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Internetworking
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Lab 4 Lab Report

Description:

Create a Network that connects 5 separate routers to each other, as well as use Microsoft Visio.

The Math:

A) 2^S = 2^5 = 32
32 Subnets Created

B) 2^H – 2 = 2^3 – 2 = 8 – 2 = 6
6 usable hosts per subnet

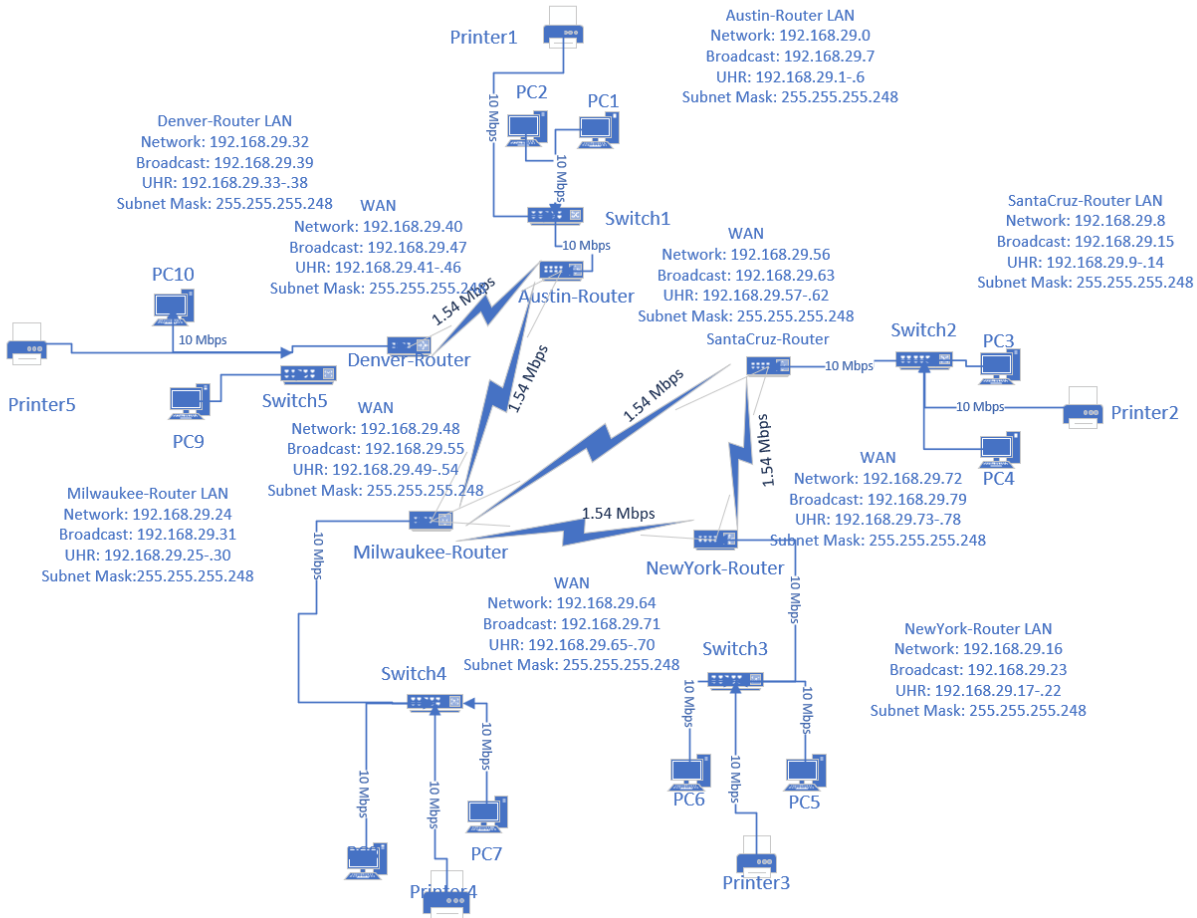
C)

Network (+1)	Usable Host Range	Broadcast (-1)
0	192.168.29.1 - .6	7
8	192.168.29.9 - .14	15
16	192.168.29.17 - .22	23
24	192.168.29.25 - .30	31
32	192.168.29. 33- .38	39
40	192.168.29. 41– .46	47
48	192.168.29.49 – .54	55
56	192.168.29.57 – .62	63
64	192.168.29.65 - .70	71
72	192.168.29.73 - .78	79
80	192.168.29.81 - .86	87
88	192.168.29.87 - .94	95
96	192.168.29.97 - .102	103
104	192.168.29.105 - .110	111
112	192.168.29.113 - .118	119
120	192.168.29.121 - .126	127
128	192.168.29.129 - .134	135
136	192.168.29.137 - .142	143
144	192.168.29.145 - .150	151
152	192.168.29.153 - .158	159
160	192.168.29.161 - .166	167
168	192.168.29.169 – .174	175

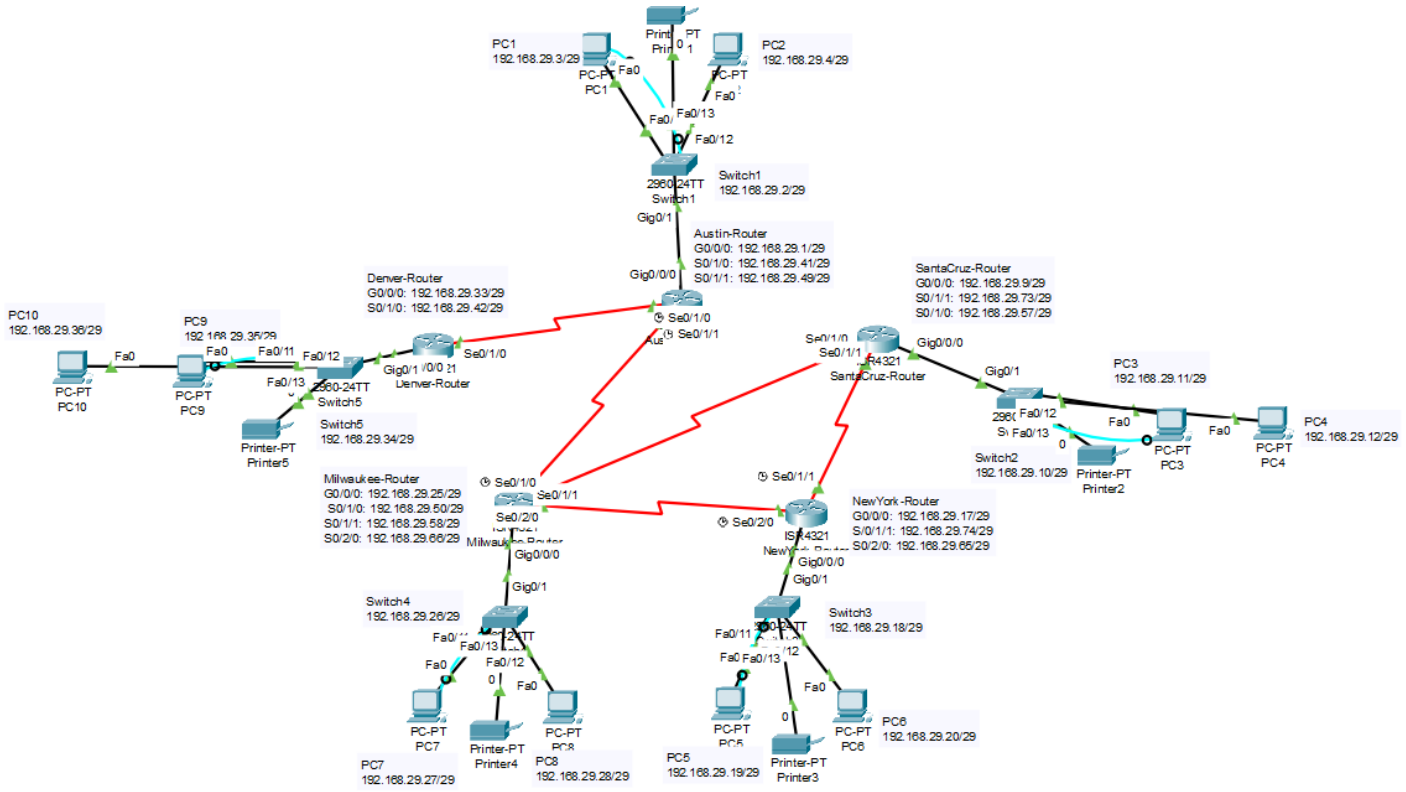
176	192.168.29.177 – .182	183
184	192.168.29.185 – .190	191
192	192.168.29.193 - .198	199
200	192.168.29.201 - .206	207
208	192.168.29.209 - .214	215
216	192.168.29.217 - .222	223
224	192.168.29.225 - .230	231
232	192.168.29.233 - .238	239
240	192.168.29.241 - .246	247
248	192.168.29.249 - .254	255

D) New Subnet Mask:
255.255.255.248

Visio Topology:



Packet Tracer Topology:



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)

Verification:

Pinging Router within interface (Same LAN)

```
C:\>ping  192.168.29.1

Pinging 192.168.29.1 with 32 bytes of data:

Reply from 192.168.29.1: bytes=32 time<1ms TTL=255
Reply from 192.168.29.1: bytes=32 time<1ms TTL=255
Reply from 192.168.29.1: bytes=32 time<1ms TTL=255
Reply from 192.168.29.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.29.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Pinging PC in another interface (Different LAN)

```
C:\>ping 192.168.29.20

Pinging 192.168.29.20 with 32 bytes of data:

Reply from 192.168.29.1: Destination host unreachable.
Reply from 192.168.29.1: Destination host unreachable.
Reply from 192.168.29.1: Destination host unreachable.
Reply from 192.168.29.1: Destination host unreachable.

Ping statistics for 192.168.29.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

I was not able to get full connectivity within the entire Network. I believe this is occurring because in this lab we didn't set up Static Routing.

Conclusion:

This lab didn't seem that difficult on paper, however it was a little bit of a headache to deal with when doing the lab. One of the learning curves was to learn how to operate Microsoft Visio, as I've never used the program before. I didn't run into any massive issues, outside of errors on

my end when I entered same IP address for both a PC and a Switch, which caused a bit of a headache until I realized it.