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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:**

Timeline

Description automatically generated  
  
**Packet Tracer Topology:**  
Map

Description automatically generated

**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)Text

Description automatically generatedPinging PC in another interface (Different LAN)  
Text

Description automatically generated  
  
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.