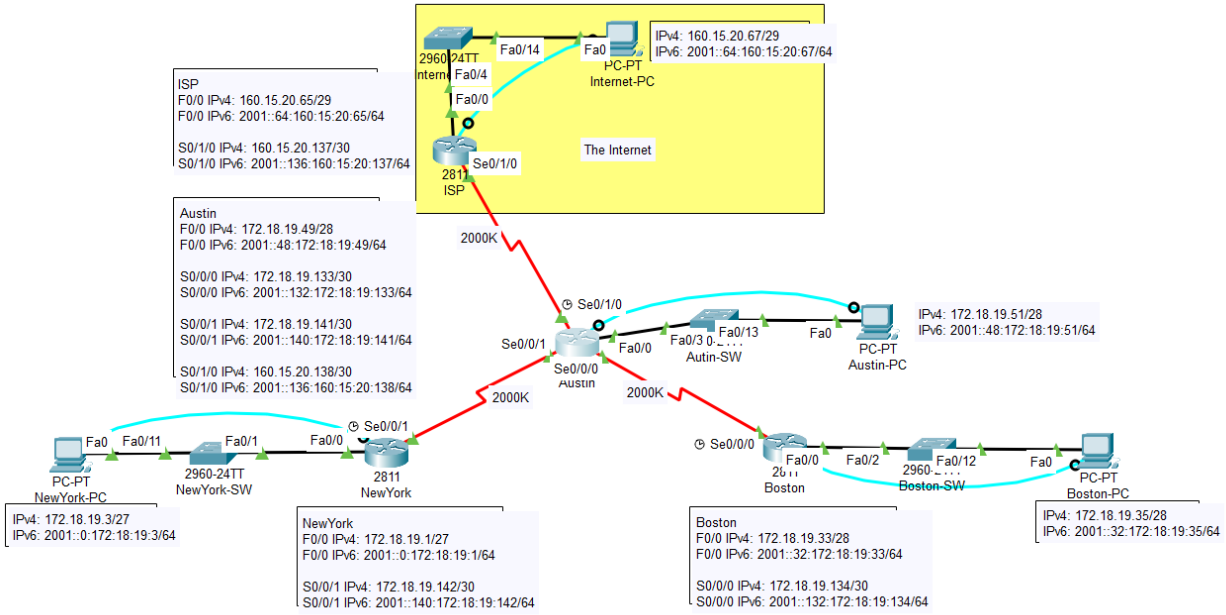
Justin Sterlacci
Internetworking
Professor Cannistra
April 9th, 2023

Lab 8 Lab Report

Lab Description:
Set up a Network, Static Routing, and Dynamic OSPF routing in both IPv4 and IPv6.

Topography:



Syntax:

CLI Command	Description	Mode of Cisco OIS
ping	Used to ping ip addresses from a PC. You can ping other PC's or switches with this.	Windows CMD
Logging synchronous	Forces error messages to be on its own line, rather than interrupt a line that you're typing on.	Console Line
Enable	Enter Privileged Mode	User Mode
Conf t	Enter Global Configurator Mode	Privileged Mode
Line con 0	Enter the Console Line	Global Configurator Mode
Hostname	Used to name a switch or PC	Privileged Mode
Password	Used to set a password	Privileged Mode

Login	Used to require the password to utilize User Mode	Global Configurator Mode
Enable password	Used to set an unencrypted Privileged Password	Global Configurator Mode
Show ip interface brief (sh ip int brief)	Displays a brief list of all interfaces	Privileged Mode
vtp domain INETLAB	Renames the VTP domain from NULL to INETLAB	Global Configurator Mode
Vtp password cisco	Set a password within the VTP Domain	Global Configurator Mode
Vtp mode server/client	Sets the vtp mode between server or client, in the case of this lab.	Global Configurator Mode
Switchport mode access	Changes the mode of a switchport to access mode	Line configuration Mode (within a vlan)
Switchport trunk encapsulation dot1q	Sets up the switch to switch connect to use IEEE 802.1Q encapsulation	Within a vlan with a multi-Connection switch
Switchport mode trunk	Sets the mode for the switchport to trunk	Within a vlan
Spanning-tree vlan xx root primary	Setting up a spanning tree within a vlan, and setting it to root primary	Privileged mode
Encapsulation dot1q xx	Sets up a VLAN in IEEE 802.1Q within a router	ROUTER Line Configuration Mode(within a sub interface)
Ip route (ip) (SM) (ip)	Sets up a static IP Route	Interface Mode
Router rip	Sets the Router into RIP mode	Global Configuration
Version 2	Sets the RIP version to version 2	Global Configuration
Network (ip address)	Sets the Network for RIPv2 networking	Global Configuration
Ipv6 router ospf 1	Sets the router to have OSPFv3 enabled	Global Configuration
Passive-interface (interface)	Will set the selected interface as a passive interface in OSPFv3	Router Line Configuration mode
Ipv6 ospf 1 area 0	Sets the passive interface in area 0	Interface Configuration

Verification:

A)

```
Austin(config)#do sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 160.15.20.137 to network 0.0.0.0

     160.15.0.0/30 is subnetted, 1 subnets
C       160.15.20.136 is directly connected, Serial0/1/0
     172.18.0.0/16 is variably subnetted, 5 subnets, 2 masks
S       172.18.19.0/28 [1/0] via 172.18.19.142
S       172.18.19.32/28 [1/0] via 172.18.19.134
C       172.18.19.48/28 is directly connected, FastEthernet0/0
C       172.18.19.132/30 is directly connected, Serial0/0/0
C       172.18.19.140/30 is directly connected, Serial0/0/1
S*   0.0.0.0/0 [1/0] via 160.15.20.137
```

B)

```
Austin#sh ipv6 route
IPv6 Routing Table - 11 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
S   ::/64 [1/0]
     via 2001::136:160:15:20:137
S   2001::/64 [1/0]
     via 2001::140:172:18:19:142
C   2001:0:0:48::/64 [0/0]
     via ::, FastEthernet0/0
L   2001::48:172:18:19:49/128 [0/0]
     via ::, FastEthernet0/0
C   2001:0:0:132::/64 [0/0]
     via ::, Serial0/0/0
L   2001::132:172:18:19:133/128 [0/0]
     via ::, Serial0/0/0
C   2001:0:0:136::/64 [0/0]
     via ::, Serial0/1/0
L   2001::136:160:15:20:138/128 [0/0]
     via ::, Serial0/1/0
C   2001:0:0:140::/64 [0/0]
     via ::, Serial0/0/1
L   2001::140:172:18:19:141/128 [0/0]
     via ::, Serial0/0/1
L   FF00::/8 [0/0]
     via ::, Null0
```

C)

```
NewYork#sh ipv6 route
IPv6 Routing Table - 8 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       U - Per-user Static route, M - MIPv6
       I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
       ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
       O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
       D - EIGRP, EX - EIGRP external
S   ::/64 [1/0]
     via 2001::140:172:18:19:141
C   2001::/64 [0/0]
     via ::, FastEthernet0/0
L   2001::172:18:19:1/128 [0/0]
     via ::, FastEthernet0/0
S   2001:0:0:32::/64 [1/0]
     via 2001::140:172:18:19:134
S   2001:0:0:48::/64 [1/0]
     via 2001::140:172:18:19:141
C   2001:0:0:140::/64 [0/0]
     via ::, Serial0/0/1
L   2001::140:172:18:19:142/128 [0/0]
     via ::, Serial0/0/1
L   FF00::/8 [0/0]
     via ::, Null0
```

D)

```
C:\>ping 2001::64:160:15:20:67

Pinging 2001::64:160:15:20:67 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001::64:160:15:20:67:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

E)

```
C:\>ping 2001::32:172:18:19:35

Pinging 2001::32:172:18:19:35 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 2001::32:172:18:19:35:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Conclusion:

I couldn't get the routing for IPv6 to work properly, as each time I attempted to resolve this issue, it continued to not function. I am unsure as to why this is happening as I believe I set up ipv6 static routing properly. This whole lab was a little bit of a learning curve as I have never used IPv6 before this point.