

How Does a Network Interface Card Work?

A network interface card works by sending and receiving signals over some type of media. This media can be a cable, fibre optics, or wireless. When you connect a computer to a network, and you perform some action on the computer, what happens is the signal gets converted to a series of bits of information called packets. There are protocols, or particular software, that controls the way these signals are transmitted. This protocol is also known as TCP/IP and is the most popular protocol used on networks and on the Internet.

When a cable is connected to the network interface card, and the other end is also connected, one computer can communicate to the other computer simply by the method of conversion. Whatever you do on your computer, if the process is meant to be transported over the network, what happens inside the computer is amazing. Whatever process you undertook gets sent to the network interface card. The network interface card takes the incoming process and converts it and disassembles it into packets so it can be transported over the network.

If you are familiar with the OSI model, there are seven layers that control the data that is being sent over the network. The Application layer represents the interface between the user and the network. It is also here that all the data you work with is controlled by many protocols besides TCP/IP. For instance, other protocols that are used for formatting data are HTTP, SMTP, and FTP. Presentation layer basically takes your input, decodes, encodes, and compresses the data so it can be transmitted over the network at great speeds. The next layer that controls how the data is sent over the network is the Session layer. The Session layer sends a signal to the network interface card and tells it to open the lines of communication so the data can be sent out. The Transport layer actually takes the data and transports it from the network interface card to another network interface card. The Network layer adds information to the data that the Transport layer sends out so other machines will know what computer sent out the data. It does this by including an IP address of the machine transmitting and the IP address of the receiving computer as well. The DataLink layer takes the data

sent from the Transport and Network layers, and converts all the data to frames. The Physical layer is what manipulates and controls the way the data is sent over the network.

Every one of the above layers is not an actual layer of hardware, it is just a representation of how the data is converted and transmitted from the network interface card, over the network to the other computer. As you can see network interface cards are a lot of responsibility.