Streaming Video

Significance of Topic

Internet technology is changing at a rapid pace, and the faster the technology changes, the more people expect from the Internet. Users were once satisfied with text and still images on their web pages. Now they want to see video. And they want it fast. They want the quality to be as good as what they see on their television. Because of bandwidth issues, we are still several years away from high-quality video delivery over the Internet.

Streaming video is one way to deliver video over the Internet. Though far from a perfect solution, streaming video technology is becoming more powerful all the time. With streaming video, designers can broadcast lectures, make announcements, deliver seminars, or show exactly how something is supposed to work. And users can see it NOW, quenching some of their thirst for fast, high-quality video. Streaming video provides flexibility as well. Users can view what they want, when they want.

Streaming video offers many opportunities to the web designer, and to make the best use of this technology, designers need to understand what it is, how it works, and the advantages and disadvantages of using streaming video.

Discussion of Topic

What exactly is streaming video? Streaming video allows the user to view video over the Internet as it downloads, instead of waiting until the entire file is downloaded to the computer. According to the CNET glossary, data is streaming "when it's moving quickly from one chunk of hardware to another and doesn't have to be all in one place for the destination device to do something with it" (Streaming, 1995-2000). Streaming video can also be defined as a series of "moving images" (Streaming Video and Streaming Media, 1999) sent in a compressed form over the Internet and displayed as they arrive. Streaming video is available to the viewer almost immediately after clicking on the link. After a few seconds of buffering, the clip begins to play (Edwards, 1997).

Designers who want to deliver video from their website have the option of using streaming or download. With download technology, users download the video and it appears as a file on the hard disk. The user then starts a video player and opens the file. The video plays in a window

once the entire file has arrived (Video on the World Wide Web, 1997). Although the playback quality may be better with download, the long wait for the download is a disadvantage (Video on the World Wide Web, 1997). Downloadable files are generally recommended for videos less than 30 seconds long; streaming video is better for longer clips (Edwards, 1997). To view a streaming video file, the viewer must first have a streaming video player installed on their system. Two of the most popular are RealVideo and Windows Media Player (see References section for links). Both are free to download. In a perfect world, streaming video works by downloading the initial portion of the file, which is called the buffer, into the user's player. The player then begins to play back the file while the remainder continues to be downloaded. The buffer allows for continuous playback by compensating for any delays in the transmission of the rest of the file (All About Multimedia, 1999-2000).

The basic steps for putting streaming video on a website are the same, regardless of the streaming software chosen (RealVideo, Windows, etc.). Before a designer begins the process of putting streaming video on his website, there are some tools he must have:

- Video capture card and the appropriate encoding software to go with it
- Streaming software
- Editing software (like Adobe Premiere) to edit the video (Steinmetz, 2000)

Once he has the proper tools, the designer films the event using a standard video camera. The computer's video capture card digitizes the video signal, and "the Encoder software compresses the digital signal into a streamable digital file" (Streaming Media Buyers Guide, 1995-1999). The compression software reduces the video to a manageable file size by analyzing a sequence of video frames and determining which frames are needed. Vital information is retained and redundant information is discarded (Griffin, 1998). The file is then transmitted to a computer with the Server software installed (Streaming Media Buyers Guide, 1995-1999). When a user clicks on a link to a streaming video file, the video streaming software on the remote server releases the video file for play (Griffin, 1998).

It is helpful if the designer writes an explanatory paragraph to let users know what to expect. Information can include how to set up their browser, where to get the player software, and what the user can expect to see (Video on the World Wide Web, 1997).

Streaming video has its advantages and its drawbacks. Bandwidth is a big issue. Most users do not have adequate bandwidth to receive streaming video at an acceptable quality, and won't have it until around 2003 (Nielsen, 1999). When the requested video doesn't stream quickly enough the presentation is not smooth. Those connecting at less than T1 speeds will see "choppy, 'freeze frame'" pictures (Larson, 1996).

Competing technologies also present a problem for designers. RealNetworks, creator of RealVideo, was long the leader in streaming media. Microsoft now wants to control the standards with its own products. "It is producing competing products that, with each succeeding version, diverge further and further from RealNetworks standard" (Berst, 1998).
The main attraction of streaming video is the time it saves. Viewers can see a video in seconds, as it downloads. "Streaming technology allows bandwidth-intensive media files containing multimedia content to be played as it is received, rather than requiring that the entire file first be downloaded to a user's hard disk before it can be viewed" (Guglielmo, 1998).

There are other advantages besides the obvious factor of time. Streaming video is easy to create. Digitizing and uploading video files is not a difficult process (Bremser, 1996). The most common production tools use graphical user interfaces with the settings predefined (Edwards, 1997). Streaming video provides flexibility to the user. With television, the viewer is at the mercy of the network programmers. Miss a program (and forget to set the VCR) and it may take months before it is shown again. With Internet broadcasts, the viewer can most likely select the file at any time (Petreley, 1999). Some may argue that most miss the point of streaming video. The technology is less about quality and more about access. "When a web user clicks on that link and gets media-on-demand, that is power" (Kennedy, 1999).

Bandwidth issues are being addressed by Internet service providers who are offering distributed servers so that users get local performance. "The services point Web traffic to the network hub closest to the user's location, thereby reducing the number of router hops a packet must make and circumventing the already jammed national and international Internet backbones" (Radosevich and Fitzloff, 1998).

Streaming video has already found useful niches, and as streaming tools become more powerful, the acceptance and quality of the technology will increase greatly. Websites of major media organizations already enhance stories with related streaming video clips (Griffin, 1998). Colleges are putting courses online and including video clips of lectures. Activists whose beliefs are generally ignored by the mainstream disseminate video via the Web (Griffin, 1998).

As bandwidths increase and technology moves forward, streaming video delivery will become smoother and look more like a television broadcast. (Kupfer, 1998). Although at this time streaming video does not offer the experience of television or the movies, advances in this technology may one day see people accessing the Internet to view the Oscar nominees for best picture or to catch the NBA playoffs. There are no limits to the possibilities offered by streaming video.

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Related Links

Streaming Video Players—Free to Download

1. RealVideo by RealNetworks: http://www.real.com/.
2. Windows Media Player by Microsoft: http://www.microsoft.com/windows/windowsmedia/EN/default.asp.
3. VivoActive Player by Vivo Software: http://www.vivo.com/.
4. StreamWorks Player by Xing Technology: http://www.xingtech.com/.
5. VDOLive Player by VDOnet: http://www.vdo.net/.

Good Use of Streaming Video

1. CNN News Organization. Select the Video of the Day. http://www.cnn.com/.
2. Court TV. Select a court case of interest and click on the accompanying Video button. http://www.courttv.com/.
3. Film.com. See movie trailers for recently released movies and clips of Oscar nominees. http://www.film.com/.
4. MSNBC. Offers video clips to accompany selected news stories. http://www.msnbc.com/.
5. Live@. A collection of live events on the web using streaming video technology. http://www.live-at.com/.
6. Internet Hourly News. 24-hour news service by ABC and RealNetworks. http://www.realaudio.com/contentp/abc.html.
7. Internet Television Network. Streaming video business news and information (Chicago-based). http://intv.net/.
8. Virtual College Day. Virtual tours of universities. http://www.criterioninfo.net/vcd/.
9. UN World News. Daily press briefings from the United Nations. http://www.internetbroadcast.com/un/.
10. Fifty Interviews on Learning & Technology. A series of fifty video interviews with learning and training managers from The Masie Center's TechLearn Conference. http://www.techlearn99.com/exe/test/techlearntv.cfm.

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