**LAActivity Worksheet**

**Week 6 - Packet Tracer – Subnet an IPv4 Network**

**Step 1: Understand the Requirements**

In this scenario, you are a network technician assigned to install a new network for a customer. You must create multiple subnets out of the 192.168.0.0/24 network address space to meet the following requirements:

a.     The first subnet is the LAN-A network. You need a minimum of 50 host IP addresses.

b.     The second subnet is the LAN-B network. You need a minimum of 40 host IP addresses.

c.     You also need at least two additional unused subnets for future network expansion.

**Step 2: Subnet Mask??**

Find out suitable subnet mask to be used based on the given requirement.

**Step 3: Prepare Subnetting Table:**

When you have determined which subnet mask meets all of the stated network requirements, derive each of the subnets. List the subnets from first to last in the table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subnet**  **(No of Host)** | **Block Size** | **Prefix** | **Subnet Mask** | **Network Address**  **(First Address)** | **Broadcast Address**  **(Last Address)** | **Range of usable IP** |
| **LAN A (50)** | **64** | **/26** | **255.255.255.192** | **192.168.0.0 (+60)** | **192.168.0.63** | **192.168.0.1 - 192.168.0.64** |
| **LAN B (40)** | **64** | **/26** | **255.255.255.192** | **192.168.0.64 (+60)** | **192.168.0.127** | **192.168.0.65 - 192.168.0.128** |
| **LAN C** | **64** | **/26** | **255.255.255.192** | **192.168.0.128 (+60)** | **192.168.0.191** | **192.168.0.129 - 192.168.0.192** |
| **LAB D** | **64** | **/26** | **255.255.255.192** | **192.168.0.192 (+60)** | **192.168.0.255** | **192.168.0.193 - 192.168.0.255** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subnet**  **(No of Host)** | **Block Size** | **Prefix** | **Subnet Mask** | **Network Address**  **(First Address)** | **Broadcast Address**  **(Last Address)** | **Range of usable IP** |
| **BR1 LAN (40)** | **64** | **/26** | **255.255.255.192** | **192.168.33.128** | **192.168.0.63** | **192.168.0.1 - 192.168.0.64** |
| **BR2 LAN (25)** | **32** | **/2** | **255.255.255.192** | **192.168.0.192** | **192.168.0.127** | **192.168.0.65 - 192.168.0.128** |
| **BR2 IoT LAN (5)** | **8** | **/29** | **255.255.255.192** | **192.168.0.224** | **192.168.0.191** | **192.168.0.129 - 192.168.0.192** |
| **BR2 CCTV (4)** | **8** | **/29** | **255.255.255.248** |  |  |  |
| **BR2 HVAC C2LAN (4)** | **8** | **/29** | **255.255.255.248** |  |  |  |
| **BR1-BR2 LAN (2)** | **4** | **/30** | **255.255.255.248** |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Device Interface** |
| **BR1 LAN (40)** | **64** | **/26** | **255.255.255.192** | **192.168.33.128** |
| **BR2 LAN (25)** | **32** | **/2** | **255.255.255.192** | **192.168.0.64 (+60)** |
| **BR2 IoT LAN (5)** | **8** | **/29** | **255.255.255.192** | **192.168.0.128 (+60)** |
| **BR2 CCTV (4)** | **8** | **/29** | **255.255.255.248** |  |
| **BR2 HVAC C2LAN (4)** | **8** | **/29** | **255.255.255.248** |  |
| **BR1-BR2 LAN (2)** | **4** | **/30** | **255.255.255.248** |  |

**Step 4: Finalize the Addressing Table:**

Assign IP addresses based on the following criteria: Use the ISP Network settings as an example.

a.     Assign the first subnet to LAN-A.

1)    Use the first host address for the CustomerRouter interface connected to LAN-A switch.

2)    Use the second host address for the LAN-A switch. Make sure to assign a default gateway address for the switch.

3)    Use the last host address for PC-A. Make sure to assign a default gateway address for the PC.

b.     Assign the second subnet to LAN-B.

1)    Use the first host address for the CustomerRouter interface connected to LAN-B switch.

2)    Use the second host address for the LAN-B switch. Make sure to assign a default gateway address for the switch.

3)    Use the last host address for PC-B. Make sure to assign a default gateway address for the PC.

**Addressing Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Default Gateway** |
| CustomerRouter | G0/0 | 192.168.0.1 | 255.255.255.192 | N/A |
|  | G0/1 | 192.168.0.65 | 255.255.255.192 | *N/A* |
|  | S0/1/0 | 209.165.201.2 | 255.255.255.252 | *N/A* |
| LAN-A Switch | VLAN1 | 192.168.0.2 | 255.255.255.192 |  |
| LAN-B Switch | VLAN1 | 192.168.0.66 | 255.255.255.192 |  |
| PC-A | NIC | 192.168.0.60 | 255.255.255.192 |  |
| PC-B | NIC | 192.168.0.128 | 255.255.255.192 |  |
| ISPRouter | G0/0 | 209.165.200.225 | 255.255.255.224 | N/A |
|  | S0/1/0 | 209.165.201.1 | 255.255.255.252 | *N/A* |
| ISPSwitch | VLAN1 | 209.165.200.226 | 255.255.255.224 | 209.165.200.225 |
| ISP Workstation | NIC | 209.165.200.235 | 255.255.255.224 | 209.165.200.225 |
| ISP Server | NIC | 209.165.200.240 | 255.255.255.224 | 209.165.200.225 |