How Internet Video Streams...

1. Inside the computer that acts as a server for Internet video, a video capture expansion card receives the ordinary analog video signal from its source, either a live feed or recorded tape. The capture board turns the analog signal into digital information at a maximum rate of 30 frames a second.

2. The capture board sends the digital information through a codec, a compression/decompression algorithm. Different codecs use several methods to compress the video.

3. Interframe compression compares adjacent frames and transmits only those pixels that change from one frame to the other. When the camera pans, causing the background to change, the entire frame is transmitted, creating another key frame. Thus, a still camera generally creates less data to transmit than a camera that is always moving.

4. Codecs also skip frames for slower Internet links. The faster your connection, the more frames you receive, and the smoother the video is.

5. The server breaks up compressed video into one of two types of packets for two types of transmission protocols. One type is called IP (Internet Protocol) multicast packets. IP multicast uses less bandwidth, which is helpful when transmitting the same video to several people at different PCs. The video server sends a single signal to a computer acting as a multicast server, which duplicates the video signal for all the client PCs attached to it.

6. The other protocol is UDP, discussed in the previous illustration. UDP video delivery is more common because it doesn't require special network hardware, such as a multicast server. UDP packets must be sent to every client PC, which uses more bandwidth, but is more efficient in preventing gaps or pauses in the audio part of the signal.

7. The PCs receiving the signals decompress the video and load it into a small buffer in RAM. From there the signal splits into video and audio components, which are sent to the video card and sound card. As with pure audio streaming, video streams simply skip packets that it can't handle in real time.

8. But unlike audio, a corrupt video packet can cause a defect that carries over to other frames. To correct this, the software compares new frames with other ones to detect errors and correct them using visual information from an untampered frame.