What happens at the Presentation layer? The Presentation layer is responsible for dealing with file formats so that the contents of a file transmitted by one computer can be received and displayed—or presented—by any other computer on the network. Presentation layer activities include compression, uncompression, encryption, decryption, and conversion between ASCII-coded and EBCDIC-coded files. Most Presentation layer activities are handled by application software and utilities.

What happens at the Session layer? Each time you log on to a network, you begin what technicians refer to as a “session.” The Session layer establishes, maintains, and terminates sessions. Because you can be logged in to more than one session at a time, it is also important for the Session layer to keep track of what is happening in each session. SSL (Secure Sockets Layer), which is discussed in Chapter 6, is an example of a Session layer protocol. SSL establishes a secure connection (session) while you make online purchases, for example.

What happens at the Transport layer? The basic functions of the Transport layer are to pack data for efficient transmission and assign a sequence number to each packet so that the packets can be reassembled in proper order. Protocols such as TCP, SPX, and NetBEUI operate at the Transport layer of a network.

What happens at the Network layer? The Network layer is responsible for routing data to its destination. Remember that a network is a spider web of connections, and something must route packets at each intersection. Routers are important devices that operate at the Network layer, along with protocols such as IP and IPX.

What happens at the Data Link layer? The Data Link layer is responsible for the reliable transfer of data across a network’s physical links. It sets up the necessary synchronization between sending and receiving devices, checks for transmission errors, and makes sure that data flows across the network in a smooth and orderly manner. CSMA/CD, the protocol that handles collisions on an Ethernet, is a good example of a Data Link layer protocol.

What happens at the Physical layer? The Physical layer, as its name implies, deals with the physical cabling and circuitry that form network links. Protocols associated with this layer establish a network’s physical characteristics, such as the type of cable that connects devices, and the characteristics of the signal that travels over that cable. The Ethernet specifications for 10BaseT cables, hubs, and NICs provide an example of a protocol that defines the Physical layer of a network.

How does OSI help me keep all the protocols straight? Protocols can be categorized as functioning at one or more of the seven OSI layers. It would be nice if each protocol mapped to a single layer. Unfortunately, some wayward protocols happen to perform tasks that apply to more than one OSI layer. To muddy the waters even more, technicians occasionally disagree on the layer in which a protocol belongs.

Wait! Can’t these protocols be organized in a simpler structure? The OSI model has enough ambiguity to make you cross-eyed. And, truth be told, only a few die-hard network experts care to memorize the seven OSI layers and the protocols each layer contains. (If you need to memorize the order of the seven layers, just remember the first letter of each word in the phrase: “Please Do Not Think She Picked Apples.”) As a rule of thumb, a simplified three-layer model is probably a more practical tool that you can apply to real-world networks.

INFOWEBLINKS
Most technicians have their own interpretations of the OSI layers. To appreciate the flexibility of the OSI “standard,” you might want to check out some of the links at the OSI InfoWeb.

www.course.com/nlp/concepts7/ch05