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21BDS0340

Information Security Management

Assignment – I

Question 1

Aim
To connect two networks using a router

Procedure
1. Select 1 router, 2 switches and 6 PCs
2. Connect the 2 switches to the router on the gigabit ethernet ports
3. Connect 3 PCs to the first switch and 3 PCs to the second switch
4. Assign 192.168.10.1 to the gigabit ethernet 0/0 on the router and 192.168.20.1 to the gigabit ethernet 0/1
5. Assign the first 3 PCs IP addresses 192.168.10.2 to 192.168.10.4 and the second 3 PCs IP addresses 192.168.20.2 to 192.168.20.4
6. Pinging each computer from one another should now work

Screenshots
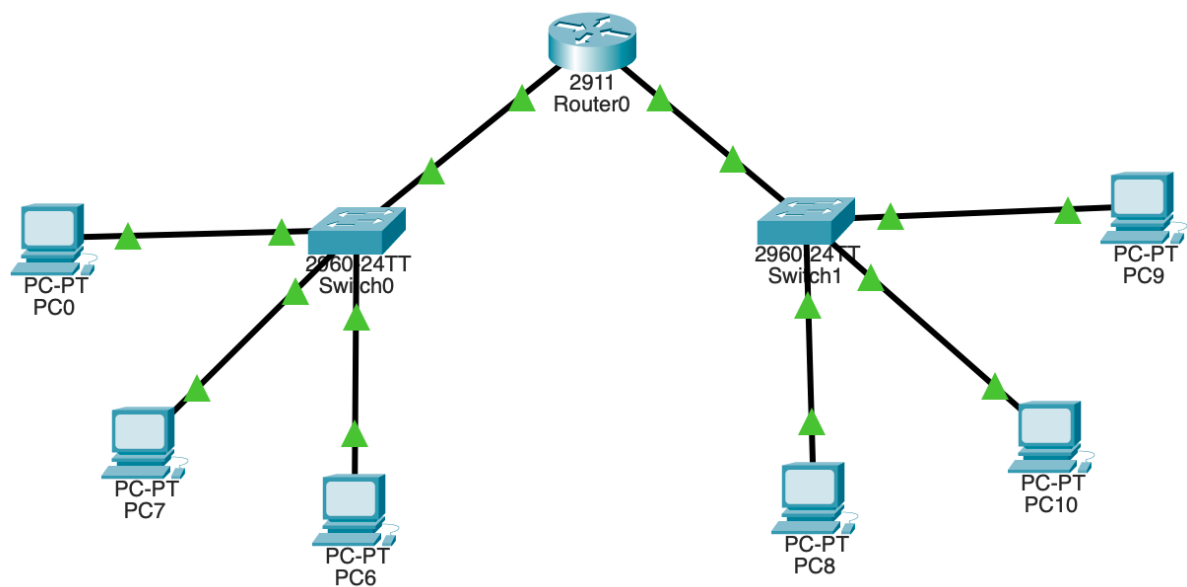
```
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 192.168.10.1 255.255.255.0
Router(config-if)#no shutdown

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface gigabitEthernet 0/1
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 GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

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

Result

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

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix..:
    Link-local IPv6 Address.........: FE80::203:E4FF:FE4B:66B8
    IPv6 Address....................: ::
    IPv4 Address....................: 192.168.10.2
    Subnet Mask.....................: 255.255.255.0
    Default Gateway.................: ::
                                      192.168.10.1

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

C:\>ping 192.168.20.4

Pinging 192.168.20.4 with 32 bytes of data:

Reply from 192.168.20.4: bytes=32 time<1ms TTL=127
Reply from 192.168.20.4: bytes=32 time=1ms TTL=127
Reply from 192.168.20.4: bytes=32 time<1ms TTL=127
Reply from 192.168.20.4: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Conclusion

This packet tracer demo has been constructed to successfully demonstrate connection two different networks with a router as an intermediate.

Question 2

Aim

To configure an access control list (ACL)

Procedure

1. Select 1 router, 1 switch, 1 server and 2 PCs
2. Connect the switch to the router on the gigabit ethernet port
3. Connect the server to the router
4. Connect the 2 PCs to the switch
5. Assign gigabit ethernet 0/0 as 192.168.10.1 for the PCs
6. Assign gigabit ethernet 0/1 as 10.10.10.1 for the server
7. Set the server IP address as 10.10.10.11
8. Set the PCs IP addresses as 192.168.10.2 and 192.168.10.3
9. Configure the ACL through the router terminal
10. PC 192.168.10.2 should not be able to access the server, while 192.168.10.3 can

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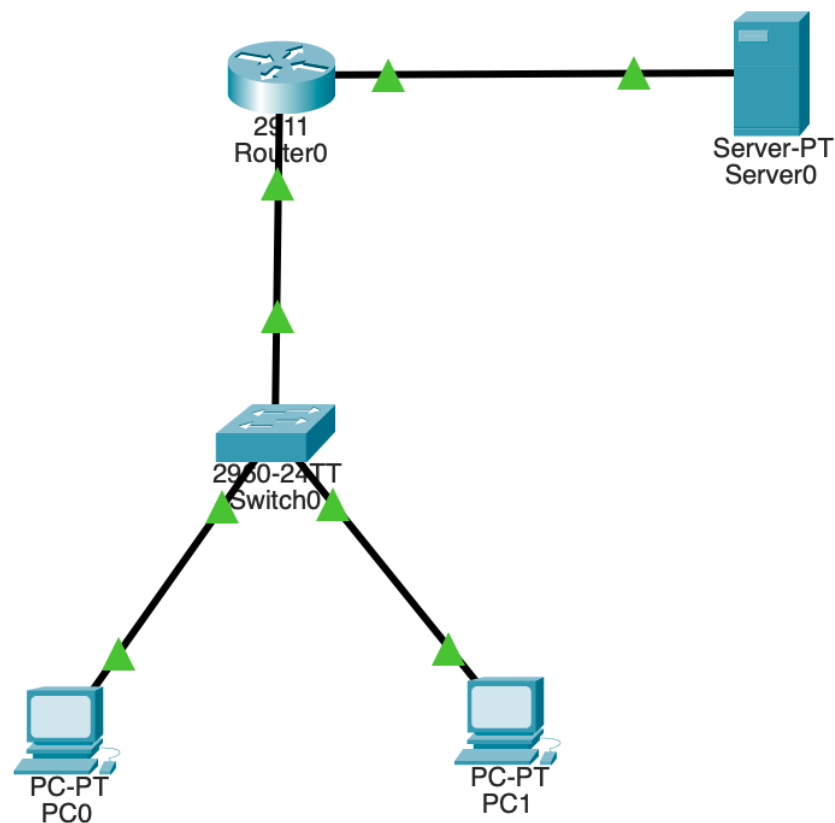
```
Router>en
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0
Router(config-if)#
Router(config-if)#ip address 192.168.10.1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

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface gigabitEthernet 0/1
Router(config-if)#ip address 10.10.10.10 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#ip access-list standard 11
Router(config-std-nacl)#deny host 192.168.10.2
Router(config-std-nacl)#permit any
Router(config-std-nacl)#exit
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip access-group 11 in
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Result

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::2E0:B0FF:FE89:E656
   IPv6 Address....................: ::
   IPv4 Address....................: 192.168.10.2
   Subnet Mask.....................: 255.255.255.0
   Default Gateway.................: ::
                                     192.168.10.1

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

C:\>ping 10.10.10.11

Pinging 10.10.10.11 with 32 bytes of data:

Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.

Ping statistics for 10.10.10.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::260:70FF:FE92:493A
   IPv6 Address....................: ::
   IPv4 Address....................: 192.168.10.3
   Subnet Mask.....................: 255.255.255.0
   Default Gateway.................: ::
                                     192.168.10.1

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

C:\>ping 10.10.10.11

Pinging 10.10.10.11 with 32 bytes of data:

Request timed out.
Reply from 10.10.10.11: bytes=32 time<1ms TTL=127
Reply from 10.10.10.11: bytes=32 time=1ms TTL=127
Reply from 10.10.10.11: bytes=32 time<1ms TTL=127

Ping statistics for 10.10.10.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Conclusion

This packet tracer demo has been constructed to successfully demonstrate denial and access of services through an access control list set configured on the router.

Question 3

Aim

To configure DHCP and firewall on a server

Procedure

1. Select 1 server, 1 switch and 3 PCs
2. Connect all the PCs and server to the switch
3. Enable the DHCP option and configure the IP as 1.0.0.1
4. In all the PCs, enable the DHCP protocol to assign IP addresses

The following steps are for the firewall setup:

5. Go to the firewall settings in the server
6. Add a deny rule for all ICMP traffic on all IPs with a complete mask
7. Add an allow rule for all IP traffic on all IPs with a complete mask
8. The webpage should now be accessible, but pinging will be prevented from the PCs

Screenshots
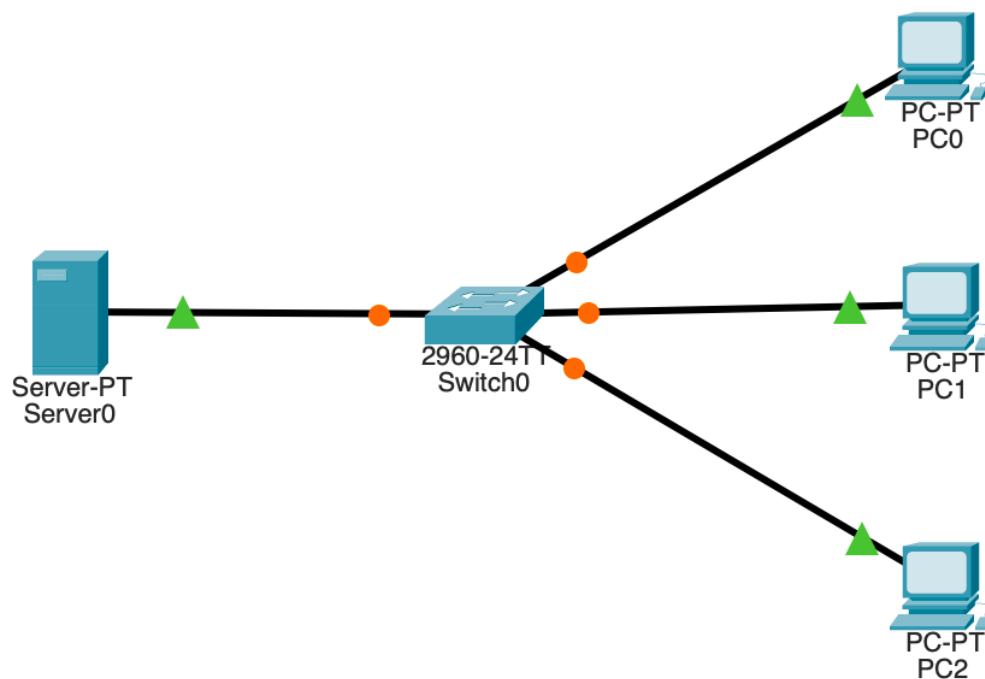
IP Configuration

◉ DHCP　　　　　○ Static　　　　　DHCP request successful.

IPv4 Address	1.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IP Configuration

◉ DHCP　　　　　○ Static　　　　　DHCP request successful.

IPv4 Address	1.0.0.3
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

IP Configuration

◉ DHCP　　　　　○ Static　　　　　DHCP request successful.

IPv4 Address	1.0.0.4
Subnet Mask	255.0.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0

	Action	Protocol	Remote IP	Remote Wild Card	Remote Port	Local Port
1	Deny	ICMP	0.0.0.0	255.255.255.255	-	-
2	Allow	IP	0.0.0.0	255.255.255.255	-	-

Result

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

    Connection-specific DNS Suffix..:
    Link-local IPv6 Address.........: FE80::260:3EFF:FE53:B533
    IPv6 Address....................: ::
    IPv4 Address....................: 1.0.0.2
    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

C:\>ping 1.0.0.1

Pinging 1.0.0.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 1.0.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

| < | > | URL | http://1.0.0.1 | Go | Stop |

Cisco Packet Tracer

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Conclusion

This packet tracer demo has been constructed to successfully demonstrate dynamically configured IP addresses and also denial of ICMP and allowance of IP through the server firewall.