**Networking Coursework**

Part 5: Examine the Physical Topology

Step 1: Question: How many wires are connected to the switch in the blue rack?

2

Step 2: Question: What is located on the table to the right of the blue rack?

The configuration terminal

Step 3: Question: Why are there two orange cables connected to each device?

To connect the devices to the network

Step 4: Question: Why is there no rack to hold the equipment?

Because there is no equipment needing a rack in that location because the routers and switches connected through the cloud are located in a separate location network

|  |  |
| --- | --- |
| Class B Address | 147.144.X.X (/16) |
| Number of host bits | 16 |
| Subnet Mask | 255.255.192.0(/18) |

Addressing Table

|  |  |
| --- | --- |
| **Device** | **IP Address** |
| Subnet-1 Network Address | 147.144.0.0 |
| Switch-1 VLAN1 | 147.144.1.0 |
| PC-1 | 147.144.2.0 |
| Laptop-1 | 147.144.2.1 |
| Subnet-2 Network Address | 147.144.64.0 |
| Switch-2 VLAN1 | 147.144.65.0 |
| PC-2 | 147.144.66.0 |
| Laptop-2 | 147.144.66.1 |
| Subnet-3 Network Address | 147.144.128.0 |
| Switch-3 VLAN1 | 147.144.129.0 |
| PC-3 | 147.144.130.0 |
| PC-4 | 147.144.130.1 |
| Subnet-4 Network Address | 147.144.192.0 |
| Switch-4 VLAN1 | 147.144.193.0 |
| PC-5 | 147.144.194.0 |

**Report:**

Before doing the host bits, let’s determine the network portion of the address; my surname is Roman so the first 2 octets would be 147 and 144:

* R is the 18th letter of the alphabet: 130 + (18 - 1) = 147
* O is the 15th letter of the alphabet: 130 + (15 - 1) = 144

Since I’ve been assigned a Class B address, the amount of host bits available would be 16. With 4 subnets in the network we would need to borrow 2 bits (2n = 4, n = borrowed bits = 2), the new subnet thus being 255.255.192.0.

Then to get the range of the subnet we would have to divide the 2n by 256, n being the number of host bits left: 214/256 = 16,384/256 = 64. So the subnet range would be 64.

Subnet ranges:

Subnet 1: 147.144.0.0 – 147.144.63.255

Subnet 2: 147.144.64.0 – 147.144.127.255

Subnet 3: 147.144.128.0 – 147.144.191.255

Subnet 4: 147.144.192.0 – 147.144.255.255

IP Address assignment:

The IP Adresses can be seen in the table above; I would assign the first octet to the router which is why it is left out in the table and then go to the next host number to allow further expansion if necessary in a hypothetical situation.

Router 🡪 147.144.0.X (Subnet 1)

Switch 🡪 147.144.1.X (Subnet 1)

Other End devices 🡪 147.144.2.X (Subnet 1)

And the other subnets follow the same pattern to further allow expansion, let it be for extra routers, switches or other end devices.

Realistically, the all usable host from the ranges I created will never be fully used but it’s to ensure easy expansion in a hypothetical situation.