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INTRODUCTION When you configure the TCP/IP protocol on a Microsoft Windows computer, an IP address, subnet mask, and usually a default gateway are required in the TCP/IP configuration settings. To configure TCP/IP correctly, it is necessary to understand how TCP/IP networks are addressed and divided into networks and subnetworks. This article is intended as a general introduction to the concepts of IP networks and subnetting. A glossary is included at the end of article. MORE INFORMATION The success of TCP/IP as the network protocol of the Internet is largely because of its ability to connect together networks of different sizes and systems of different types. These networks are arbitrarily defined into three main classes (along with a few others) that have predefined sizes, each of which can be divided into smaller subnetworks by system administrators. A subnet mask is used to divide an IP address into two parts. One part identifies the host (computer), the other part identifies the network to which it belongs. To better understand how IP addresses and subnet masks work, look at an IP (Internet Protocol) address and see how it is organized. IP addresses: Networks and hosts An IP address is a 32-bit number that uniquely identifies a host (computer or other device, such as a printer or router) on a TCP/IP network. IP addresses are normally expressed in dotted-decimal format, with four numbers separated by periods, such as 192.168.123.132. To

understand how subnet masks are used to distinguish between hosts, networks, and subnetworks, examine an IP address in binary notation. For example, the dotted-decimal IP address 192.168.123.132 is (in binary notation) the 32 bit number 11000000101010000111101110000100. This number may be hard to make sense of, so divide it into four parts of eight binary digits. These eight bit sections are known as octets. The example IP address, then, becomes 11000000.10101000.01111011.10000100. This number only makes a little more sense, so for most uses, convert the binary address into dotted-decimal format (192.168.123.132). The decimal numbers separated by periods are the octets converted from binary to decimal notation. 100Test

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