 192.168.1.9 255.255.0.0
s3(config-if)#no shut

s3(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

Ctrl+F6 to exit CLI focus   Copy   Paste

☐ Top

Step 4-Simulate Results.

Fire	Last Statu	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Succes...	PC0	PC6	ICMP	■	0.000	N	0	(edit)		(delete)
●	Succes...	PC0	PC5	ICMP	■	0.000	N	1	(edit)		(delete)
●	Succes...	PC4	PC3	ICMP	■	0.000	N	2	(edit)		(delete)

Fire	Last Statu	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
●	Succes...	PC0	PC5	ICMP	■	0.000	N	1	(edit)		(delete)
●	Succes...	PC4	PC3	ICMP	■	0.000	N	2	(edit)		(delete)
●	Succes...	PC1	PC11	ICMP	■	0.000	N	3	(edit)		(delete)

Result:Simulation of created topology has been completed successfully.

1.ROUTER CONFIGURATION
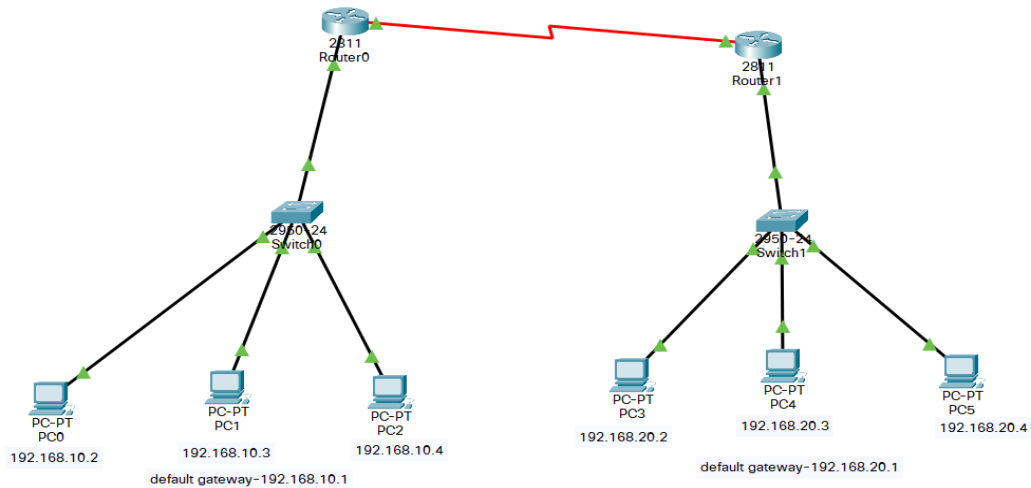
2.Insert IPv4 Address in the config menu of the routers and turn them on.
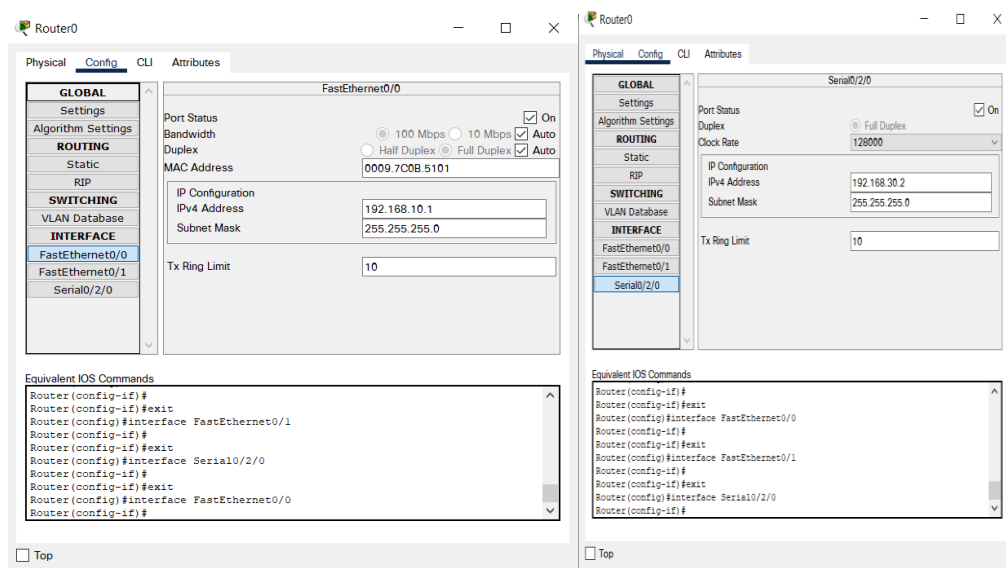
Router1 — □ ✕

Physical | Config | CLI | Attributes

GLOBAL
- Settings
- Algorithm Settings

ROUTING
- Static
- RIP

SWITCHING
- VLAN Database

INTERFACE
- FastEthernet0/0
- FastEthernet0/1
- Serial0/0/0

FastEthernet0/0

Port Status ☑ On
Bandwidth ○ 100 Mbps ○ 10 Mbps ☑ Auto
Duplex ○ Half Duplex ○ Full Duplex ☑ Auto
MAC Address 0090.0C45.3B01

IP Configuration
IPv4 Address 192.168.20.1
Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to
up


Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
```

☐ Top

Router1 — □ ✕

Physical | Config | CLI | Attributes

GLOBAL
- Settings
- Algorithm Settings

ROUTING
- Static
- RIP

SWITCHING
- VLAN Database

INTERFACE
- FastEthernet0/0
- FastEthernet0/1
- Serial0/0/0

Serial0/0/0

Port Status ☑ On
Duplex ○ Full Duplex
Clock Rate 2000000

IP Configuration
IPv4 Address 192.168.30.3
Subnet Mask 255.255.255.0

Tx Ring Limit 10

Equivalent IOS Commands

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#clock rate 128000
This command applies only to DCE interfaces
Router(config-if)#clock rate 2000000
This command applies only to DCE interfaces
Router(config-if)#
```

☐ Top

3.Enter IPv4 Address and Default gateway in the config menus of the PCs and set their interfaces to static.

PC3

Physical | Config | Desktop | Programming | Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

○ DHCP ● Static

IPv4 Address: 192.168.20.2
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.20.1
DNS Server: 0.0.0.0

IPv6 Configuration

○ Automatic ● Static

IPv6 Address: /
Link Local Address: FE80::202:16FF:FE67:1754
Default Gateway:
DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5
Username:
Password:

☐ Top

PC2

Physical | Config | Desktop | Programming | Attributes

IP Configuration X

Interface: FastEthernet0

IP Configuration

○ DHCP ● Static

IPv4 Address: 192.168.10.4
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.10.1
DNS Server: 0.0.0.0

IPv6 Configuration

○ Automatic ● Static

IPv6 Address: /
Link Local Address: FE80::2E0:F9FF:FE33:5040
Default Gateway:
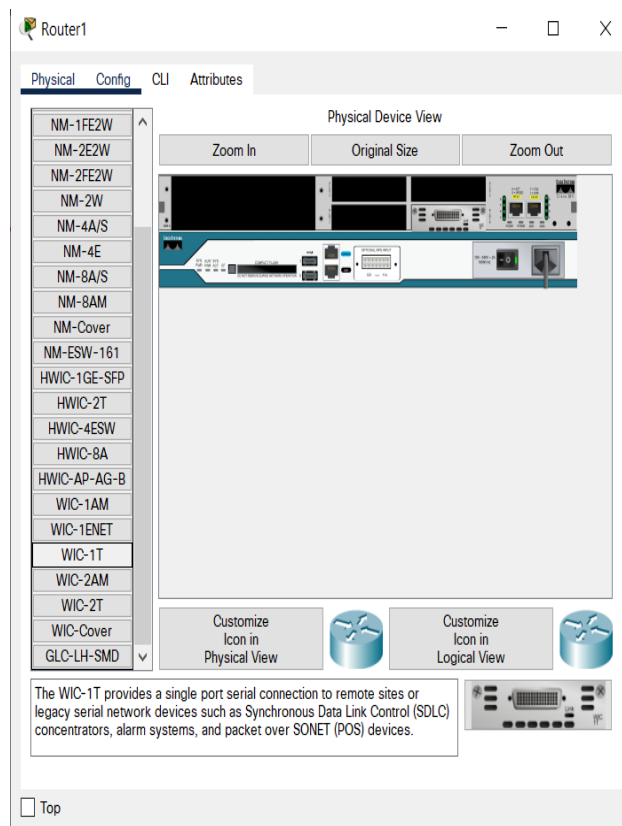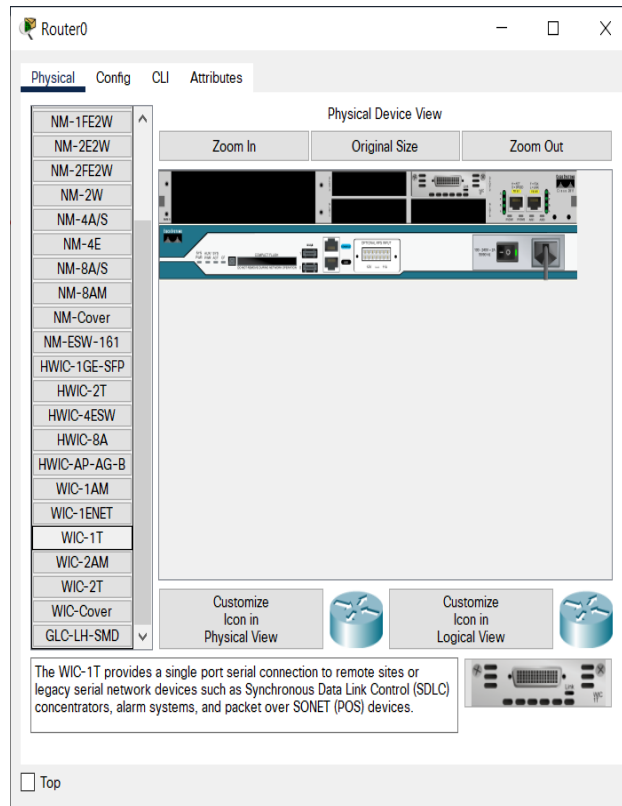DNS Server:

802.1X

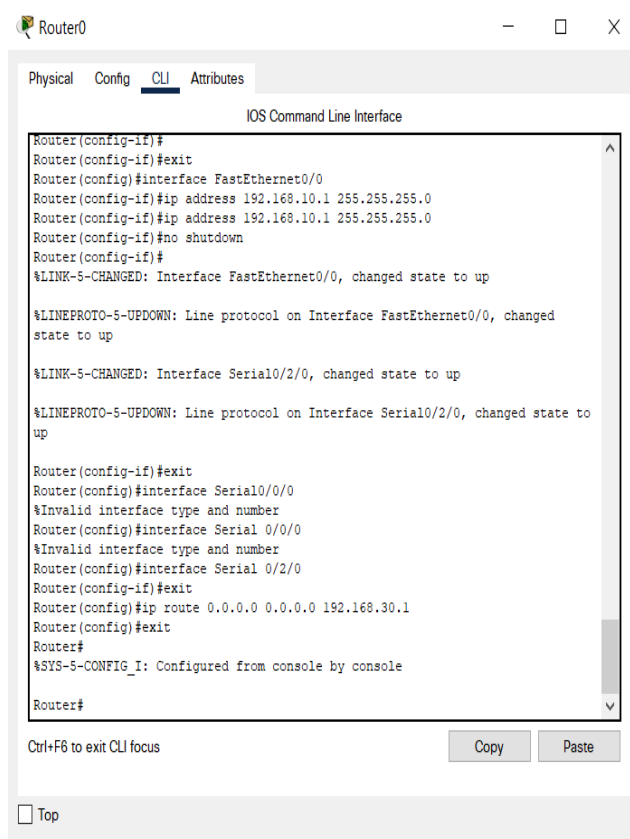☐ Use 802.1X Security

Authentication: MD5
Username:
Password:

☐ Top

PC4

Physical | Config | Desktop | Programming | Attributes

IP Configuration   X

Interface: FastEthernet0

IP Configuration

- ( ) DHCP   (●) Static

IPv4 Address	192.168.20.3
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

IPv6 Configuration

- ( ) Automatic   (●) Static

IPv6 Address	/
Link Local Address	FE80::201:96FF:FEBD:1C36
Default Gateway	
DNS Server	

802.1X

- [ ] Use 802.1X Security

Authentication	MD5
Username	
Password	

[ ] Top

PC5

Physical | Config | Desktop | Programming | Attributes

IP Configuration   X

Interface: FastEthernet0

IP Configuration

- ( ) DHCP   (●) Static

IPv4 Address	192.168.20.4
Subnet Mask	255.255.255.0
Default Gateway	192.168.20.1
DNS Server	0.0.0.0

IPv6 Configuration

- ( ) Automatic   (●) Static

IPv6 Address	/
Link Local Address	FE80::260:5CFF:FE92:8A15
Default Gateway	
DNS Server	

802.1X

- [ ] Use 802.1X Security

Authentication	MD5
Username	
Password	

[ ] Top

4.Add WIC-IT Port to connect the routers,and turn them on.

Router0 — Physical Device View. Module panel with WIC-1T selected.

The WIC-1T provides a single port serial connection to remote sites or legacy serial network devices such as Synchronous Data Link Control (SDLC) concentrators, alarm systems, and packet over SONET (POS) devices.

Router1 — Physical Device View. Module panel with WIC-1T selected.

The WIC-1T provides a single port serial connection to remote sites or legacy serial network devices such as Synchronous Data Link Control (SDLC) concentrators, alarm systems, and packet over SONET (POS) devices.

5.Define IP Route and Serial Port in the CLI menu of the routers.

Router0 — CLI

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
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

%LINK-5-CHANGED: Interface Serial0/2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/2/0, changed state to
up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
%Invalid interface type and number
Router(config)#interface Serial 0/0/0
%Invalid interface type and number
Router(config)#interface Serial 0/2/0
Router(config-if)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.30.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
```


Router1 — CLI

```
This command applies only to DCE interfaces
Router(config-if)#ip address 192.168.30.3 255.255.255.0
Router(config-if)#ip address 192.168.30.3 255.255.255.0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
%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)#interface Serial0/0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to
up

Router(config-if)#exit
Router(config)#ip route 0.0.0.0 0.0.0.0 192.168.30.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

6.Test proper connection of the PC devices using the simulation menu.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
🔴	Successful	PC0	PC4	ICMP		0.000	N	7	(edit)	(delete)
🔴	Successful	PC0	Router0	ICMP		0.000	N	8	(edit)	(delete)
🔴	Successful	PC0	PC3	ICMP		0.000	N	9	(edit)	(delete)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
🔴	Successful	PC1	PC5	ICMP		0.000	N	10	(edit)	(delete)
🔴	Successful	PC1	PC2	ICMP		0.000	N	11	(edit)	(delete)
🔴	Successful	PC2	PC3	ICMP		0.000	N	12	(edit)	(delete)

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
🔴	Successful	PC1	PC2	ICMP		0.000	N	11	(edit)	(delete)
🔴	Successful	PC2	PC3	ICMP		0.000	N	12	(edit)	(delete)

CONCLUSION:

DESIGNED TOPOLOGY HAS BEEN EXECUTED SUCCESFULLY.