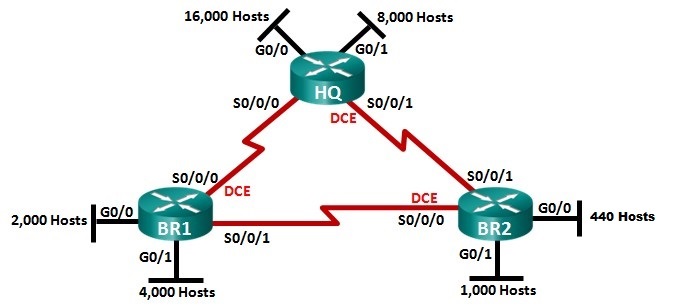
Lab – Designing and Implementing a VLSM Addressing Scheme 

1. *Continue from Assign#10A – As described in class, use the following corrected values for this assignment:*

**Using Provided Network: 177.61.128.0 /17**

**Modified correct answer to Step 2d: 177.61.128.0 & 177.61.192.0**

**Modified correct answers to Step 3d: 177.61.192.0 & 177.61.224.0**

* 1. Determine the next largest subnet.

1. What is the subnet description? \_\_\_\_\_ BR1 G0/1\_\_\_\_\_
2. How many IP addresses are required for the next largest subnet? \_\_\_4,000\_\_\_
3. What subnet mask can support that many host addresses? \_\_\_\_\_255.255.240.0\_\_\_\_\_
4. How many total host addresses can that subnet mask support? \_\_\_\_\_4,094\_\_\_\_\_
5. Can you subnet the remaining subnet again and still support this subnet? \_\_\_yes\_\_\_
6. What are the two network addresses that would result from this subnetting?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_177.61.224.0/20, 177.61.240/20\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the first network address for this subnet.

* 1. Determine the next largest subnet.

1. What is the subnet description? \_\_\_\_\_BR1 G0/0\_\_\_\_\_
2. How many IP addresses are required for the next largest subnet? \_\_\_2,000\_\_\_
3. What subnet mask can support that many host addresses?

\_\_\_\_\_255.255.248.0\_\_\_\_\_

1. How many total host addresses can that subnet mask support? \_\_\_\_\_2,046\_\_\_\_\_
2. Can you subnet the remaining subnet again and still support this subnet? \_\_\_yes\_\_\_
3. What are the two network addresses that would result from this subnetting?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_177.61.240.0/21, 177.61.248.0/21\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the first network address for this subnet.

* 1. Determine the next largest subnet.

1. What is the subnet description? \_\_\_\_\_\_BR2 G0/1\_\_\_\_\_\_
2. How many IP addresses are required for the next largest subnet? \_\_\_1,000\_\_\_
3. What subnet mask can support that many host addresses? \_\_\_\_\_255.255.252.0\_\_\_\_\_
4. How many total host addresses can that subnet mask support? \_\_\_\_\_1022\_\_\_\_\_
5. Can you subnet the remaining subnet again and still support this subnet? \_\_\_yes\_\_\_
6. What are the two network addresses that would result from this subnetting?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_177.61.248.0/22, 177.61.252.0/22\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the first network address for this subnet.

* 1. Determine the next largest subnet.

1. What is the subnet description? \_\_\_\_\_\_BR2 G0/0\_\_\_\_\_\_
2. How many IP addresses are required for the next largest subnet? \_\_\_440\_\_\_
3. What subnet mask can support that many host addresses? \_\_\_\_\_\_255.255.254.0\_\_\_\_\_\_
4. How many total host addresses can that subnet mask support? \_\_\_\_\_510\_\_\_\_\_
5. Can you subnet the remaining subnet again and still support this subnet? \_\_\_yes\_\_\_
6. What are the two network addresses that would result from this subnetting?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_177.61.252.0/23, 177.61.254.0/23\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the first network address for this subnet.

* 1. Determine the subnets needed to support the serial links.

1. How many host addresses are required for each serial subnet link? \_\_\_2\_\_\_
2. What subnet mask can support that many host addresses? \_\_\_\_255.255.255.252\_\_\_\_
   * 1. Continue subnetting the first subnet of each new subnet until you have four /30 subnets. Write the first three network addresses of these /30 subnets below.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_177.61.254.0/30, 177.61.254.4/30, 177.61.254.8/30\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + 1. Enter the subnet descriptions for these three subnets below.

\_\_\_\_\_\_\_\_\_\_\_\_\_ HQ – BR1 Serial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_ HQ – BR2 Serial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_ BR1 – BR2 Serial \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Design the VLSM Address Scheme
   1. Calculate the subnet information.

Use the information that you obtained in Part 1 to fill in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subnet Description | Number of Hosts Needed | Network Address /CIDR | First Host Address (not /CIDR) | Broadcast Address (not /CIDR) |
| HQ G0/0 | 16,000 | 177.61.128.0/18 | 177.61.128.1 | 177.61.191.255 |
| HQ G0/1 | 8,000 | 177.61.192.0/19 | 177.61.192.1 | 177.61.223.255 |
| BR1 G0/1 | 4,000 | 177.61.224.0/20 | 177.61.224.1 | 177.61.239.255 |
| BR1 G0/0 | 2,000 | 177.61.240.0/21 | 177.61.240.1 | 177.61.247.255 |
| BR2 G0/1 | 1,000 | 177.61.248.0/22 | 177.61.248.1 | 177.61.251.255 |
| BR2 G0/0 | 440 | 177.61.252.0/23 | 177.61.252.1 | 177.61.253.255 |
| HQ S0/0/0 – BR1 S0/0/0 | 2 | 177.61.254.0/30 | 177.61.254.1 | 177.61.254.3 |
| HQ S0/0/1 – BR2 S0/0/1 | 2 | 177.61.254.4/30 | 177.61.254.5 | 177.61.254.7 |
| BR1 S0/0/1 – BR2 S0/0/0 | 2 | 177.61.254.8/30 | 177.61.254.9 | 177.61.254.11 |

* 1. Complete the device interface address table.

Assign the **first host** address in the subnet to the **Ethernet** interfaces. HQ should be given the **first host** address on the **Serial** links to BR1 and BR2. BR1 should be given the **first host** address for the **serial** link to BR2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address (not /CIDR) | Subnet Mask (not /CIDR) | Device Interface |
| HQ | G0/0 | 177.61.128.1 | 255.255.192.0 | 16,000 Host LAN |
| G0/1 | 177.61.192.1 | 255.255.224.0 | 8,000 Host LAN |
| S0/0/0 | 177.61.254.1 | 255.255.255.252 | BR1 S0/0/0 |
| S0/0/1 | 177.61.254.5 | 255.255.255.252 | BR2 S0/0/1 |
| BR1 | G0/0 | 177.61.240.1 | 255.255.248.0 | 2,000 Host LAN |
| G0/1 | 177.61.224.1 | 255.255.240.0 | 4,000 Host LAN |
| S0/0/0 | 177.61.254.2 | 255.255.255.252 | HQ S0/0/0 |
| S0/0/1 | 177.61.254.9 | 255.255.255.252 | BR2 S0/0/0 |
| BR2 | G0/0 | 177.61.252.1 | 255.255.254.0 | 440 Host LAN |
| G0/1 | 177.61.248.1 | 255.255.252.0 | 1,000 Host LAN |
| S0/0/0 | 177.61.254.10 | 255.255.255.252 | BR1 S0/0/1 |
| S0/0/1 | 177.61.254.6 | 255.255.255.252 | HQ S0/0/1 |