Module 1 Mastery Assessment (Lab)

Objectives

In this Performance Assessment, the student will:

- Given a scenario, determine how many subnets are needed
- Document the order that the networks need to be addressed
- Document the Network Addresses, CIDR Prefixes, First Host, Last Host and Broadcast Addresses for the subnets

Assignment

Document a VLSM Addressing scheme from a given scenario.

Equipment/Supplies Needed

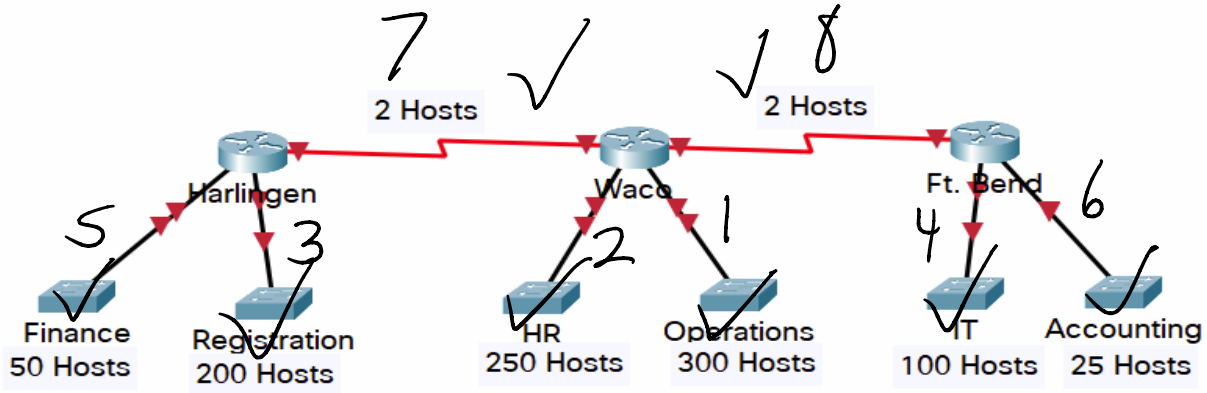
- Scratch paper to work out subnet calculations
- Computer to upload the completed Performance Assessment

Part 1 - Subnetting Scenario

175.15.0.0/16

Your company has been given the IP address of **175.15.0.0/16**. You will need to subnet according to the network with the largest number of hosts, down to the WAN links (router-ro-router connections).

Here is a sketch of what you need to implement:



Type A = 255.0.0.0 Range 0.0.0.0 to 127.255.255.255

Type B = 255.255.0.0 Range 128.0.0.0. To 191.255.255.255

Type C = 255.255.255.0 Range 192.0.0.0 to 192.255.255.255

1. How many subnets will you need?

8

128| 64|32|16| 8| 4|2|1 Subnets Go Right

256|128|64|32|16|8|4|2 Host go Left

2. List the order for addressing this network layout

	Router Name and Department	Number of Hosts
1	Waco / operations ✓	300
2	Waco / hr ✓	250
3	Harlingen / Registration ✓	200
4	Ft. Bend / IT ✓	100
5	Harlingen / Finance ✓	50
6	Ft. Bend / Accounting ✓	25
7	Harlingen / Waco ✓	2
8	Ft. Bend / Waco ✓	2

3. List your table of subnet IDs, Valid Hosts, and broadcast IDs for each subnet.

	Network #	CIDR / #	First Host ID	Last Host ID	Broadcast ID
300	175.15.0.0 +2	/23	175.15.0.1	175.15.1.254	175.15.1.255
250	175.15.2.0 +1	/24	175.15.2.1	175.15.2.254	175.15.2.255
200	175.15.3.0 +1	/24	175.15.3.1	175.15.3.254	175.15.3.255
100	175.15.4.0 +128	/25	175.15.4.1	175.15.4.126	175.15.4.127
50	175.15.4.128 +64	/26	175.15.4.129	175.15.4.190	175.15.4.191
25	175.15.4.192 +32	/27	175.15.4.193	175.15.4.222	175.15.4.223
2	175.15.4.224 +4	/30	175.15.4.225	175.15.4.226	175.15.4.227
2	175.15.4.228 +4	/30	175.15.4.229	175.15.4.230	175.15.4.231

128| 64|32|16| 8| 4|2|1

256|128|64|32|16|8|4|2

Part 2 - Supernetting Calculations

4. Supernet the following networks into a Single Summary Route:

12.50.0.0 00001100.00110010.00000000.00000000
12.51.0.0 00001100.00110011.00000000.00000000
12.52.0.0 00001100.00110100.00000000.00000000

Summary Route Answer: 12.48.0.0/13

5. Supernet the following networks into a Single Summary Route:

161.109.40.0 10100001.01101101.00101000.00000000
161.109.41.0 10100001.01101101.00101001.00000000
161.109.42.0 10100001.01101101.00101010.00000000

128| 64|32|16| 8| 4|2|1

256|128|64|32|16|8|4|2

Summary Route Answer: 161.109.40.0/22

6. Supernet the following networks into a Single Summary Route:

192.168.105.0 11000000.10101000.01101001.00000000
192.168.106.0 11000000.10101000.01101010.00000000
192.168.107.0 11000000.10101000.01101011.00000000

Summary Route Answer: 192.168.104.0/22

Part 3 - IPv6 Addressing

7. Compress the following IPv6 Address: Answer: 2001:1212::abcd:0:0:a113

8. Compress the following IPv6 Address: Answer: 2001:acad:1234::eded:0

9. Decompress the following IPv6 Address: Answer: 2001:1234:acad:0400:0000:0000:abab:0200

10. Decompress the following IPv6 Address: Answer: 2001:0300:2b1a:0000:0000:0000:acad:0000

Grading Rubric

Grading Criteria	**Point Value**
Correct Answer for Question #1	5 Points
Correct Answer for Question #2 - Addressing Order	20 Points
Correct Answer for Question #3 - VLSM Scheme	40 Points
Correct Answer for Question #4	5 Points
Correct Answer for Question #5	5 Points
Correct Answer for Question #6	5 Points
Correct Answer for Question #7	5 Points
Correct Answer for Question #8	5 Points
Correct Answer for Question #9	5 Points
Correct Answer for Question #10	5 Points
TOTAL	100 Points