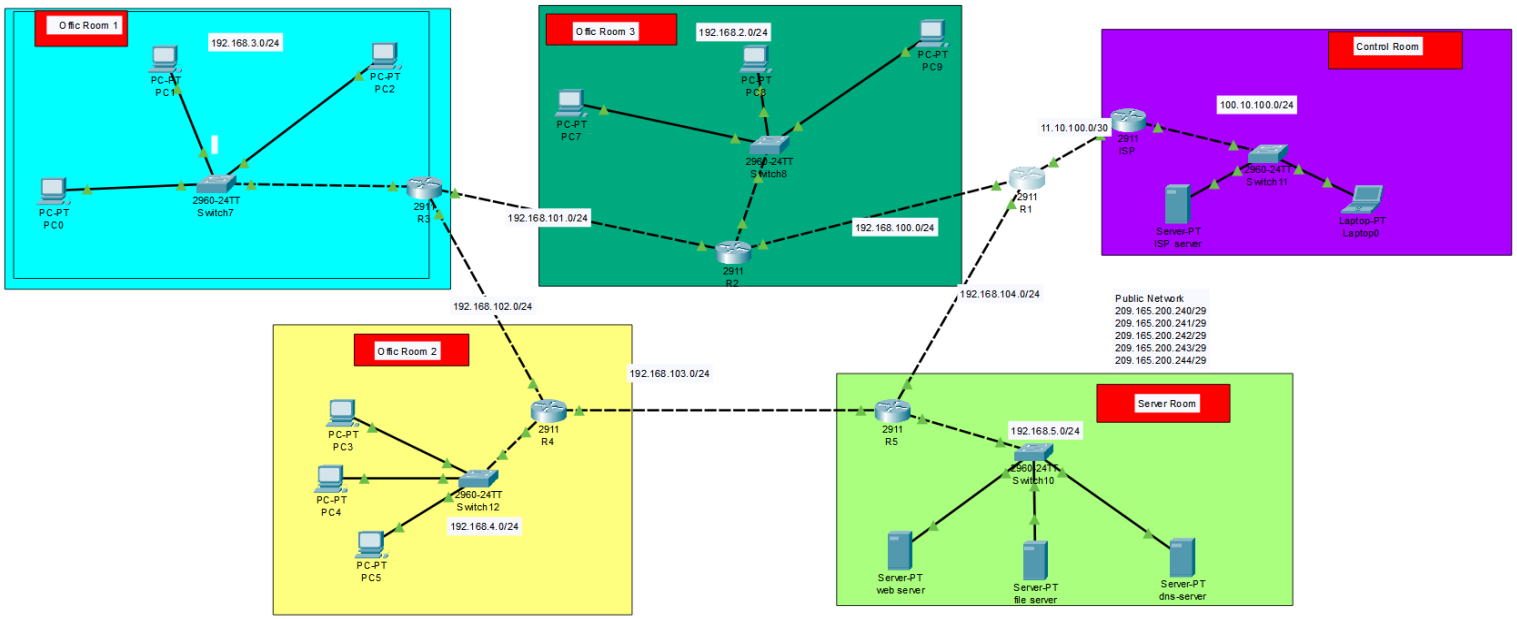
Computer network Lab Project Report on

Office Network Management

Name: MD. ASADUZZAMAN SHUVO **ID:011221104**



This Project is about an office management :

Summary: In this project we are trying to separate control room and other office. The control room has a dedicated server in his room. And Other room has server room for their activities . The thing is ,we are trying to do something unique , like we are giving access to server room for every office room but not giving access to control room . Control room do not have access to server room.We have done static nat in router R1 .And Dynamic nat to router R5 . Every one can access every one only control room has not any access to server room .We are assign ip address using DHCE which is randomly select ip address to end devices.Use Standard ACL on R5 for do not giving access to any of out server in server room.

DHCP

R2 - Office Room 3 Router:

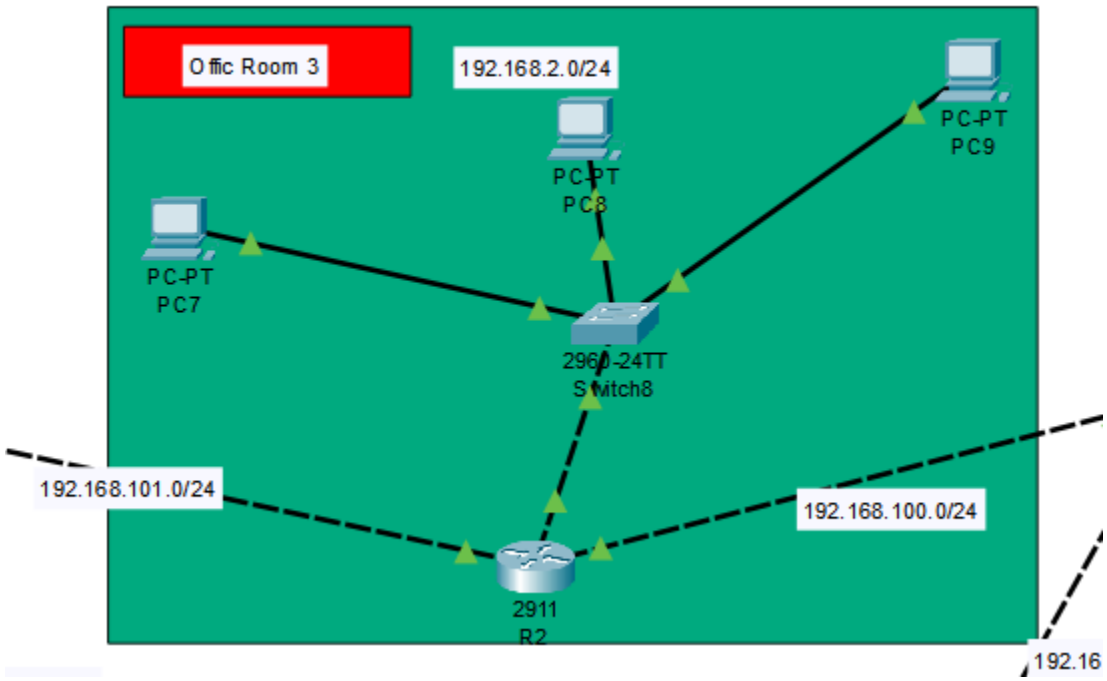
Interfaces:

GigabitEthernet0/0: 192.168.101.1/24

GigabitEthernet0/1: 192.168.100.1/24

GigabitEthernet0/2: 192.168.2.0/24

DHCP:Assigns IP addresses to devices in the office room. Routing: Utilizes RIP routing protocol for network communication.



Commands:

ip dhcp pool R2G0/2

network 192.168.2.0 255.255.255.0

R2(dhcp-config)#default-router 192.168.2.1

R2(dhcp-config)#dns-server 192.168.5.7

exit

ip dhcp excluded-address 192.168.2.1 192.168.2.10

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interface g0/2

R2(config-if)#ip address 192.168.2.1 255.255.255.0

R2(config-if)#no shutdown

R2(config)#interface g0/0
R2(config-if)#ip add
R2(config-if)#ip address 192.168.101.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#no shutdown

R2(config)#interface g0/1
R2(config-if)#ip address 192.168.100.1 255.255.255.0
R2(config-if)#no shutdown

Routing:

R2(config)#router rip
R2(config-router)#network 192.168.2.0
R2(config-router)#net 192.168.100.0
R2(config-router)#net 192.168.101.0
R2(config-router)#exit

R3 - Office Room 1 Router:

Interfaces:

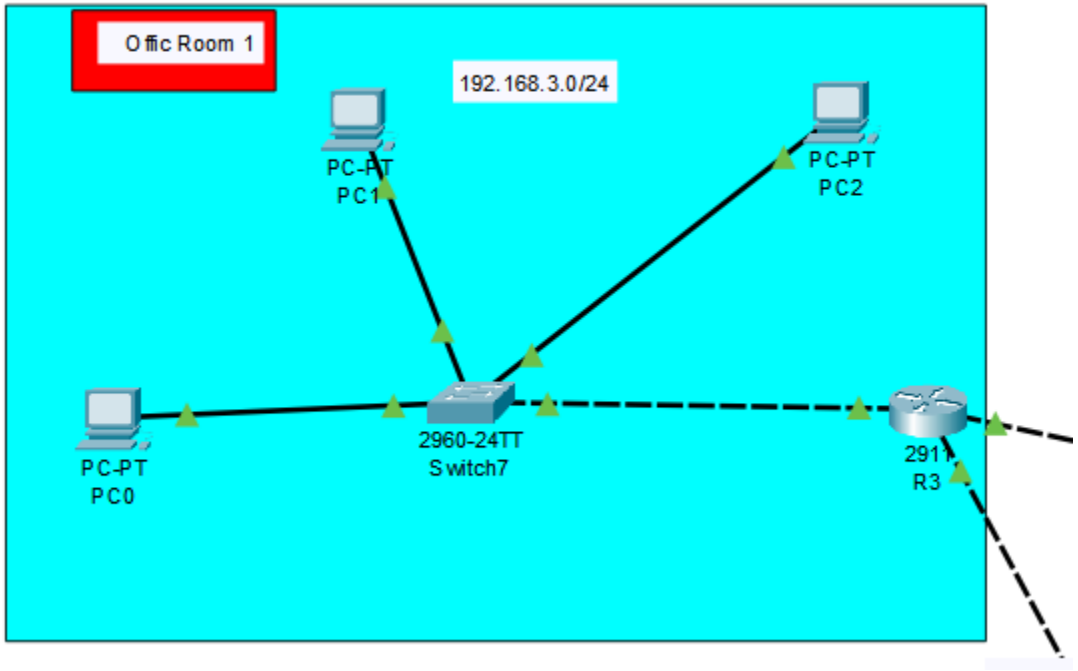
GigabitEthernet0/0: 192.168.101.2/24

GigabitEthernet0/1: 192.168.102.1/24

GigabitEthernet0/2: 192.168.3.0/24

DHCP:Assigns IP addresses to devices in the office room.

Routing:Utilizes RIP routing protocol for network communication.



Commands:

```
ip dhcp pool G0/2
network 192.168.3.0 255.255.255.0
default-router 192.168.3.1
dns-server 192.168.5.7
```

```
R3(config)#int g0/2
R3(config-if)#ip ad
R3(config-if)#ip address 192.168.3.1 255.255.255.0
R3(config-if)#no shutdown

R3(config)#interface g0/0
R3(config-if)#ip add
R3(config-if)#ip address 192.168.101.2 255.255.255.0
R3(config-if)#no shutdown

R3(config)#interface g0/1
R3(config-if)#ip address 192.168.102.1 255.255.255.0
R3(config-if)#no shutdown
```

Routing :

```
R3(config)#router rip
R3(config-router)#net 192.168.3.0
R3(config-router)#net 192.168.101.0
R3(config-router)#net 192.168.102.0
R3(config-router)#exit
```

R4 - Office Room 2 Router:

Interfaces:

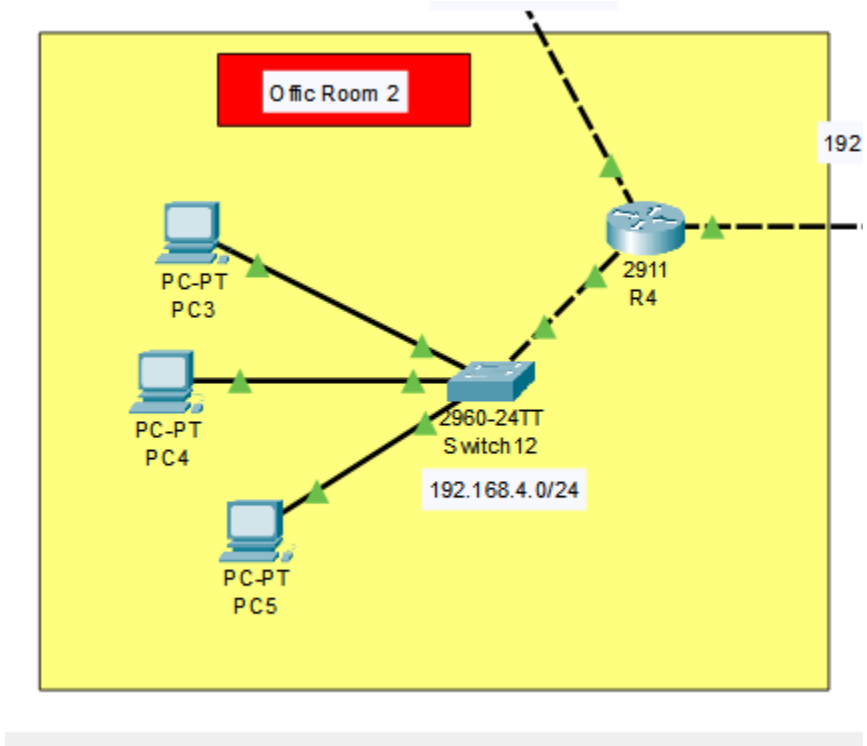
GigabitEthernet0/0: 192.168.102.2/24

GigabitEthernet0/1: 192.168.103.1/24

GigabitEthernet0/2: 192.168.4.0/24

DHCP:Assigns IP addresses to devices in the office room.

Routing:Utilizes RIP routing protocol for network communication.



Commands:
ip dhcp pool R4G0/2
network 192.168.4.0 255.255.255.0
default-router 192.168.4.1
dns-server 192.168.5.7

R4(config)#interface g0/2
R4(config-if)#ip address 192.168.4.1 255.255.255.0
R4(config-if)#no shutdown

R4(config)#int g0/0
R4(config-if)#ip address 192.168.102.2 255.255.255.0
R4(config-if)#no shutdown

R4(config)#int g0/1
R4(config-if)#ip address 192.168.103.1 255.255.255.0
R4(config-if)#no shutdown

Routing :
R4(config)#router rip
R4(config-router)#net 192.168.4.0
R4(config-router)#net 192.168.102.0

R4(config-router)#net 192.168.103.0
R4(config-router)#ex

R5 - Server Room Router:

Interfaces:

GigabitEthernet0/0: 192.168.103.2/24

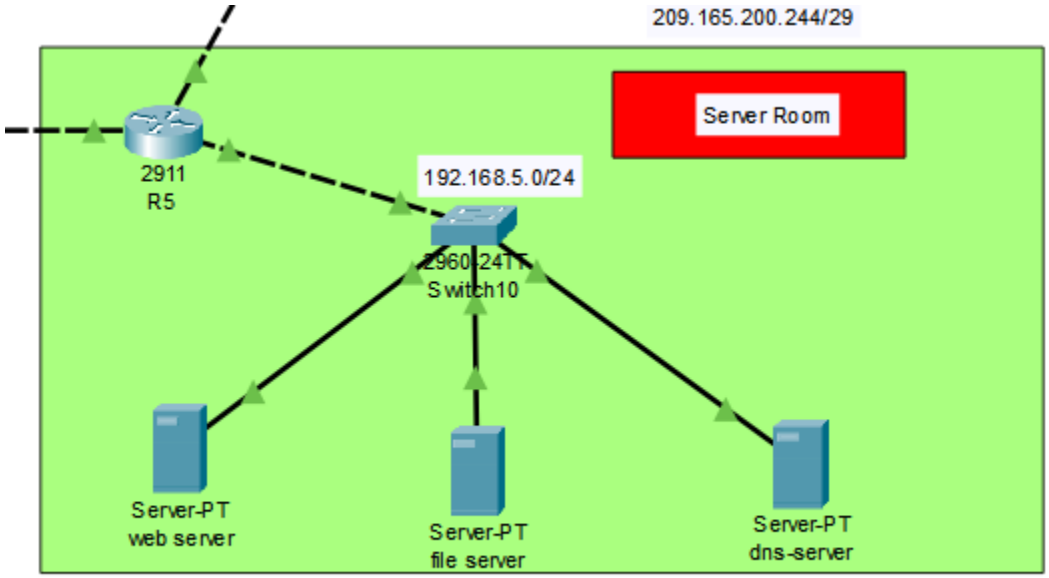
GigabitEthernet0/1: 192.168.104.1/24

GigabitEthernet0/2: 192.168.5.0/24

NAT:Implements dynamic NAT to provide internet access to office rooms.Utilizes NAT pool for IP address translation.

ACL:Configures standard ACL to restrict unauthorized access to the server room.

R5 is server room, where office data is being saved. It is necessary for office room to access data , for that reason every office can access server room except control room .



Commands:

```
R5(config)#int g0/0
R5(config-if)#ip address 192.168.103.2 255.255.255.0
R5(config-if)#no shutdown
```

R5(config)#int g0/1
R5(config-if)#ip address 192.168.104.1 255.255.255.0
R5(config-if)#no shutdown
R5(config)#int g0/2
R5(config-if)#ip address 192.168.5.1 255.255.255.0
R5(config-if)#no shutdown

Routing:
R5(config)#router rip
R5(config-router)#net 192.168.5.0
R5(config-router)#net 192.168.103.0
R5(config-router)#net 192.168.104.0
R5(config-router)#ex

R4 –

R1(config)#int g0/0
R1(config-if)#ip address 192.168.104.2 255.255.255.0
R1(config-if)#no shutdown

R1(config)#int g0/1
R1(config-if)#ip address 192.168.100.2 255.255.255.0
R1(config-if)#no shutdown

R1(config)#int g0/2
R1(config-if)#ip address 11.10.100.0 255.255.255.252
R1(config-if)#no shutdown

R1 - Control Room Router:

Interfaces:

GigabitEthernet0/0: 192.168.104.2/24

GigabitEthernet0/1: 192.168.100.2/24

GigabitEthernet0/2: 11.10.100.0/30

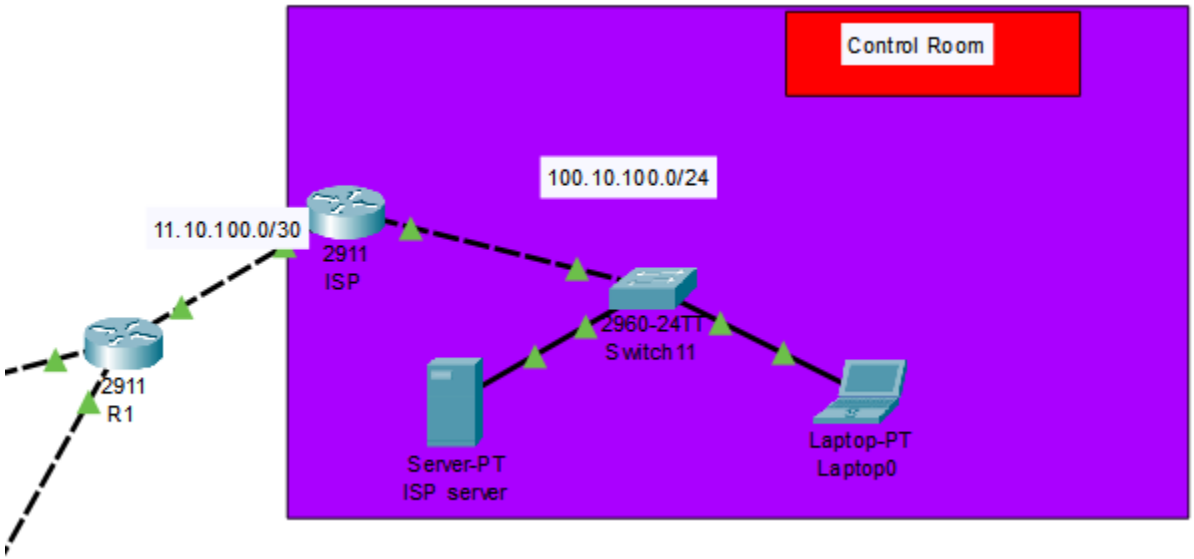
Routing:Utilizes RIP routing protocol.

Routes traffic to the ISP via interface g0/2.

NAT:Implements static NAT for server IP mapping.

ACL:Configures standard ACL to restrict access to the server room.

R1 Router is a way to contact control room. Control room control office activities such as cctv control. For control CCTv it is not necessary to access another server. For that reason, we restrict control room so that it can not take any other server control. But it van send ping to office rooms.



Commands:
R1(config)#int g0/2
R1(config-if)#ip address 11.10.100.1 255.255.255.252
R1(config-if)#no shutdown

R1(config)#interface GigabitEthernet0/0
R1(config-if)#ip address 192.168.104.2 255.255.255.0
R1(config-if)#no shutdown

R1(config)#interface GigabitEthernet0/1
R1(config-if)#ip address 192.168.100.2 255.255.255.0
R1(config-if)#no shutdown

Routing:
R1(config)#ip route 0.0.0.0 0.0.0.0 11.10.100.2

R1(config)#router rip
R1(config-router)#network 192.168.100.0
R1(config-router)#network 192.168.104.0
R1(config-router)#default-information originate

NAT && ACL

Standard ACL on R5:

R5 (config)# access-list 1 deny 100.10.100.0 0.0.0.255

R5 (config)# access-list 1 permit any

R5 (config)# interface GigabitEthernet0/0
R5 (config-if)# ip access-group 1 out
R5 (config-if)# exit

R5(config)#access-list 2 deny host 100.10.100.1
R5(config)#access-list 2 permit any
R5(config)#int gigabitEthernet 0/0
R5(config-if)#ip access-group 2 out
R5(config-if)#exit

Static nat:

R1(config)#ip nat inside source static 192.168.5.5 209.165.200.241

Nat pool: nat-pool
R1(config)#ip nat pool nat-pool 209.165.200.241 209.165.200.244 netmask 255.255.255.248

Nat pool => Accesslist:

R1(config)#access-list 1 permit 192.168.2.0 0.0.0.255
R1(config)#access-list 1 permit 192.168.3.0 0.0.0.255
R1(config)#access-list 1 permit 192.168.4.0 0.0.0.255
R1(config)#access-list 1 permit 192.168.5.0 0.0.0.255

R1(config)#iP nat inside source list 1 pool nat-pool

R1(config)#interface g0/0

R1(config-if)#ip nat inside

R1(config)#interface g0/1
R1(config-if)#ip nat inside

R1(config)#interface g0/2
R1(config-if)#ip nat outside

DYNAMIC NAT ON R5:

R5>en

R5#config t

Enter configuration commands, one per line. End with CNTL/Z.

R5(config)#int GigabitEthernet0/0

R5(config-if)#ip nat inside

R5(config-if)#exit

R5(config)#int GigabitEthernet0/2

R5(config-if)#ip nat inside

R5(config-if)#exit

R5(config)#int GigabitEthernet0/1

R5(config-if)#ip nat outside

R5(config-if)#exit

R5(config)#ip nat pool NAT-POOL 209.165.200.240 209.165.200.244 netmask 255.255.255.248

R5(config)#access-list 1 permit 192.168.4.0 0.0.0.255

R5(config)#access-list 1 permit 192.168.103.0 0.0.0.255

R5(config)#access-list 1 permit 192.168.104.0 0.0.0.255

R5(config)#ip nat inside source list 1 pool NAT-POOL

Pro Inside global Inside local Outside local Outside global
udp 209.165.200.241:520192.168.103.2:520 255.255.255.255:520255.255.255.255:520
udp 209.165.200.242:520192.168.104.1:520 255.255.255.255:520255.255.255.255:520

ISP –

ISP(config)#interface g0/0
ISP(config-if)#ip address 11.10.100.2 255.255.255.252
ISP(config-if)#no shutdown

ISP(config)#interface g0/1

ISP(config-if)#ip address 100.10.100.1 255.255.255.0

ISP(config-if)#no shutdown

Routing:

ISP(config)#ip route 209.165.200.240 255.255.255.248 11.10.100.1

ISP Router:

Interfaces:

GigabitEthernet0/0: 11.10.100.2/30

GigabitEthernet0/1: 100.10.100.1/24

Routing:

Configures routing for traffic forwarding to the NAT pool.

Conclusion:

The Office Management Network Infrastructure project successfully establishes a secure and efficient networking environment for office operations. By segregating control room activities and providing controlled access to the server room, the network ensures optimal functionality while maintaining security standards. The configuration of routers, DHCP services, NAT, ACL, and routing protocols facilitates seamless communication and data management within the office setup