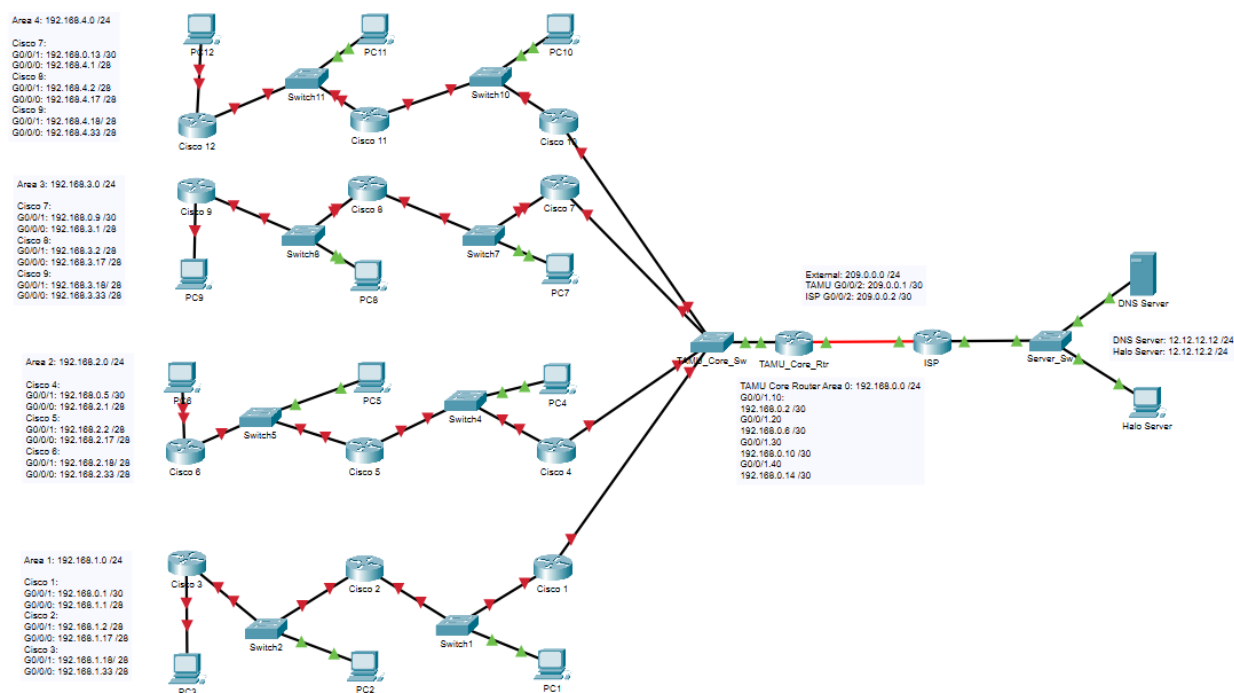


## Admin Routing: Fall 2022

### Purpose:

This is the administrative and core layer infrastructure layout to the October 2022 lab.



### Part 1:

IP addressing schemes for all networks

- Area 0: 192.168.0.0 - 3, 4 - 7, 8 - 11, 12 - 15 /30
- Area 1: 192.168.1.0 - 15, 16 - 31, 32 - 47 /28
- Area 2: 192.168.2.0 - 15, 16 - 31, 32 - 47 /28
- Area 3: 192.168.3.0 - 15, 16 - 31, 32 - 47 /28
- Area 4: 192.168.4.0 - 15, 16 - 31, 32 - 47 /28
- ISP: 209.0.0.0 - 3 /31
- DNS: 12.12.12.0 /24

---

**Part 2:**

## ISP router configurations

- Assign IP addresses to the interfaces on the router
  - `ISP(config)# interface g0/0/1`
  - `ISP(config-if)# ip address 12.12.12.1 255.255.255.0`
  - `ISP(config-if)# no shutdown`
  - `ISP(config-if)# exit`
  - `ISP(config)# interface g0/0/2`
  - `ISP(config-if)# ip address 209.0.0.1 255.255.255.252`
  - `ISP(config-if)# no shutdown`
  - `ISP(config-if)# end`
  - `ISP# show ip interface brief`
- Enable the BGP process on the router
  - `ISP#configure terminal`
  - `ISP(config)#router bgp 2222`
- Tell the router who it is connected to and include the AS of that router.
  - `ISP(config-router)#neighbor 209.0.0.2 remote-as 1111`
- Finally, we need to tell the router what its home network is.
  - `ISP(config-router)#network 12.12.12.0 mask 255.255.255.0`
- Be sure to check that the BGP protocol is properly working
  - `ISP(config-router)#end`
  - `ISP#show ip route`

---

**Part 3:****TAMU Core router configurations**

- Assign IP addresses to the interfaces on the router

```
o TAMU_Core_Rtr(config)# interface g0/0/1.10
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 10
o TAMU_Core_Rtr(config-if)# ip address 192.168.0.2
  255.255.255.252
o TAMU_Core_Rtr(config-if)# exit
o TAMU_Core_Rtr(config)# interface g0/0/1.20
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 20
o TAMU_Core_Rtr(config-if)# ip address 192.168.0.6
  255.255.255.252
o TAMU_Core_Rtr(config-if)# exit
o TAMU_Core_Rtr(config)# interface g0/0/1.30
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 30
o TAMU_Core_Rtr(config-if)# ip address 192.168.0.10
  255.255.255.252
o TAMU_Core_Rtr(config-if)# exit
o TAMU_Core_Rtr(config)# interface g0/0/1.40
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 40
o TAMU_Core_Rtr(config-if)# ip address 192.168.0.14
  255.255.255.252
o TAMU_Core_Rtr(config-if)# exit
o TAMU_Core_Rtr(config)# interface g0/0/1
o TAMU_Core_Rtr(config-if)# no shutdown
o TAMU_Core_Rtr(config-if)# exit
o TAMU_Core_Rtr(config)# interface g0/0/2
o TAMU_Core_Rtr(config-if)# ip address 209.0.0.2
  255.255.255.252
o TAMU_Core_Rtr(config-if)# no shutdown
o TAMU_Core_Rtr(config-if)# end
```

---

```
TAMU_Core_Rtr# show ip interface brief
```

- Enable the BGP process on the router

```
TAMU_Core_Rtr# configure terminal
```

```
TAMU_Core_Rtr(config)# router bgp 1111
```

- Tell the router who it is connected to and include the AS of that router.

```
TAMU_Core_Rtr(config-router)# neighbor 209.0.0.1  
remote-as 2222
```

- Finally, we need to tell the router what its home network is.

```
TAMU_Core_Rtr(config-router)# network 192.168.0.0 mask  
255.255.255.252
```

- Be sure to check that the BGP protocol is properly working

```
TAMU_Core_Rtr(config-router)# end
```

```
TAMU_Core_Rtr# show ip route
```

- OSPF Configurations

```
TAMU_Core_Rtr(config)# router ospf 1
```

```
TAMU_Core_Rtr(config-router)# router-id 6.7.0.0
```

```
TAMU_Core_Rtr(config-router)# network 192.168.0.0  
0.0.0.3 area 0
```

```
TAMU_Core_Rtr(config-router)# network 192.168.0.4  
0.0.0.3 area 0
```

```
TAMU_Core_Rtr(config-router)# network 192.168.0.8  
0.0.0.3 area 0
```

```
TAMU_Core_Rtr(config-router)# network 192.168.0.12  
0.0.0.3 area 0
```

```
TAMU_Core_Rtr(config-router)# exit
```

- OSPF Redistribution into BGP

```
TAMU_Core_Rtr(config)# router bgp 1111
```

- TAMU\_Core\_Rtr(config-router)# redistribute ospf 1  
match external
- TAMU\_Core\_Rtr(config-router)# exit

- BGP Redistribution into OSPF

- TAMU\_Core\_Rtr(config)# router ospf 1
- TAMU\_Core\_Rtr(config-router)# redistribute bgp 1111  
subnets

#### **Part 4:**

#### **Configure RoaS on the Core Switch**

- Configure access ports

- TAMU\_Core\_Sw(config)# vlan 10
- TAMU\_Core\_Sw(config-vlan)# name area1
- TAMU\_Core\_Sw(config-vlan)# exit
- TAMU\_Core\_Sw(config)# vlan 20
- TAMU\_Core\_Sw(config-vlan)# name area2
- TAMU\_Core\_Sw(config-vlan)# exit
- TAMU\_Core\_Sw(config)# vlan 30
- TAMU\_Core\_Sw(config-vlan)# name area3
- TAMU\_Core\_Sw(config-vlan)# exit
- TAMU\_Core\_Sw(config)# vlan 40
- TAMU\_Core\_Sw(config-vlan)# name area4
- TAMU\_Core\_Sw(config-vlan)# exit
- TAMU\_Core\_Sw(config)# interface fa0/1
- TAMU\_Core\_Sw(config-if)# switchport mode access
- TAMU\_Core\_Sw(config-if)# switchport access vlan 10
- TAMU\_Core\_Sw(config-if)# exit
- TAMU\_Core\_Sw(config)# interface fa0/2
- TAMU\_Core\_Sw(config-if)# switchport mode access
- TAMU\_Core\_Sw(config-if)# switchport access vlan 20

---

```
o TAMU_Core_Sw(config)# interface fa0/3
o TAMU_Core_Sw(config-if)# switchport mode access
o TAMU_Core_Sw(config-if)# switchport access vlan 30
o TAMU_Core_Sw(config-if)# exit
o TAMU_Core_Sw(config)# interface fa0/4
o TAMU_Core_Sw(config-if)# switchport mode access
o TAMU_Core_Sw(config-if)# switchport access vlan 40
o TAMU_Core_Sw(config-if)# end
o TAMU_Core_Sw# copy run start
```

- Configure trunk ports

```
o TAMU_Core_Sw(config)# interface fa0/5
o TAMU_Core_Sw(config-if)# switchport mode trunk
o TAMU_Core_Sw(config-if)# switchport trunk allowed vlan
  add 10
o TAMU_Core_Sw(config-if)# switchport trunk allowed vlan
  add 20
o TAMU_Core_Sw(config-if)# switchport trunk allowed vlan
  add 30
o TAMU_Core_Sw(config-if)# switchport trunk allowed vlan
  add 40
o TAMU_Core_Sw(config-if)# end
o TAMU_Core_Sw# copy run start
```