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Variable-length subnet mask (VLSM) is a technology concept that is used throughout net- works that have great subnetting requirements but require the least amount of waste and most ef?cient use of broadcast traffic possible. Imagine for a moment that you work for MyCorp again and that you have a user situation in your office that breaks down as shown in Figure 2.4.

As you can see, the Microsoft Certification Exam is broken up into four individual subnets, and each of those subnets has a different user requirement. In the first subnet, you require 200 users, in the second you require 30, and so forth. Normally, you would break this network up by sub- netting it into four individual groups, Subnet A, B, C, and D. But letâ€™s look at what happens if you do that; see Figure 2.5.

On the right side of the ?gure, youâ€™ll see the maximum number of hosts that can be con- tained on the subnet. To the right of this, youâ€™ll see your actual number of users, and then on the far right you can see the amount of wasted addresses within this space. Now, as you can imagine, especially with high-end networking, space matters.

Part of being an enterprise administrator is understanding that your ultimate goal for your enterprise is to make sure that everything is running as often as possible and as ef?- ciently as possible. In your career up until this point, someone has undoubtedly CCNA Exam Answers told you that the best way to become successful in life is not to waste anything. This includes money, opportunities, and, of course, host addresses. Instead, consider what would happen if you could apply an individual subnet address for each of these subnetworks. For instance, using some basic calculations that you learned earlier, you could determine that the following masks could be used based on the host requirements:

Subnetwork A: Requires 200 hosts 8 bits 255.255.255.0 subnet mask

Subnetwork B: Requires 90 hosts 7 bits 255.255.255.128 subnet mask

Subnetwork C: Requires 60 hosts 6 bits 255.255.255.192 subnet mask

Subnetwork D: Requires 30 hosts 5 bits 255.255.255.224 subnet mask

This sure would be nice if you could do it, wouldn?t it? The truth is, you can. VLSM allows administrators to apply a more specific subnet mask to a preexisting subnet mask to further define a subnet. This is extraordinarily useful for complex organizations and can really optimize your efficiency. Consider your first example, where the same mask was applied throughout, and consider your latest example, shown in Figure 2.6, which uses VLSM.

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