[**11.5.5 - Packet Tracer - Subnet an IPv4 Network**](https://contenthub.netacad.com/itn#11.5.5)

Part 1: Subnet the Assigned Network

### **Step 1: Create a subnetting scheme that meets the required number of subnets and required number of host addresses.**

1. How many host addresses are needed in the largest required subnet?

Answer: 50

2. What is the minimum number of subnets required?

Answer: The requirements stated above specify two company networks plus two additional networks for future expansion. So, the answer is a minimum of four networks.

3. The network that you are tasked to subnet is 192.168.0.0/24. What is the /24 subnet mask in binary?

Answer: 1111111.11111111.11111111.00000000

4. In the network mask, what do the ones represent?

Answer: The ones represent the network portion.

5. In the network mask, what do the zeros represent?

Answer: The zeroes represent the host portion.

6. (/25) 11111111.11111111.11111111.10000000  
Dotted decimal subnet mask equivalent:

255.255.255.128

Number of subnets? Number of hosts?

Two subnets (2^1) and 128 hosts (2^7) – 2 = 126 hosts per subnet

(/26) 11111111.11111111.11111111.11000000

Dotted decimal subnet mask equivalent: 255.255.255.192

Number of subnets? Number of hosts? Four subnets (2^2) and 64 hosts (2^6) – 2 = 62 hosts per subnet

(/28) 11111111.11111111.11111111.11110000

Dotted decimal subnet mask equivalent: 255.255.255.240

Number of subnets? Number of hosts? Sixteen subnets (2^4) and 16 hosts (2^4) – 2 = 14 hosts per subnet

(/29) 11111111.11111111.11111111.11111000

Dotted decimal subnet mask equivalent: 255.255.255.248

Number of subnets? Number of hosts? Thirty two subnets (2^5) and 8 hosts (2^3) – 2 = 6 hosts per subnet

(/30) 11111111.11111111.11111111.11111100

Dotted decimal subnet mask equivalent: 255.255.255.252

Number of subnets? Number of hosts? Sixty four subnets (2^6) and 4 hosts (2^2) – 2 = 2 hosts per subnet

7. Considering your answers above, which subnet masks meet the required number of minimum host addresses?

Answer: /25, /26

8. Considering your answers above, which subnet masks meets the minimum number of subnets required?

Answer: /26, /27, /28, /29, /30 will give the required number of subnets.

9. Considering your answers above, which subnet mask meets both the required minimum number of hosts and the minimum number of subnets required?

Answer: /26 will give you the four subnets that are required, and 62 hosts per subnet, which is greater than the 50 hosts required for the first subnet.

[**11.7.5 - Packet Tracer - Subnetting Scenario**](https://contenthub.netacad.com/itn#11.7.5)

## Part 1: Design an IP Addressing Scheme

### **Step 1: Subnet the 192.168.100.0/24 network into the appropriate number of subnets.**

1. Based on the topology, how many subnets are needed?

Answer: 5 Four for the LANs, and one for the link between the routers.

1. How many bits must be borrowed to support the number of subnets in the topology table?

Answer: 3

1. How many subnets does this create?

Answer: 8

1. How many usable hosts does this create per subnet?

Answer: 30

[**11.9.3 - Packet Tracer - VLSM Design and Implementation Practice**](https://contenthub.netacad.com/itn#11.9.3)

Part 1: Examine the Network Requirements

Step 1: Determine the number of subnets needed.

1. How many subnets are needed in the network topology?

Answer: 5

##### Step 2: Determine the subnet mask information for each subnet.

1. Which subnet mask will accommodate the number of IP addresses required for **ASW-1**?

Answer: 255.255.255.240/28

1. How many usable host addresses will this subnet support?

Answer: 14 (10.11.48.97 - 10.11.48.110)

1. Which subnet mask will accommodate the number of IP addresses required for **ASW-2**?

Answer: 255.255.255.224 /27

1. How many usable host addresses will this subnet support?

Answer: 30 (10.11.48.65 - 10.11.48.94)

1. Which subnet mask will accommodate the number of IP addresses required for **ASW-3**?

Answer: 255.255.255.248 /29

1. How many usable host addresses will this subnet support?

Answer: 6 (10.11.48.113 - 10.11.48.118)

1. Which subnet mask will accommodate the number of IP addresses required for **ASW-4**?

Answer: 255.255.255.192 /26

1. How many usable host addresses will this subnet support?

Answer: 62 (10.11.48.1 - 10.11.48.62)

1. Which subnet mask will accommodate the number of IP addresses required for the connection between **Building1** and **Building2**?

Answer: 255.255.255.252/30