



## **CSE421 Lab Project**

### **Topic 06**

### **The Office**

Submitted by

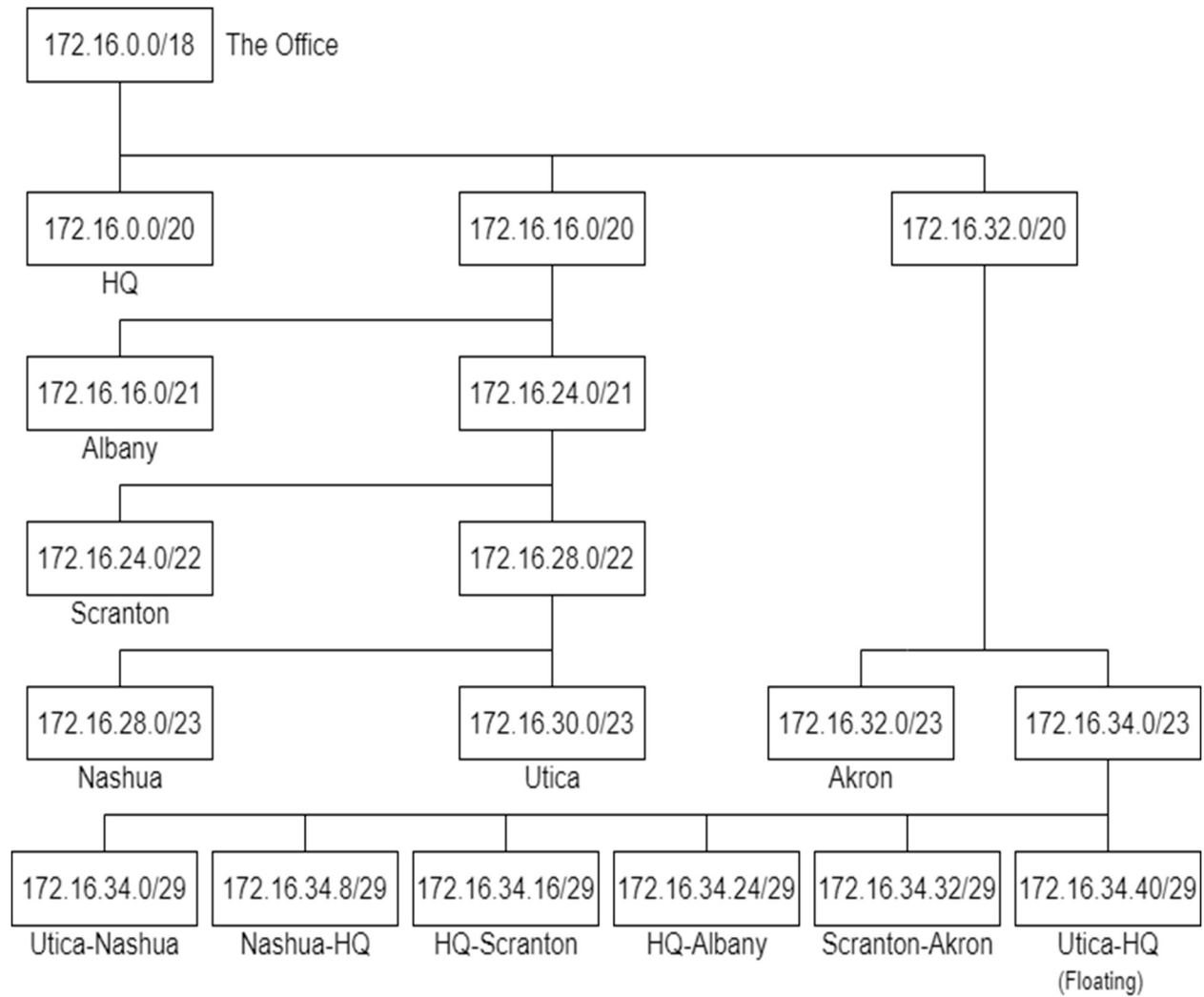
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Submission Date: 31 December, 2021

## VLSM Tree:



## IP Address Table:

### Routers:

| Device       | Interface | IP Address   | Subnet Mask     |
|--------------|-----------|--------------|-----------------|
| Corporate HQ | Se4/0     | 172.16.34.19 | 255.255.255.248 |
|              | Se5/0     | 172.16.34.11 | 255.255.255.248 |
|              | Se6/0     | 172.16.34.25 | 255.255.255.248 |
|              | Se7/0     | 172.16.34.43 | 255.255.255.248 |
|              | Fa0/0     | 172.16.0.1   | 255.255.240.0   |
| Nashua       | Se4/0     | 172.16.34.3  | 255.255.255.248 |
|              | Se5/0     | 172.16.34.9  | 255.255.255.248 |
|              | Fa0/0     | 172.16.28.1  | 255.255.254.0   |
| Utica        | Se4/0     | 172.16.34.1  | 255.255.255.248 |
|              | Se5/0     | 172.16.34.41 | 255.255.255.248 |
|              | Fa0/0     | 172.16.30.1  | 255.255.254.0   |
| Scranton     | Se4/0     | 172.16.34.17 | 255.255.255.248 |
|              | Se5/0     | 172.16.34.33 | 255.255.255.248 |
|              | Fa0/0     | 172.16.24.1  | 255.255.252.0   |
| Akron        | Se4/0     | 172.16.34.35 | 255.255.255.248 |
|              | Fa0/0     | 172.16.32.1  | 255.255.254.0   |
| Albany       | Se4/0     | 172.16.34.27 | 255.255.255.248 |
|              | Fa0/0     | 172.16.16.1  | 255.255.248.0   |

**Hosts:**

| Device         | IP Address    | Subnet Mask   | Default Gateway |
|----------------|---------------|---------------|-----------------|
| HQ_PC1         | 172.16.0.3    | 255.255.240.0 | 172.16.0.1      |
| HQ_PC2         | 172.16.0.5    | 255.255.240.0 | 172.16.0.1      |
| Nashua_PC1     | DHCP Assigned | DHCP Assigned | N/A             |
| Nashua_PC2     | DHCP Assigned | DHCP Assigned | N/A             |
| Nashua_Printer | N/A           | N/A           | 172.16.28.1     |
| Utica_PC1      | 172.16.30.3   | 255.255.254.0 | 172.16.30.1     |
| Utica_PC2      | 172.16.30.5   | 255.255.254.0 | 172.16.30.1     |
| Scranton_PC1   | DHCP Assigned | DHCP Assigned | N/A             |
| Scranton_PC2   | DHCP Assigned | DHCP Assigned | N/A             |
| Akron_PC1      | DHCP Assigned | DHCP Assigned | N/A             |
| Akron_PC2      | DHCP Assigned | DHCP Assigned | N/A             |
| Akron_Printer  | N/A           | N/A           | 172.16.32.1     |
| AlbanyPC1      | DHCP Assigned | DHCP Assigned | N/A             |
| Albany_PC2     | DHCP Assigned | DHCP Assigned | N/A             |
| Email Server   | 172.16.24.3   | 255.255.252.0 | 172.16.24.1     |
| Web Server     | 172.16.24.5   | 255.255.252.0 | 172.16.24.1     |
| DNS Server     | 172.16.24.7   | 255.255.252.0 | 172.16.24.1     |

## **Configuration:**

### **Router IP Address Assigning:**

#### **Utica:**

Router>enable

Router# erase startup-config -> y

Router# reload

save->no

proceed reload-> y

initial conf-> no

Router>enable

Router# configure terminal

Router (config) # hostname Utica

Utica (config) # no ip domain-lookup

Utica (config) #interface serial 4/0

Utica (config-if) # ip address 172.16.34.1 255.255.255.248

Utica (config-if) # clock rate 64000

Utica (config-if) # no shutdown

Utica (config-if) #interface serial 5/0

Utica (config-if) # ip address 172.16.34.41 255.255.255.248

Utica (config-if) # clock rate 64000

Utica (config-if) # no shutdown

Utica (config-if) # interface fastethernet 0/0

Utica (config-if) # ip address 172.16.30.1 255.255.254.0

Utica (config-if) # no shutdown

Utica (config-if) # end

Utica # copy run start

### **Nashua:**

Router>enable

Router# erase startup-config -> y

Router# reload

proceed reload-> y

initial conf-> no

Router# configure terminal

Router (config) # hostname Nashua

Nashua (config) # no ip domain-lookup

Nashua (config) #interface serial 4/0

Nashua (config-if) # ip address 172.16.34.3 255.255.255.248

Nashua (config-if) # no shutdown

Nashua (config) #interface serial 5/0

Nashua (config-if) # clock rate 64000

Nashua (config-if) # ip address 172.16.34.9 255.255.255.248

Nashua (config-if) # no shutdown

Nashua (config-if) # interface fastethernet 0/0

Nashua (config-if) # ip address 172.16.28.1 255.255.254.0

Nashua (config-if) # no shutdown

Nashua (config-if) # end

Nashua # copy run start

### **Corporate\_HQ:**

Router>enable

Router# erase startup-config -> y

Router# reload

save->no

proceed reload-> y

initial conf-> no

Router# configure terminal

Router (config) # hostname Corporate\_HQ

Corporate\_HQ (config) # no ip domain-lookup

Corporate\_HQ (config) #interface serial 4/0

Corporate\_HQ (config-if) # ip address 172.16.34.19 255.255.255.248

Corporate\_HQ (config-if) # no shutdown

Corporate\_HQ (config) #interface serial 5/0

Corporate\_HQ (config-if) # ip address 172.16.34.11 255.255.255.248

Corporate\_HQ (config-if) # no shutdown

Corporate\_HQ (config) #interface serial 6/0

Corporate\_HQ (config-if) # ip address 172.16.34.25 255.255.255.248

Corporate\_HQ (config-if) # clock rate 64000

Corporate\_HQ (config-if) # no shutdown

Corporate\_HQ (config) #interface serial 7/0

Corporate\_HQ (config-if) # ip address 172.16.34.43 255.255.255.248

Corporate\_HQ (config-if) # no shutdown

Corporate\_HQ (config-if) # interface fastethernet 0/0

Corporate\_HQ (config-if) # ip address 172.16.0.1 255.255.240.0

Corporate\_HQ (config-if) # no shutdown

HQ (config-if) # end

HQ # copy run start

### **Scranton:**

Router>enable

Router# erase startup-config -> y

Router# reload

save->no

proceed reload-> y

initial conf-> no

Router# configure terminal

Router (config) # hostname Scranton

Scranton (config) # no ip domain-lookup

Scranton (config) # interface serial 4/0

Scranton (config-if) # clock rate 64000

Scranton (config-if) # ip address 172.16.34.17 255.255.255.248

Scranton (config-if) # no shutdown

Scranton (config) # interface serial 5/0

Scranton (config-if) # clock rate 64000

Scranton (config-if) # ip address 172.16.34.33 255.255.255.248

Scranton (config-if) # no shutdown

Scranton (config-if) # interface fastethernet 0/0

Scranton (config-if) # ip address 172.16.24.1 255.255.252.0

Scranton (config-if) # no shutdown

Scranton (config-if) # end

Scranton # copy run start

### **Albany:**

Router>enable

Router# erase startup-config -> y

Router# reload

proceed reload-> y

initial conf-> no

Router# configure terminal

Router (config) # hostname Albany

Albany (config) # no ip domain-lookup



```
Albany (config) #interface serial 4/0
Albany (config-if) # ip address 172.16.34.27 255.255.255.248
Albany (config-if) # no shutdown
Albany (config-if) # interface fastethernet 0/0
Albany (config-if) # ip address 172.16.16.1 255.255.248.0
Albany (config-if) # no shutdown
Albany (config-if) # end
Albany # copy run start
```

### **Akron:**

```
Router>enable
Router# erase startup-config -> y
Router# reload
proceed reload-> y
initial conf-> no
Router# configure terminal
Router (config) # hostname Akron
Akron (config) # no ip domain-lookup
Akron (config) #interface serial 4/0
Akron (config-if) # ip address 172.16.34.35 255.255.255.248
Akron (config-if) # no shutdown
Akron (config-if) # interface fastethernet 0/0
Akron (config-if) # ip address 172.16.32.1 255.255.254.0
Akron (config-if) # no shutdown
Akron (config-if) # end
Akron # copy run start
```

## Dynamic Route Configuration:

### Nashua:

```
Nashua >en
Nashua #conf t
Nashua (config)#ip route 0.0.0.0 0.0.0.0 Se5/0
Nashua (config)#router rip
Nashua (config-router)#version 2
Nashua (config-router)#no auto-summary
Nashua (config-router)#network 172.16.28.0
Nashua (config-router)#network 172.16.34.0
Nashua (config-router)#network 172.16.34.8
Nashua (config-router)#passive-interface Fa0/0
Nashua (config-router)#default-information originate
Nashua (config-router)#end
Nashua #copy run start
```

### Akron:

```
Akron >en
Akron #conf t
Akron (config)#ip route 0.0.0.0 0.0.0.0 Se4/0
Akron (config)#router rip
Akron (config-router)#version 2
Akron (config-router)#no auto-summary
Akron (config-router)#network 172.16.32.0
Akron (config-router)#network 172.16.34.32
Akron (config-router)#passive-interface Fa0/0
Akron (config-router)#default-information originate
```

Akron (config-router)#end

Akron #copy run start

### **Albany:**

Albany >en

Albany #conf t

Albany (config)#ip route 0.0.0.0 0.0.0.0 Se4/0

Albany (config)#router rip

Albany (config-router)#version 2

Albany (config-router)#no auto-summary

Albany (config-router)#network 172.16.16.0

Albany (config-router)#network 172.16.34.24

Albany (config-router)#passive-interface Fa0/0

Albany (config-router)#default-information originate

Albany (config-router)#end

Albany #copy run start

### **Scranton:**

Scranton >en

Scranton #conf t

Scranton (config)#ip route 0.0.0.0 0.0.0.0 Fa0/0

Scranton (config)#router rip

Scranton (config-router)#version 2

Scranton (config-router)#no auto-summary

Scranton (config-router)#network 172.16.34.16

Scranton (config-router)#network 172.16.34.32

Scranton (config-router)#passive-interface Fa0/0

Scranton (config-router)#default-information originate

Scranton (config-router)#end

Scranton #copy run start

### **Static route Configuration:**

#### **HQ:**

ip route 172.16.16.0 255.255.248.0 Se6/0

ip route 172.16.24.0 255.255.252.0 Se4/0

ip route 172.16.28.0 255.255.254.0 Se5/0

ip route 172.16.30.0 255.255.254.0 Se5/0

ip route 172.16.32.0 255.255.254.0 Se4/0

ip route 172.16.34.32 255.255.255.248 Se4/0

ip route 172.16.34.32 255.255.255.248 Se4/0

ip route 172.16.34.0 255.255.255.248 Se5/0

#### **HQ Floating Routes:**

ip route 172.16.30.0 255.255.255.248 Se7/0 5

#### **Utica:**

ip route 172.16.0.0 255.255.240.0 Se4/0

ip route 172.16.16.0 255.255.248.0 Se4/0

ip route 172.16.24.0 255.255.252.0 Se4/0

ip route 172.16.28.0 255.255.254.0 Se4/0

ip route 172.16.32.0 255.255.254.0 Se4/0

ip route 172.16.34.8 255.255.255.248 Se4/0

ip route 172.16.34.16 255.255.255.248 Se4/0

ip route 172.16.34.24 255.255.255.248 Se4/0

ip route 172.16.34.32 255.255.255.248 Se4/0

#### **Utica Floating Routes:**

ip route 172.16.0.0 255.255.240.0 Se4/0 5

```
ip route 172.16.16.0 255.255.248.0 Se4/0 5
ip route 172.16.24.0 255.255.252.0 Se4/0 5
ip route 172.16.28.0 255.255.254.0 Se4/0 5
ip route 172.16.30.0 255.255.254.0 Se4/0 5
ip route 172.16.32.0 255.255.254.0 Se4/0 5
ip route 172.16.34.8 255.255.255.248 Se4/0 5
ip route 172.16.34.16 255.255.255.248 Se4/0 5
ip route 172.16.34.24 255.255.255.248 Se4/0 5
ip route 172.16.34.32 255.255.255.248 Se4/0 5
```

### **DHCP Configuration:**

```
ip dhcp excluded-address 172.16.24.1 172.16.24.1
ip dhcp excluded-address 172.16.28.1
ip dhcp excluded-address 172.16.32.1
ip dhcp excluded-address 172.16.16.1
ip dhcp pool Nashua-LAN
network 172.16.28.0 255.255.254.0
default-router 172.16.28.1
dns-server 172.16.24.7
exit
ip dhcp pool Scraton-LAN
network 172.16.24.0 255.255.252.0
default-router 172.16.24.1
dns-server 172.16.24.7
exit
ip dhcp pool Albany-LAN
network 172.16.32.0 255.255.248.0
default-router 172.16.32.1
```

dns-server 172.16.24.7

exit

ip dhcp pool Akron-LAN

network 172.16.16.0 255.255.254.0

default-router 172.16.16.1

dns-server 172.16.24.7

exit