Article Side

Fast Pass MCSE Exams you have one octet that has two written in shorthand by Zhuimeng

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IPv6 addresses are beautiful because of their absolute simplicity. Before, when you dealt with an IPv4 address, there was a lot of confusion. What part of the address belongs to the Internet service provider? Where is the subnet portion of the address? Better yet, where is the host? In IPv6, these are no longer concerns.

All IPv6 addresses can be broken down into two distinct portions, which can further be subdivided to a point that just about every portion of the address is accounted for. On the base level, IPv6 addresses are broken into two 64-bit portions, one of which is called the MCSE Exam pre?x portion and one of which is called the host portion, or the interface ID . Visually, the address looks like Figure 2.7.

In one fell swoop, you can cover the second portion of the address. Itâ€™s just the host por- tion of the network. In more technical terms, the 65th to the 128th bit of your address is completely dedicated to assigning the address to your hosts. That?s a lot of hosts! Itâ€™s more, in fact, than even some of the largest enterprises on the planet would ever use. However, when the IEEE designed IPv6, it didn?t want to run into a situation where anyone would ever have to worry about having ?enough?host addresses ever again. I think itâ€™s safe to say they?ve succeeded. 2^64 is such a large number that if you were to take that many pen- nies and stack them up one after another, you?d be able to reach Mars more than 300,000 times. Or, if you?d like to think of it in more CompTIA Exams, you?d be able to have 230,584,300 times the amount of money of Bill Gates (when he was worth 80 billion).

The first portion of an IPv6 address, called the address pre?x, is a little bit more compli-cated, but not too much so. To begin, one of the real issues that IPv6 was meant to ?x was to give service providers their own reserved section of the IP address that would identify whatever service provider was issuing the address. Accordingly, the IEEE assigned the first 48 bits of the pre?x portion of the address to the service provider. Then, with the remain- ing 16 bits, it allocated a portion to be used for subnet addressing. You can see another visual interpretation of this in Figure 2.8.

The main reason that only 16 bits has been assigned to the subnet portion is actually pretty reasonable. After all, how often do you run across an organization that will need more than 65,536 subnets? The answer is not very often. And thus, only a small portion of the overall 128 bits is assigned. In just a moment, Iâ€™ll go over how subnetting this portion of an address is slightly different than it was with IPv4. But for the moment, Iâ€™ll take a step back and talk about those first 48 bits before the 16 bits of the subnet portion.

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