

How Does a Video Card Work

Every image you see on your screen was put there by a video card. A video card is set up to display all images as tiny dots called pixels. Over a million pixels fill up the screen at one time. But these pixels are not just thrown against the screen at once or in the same way. They are controlled by the video card.

In the beginning, when a certain software program creates an image, this program gets compiled and is sent to the CPU, which then sends the data to the video card. At this time the video card processes the data and determines, based on the processed data, how the image is to be displayed on the screen. So the video card sends pixels to the screen in a certain order and group that duplicates the original image, by way of the video cable.

The video card really does a lot of work to get the image to the screen. If the video card handles 3-D images, this gets more complicated. In order to create an image out of binary data, the video card must first create a wire frame out of straight lines. The video card in turn rasterizes the image (this fills the remaining image with pixels that are missing). After it rasterizes the image, it in turn adds lighting, texture, and color.

The actual process of a video card works by means of a processor and memory that is embedded in the video card. A video card has a processor or, as IT people call it, a graphic processing unit (GPU). Besides the processor is the BIOS chip that loads when the computer is first booted. And of course is memory that holds the image to be processed.

The video card's GPU is just like the CPU of a PC. The only difference is that it was designed for handling complex mathematical and geometric calculations that are used to formulate an image. Many video cards are built with special programming code that allows for enhancements to occur to images. For example, a couple of enhancements would be smoothing the edges of 3-D objects, and making images look crisper.

While the processor is taking care of the image, special coding and other important image control data is sent to the video card's RAM to store it there. As the image is being processed, more data is feed to RAM from the processor. After the data is placed in RAM, the data is sent to the digital-to-analog converter (DAC) that is connected directly to RAM, where the image is translated into analog where it is sent over video cable to the monitor.