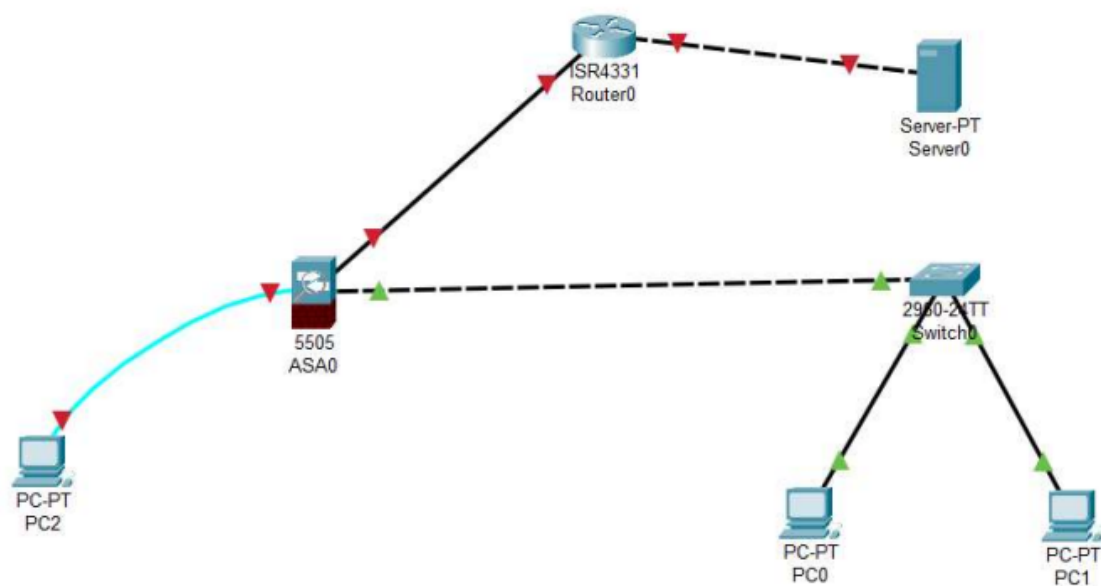**ARYAMAN MISHRA**

19BCE1027

LAB 7

AIM: Create a network topology with a CISCO ASA Firewall, Router, Switch, 3 PCs and a Server. Here, a PC is to be connected with ASA Firewall and two PCs are to be connected with switch. Do the following:
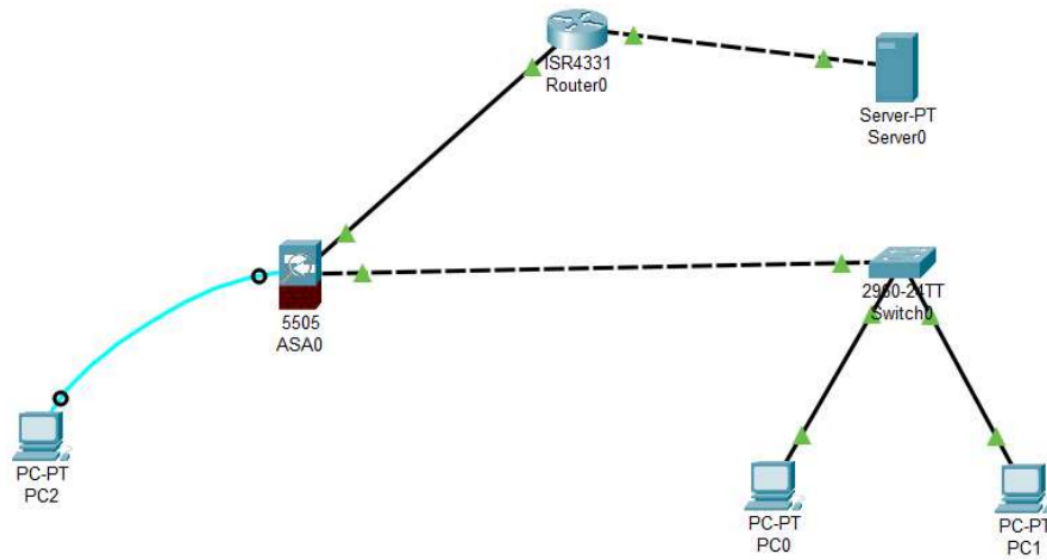
1. Create two VLANs

2. Configure the Router, Server and Firewall.

3. Ensure the firewall functionality by demonstrating the packet transmission between the PCs and Server.

4. Apply NAT

5. Use DHCP and ICMP protocols

6. Ping the connected PCs

Experiment:

Create a Topology

Turn on the routers.

Configuring 1 st VLAN with firewall.


```
ciscoasa(config)#conf t
ciscoasa(config)#sh running-config
: Saved
:
ASA Version 8.4(2)
!
hostname ciscoasa
names
!
interface Ethernet0/0
 switchport access vlan 2
!
interface Ethernet0/1
!
interface Ethernet0/2
!
interface Ethernet0/3
!
interface Ethernet0/4
!
interface Ethernet0/5
!
interface Ethernet0/6
!
interface Ethernet0/7
!
interface Vlan1
 nameif inside
 security-level 100
 ip address 192.168.1.1 255.255.255.0
!
interface Vlan2
 nameif outside
 security-level 0
 ip address dhcp
!
!
!
!
!
<--- More --->
```

```
!
telnet timeout 5
ssh timeout 5
!
dhcpd auto_config outside
!
!
dhcpd address 192.168.1.5-192.168.1.36 inside
dhcpd enable inside
!
!
!
!
ciscoasa(config)#no dhcpd address 192.168.1.5-192.168.1.36 inside
ciscoasa(config)#
ciscoasa(config)#int vlan 1
ciscoasa(config-if)#ip add 10.1.1.1 255.0.0.0
ciscoasa(config-if)#no shut
ciscoasa(config-if)#nameif inside
ciscoasa(config-if)#security-level 100
ciscoasa(config-if)#exit
ciscoasa(config)#
```

Setting the IP Address on Router

```
ciscoasa(config-if)#
ciscoasa(config-if)#
ciscoasa(config-if)#int e0/2
ciscoasa(config-if)#switchport access vlan 1
ciscoasa(config-if)#exit
ciscoasa(config)#v
                ^
% Invalid input detected at '^' marker.

ciscoasa(config)#
ciscoasa(config)#
ciscoasa(config)#int vlan 2
ciscoasa(config-if)#ip add 50.1.1.2 255.0.0.0
ciscoasa(config-if)#no shut
ciscoasa(config-if)#nameif outside
ciscoasa(config-if)#security-level 0
ciscoasa(config-if)#exit
ciscoasa(config)#intint e0/0
                      ^
% Invalid input detected at '^' marker.

ciscoasa(config)#int e0/0
ciscoasa(config-if)#switchport access vlan 2
ciscoasa(config-if)#
```

Router0 — □ ×

Physical   Config   CLI   Attributes

GLOBAL	GigabitEthernet0/0/0
Settings	Port Status ☑ On
Algorithm Settings	Bandwidth ◯ 1000 Mbps ◯ 100 Mbps ⦿ 10 Mbps ☑ Auto
ROUTING	Duplex ◯ Half Duplex ⦿ Full Duplex ☑ Auto
Static	MAC Address 00D0.58BA.EB01
RIP	IP Configuration
SWITCHING	IP Address 50.1.1.1
VLAN Database	Subnet Mask 255.0.0.0
INTERFACE	
GigabitEthernet0/0/0	Tx Ring Limit 10
GigabitEthernet0/0/1	
GigabitEthernet0/0/2	

Equivalent IOS Commands
```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#ip address 50.1.1.1 255.0.0.0
Router(config-if)#
```

☐ Top

Setting the IP Address on Router

Setting the IP Address on the Server

Setting DHCPD range for Firewall via the PC-2 and the DNS IP

```
ciscoasa(config)#int e0/0
ciscoasa(config-if)#switchport access vlan 2
ciscoasa(config-if)#exit
ciscoasa(config)#dhcpd address 10.1.1.10-10.1.1.30 inside
ciscoasa(config)#dhcpd dns 8.8.8.8 interface inside
ciscoasa(config)#
```

PC0   —   □   X

Physical   Config   Desktop   Programming   Attributes

IP Configuration   X

Interface   FastEthernet0   ∨

IP Configuration

  ⦿ DHCP   ◯ Static

  IP Address   10.1.1.10

  Subnet Mask   255.0.0.0

  Default Gateway   10.1.1.1

  DNS Server   8.8.8.8

IPv6 Configuration

  ◯ DHCP   ◯ Auto Config   ⦿ Static

  IPv6 Address   /

  Link Local Address   FE80::20C:85FF:FE65:4BB8

  IPv6 Gateway

  IPv6 DNS Server

802.1X

  ☐ Use 802.1X Security

  Authentication   MD5

☐ Top

IP Address   10.1.1.11

Subnet Mask   255.0.0.0

Default Gateway   10.1.1.1

DNS Server   8.8.8.8

Setting up OSPF on the Router

```
ciscoasa(config)#route outside 0.0.0.0 0.0.0.0 50.1.1.1
```

Setting up OSPF on the Router

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/1
Router(config-if)#exit
Router(config)#router ospf ?
  <1-65535>  Process ID
Router(config)#router ospf
% Incomplete command.
Router(config)#router ospf ?
  <1-65535>  Process ID
Router(config)#router ospf 1
Router(config-router)#net 50.0.0.0 ?
  A.B.C.D  OSPF wild card bits
Router(config-router)#net 50.0.0.0 0.255.255.255 area 0
Router(config-router)#net 8.0.0.0 0.255.255.255 area 0
Router(config-router)#
```

Enable NAT on ASA
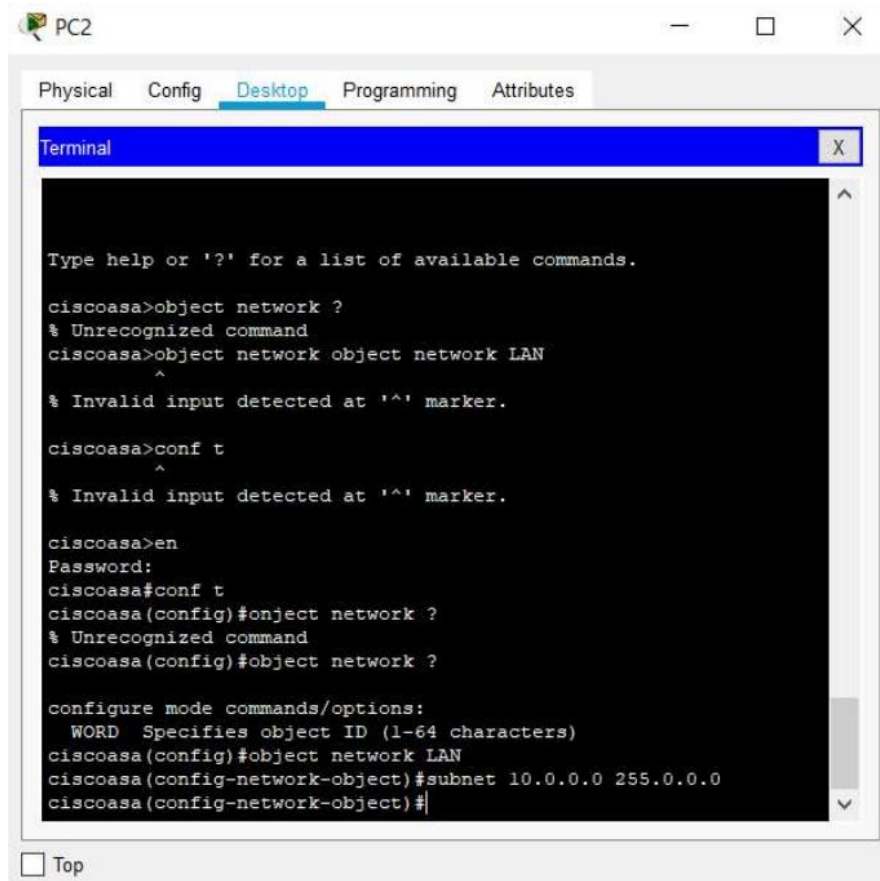
Enable NAT on ASA

```
ciscoasa(config)#object network LAN
ciscoasa(config-network-object)#subnet 10.0.0.0 255.0.0.0
ciscoasa(config-network-object)#nat ?

network-object mode commands/options:
  (  Open parenthesis for (<internal_if_name>,<external_if_name>)
pair
ciscoasa(config-network-object)#nat (inside, Outside) dynamic
interface
ciscoasa(config-network-object)#
```

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	
	0.000	--	PC0		ICMP
	0.001	PC0	Switch0		ICMP
	0.002	Switch0	PC1		ICMP
	0.003	PC1	Switch0		ICMP
	0.004	Switch0	PC0		ICMP
	0.013	--	ASA0		STP
	0.014	ASA0	Router0		STP
	0.019	--	Switch0		STP
	0.020	Switch0	PC1		STP
	0.020	Switch0	ASA0		STP
	0.020	Switch0	PC0		STP
	2.017	--	ASA0		STP
👁	2.018	ASA0	Router0		STP

Reset Simulation ☑ Constant Delay   Capturing...

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, NDP, NETFLOW, NTP, OSPF,
OSPFv6, PAgP, POP3, PPP, PPPoED, PTP, RADIUS, REP, RIP, RIPng, RTP,
SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP,
USB, VTP

Edit Filters	Show All/None

All steps have been successfully implemented and executed.