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Internetworking
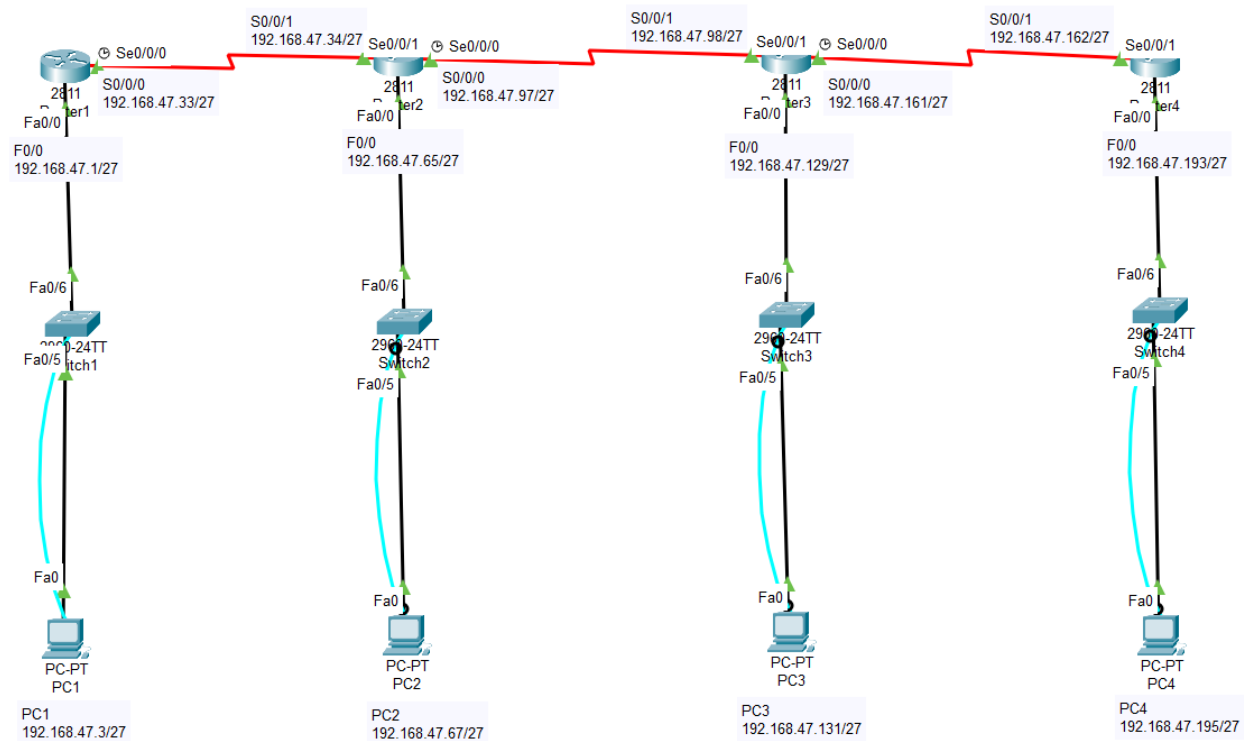Professor Cannistra
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Lab 5 Lab Report

Lab Description:

Set up a Network with Static Line Functionality using Routers, Switches, and PC's.

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

Verification:

C)

```
C:\>ping 192.168.47.1

Pinging 192.168.47.1 with 32 bytes of data:

Reply from 192.168.47.1: bytes=32 time<1ms TTL=255
Reply from 192.168.47.1: bytes=32 time<1ms TTL=255
Reply from 192.168.47.1: bytes=32 time<1ms TTL=255
Reply from 192.168.47.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.47.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```
PC1 – Router1

```
C:\>ping 192.168.47.65

Pinging 192.168.47.65 with 32 bytes of data:

Reply from 192.168.47.65: bytes=32 time<1ms TTL=255
Reply from 192.168.47.65: bytes=32 time<1ms TTL=255
Reply from 192.168.47.65: bytes=32 time<1ms TTL=255
Reply from 192.168.47.65: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.47.65:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```
PC2-Router2

```
C:\>ping 192.168.47.129

Pinging 192.168.47.129 with 32 bytes of data:

Reply from 192.168.47.129: bytes=32 time<1ms TTL=255
Reply from 192.168.47.129: bytes=32 time<1ms TTL=255
Reply from 192.168.47.129: bytes=32 time<1ms TTL=255
Reply from 192.168.47.129: bytes=32 time=6ms TTL=255

Ping statistics for 192.168.47.129:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 6ms, Average = 1ms
```
PC3-Router3

```
C:\>ping 192.168.47.193

Pinging 192.168.47.193 with 32 bytes of data:

Reply from 192.168.47.193: bytes=32 time<1ms TTL=255
Reply from 192.168.47.193: bytes=32 time<1ms TTL=255
Reply from 192.168.47.193: bytes=32 time<1ms TTL=255
Reply from 192.168.47.193: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.47.193:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```
PC4-Router4

D)

```
Router1#sh ip route
Codes: L - local, C - connected, S - static, 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 not set

     192.168.47.0/24 is variably subnetted, 9 subnets, 2 masks
C       192.168.47.0/27 is directly connected, FastEthernet0/0
L       192.168.47.1/32 is directly connected, FastEthernet0/0
C       192.168.47.32/27 is directly connected, Serial0/0/0
L       192.168.47.33/32 is directly connected, Serial0/0/0
S       192.168.47.64/27 [1/0] via 192.168.47.34
S       192.168.47.96/27 [1/0] via 192.168.47.34
S       192.168.47.128/27 [1/0] via 192.168.47.98
S       192.168.47.160/27 [1/0] via 192.168.47.98
S       192.168.47.192/27 [1/0] via 192.168.47.162
```
IP Route Table from Router1

E)

```
Router1#ping 192.168.47.162

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.47.162, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 28/31/33 ms
```
Ping from Router1-Router4. I am also able to ping every other Router, thus having full connectivity.

F)

```
C:\>ping 192.168.47.195

Pinging 192.168.47.195 with 32 bytes of data:

Reply from 192.168.47.195: bytes=32 time=42ms TTL=124
Reply from 192.168.47.195: bytes=32 time=27ms TTL=124
Reply from 192.168.47.195: bytes=32 time=50ms TTL=124
Reply from 192.168.47.195: bytes=32 time=42ms TTL=124

Ping statistics for 192.168.47.195:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 27ms, Maximum = 50ms, Average = 40ms

C:\>tracert 192.168.47.195

Tracing route to 192.168.47.195 over a maximum of 30 hops:

  1    0 ms       0 ms       0 ms      192.168.47.1
  2    7 ms      12 ms      11 ms      192.168.47.34
  3   13 ms      22 ms      19 ms      192.168.47.98
  4   19 ms      29 ms      17 ms      192.168.47.162
  5    0 ms       0 ms       7 ms      192.168.47.195

Trace complete.
```
Ping and a Tracert from PC1-PC4. I can do PC1 to any other PC, thus having full connectivity.

Conclusion:

This Lab wasn't too hard compared to Lab 4 as it took much less time to set up the basic network. I ran into some confusion when it came to the static routing, but once I checked my notes again it clicked, and I was able to complete this Lab to have full connectivity.