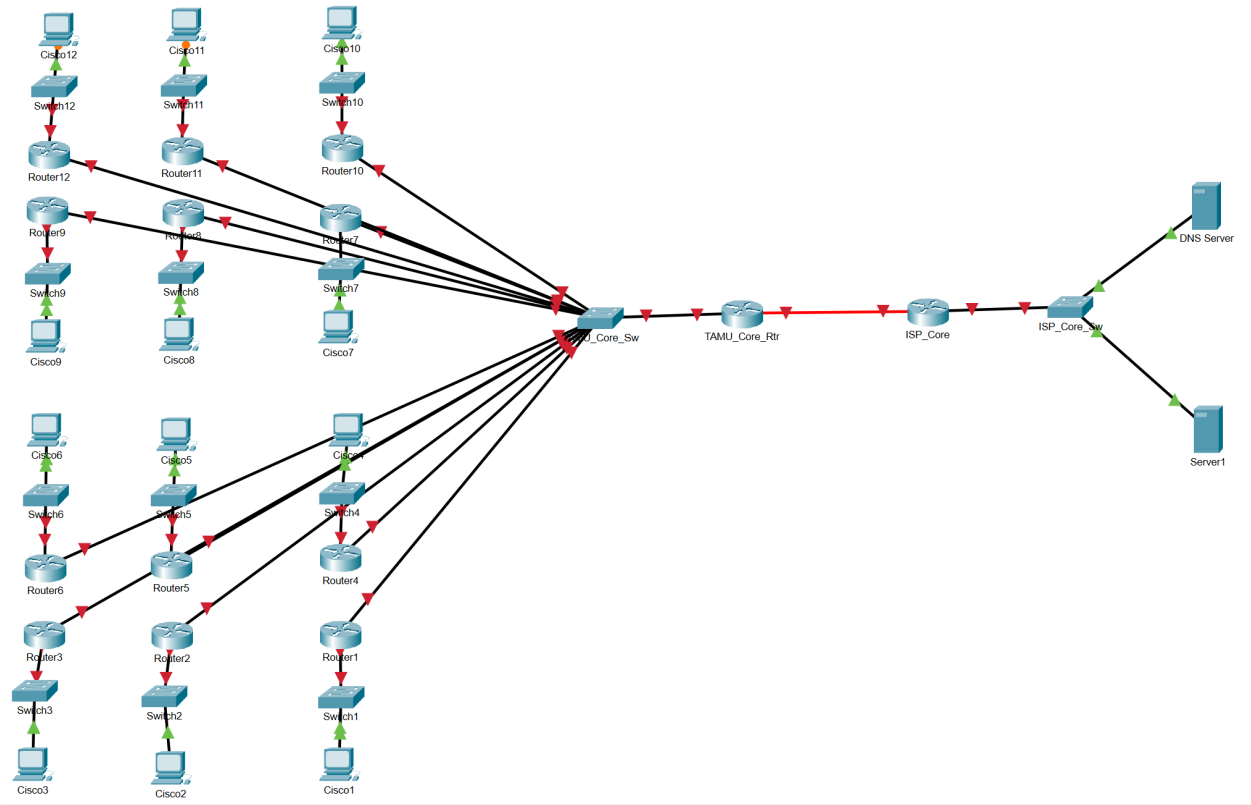
Admin Network: Spring 2023

Purpose:
This is the administrative and core layer infrastructure layout to the April 2023 lab.



Part 1:

IP addressing schemes for all networks

- OSPF Area 0:
  - 10.1.1.0 / 24
  - 10.1.2.0 / 24
  - 10.1.3.0 / 24
  - 10.1.4.0 / 24

    - 10.1.5.0 / 24
    - 10.1.6.0 / 24
    - 10.1.7.0 / 24
    - 10.1.8.0 / 24
    - 10.1.9.0 / 24
    - 10.1.10.0 / 24
    - 10.1.11.0 / 24
    - 10.1.12.0 / 24
- OSPF Areas 1 - 12 (NAT Overload):
    - 192.168.1.0 /25 - Internal-Wired
    - 192.168.1.128 /25 - Guest-Wifi
- DNS: 12.12.12.0 /24

Part 2:

ISP Router configurations

- Assign IP addresses to the interfaces on the router
    - `ISP_Rtr(config)# interface g0/0/1`
    - `ISP_Rtr(config-if)# ip address 12.12.12.1 255.255.255.0`
    - `ISP_Rtr(config-if)# no shutdown`
    - `ISP_Rtr(config-if)# exit`
    - `ISP_Rtr(config)# interface g0/0/0`
    - `ISP_Rtr(config-if)# ip address 209.0.0.2 255.255.255.252`
    - `ISP_Rtr(config-if)# no shutdown`
    - `ISP_Rtr(config-if)# end`
    - `ISP_Rtr# show ip interface brief`

- Next, we will set a default route.
    - `ISP_Rtr# configure terminal`
    - `ISP_Rtr(config)# ip route 0.0.0.0 0.0.0.0 209.0.0.1`
    - `ISP_Rtr(config-router)#end`
    - `ISP_Rtr# show ip route`

Part 3:

TAMU Core router configurations

- Assign IP addresses to the interfaces on the router
  - `TAMU_Core_Rtr# configure terminal`
  - `TAMU_Core_Rtr(config)# interface g0/0/0`
  - `TAMU_Core_Rtr(config-if)# ip address 209.0.0.1 255.255.255.252`
  - `TAMU_Core_Rtr(config-if)# no shutdown`
  - `TAMU_Core_Rtr(config-if)# exit`
  - `TAMU_Core_Rtr(config)# interface Gi0/0/1.10`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 10`
  - `TAMU_Core_Rtr(config-if)# ip address 10.1.1.2 255.255.255.0`
  - `TAMU_Core_Rtr(config-if)# interface Gi0/0/1.20`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 20`
  - `TAMU_Core_Rtr(config-if)# ip address 10.1.2.2 255.255.255.0`
  - `TAMU_Core_Rtr(config-if)# interface Gi0/0/1.30`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 30`
  - `TAMU_Core_Rtr(config-if)# ip address 10.1.3.2 255.255.255.0`
  - `TAMU_Core_Rtr(config-if)# interface Gi0/0/1.40`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 40`
  - `TAMU_Core_Rtr(config-if)# ip address 10.1.4.2 255.255.255.0`
  - `TAMU_Core_Rtr(config-if)# interface Gi0/0/1.50`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 50`
  - `TAMU_Core_Rtr(config-if)# ip address 10.1.5.2 255.255.255.0`
  - `TAMU_Core_Rtr(config-if)# interface Gi0/0/1.60`
  - `TAMU_Core_Rtr(config-if)# encapsulation dot1q 60`

```
o TAMU_Core_Rtr(config-if)# ip address 10.1.6.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.70
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 70
o TAMU_Core_Rtr(config-if)# ip address 10.1.7.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.80
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 80
o TAMU_Core_Rtr(config-if)# ip address 10.1.8.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.90
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 90
o TAMU_Core_Rtr(config-if)# ip address 10.1.9.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.100
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 100
o TAMU_Core_Rtr(config-if)# ip address 10.1.10.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.110
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 110
o TAMU_Core_Rtr(config-if)# ip address 10.1.11.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# interface Gi0/0/1.120
o TAMU_Core_Rtr(config-if)# encapsulation dot1q 120
o TAMU_Core_Rtr(config-if)# ip address 10.1.12.2
  255.255.255.0
o TAMU_Core_Rtr(config-if)# int Gi0/0/1
o TAMU_Core_Rtr(config-if)# no shutdown
o TAMU_Core_Rtr(config-if)#exit
```

- OSPF Configurations
  - `TAMU_Core_Rtr(config)# router ospf 1`
  - `TAMU_Core_Rtr(config-router) router-id 1.1.1.13`

- `TAMU_Core_Rtr(config-router) network 10.1.1.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.2.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.3.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.4.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.5.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.6.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.7.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.8.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.9.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.10.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.11.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) network 10.1.12.0 255.255.255.0 area 0`
- `TAMU_Core_Rtr(config-router) exit`

- Next, we will set a default route.
  - `TAMU_Core_Rtr(config)# ip route 0.0.0.0 0.0.0.0 209.0.0.2`
  - `TAMU_Core_Rtr(config-router)# end`
  - `TAMU_Core_Rtr# show ip route`

Part 4:

Configure RoaS on the Core Switch

- Configure access ports
  - TAMU_Core_Sw(config)# vlan 10
  - TAMU_Core_Sw(config-vlan)# name Cisco1
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 20
  - TAMU_Core_Sw(config-vlan)# name Cisco2
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 30
  - TAMU_Core_Sw(config-vlan)# name Cisco3
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 40
  - TAMU_Core_Sw(config-vlan)# name Cisco4
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 50
  - TAMU_Core_Sw(config-vlan)# name Cisco5
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 60
  - TAMU_Core_Sw(config-vlan)# name Cisco6
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 70
  - TAMU_Core_Sw(config-vlan)# name Cisco7
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 80
  - TAMU_Core_Sw(config-vlan)# name Cisco8
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 90
  - TAMU_Core_Sw(config-vlan)# name Cisco9
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 100
  - TAMU_Core_Sw(config-vlan)# name Cisco10
  - TAMU_Core_Sw(config-vlan)# exit
  - TAMU_Core_Sw(config)# vlan 110

```
TAMU_Core_Sw(config-vlan)# name Cisco11
TAMU_Core_Sw(config-vlan)# exit
TAMU_Core_Sw(config)# vlan 120
TAMU_Core_Sw(config-vlan)# name Cisco12
TAMU_Core_Sw(config-vlan)# exit
```

- Assign access VLANs to port numbers

```
TAMU_Core_Sw(config)# interface g0/1
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 g0/2
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 20
TAMU_Core_Sw(config)# interface g0/3
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 30
TAMU_Core_Sw(config-if)# exit
TAMU_Core_Sw(config)# interface g0/4
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 40
TAMU_Core_Sw(config)# interface g0/5
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 50
TAMU_Core_Sw(config)# interface g0/6
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 60
TAMU_Core_Sw(config)# interface g0/7
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 70
TAMU_Core_Sw(config)# interface g0/8
TAMU_Core_Sw(config-if)# switchport mode access
```

```
TAMU_Core_Sw(config-if)# switchport access vlan 80
TAMU_Core_Sw(config)# interface g0/9
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 90
TAMU_Core_Sw(config)# interface g0/10
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 100
TAMU_Core_Sw(config)# interface g0/11
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 110
TAMU_Core_Sw(config)# interface g0/12
TAMU_Core_Sw(config-if)# switchport mode access
TAMU_Core_Sw(config-if)# switchport access vlan 120
TAMU_Core_Sw(config-if)# end
TAMU_Core_Sw# copy run start
```

- Configure trunk ports

```
TAMU_Core_Sw(config)# interface g0/13
TAMU_Core_Sw(config-if)# switchport mode trunk
TAMU_Core_Sw(config-if)#end
TAMU_Core_Sw# copy run start
```