

## **"How To Present Your Concerts on the Internet and Television"**

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***Midwest International Band and Orchestra Clinic***

3:00 – 4:00 p.m. Friday, December 22, 2000

Williford Room

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**The New Trier High School BLUEGRASS BOYZ**

*Soundtraks* student crew.. Matt Holt, Nica Ross, Josh Hadro, John Gillilan

- ❑ This clinic is being videotaped and will be archived on [ntjazz.com](http://ntjazz.com) within a few weeks.
- ❑ The *PowerPoint* presentation being utilized for this clinic has already been placed on <http://ntjazz.com>
- ❑ [Concertvault.org](http://concertvault.org) (Authoring home now located at... <http://ntjazz.com/concertvault>)

# Technology: Web Development

## The Creative Aspects of Video Streaming

BY JOHN KUZMICH, JR.

There is an innovative way to promote your school's performing program worldwide. Now you can post videos of your performing groups on the Internet. There are two ways that this can be done. First, you can load videos to the Web, which can be played back by downloading them from the Web onto your computer. The second way is to post your video via video streaming. This allows the video to record a "live" performance while it continues to download to your computer. The advantage of video streaming is that it plays back almost immediately rather than posting it for later download viewing. For example, a one-minute video could be 60 to 100 MB in size, which makes downloading a rather tedious proposition even with high speed Internet access with cable modem, T1 line or DSL. But with video streaming, average computer users without high speed Internet access can view your performance almost immediately.

Never before in education, has it seemed so easy to promote your curriculum, your students and their performance groups to such a large world population on a relatively low budget. This is especially promising in school districts that are providing free Web pages for their teachers and their classes. Video streaming is an incredible, valuable experience for what it can offer. Just a few years ago, digital video was something that was out of reach for the average consumer. Powerful computers were too expensive and difficult to use. Recent PC prices have plummeted while processing speeds have skyrocketed. Now, just about any new computer can do a decent job with home movies. And with software programs like Ulead VideoStudio 4.0, MediaStudio Pro and VideoWaveIII by MGI Software, you don't need to be a rocket scientist to figure it all out. Tens of millions of camcorders have been sold around the world and computers have become standard fare in the home. It hasn't taken long for video capture cards to make the connection between the

two, even if all you have are analog video capabilities with 8mm, HI 8mm, VHS, or VHS HI-Fi.

### Understanding the Video Streaming Format

Before anything can be accomplished, the video must be transferred to a computer after it has been created. On a PC computer, you need to have a video capture card and software comes with the card. A PC capture card is used to convert analog video (from a camcorder or TV) to digitalize use on the computer. On Macs you can transfer the video to the computer through the SCSIII port and use QuickTime. This process creates a digital video, which can be easily edited and eventually posted to the Internet for viewing in a video-streaming format. Video cameras record images onto magnetic tape rather than film and require no developing, so the tape can be played back immediately after recording. Like motion pictures and analog video, digital video is made up



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of many still images, though in digital form they are called bitmaps. If you are using a PC with a video capture board to capture video from an analog source, such as that from a VHS or 8mm camcorder, it is converted to digital and stored on the computer's hard disk drive.

It is possible to convert any of your analog videos to digital video on a PC. Then, editing your video on your computer can be done with the ease of mouse clicks, drag and drop operations, and cut and paste. What's more, with the previously mentioned software products, you have access to numerous transition effects, professional titling capabilities and simple soundtrack creation tools. And for more good news, it is possible to learn this technology in seconds, and create within minutes.

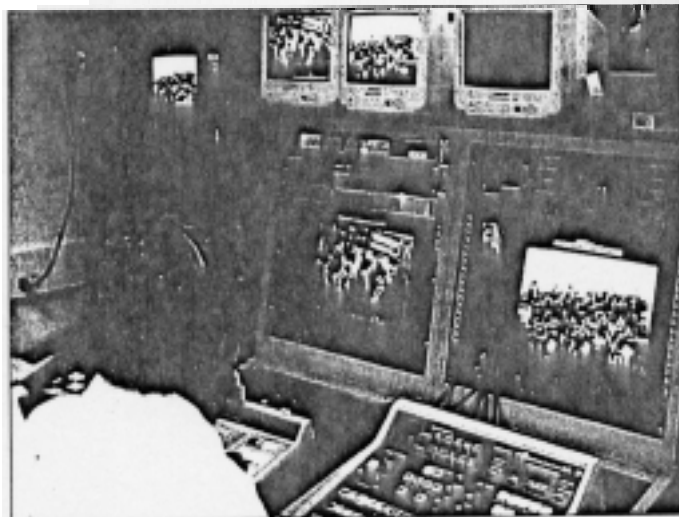
## New Technology Developments for Digital Video

Computer video technology has changed faster than anyone could have predicted. Digital Video (DV) has taken the world by storm, becoming the format of choice for enthusiasts. It is easy to configure your computer to capture DV data from your camcorder, and the quality is superior to S-VHS.

With the rapid advance of the consumer video editing market, industry experts agree that this year marks the crossover of professional digital video editing to the mainstream market with significant advances in both hardware and software. The leading technology advancement has been in the area of IEEE-1394. With new video editing software and with IEEE-1394 device control, consumers can quickly and easily play, pause, fast-forward, rewind, frame-advance, frame-reverse and stop Digital Video and digital-8 camcorders. Software can also capture digital video clips directly with no quality loss.

Another momentous technology advancement for the video editing

industry has been the improvements in MPEG-2 encoding technology. Until recently, high quality compression solutions also came at a high price and, therefore, were aimed at the professional broadcast markets. Today's MPEG-2 encoders offer consumers the ability to quickly create DVD quality video in smaller file sizes than previous video formats. This integration of software with MPEG-2 encoders is seamless, allowing scalable MPEG-2 compression that delivers high quality video at lower data rates on Pentium computers with no added compression hardware. A standard PC can now compress video that will play back in any PC DVD-ROM or MPEG-2 player at full resolution and full frame rate. Therefore, it is possible to create amazing DVD quality movies using the MPEG-2 format. Because MPEG-2 is so powerful, it requires a fast CPU or a dedicated MPEG-2 video card. The recommended CPU is 450 MHz as a



minimum. MPEG-2 is an excellent choice for any type of movie. MP3 is now the standard audio file format that allows individuals to download near-CD quality music and audio from the Web.

## Education Video Streaming Applications

There are various ways to use videos in education. You can put a movie on the Web. You can send a movie by e-mail for an audition of one of your groups. You can even put video on an electronic greeting card.

The Internet is becoming an exciting new place to share your movies, but there are a few things you need to watch out for. A short three-minute demo video can easily run 60MB and take many, many hours to download. But if you are reasonable, you can put your movies on the 'Net just as easily as you place an image on a Web page. Effective use of video on the Internet requires that you understand that you absolutely must use very high compression ratios that result in very low quality movies. This means your movie should use a small window (320x240) or preferably smaller, low frame rate (15 fps), and radio quality mono audio (8bit). Videos with a lot of motion or action are not well suited to this medium.

Streaming video is an exciting new method of displaying video on the Internet. This means that your video begins playing while your movie is still downloading. Some methods of streaming require special software, a special Internet server and can be expensive, but there are other choices appearing. For example, Ulead's VideoStudio allows you to compress your digitalized video files using RealNetwork's RealVideo file format (\*.RM), Microsoft's Advanced Streaming format (\*.ASF) or Apple's QuickTime format (\*.QT). These formats also require your viewer to install the appropriate player, but all are widely available for download on the Internet.

## Recommended Entry-Level Hardware/Software Products

Here's what you need for video streaming. You'll need a computer with video capture capabilities. PCs will need a video capture card that can connect your analog video camera to the computer to transfer the video via an S-Cable connection. The S-cable can be purchased at Radio Shack.

are ready to go without any hardware. If you have a digital video camcorder, you will only need an

IEEE-1394 card instead of a video capture card. Popular PC video capture cards are produced by Winnov for Windows 3.1, Windows 95/98/2000 and notebook computers. What makes Winnov video capture products so powerful are their software drivers that can compress audio and video files so well, and they are frequently updated and are an industry standard in quality performance.

Once the video has been transferred to the computer, you'll need a software editing program to finalize and compress your video for the Web. Several worthy programs include: VideoStudio or MediaStudio by Ulead ([www.ulead.com](http://www.ulead.com)) or VideoWave III by MCI ([www.mgisoft.com](http://www.mgisoft.com)). In the past, editing complex video formats, such as digital video (DV) and MPEG-2, had been reserved for expensive hardware and dedicated systems. MediaStudio Pro 6.0 was the first professional video editing software to incorporate MPEG-2 native editing in a software solution. All three of these programs can do a lot of editing without expensive, dedicated

hardware and best of all with ease-of-use, quality and speed. VideoStudio is a very good entry-level software editing product while VideoWave III and MediaStudio are excellent products with more editing options. I like MediaStudio because it is a complete video editing solution that incorporates video capturing, editing, animated video painting, object-based titling and animation, and audio editing in a single package for use in producing video content for broadcast, tape, CD-ROM and the Internet. What I like about VideoWave III is that you get a lot of intermediate/advanced product features. Network's RealProducer is a must program to publish your video for both posting and streaming on the Web.

## Video Streaming: Getting Started with a Tutorial

Since most readers will probably be using an analog video camcorder to photograph their students and ensembles, the primary job of your video capture board is to convert an incoming analog video signal into a digitized format that your computer can read.

Publishing your movie on the Internet is not difficult. Keep in mind that although you might have a fast cable modem or DSL connection, you should keep your movie short. You should consider video streaming because many of your viewers will probably have 28.8 or 56K modems. Video streaming allows visitors to your Web site to watch the movie as it downloads. To stream video, you need to first produce it in a special way in VideoWave, VideoStudio or MGI's VideoWave III before feeding it into a Web producing program, such as RealNetworks' RealProducer. Streaming video or audio is more instantaneous than waiting for a file to completely download. If you want to look for streaming video on your own, the best place to start is [www.real.com](http://www.real.com), where you can also download the program for free.

Below are some sample steps for preparing your video footage for video streaming capabilities. I will use MGI's

VideoWave III as a demonstration of the actual steps needed. Other software programs mentioned in this article will also do the same things.

**Make Your Template.** With your movie loaded in the VideoWave Storyline, choose Storyline, Produce from the menu button to open the Produce Movie wizard. By default, VideoWave creates movies only in MPEG format, but RealProducer requires an AVI movie. The first time you create a streaming movie, click the Create button to make a new template.

**Template Title.** In the Template Name field of the Create Produce Template dialog box, give the template you are about to create a name, something like Streaming Video, so that you can find this template again in the future. From the File Type list, choose AVI Compressed. Click Next.

**Check Video Options.** This next dialog box, AVI Settings, looks intimidating,

but you can accept the defaults. Make sure that you are using Indeo video compression, that the frame size is 320x240, and that the Quality slider is set to High (100 percent). Click the Finish button to return to the Produce Movie wizard.

**Create Your Movie File.** Click the Next button to go the Summary Page. Type a name for your movie and click the Produce button to create your movie file. Note that the movie isn't in streaming format yet - you have to import it to the next task and finish the job.

**Begin RealProducer.** After you have created a complete movie in AVI format in VideoWave, start your copy of RealProducer in the New Session dialog box that appears when you launch the program. Choose Record From File and click OK.

**Find the Video.** On the first page of the Recording Wizard, click the Browse button and choose the filename of the streaming video file you created in the last task. Click Next.

**Name the File.** Now enter the details about your video that will appear on the Web page. Give the file a title, name the author, type a brief description of the video file, and enter some appropriate keywords. The keywords make it easier for Web surfers to find your video via search engines. Click Next.

Select a Server. Because you're probably posting this video to your own Web server and are not expecting thousands of people to flock to it, choose the Single-rate for Web Servers option and click Next. (If you had a high demand for your movies, you would want to use a special server that could deliver the movie to many people simultaneously.)

Find an Audience. RealProducer assumes that you know something about the kind of people who will view your movie. Select the kind of

Internet connection you expect most of your viewers to have. If you don't know the modem speeds of your audience, a safe bet is 56K modem. Click Next.

Select Audio Quality. Select the option that best matches the audio fidelity of your movie. The Stereo Music option takes up more of the available bandwidth than Voice Only, leaving less bandwidth available for the video stream. For most videos, Voice with Background Music is your best bet because it balances the sound quality with video quality pretty well. Click Next.

Select Video Quality. Select the option that best represents the quality level of your video. Normal Motion Video is usually a good compromise. Don't choose Slide Show if you want the video to appear as a motion picture. Click Next.

Identify Your Location. Choose a file name and location for your movie. This file, bearing the .rm file extension, is the hyper-compression streaming video file that was created based on the VideoWave produced file. It is the file that will be uploaded to your Web site. Click next.

Verify the Settings. The next dialog box displays all the data about your movie. Check it over to make sure that it is all correct. You can use the Back button to make changes to these options. When you're satisfied with your movie settings click the Finish button.

Showtime! After the Recording Wizard goes away, you finally see the main RealProducer window. This view gives you one last chance to make any changes to your video before you produce it.

Encoding. Click the Start button. The video will play and encode itself into a streaming video file.

Uplink to the Web. After the file is complete, you can upload it to your Web site. RealProducer includes a wizard for creating and publishing the streaming video file in the Tools menu.

## Remote Video Streaming Playback Options

There are several free software programs that allow remote playback options for streaming your videos over the Internet. The big three in the streaming media are: Apple with QuickTime, Microsoft with Windows Media Player and RealNetworks' RealPlayer. My favorites are RealPlayer and Windows Media Player. All of these products can be downloaded for free. I recommend that you post these products on your Web

page with "hot" links directly to their URLs for downloading so your Web page visitors can quickly download them in order to view your movies. Just go to my Web page at: [www.kuzmich.com/kuzdir.html/](http://www.kuzmich.com/kuzdir.html/) to get a better idea of how to set up the "hot" links on your Web page. One problem that is being experienced with streaming software is that it does not handle all vendors' products equally as well. Microsoft's Windows' Media Player version 7 now handles an unprecedented range of media experiences, serving as a streaming player for Internet-based on-demand content, a jukebox and an Internet radio receiver.

## Additional Video Options

If you don't feel you are ready to post your videos to your Web site, there are Web pages on the Internet that you can post your videos for free. Two choices are [www.winnov.com](http://www.winnov.com) and [www.PopCast.com](http://www.PopCast.com). The first URL allows you to post up to 100 MB for free.

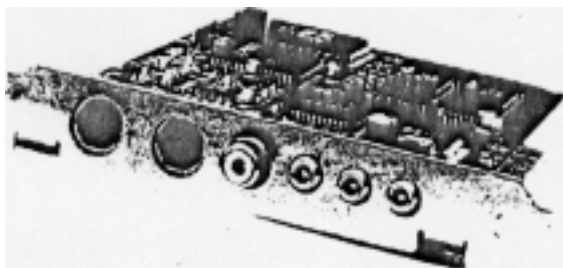
Once you get the hang of creating, editing and streaming video to the Internet, it is also possible to put your video on CD-ROM or incorporate video into a PowerPoint slide show. Can you think of a more dynamic way to promote your instrumental music program than through video streaming?

## Exemplary Programs of Public School Video Streaming New Trier High School

One music educator can be identified as a video streaming pioneer. He is Jim Warrick, Director of Jazz Studies at New Trier High School in Winnetka, Ill. He has embraced video streaming by making the band, orchestra and jazz band concerts available on-line for parents, friends and music educators around the world to watch both "live" and via video streaming 24 hours a day, 365 days a year on the Internet. New Trier's several Web sites provide video streaming of their music department's ensembles along with top professional artists [with permission] such as the Buddy Rich Big Band, Tucson, Arizona

Boys Chorus, North Shore Stompers, Rob Parton's ROPA Big Band, Byron Stripling, Gary Burton/Chick Duo, as well as the 17th Annual New Trier Jazz Festival, with more than 12 hours of video streaming coverage. The main URL is: [www.ntjazz.com](http://www.ntjazz.com).

This Web site is housed in a dedicated server at New Trier High School in Winnetka, Ill. New Trier is a highly acclaimed public school recognized for outstanding success in academics and the performing arts. The New Trier Music Department has been

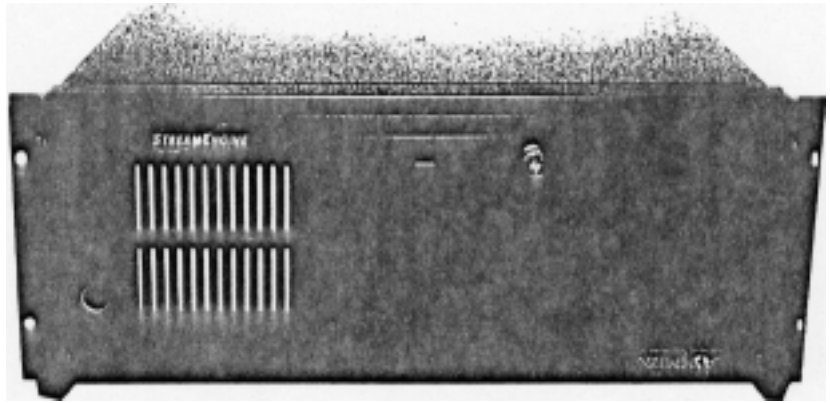


broadcasting live and archiving their concerts for three years, receiving more than 70,000 "hits" on the school's Web page. The music department recently received a Grammy from the NARAS Foundation for recognition as a Grammy Signature School. There is no international video depository of concerts for all to see. Students could gain much from seeing their musical peers in a Japanese Wind Ensemble or an ethnic folk group from Arizona or Europe. Technology and video production students at New

Trier High School have provided real world experiences in video editing/production, and receive on-line recognition for their work. Other schools may be inspired to obtain the equipment to broadcast their own concerts live or be archived for broadcast from their own Internet facilities. Live television broadcasts of concerts from schools then become possible.

## Solutions for Video and Audio Internet Broadcasting

There are some innovative venues for streaming video and audio on the Internet for wider exposure, much like the New Trier High School experience. One company, Winnov, offers the Videum StreamEngine, which can stream live or pre-recorded audio and video across the Internet. This high performance pre-configured turnkey system encodes one to four live audio and video streams simultaneously for Microsoft Windows Media and/or RealNetworks RealProducer. It synchronizes audio and video, and encodes for any length of time. A unique feature of Winnov's Videum StreamEngine is that it has the ability to control live streaming from remote locations using the remote control ASP. It is possible - by remote - to start and stop encoding tasks, to configure capture parameters such as brightness, contrast, saturation, video input selection, zoom factor and pan/tilt settings, even while the encoder is running. There is no need to interrupt your event when capture settings need to be changed and live events can be engineered with off-site personnel.



RealNetworks is now offering three different software kits that deal with the production of video streaming. Their Streaming Media Starter Kit is a complete content-creation and broadcasting solution that includes everything you need with Real Audio 8 and RealServer Plus for more multiple content-creation tools. The RealProducer Production Bundler includes RealAudio 8 and RealVideo 8 plus RealProducer

Plus and Cleaner 5. This bundle gives you the capability to do live encoding to high-volume production. The RealProducer Plus 8.5 is not only powerful but also easy-to-use for beginners and comes loaded with features powerful enough to satisfy any pro.

## Closing Comments

Video streaming is a fast emerging technology and is well suited for sending live audio and video across any kind of IP network including Intranets and the Internet. Video streaming may be used for applications such as an online press conference, music concert, Internet radio and TV, distance learning, remote surveillance or special events. For a great glossary of video streaming/videoconferencing terms, please go to: [www.winnov.com/support/glossary/index.htm](http://www.winnov.com/support/glossary/index.htm).

Music educators are fortunate to live when their music can be shared worldwide on a limited budget. A new audience awaits your imagination.