

Multimedia Medley

by Péter Jacsó

Prick Up Your Ears and Listen

There are new streaming audio formats of stunning quality on the Web

Much has changed in the Web audio arena since I last wrote about streaming audio formats and plug-ins in this column almost 2 years ago. That was in March and April 1996. Streaming audio was a brand new concept then, allowing the users to listen to sound clips without waiting for the sound file to be completely downloaded before playback. This was more important than it may sound. At then-typical 14.4-Kbps downloading speeds, 1 minute of near-CD-quality audio took about 90 minutes to come over the line.

Then came compression programs that took AM-radio-quality sound bites and compressed the daylights out of them—at the cost of further quality loss. The compressed audio could be streamed continuously or almost continuously even through 14.4-Kbps modems. Despite the low quality, this type of streamed audio became an instant success with music stores on the Web, making it possible to get the flavor of some songs on an album after a short wait time for buffering. Buffering before playback is needed to build a small reservoir in case the stream gets blocked for a second or a fraction of a second. It is like Universal Power Supply for your computer for brown-outs and blackouts.

By late 1997, audio compression technology progressed to the point that near-CD-quality music could be compressed to a level that can be streamed to users with 28.8-Kbps modems with a minimum of wait time before playback. Massive traffic jams may still interfere with continuous playback, but on a modest 33.6-Kbps network connection, and especially on faster connections, I rarely had stuttering audio. And the sound quality is just awesome considering the grueling trip the sound makes.

Newscasts are far easier to compress into thin bitstreams, as AM-quality audio requires one-tenth what CD-quality audio requires in storage capacity. Since my last evaluation of streaming audio, two new formats—MP3 and Liquid Audio—have emerged and an existing one—RealAudio—has improved significantly. Each offers a free plug-in player at least for Internet Explorer and Netscape. These streaming audio formats herald a revolution in music commerce, and also in radio broadcasting.

RealAudio 5: Continual Improvement

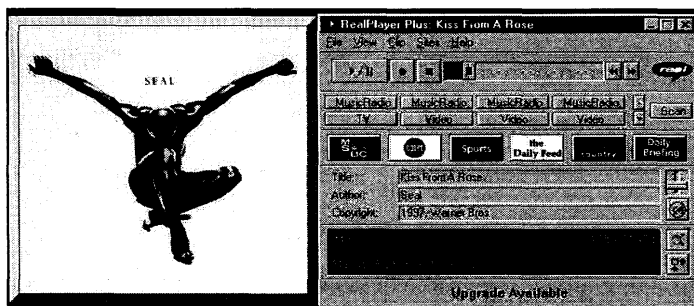
RealAudio technology emerged as the absolute winner among those offered by the original group of competitors (Progressive Networks, Internet Wave, StreamWorks, TrueSpeech, Toolvox) for the streaming audio market. Wherever you look these days on the Web, from music stores to radio stations to music publishers, you will find music recordings and live broadcasts using RealAudio.

Progressive Networks, the company that brought us RealAudio more than 2 years ago, has a new name: RealNetworks. The name of the product has also changed, to RealPlayer, and it now includes audio, video (RealVideo), and animation (RealFlash). RealNetworks deserves credit for not resting on its laurels even though it achieved practically a monopoly by virtue of its ever-improving quality by the end of 1996. I was not impressed with its first version, but I have liked it since version 2.0, and, since version 3.0, I have liked it very much.

Now it is up to version 5.0, and my liking for it increases along with the version number. I have always been a radio fan. It is impressive to listen in Honolulu to broadcasts of WABC from New York,

RealPlus plug-in more than a year ago.

RealPlus Player offers not only better audio quality due to extra noise filters, but also extra services, such as pre-programming of radio stations (so I just click on buttons to tune in to my favorite stations) and access to all songs of albums in their entirety. As I write this, Time Warner offers 30 complete albums on the Web for RealPlus users. These are not lukewarm albums, but hot former or current top-10 albums. Music is flat in 22-KHz, 8-bit mono format, but that is what can be compressed for a 16-Kbps stream without distortion. Or is it? Well, according to the latest developments, even near-CD-quality audio can be compressed to a stream thin enough for 28.8-Kbps modems.



Via RealPlayer, all the songs from Seal's Grammy-Award-winning album

without a glitch or a bit of distortion for hours. I cannot help but be fascinated that while I am working on a desktop application (or just reading the newspaper on the lanai), I can tune in to two excellent news/political/cultural radio stations and two music stations broadcasting from Budapest (true, in mono only). These are streamed in real time and come through phone lines for part of their journey. The news/cultural stations broadcast their programs at 8 Kbps, which is decent for spoken words, and come through in acceptable quality even with a 14.4-Kbps modem. If there are problems, they are due to congestion on the Internet, or to saturation of the servers used by the radio stations. When I save a spreadsheet file, the broadcast or playback may stutter for a second or two.

The music stations broadcast at 16 Kbps. Again, the predominantly 28.8- or 33.6-Kbps modems of today are very comfortable with that, let alone the 56-Kbps modems, the ISDN adapters, and the network T-1 lines. I use different connections on different machines at home and at the office, but my faster connections don't yield perceivably higher quality. What makes a difference—beyond the speaker boxes—is the RealPlus Player software. It is a \$30 version of the free RealPlayer, and just before Thanksgiving I still qualified for its latest upgrade for free, even though I had bought my

music industry is cracking down on this activity, with good reason.

MP3 allows a 10- to 12-fold reduction of file size without any perceivable loss in quality. This means that a 3-minute song requires less than 3 MB in MP3 format. Add to this the fact that so-called ripper programs and MP3 encoder programs have proliferated in freeware/shareware format. The ripper programs allow you to copy tracks from a CD-ROM and clean off any hisses and pops. The copied files are in WAV format. I tested a couple of freeware and shareware programs, and commercial ones as well. Without much effort I was able to create reasonably good WAV files that could be played back by any browser if you posted them on your home page (but don't do so unless you own the copyright, or you'll be guilty of copyright infringement).

These files, however, are *big*—about 10 MB per minute of the song. Enter the freeware/shareware MP3 encoders. These can squeeze more than 9 MB out of a 10-MB WAV file without any perceivable quality loss. Yes, I am serious, and I am not hearing-impaired, though I am not Leonard Bernstein, either. For an objective opinion I played (legitimate) MP3 files to my students in my multimedia class, and they could not tell them apart from an audio CD played on the same computer.

While bootleg MP3 recordings are predominant on the Web, the technology itself is admirable, and there are already legal MP3 files and services on the Web. A small music store, for example, offers the option of buying a song for a song (between 35 and 60 cents) in MP3 format, after free preview in WAV and MPEG format (<http://www.nordicdms.com>).

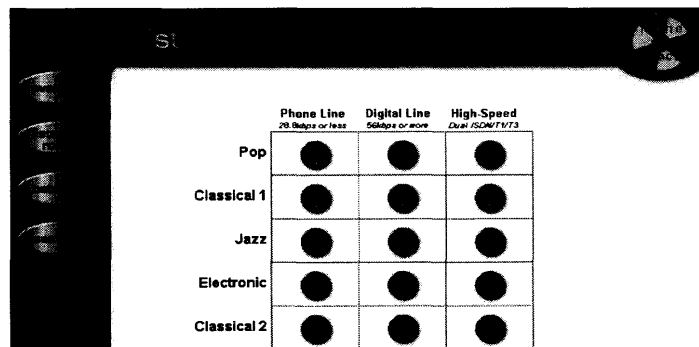
MP3: Compression with Quality

MP3 is not MPEG-3, which has been shelved, by the way, in the standardization process. MP3 is Layer 3 of the MPEG-1 and MPEG-2 standards. It is also the file extension (.MP3) for files that are compressed in compliance with the specifications of the Moving Picture Experts Group.

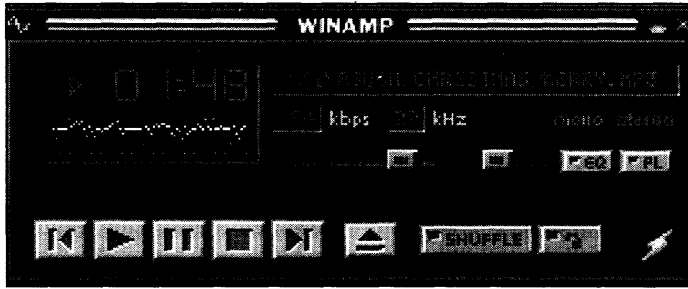
MP3 has a bad name, and looking at the trade press, even writing about MP3 is a sin, owing to guilt by association. The reason for this is that there are thousands of MP3 files illegally posted on the Internet. There has been a strong underground movement to create MP3 files of popular songs or entire albums and put them up for grabs on the Internet. The

While most of the bootlegged MP3 files are not streamed, Telos, Inc., the provider of the AudioActive MP3 player (and the MP3 Creator program), has some nice samples in streamed format (<http://www.audioactive.com>). The streamed MP3 files can be recognized by their extension, .M3U. The MP3 files can be compressed in a manner optimized for 28.8-K modems, 56-K modems, and faster connections, and the player even offers playback alternatives for the prevailing Internet congestion, and/or processor speed.

Theoretically, you may use even 486 processors for playback, but decoding an MP3 file would really stretch the capabilities of a 486 processor. AudioActive seems to be a licensed version of one of



Streamed AudioActive samples for the same sound bite compressed to different bitrates



The WinAmp playback software offers the most options.

the most popular MP3 playback software programs, WinPlay3, which can be distinguished only by the radioactive logo on the display panel. An even better MP3 playback software program is WinAmp (also available for Mac), which has a fancier look and added functionality such as built-in volume control.

Not accidentally, radio stations—especially music radio stations—also embrace the MP3 streaming format. The sound quality is better than in the RealAudio format. There are a number of stations listed at the URL <http://www.audioactive.com/listen>. These stations use Microsoft's NetShow (formerly known as ActiveMovie) format, which is just the packaging for the delivery of MP3 streams. The underlying audio decoder of NetShow for the MP3 files is the Telos version of ActiveAudio. Macromedia also uses MP3 compression.

Liquid Audio: The Best

If you want to hear the best quality audio on the Web, then go to <http://www.liquidaudio.com>. Download the player, then take a few samples of the nearly 100 songs. They are simply breathtaking, even though the streaming playback is sometimes stop-and-go on a 28.8-Kbps modem as the music is compressed to 24 Kbps. On a 56-Kbps and faster connection, the sound quality and playback are perfect.

MSNBC, WavePhore

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utive might be alerted in the morning that the CEO of a competing company will hold a press conference that is to be covered by MSNBC Business Video that afternoon. The executive would then be able to watch the press conference live or retrieve it later from the MSNBC Business Video archives.

The MSNBC Business Video programming, which includes 300 original interviews and reports per month, also features content from CNBC North America, CNBC Europe, and CNBC Asia, as well as MSNBC and NBC news programming. The company contends that, because MSNBC Business Video programming carried over Newscast Today passes through corporate firewalls and does not require high-bandwidth Web access, virtually any company with Web links can immediately utilize the new multimedia service.

"Our alliance with MSNBC Business Video is a major enhancement in the busi-

ness intelligence market," said Peter White, WavePhore Newscast's president. "For the first time, executives can receive a broad range of text-based business news and information along with video and audio programming ... all under one electronic umbrella. WavePhore Newscast is proud to be the first to cross the multimedia threshold."

MSNBC Business Video transmits its programming through direct links into the computer networks of financial firms and across its own Web site as well as through Newscast Today.

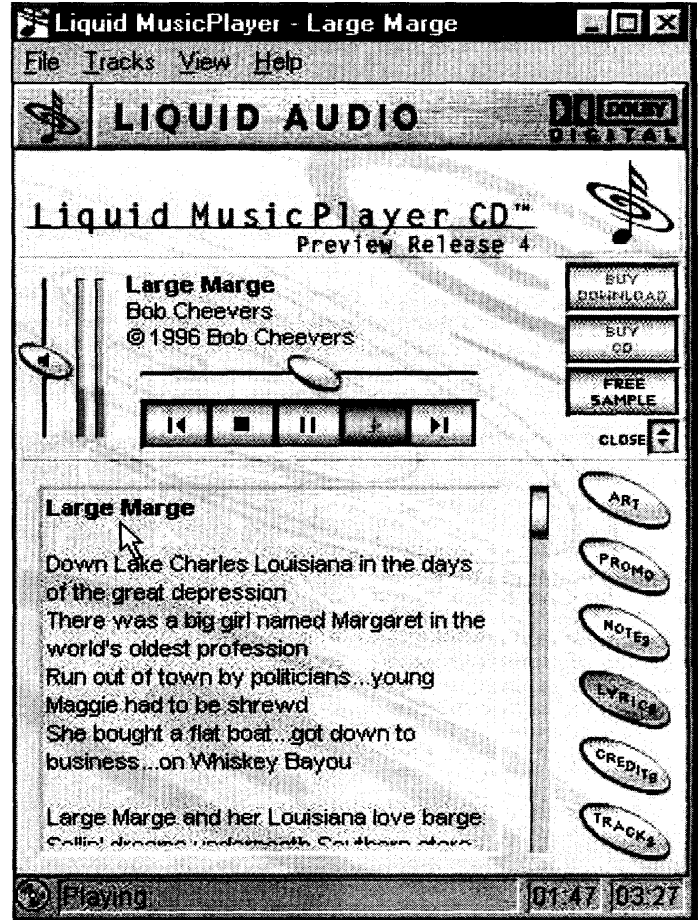
WavePhore Newscast, a provider of enterprise-wide business intelligence services, gathers business news and information worldwide for relay into corporate networks and for access through the Web. Among its 3,000 sources are many of the world's leading newswire services, publishers, financial data and analysis providers, and government authorities.

Source: WavePhore Newscast, Dallas, 972/789-1990; <http://www.newscast.com>.

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Liquid Audio has near-CD-quality streamed audio.

Liquid Pool at Liquid Audio's home page are many gems from lesser-known artists that are definitely worth the downloading of the plug-in. If you pick Bob Cheever's "Large Marge and Her Louisiana Love Barge," I guarantee you'll be enthused by this splendid Delta folksong—one that I doubt you'd find in your local music store.

With the ever-improving sound quality on the Internet and the increasing possibility of legal and inexpensive downloading (buying) of your choice of songs, I even wonder if there will be local music stores anymore, charging you \$14-\$16

dollars for a CD album that is unlikely to have 12 songs that you really like. These streamed audio formats are a lot to like.

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ISLIP's MediaKey

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accurate research results more available, and training materials easier to distribute and tailor to the needs of personnel.

The MediaKey Digital Library System is a complete suite of software and services required to construct and use digital media libraries. The MediaKey system uses integrated speech recognition, language understanding, and image understanding technologies to digitize, index, search, and retrieve video and audio resources. The full benefits of the MediaKey system are derived from the integration of the system's components: MediaKey Builder, MediaKey Finder,

and MediaKey Logger.

MediaKey Builder, ISLIP's computer-automated video and audio indexing process, is available now and is generally performed as a service by ISLIP for its customers. Indexing is priced by the video hour and is dependent on the number of hours of indexing needed. For customers with large volumes of video or with classified information, ISLIP will design, implement, and staff a MediaKey Builder processing center on the customer's site. MediaKey Finder, ISLIP's intelligent video search engine, is also now available.

Source: ISLIP Media, Pittsburgh, PA, 412/687-0530; Fax: 412/687-0537; <http://www.islip.com>.