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Audio Is Served

What You Need To Know About Hard-Drive Audio Servers

By Mark Fleischmann >

The process of playing recorded music didn't change that much from the wax cylinder all the way up to the CD. You'd put a recording into a machine and music came out. Once music became digital, courtesy of the CD, the rules changed a bit (no pun intended). But the digitization of recorded music was almost a trivial event compared to the compression of those digits. Today's state-of-the-art playback systems put compressed audio files on a hard drive, where they are rigorously cross-indexed and organized, travel through the home in a network, and roam the Internet, where they are often shared, bought, stolen and fought over.

AUDIO SERVERS DEFINED

All audio servers have at least one hard drive to store and play digital music files. Most also have a CD drive for easy encoding (ripping). In fact, most of these CD drives are actually CD-R and CD-RW drives, capable of burning recordable and rewritable CDs. Analog line, digital coaxial and digital optical inputs/outputs are usually standard equipment. But just as important are RJ-45 Ethernet jacks to communicate with networked home audio systems, as well as the Internet. Some products also communicate with home networks and the net via wireless (802.11b, -a and -g) and phone (RJ-11) connections. (For more information about the latter see www.homepna.org.) Custom-installed products that connect to an existing touchscreen interface may also require a serial (RS-232), USB or Ethernet connection.

A hard drive can be built into anything including a compact system. Such a standalone solution may appeal to some of your customers. But a true audio server is a component that seamlessly integrates with existing multi-zone or other audio systems, PCs, PDAs, home networks, third-party interfaces such as Crestron, the Internet and, last but not least, the consumer himself. The networking, programming, installation and instruction that will make the system work well are best provided by a professional.

You don't need me to remind you that MP3 is the main format for compressed audio files, though you may not have heard that its full name is MPEG-1 Layer 3, or that it was co-developed by the Fraunhofer Institute of Germany and Thomson Multimedia of France as the soundtrack for the VideoCD format, which still thrives in some regions as the poor man's DVD. MP3 reaches its optimum combination of efficiency and sound quality at an encoding rate of 128 to 160 kbps, though the mp3PRO variation offers good fidelity at 96 kbps. Some audio server products also work with the Windows Media Audio (WMA) format, and at least one offers a lossless compression scheme.

However, it would be a mistake to assume that audio server products work only with compressed file formats. Some systems require compression, and function

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only at a select number of MP3 data rates. But an increasing number of servers either offer uncompressed audio as an option, or dispense with compression altogether, providing true CD quality.

THE DEMONSTRATION

Audio servers are a compelling new product category, and customers who are new to the concept usually react favorably when the benefits are explained. But this is a complex technology, closer to a TiVo or Replay in daily use than a DVD player. As such, the questions regarding features, capabilities and user interface are correspondingly complex. In order to demonstrate how powerful an audio server can be to a home entertainment setup, the salesperson needs to understand the following product criteria:

- * **Connectivity:** How does the product connect to an existing audio system? To a multi-zone audio system?

- * **Networking:** How does the product connect to a home network? To the Internet?

- * **Interface:** How easy is the product to use? Does it operate with a remote control? A touchscreen? Are the front-panel controls relevant? Can it work with another brand of interface?

- * **Ripping:** How can the user encode CDs into MP3s using the server's built-in CD drive? An external PC? An external CD player or changer? How long does it take per CD? What about encoding analog sources such as audiocassettes and LPs?

- * **Storage capacity:** How much music can the server's hard drive(s) store? Storage capacity in gigabytes is a uniform means of comparison but may be meaningless to many customers. Overall storage capacity can be expressed in friendlier ways — hours of music, the number of 60-minute albums, the number of three-minute songs. Of course, figures will vary, depending on whether the signals are compressed and the data rate (amount) of the compression.

- * **Track data:** How does the system learn the names of artists and songs? This is a great opportunity to demonstrate how CD/MP3 track data can be automatically and easily retrieved from an internal database or downloaded from the Gracenote CDDB database, which interfaces with the large majority of audio server products.

- * **Organizing music:** In what ways does the product organize music (by song title, album title, artist name, music genre, personal playlist)? Show the customer each one. Ask if the customer likes playing the same songs over and over. If he says yes, show him how to generate a playlist. Also show how to delete music; all servers have limits.

INSTALLATION AND MAINTENANCE

The main type of wiring for home (and office) networking is Ethernet with Category 5 cable. Many new homes are already prewired with Cat5, but you may need to install it in others. Installing Cat5 wiring may also entail interfacing it with the customer's PC(s). If the server is to share the Internet connection with a PC, you'll have to install a router.

Wireless and home PNA networking may provide some alternative workarounds. For instance, if the server needs to talk to the Internet only to obtain track data, and a phone jack is nearby, plugging a phonenumber into a Home PNA-compatible server may be the easiest solution. Home PNA can operate even while the phone is used for conversation.

Some installers will rip a few hundred CDs to get the customer started. Many installers speak of happy afternoons reading a book while burning a customer's CD library. But unless the customer is willing to pay you for repeat visits, you'll also have to teach him how to rip his latest acquisitions.

While some systems acquire track data and cross-index tracks in-stantly, others require a little extra time, so some newly ripped material may not be accessible immediately or in all the preferred ways (artist name, etc.). Prepare the customer for the time lags where necessary.

If your customer prefers to rip music on his PC, be sure he has good encoding software installed, like Music Match (www.musicmatch.com). You'll need to explain the differences between free and deluxe versions of the software. If the customer wants to download audio files, you'll have to install the necessary software, such as AudioGnome, Kazaa or Morpheus, etc. If the customer is intent on file sharing, urge them to use a separate PC, even if it means buying a cheap desktop machine for the purpose. This will guard against viruses, which are a necessary risk, because file-sharing programs usually can't operate with firewalls. Using a separate PC will also prevent the customer's main PC from losing system-speed to the annoying spyware that comes with certain file-sharing programs.

SPECIALTY PRODUCT

Request Multimedia products combine brute strength — for instance, the 960-GB hard drive of the highest-capacity AudioRequest ARQ Tera — with subtleties that are rare or absent in more mainstream products. ARQ products don't just work, they thrive in a multi-zone system. A "NetSync" function automatically updates and backs up your music collection from any zone. If you're traveling, you can detach one of the hard drives and plug it into your summer-house system. You can also manipulate the system through the Internet. Control options are pretty comprehensive, embracing everything from PCs to PDAs to interfaces by AMX, Audioaccess, Crestron and Elan. Encoding options range from MP3 at 128 kbps to lossless encoding, to uncompressed CD audio. Request also offers a Ripstation — a vertical PC-lookalike box — that encodes CDs at 30 times normal speed, or about three minutes per CD, thereby compressing weeks of ripping into a few hours. Pricing for ARQ systems starts at \$2,500 to \$3,000 for the Nitro, stepping up to \$4,000 to \$9,000 for the Fusion and topping off at \$15,000 to \$25,000 for the Tera.

Sonance's Concierge (\$3,600) puts its dual 160-GB hard drives to work in a minimum of four zones. Add one or more of the Sonance NAMs (Networked Audio Modules) and the system can cover up to 10 zones. Three analog outputs and one digital optical connection are standard equipment, along with a CD drive and a front-panel liquid crystal display. Sonance cleverly quotes storage capacity at 2,500 hours or "more than 100 days." That's quite a long weekend.

Elan's VIA!dj (\$3,600) is a four-output server with storage capacity of 160 GB. Four independent outputs (three analog-line, one digital) can serve four areas with separate music feeds or just feed all four with the same music.



Sampling rates range from 128 kbps to uncompressed, though Elan says the 320 kbps sampling rate provides CD quality in half the storage space of uncompressed data. Elan provides its own VIA! touchscreen interface which can control lighting, security, and HVAC as well as a multi-zone audio system.

Escient's Fireball products feature

The Elan VIA!dj

an extraordinarily flexible user interface and have hard-drive capacity of up to 120-GB with the Fireball E-120 Digital Music Manager (\$2,999). Though Fireball products do come with internal CD-R/-RW drives, they can mesh with just about any other component or system, including several brands of CD changers like Kenwood, Pioneer and Sony, and they can also be daisy-chained to serve multiple zones. Alternatively, the Fireball MP-100 (\$999) can serve as a remote portal. Data rates range from 128 kbps to uncompressed. Escient offers its own 12.1-inch touchscreen LCD, the ETP-1000 (\$2,000), but Fireballs can interface with other touchscreens and video monitors.

Lansonic has one of the longest track records in the brief history of the audio server and a particular penchant for making multizone-friendly products. Its latest is the DAS-950 PRO Series (\$5,495), which has storage capacity of up to 240 GB and can serve as many as three sources at once. Lansonic provides uncompressed WAV as well as compressed MP3 capability, plus an unusual lossless compression called SonaPaK from a company called DVSI (www.dvsinc.com) which effectively doubles storage capacity with no loss in quality. For even greater efficiency, Lansonic includes DVSI's HS-VBR MP3 encoder which can multiply storage capacity by seven to ten times with "virtually no change in sound quality." More Lansonic features include the "MusicLoader" option (\$395), which can rip up to 400 CDs at a time. The proprietary CDID feature recognizes up to a quarter-million artist, album and song names without an Internet connection. All Lansonic products include a built-in Web server that can be operated by a PC Web browser — and it also works through a wireless network to convert any laptop or handheld PC into a two-way RF remote control.

Linn, the Scottish manufacturer that, in another age, gave us the classic LP12 turntable, adopts a similarly high-end approach in its Knekt Kivor networked audio system. The Linn strategy is to avoid the sonic degradation of MP3 and other compressed file formats by storing and distributing pure, uncompressed CD audio. That, naturally, requires a lot of hard-drive capacity. Linn provides a minimum of two 76-GB hard drives in the Kivor Tunboks, and more can be added. In addition to the Kivor Tunboks, the four-piece modular system includes the PCI Musik Machine, a high-fidelity soundcard; the Oktal, a 24-bit digital-to-analog converter; and the Linnk, a control interface. The Linn rig can feed any audio system (including non-Linn products) as long as the system has a D/A converter. A fully loaded, custom-installed Knekt Kivor with 11 (!) hard drives sells for \$20,000.

MAINSTREAM PLAYERS

Yamaha has leapfrogged other mainstream manufacturers with the 802.11b wireless operation and overall elegance of its MusicCAST system. The system consists of the MCX-1000 server, MCX-A10 client (or terminal) with liquid crystal display, and optional flat-panel speakers for wall-mounting or desktop use. An 80-GB hard drive stores up to 1,000 hours of music (at 160 kbps) or more with an optional upgrade, and the CD-R/-RW drive can burn discs as well as rip them. Burning CDs doesn't require an external CD player — the system can bounce uncompressed audio to the hard drive and back to the CD-R/-RW. Ethernet can be used in addition to (or instead of) the wireless connection. However, server and client cannot be directly wired together — a hub is needed between them. The server can accept up to five wireless clients, or with two more wired clients, a total of seven. Pricing starts at \$2,200 for the server and one client, plus \$600 for each additional client.

Kenwood's Sovereign Entré Entertainment Hub (\$1,750) controls any of four Kenwood Sovereign receivers (\$950 to \$2,650 each) and allows up to three Kenwood Sovereign DV-5900M or DV-5050 400+3 DVD changers (\$1,400 each) to be daisy-chained together. The Entré has a 20-GB hard drive, an internal CD-R/-RW drive and an intuitive graphic user interface. It feeds separate audio streams to four rooms simultaneously via Home PNA 2.0 connection, with the addition of one or more Access Remote Portals (\$500 each). The Access is a wedge-shaped device with a two-line fluorescent display, 20 watts times two and the ability to stream Internet radio.

Marantz's DH9300 Digital Music Server (\$3,299) comes with an 80-GB hard drive and a CD drive. The hard drive is rated to hold 100-plus hours of uncompressed CD data or 1,200+ hours of MP3 at 128 kbps.



The Marantz DH9300 music server

This four-source multizone product uses Imerge's XiVA software for music-library management, is software-upgradable, and offers a choice of three user interfaces: the front-panel display and controls, a remote control, or a third-party interface via RS232 port. The server talks to a PC through its USB port and to other audio components or

systems via the usual digital and analog jacks.

The RCA Scenium DRS7000N sells for an affordable \$549 and combines a hard drive with a DVD/CD drive. At 40 GB, the hard drive is rated to hold up to 30 hours of video programming, 1000 MP3 files, or 10,000 JPG still images. The do-it-all optical disc drive handles a dizzying array of video and audio formats including progressive-scan DVD-Video, DVD+R, DVD+RW, DVD-R, DVD-RW, VCD, CD, CD-R, CD-RW and CD-ROM. Sweetening the package is a subscription-free program guide, GemStar's GUIDE Plus+ GOLD and an IR blaster. There's no Ethernet connection but the USB port can be used to transfer files from a PC. RCA also offers the Scenium RTD750 Home Theater Music Jukebox (\$699), which does have both Ethernet and dial-up connections, along with a 20-GB hard drive, DVD/CD drive, surround speakers, five channels times 30 watts and a 50-watt subwoofer.

At \$399, the TDK DA-9000 Jukebox is probably the most accessibly priced audio server product.



The TDK DA-9000

TDK says the 20-GB hard drive can hold 300 uncompressed CDs or more than 4,000 MP3 files. There's also a CD-RW drive and USB port (cable included). The unit is Gracenote-compatible and has a front-panel liquid crystal display.

A NEW OPPORTUNITY

While some customers will no doubt want you to integrate an audio server into an existing whole-house system, others may never have

seriously considered going multi-zone. If that's the case you may have an opportunity to sell more than just a single audio server component. Ask the customer if he or she would like audio delivered to more than one room in the

home. You never know - an audio-server purchase could become the genesis of a whole new profit center for you and a broad-ening of horizons for the consumer.

Mark Fleischmann is the author of Practical Home Theater. For more information, visit www.practicalhometheater.com or call (800) 839-8640.

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