R&R

DIGITAL GUIDE

COMPUTERS INVADE THE PRODUCTION ROOM!

Digital Audio Workstations

- **19 Software & Hardware Packages**
- **Prices, Features For Each System**

ALSO...Computer Control Update...Hooking Up Your Station To The Internet

CONTENTS

BUYER'S GUIDE TO DIGITAL AUDIO WORKSTATIONS

Thanks to the ongoing plunge in computer memory prices, there's a DAW within reach of every budget. A variety of software and hardware options are covered.

PAGE 4

COMPUTER CONTROL ROOM SYSTEM UPDATE

What a difference a year makes. All of the computer control room systems profiled in last year's Digital Guide have undergone significant enhancements and upgrades. Plus a new system is profiled. **Page 19**

FINDING THE ON-RAMP TO THE INFORMATION HIGHWAY

It's the hottest thing since the invention of the modem! Welcome to the **Internet**, where the information highway is represented by an amazing maze of online services, colleges, major corporations, the U.S. government ... and maybe even *your* radio station. Associate Editor **Jeff Axelrod** explores this new technology and lists the stations already online.

Page 23

DIRECTORY OF DIGITAL SUPPLIERS

A comprehensive listing of addresses/phone numbers for major digital hardware and technology suppliers.

Page 28

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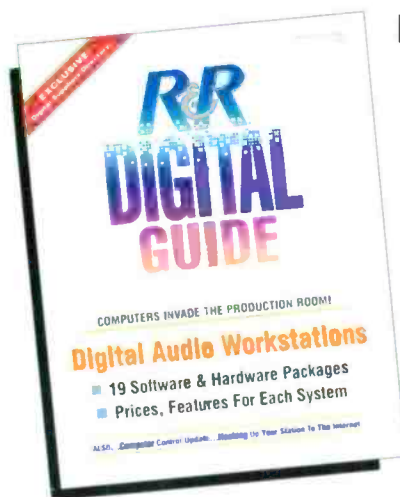
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Digital Audio Workstations Enter The Next Generation

■ **More memory, increased reliability, lower prices make heads turn in large and small markets**

Digital audio workstations invaded radio station production rooms only a few years ago. However, they were expensive, difficult to master, contained insufficient memory, and were crash-prone.

But thanks to improved designs, stabilized technology, and a freefall in computer processor and memory costs — hard drive memory runs about 50 cents per megabyte today compared to $4 five years ago — digital workstations (DAWs for short) have become an affordable and reliable option for stations in all market sizes.

As a result, stations and production directors who can master the technology will be able to make more sophisticated and better-sounding commercials and station promos. And few will dispute that production is a critical competitive factor in this burgeoning multimedia world.

What DAWs Do

DAWs came into vogue in the late '80s. Sound engineers found it much easier to manipulate multitrack sound — such as recording studio work and motion picture sound — on a hard drive rather than an analog recorder. Today, anyone who buys a sound card for their home computer usually receives software that allows the operator to edit and rearrange the audio. The home equipment is fine for weekend sound enthusiasts. But it's generally too cumbersome and slow for the intense demands of a station production room.

Just like the old **Ampex** and **Otari** reel-to-reel machines they replace, DAWs come in many flavors and colors. Some are software-only products that are designed to be installed on a Mac or PC computer you already own. These products require a more computer-literate operator, since all controls are done via a mouse or keyboard. More elaborate and expensive hardware solutions emulate analog reel-to-reel machines, with start, stop, and record buttons. Prices range from just a few hundred

dollars for software only to heftier five-figure sums for deluxe hardware featuring plenty of digital storage.

Digital workstations operate quite differently from analog tape recorders. Sound on reel-to-reel machines occupies a specific, physical space on the tape. On the other hand, sound on a DAW is stored on the hard drive the same way other computer files are. The elements are first converted into digital bits, clustered into 512-byte "sectors," and then

Roland
DM-800

Turtle Beach 56K

recorded onto the drive wherever there are open spaces. They don't necessarily even occupy *adjacent* space — parts of the file can be on one drive location while the rest can reside somewhere else. The drive's file allocation table (FAT) keeps track of where each file segment is located. The drive's head scans the disc at very high speeds and seamlessly plays back all the clusters together.

Digital audio technology boasts several advantages over its analog ancestors. If sound on an analog tape track didn't work well with the rest of the production, it had to be rerecorded. What's more, the resulting "mixdown" lost a few db in signal-to-noise ratio during the dubbing process.

With digital technology, production tracks can be laid down in no particular order, and they don't have to be in specific hard drive locations. The operator uses the DAW to instruct the computer to combine these far-flung elements into one piece containing multitrack mixes, crossfades, and overlaps.

Quick Fixes & Mixes

Many mistakes don't require the re-recording of a track. For example, if an announcer's read is too long, the varispeed option available on most units can speed up the read — without changing the announcer's pitch — to the appropriate length.

When a project is finished, it is then "bounced" or mixed down to left and right channels and dubbed to the appropriate media. The computer instructions used to form this project are saved to a file so the raw data (which still exists in its original form) can be turned into a copy of the original spot.

A DAW Glossary

Listed below are layman definitions of functions generally associated with digital audio workstations:

• **Backup** — As with all computer files, material created on a DAW needs to be backed up frequently — probably daily. Some DAWs offer built-in DAT or 8mm backup, while others offer either proprietary or consumer brand name outboard options.

• **Computer Platform** — All DAWs use a personal computer — PCs, Macs, or some proprietary technology. Almost everyone is on one side or the other in the great PC-Mac debate. But suffice it to say that hardware technology is so reliable these days that buyers may be hard-pressed to make this category a major factor in their choice of product.

• **Controller** — Some DAWs offer "front ends" that emulate the controls of an analog tape recorder, while others allow only mouse or keyboard input. Most former reel-to-reel users appreciate the familiarity of DAW controllers, but these units are more expensive.

• **DSP** — The digital sound processor can either be proprietary or a brand name. As this is the device that all sound travels through, it is virtually the single most important piece of hardware in your system.

• **Hard drive capacity** — Not much to say here except "the bigger, the better." Each mono track consumes about five megabytes per minute, which means that a 1-Gigabyte drive holds about 200 "track-minutes."

• **I/O** — Most DAWs can be hooked up to either analog or digital inputs/outputs. Although some DAWs are advertised as being "eight-track," some have only two inputs — which means that sound recorded on these units must then be assigned to one of the eight tracks after they've been recorded to the hard drive. Some machines do have as many discrete inputs/outputs as there are tracks, allowing for dubbing from multitrack analog masters.

• **Networking** — Some DAWs allow your system to be connected to standard networks, such as **Ethernet**. That is an advantage if the rest of the station may require immediate access to your work. It could also be an advantage if one station does production for a duopoly that's not in the same building or for a co-owned station in another city.

• **Plug-ins** — This is an option that allows users to add sound processing capability to their DAWs, such as equalization and compression. Most plug-ins are proprietary to the main DAW product, although some manufacturers make "third-party" options for other products.

• **Sampling Rate** — All DAWs "sample" the bits of data at 44.1kHz, the same as CD audio. Many also sample at 32kHz, which narrows the frequency response to 15kHz — about the same as FM radio's range.

• **Scrub** — This is the ability to emulate the "rocking" of analog tape reels in order to find a particular point on a tape. All DAWs that are equipped with controllers have a scrub wheel.

• **Time code** — Most DAWs are supplied with SMPTE or other time code options. Most sales reps report they've seen time code options used sparingly, if at all, by radio stations.

• **Tracks** — The number of tracks advertised by a DAW usually refers to the number of *internal* tracks the system can handle, not necessarily the number of tracks that can be simultaneously recorded. Some systems tout "virtual" tracks, which can expand (into the hundreds) the number of internal tracks used. But the ability of these tracks to be processed simultaneously is limited by the capability of the hardware.

• **Undo** — Much like on a word processor, this feature allows the operator to erase the last "marker" or edit/command from memory. Undo only alters edit *instructions* and not the program material itself.

• **Varispeed/Varipitch** — This feature is standard on most units and might also be labeled time compression/expansion on some units. It allows for speedups and slowdowns of a particular element, with or without changing its pitch.

Move Up from Carts to Touchscreen Digital Audio

Play Any Audio at a Touch

Nothing else makes radio as fast or easy as having all your spots, sounders and sweepers start with your fingertip—**always on-line and ready** to play from hard disk. And **nothing else** makes your station sound as good or as exciting as touchscreen digital and creative talent with the **new Scott Studio System!**

Here's how it works: Six buttons on the left of the 17" computer touchscreen play what's on your program log. Scheduled spots, promos, PSAs and live copy come in automatically from your Scott System Production Bank and your traffic and copy computers. You see legible labels for everything, showing full names, intro times, lengths, endings, announcer initials, outcues, posts, years, tempos and trivia. Your jocks can rearrange anything easily by touching arrows (at mid-screen), or opening windows with the entire day's log and lists of all your recordings.

On the right, 18 "hot keys" start **unscheduled** jingles, sounders, effects, comedy or promos **on the spur of the moment**. You get 26 sets of 18 user-defined instant "hot keys" for your jocks' different needs.

Large digital timers automatically count down intro times, and flash at 60-, 45-, and 30-seconds before endings. You also get countdowns the last 15 seconds of each event.

The Scott Studio System is your **best** way to make the move to digital audio and eliminate troublesome carts. Each button on the touchscreen plays whatever you want instantly. All scheduled spots, jingles, promos and scripts come in from your traffic and copy computers.
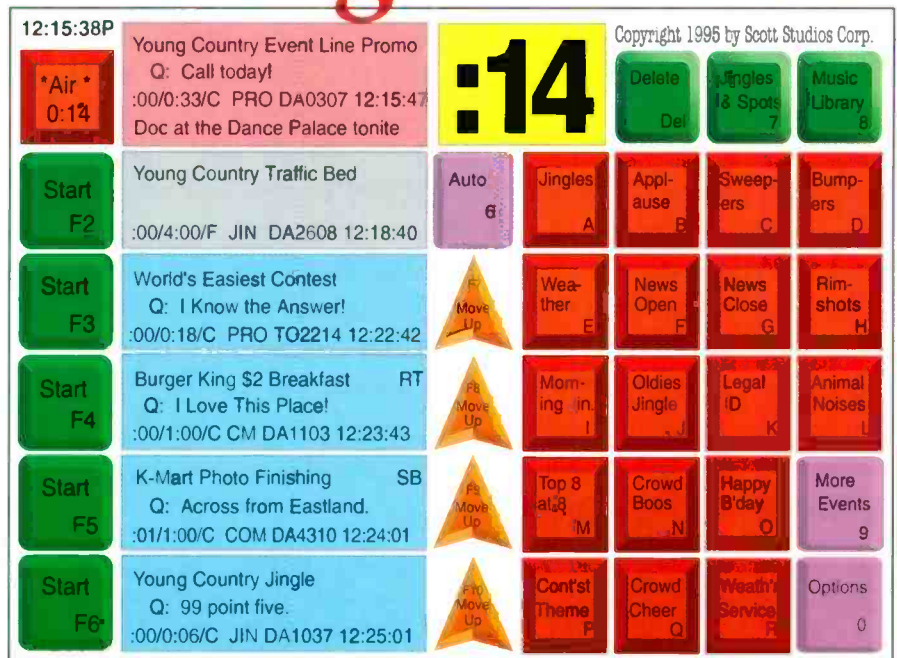
The World's Fastest Playback!

Touch either of the two buttons at the top right of the main screen to see our "Wall of Carts" with all your audio **on-line!** Touch the sound, spot, jingle, promo, PSA or comedy you want and it plays **instantly**. Or, you can put it anywhere you want in the day's schedule. Audio is displayed any five ways you like.

The Scott System also gives you a "Make Good" button so it's quick and easy to reschedule missed spots or promos.

Instant Requests from Hard Drive

Our most popular option is **9 gigabyte** disks with **1,000 songs** pre-dubbed for **free!** The audio quality of digital music from the Scott System hard drive meets or beats the best CDs.

And nothing could be faster than song requests from the Scott System! You also get five "Wall of Carts" with music that plays at a touch! Songs are displayed by title, artist, year, length, category, or any ways you like.

Live Copy On Screen

Live tags, weather, promo copy, music trivia, contest copy and winners' lists automatically pop up on your Scott System's screen.

The *Best* Digital Audio

When spots, promos, PSAs, or any other digital audio events are recorded, they're immediately playable in **all** your Scott System air studios. Nobody wastes time carrying carts down the hall or redubbing spots for additional stations.

One question you **don't** have to worry about with the Scott System is "What if it breaks?" The Scott Cart Replacement System comes complete with **every** spot and jingle stored **redundantly** on **two** hard disks with a **split-second** switch to the "hot standby" computer and its own backup audio outputs! You get touchscreen convenience, digital quality, and backup redundancy for no more money than cart machines and commercial carts.
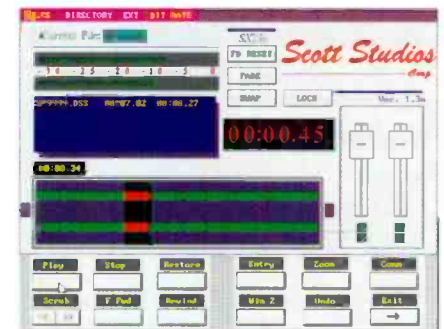
Sound Better With Digital Editing

Scott Systems' graphic waveform editors work wonders with phone calls in the air studio and creative spots and promos in production.

Your Best Investment

The Scott System **leads the industry** with the biggest broadcast groups like Shamrock, Alliance, Salem, Saga, Liggett, Regent, Tichenor, Heftel, Waterman, Max, Atlantic, and Rawlco in Canada. Our major markets include Detroit, D.C., Dallas, Miami-Ft. Lauderdale, San Diego, Denver, Oklahoma City, San Antonio, Greensboro, and others large and small from Bangor to Bakersfield.

Scott Studios Corp.
13375 Stemmons Freeway, Suite 300
Dallas, Texas 75234 USA
8 0 0   7 2 6 - 8 8 7 7
(800) SCOTT-77

A Guide To Digital Audio Workstations

Digital audio workstations come in a wide range of costs, capabilities, and sizes. Some are simply software-only products that you use with hardware you supply. Others come with sound cards that you plug into your hardware. The most elaborate products include full-featured recorders that allow operators to do all their work without touching a mouse or keyboard — but they're also the costliest. Only a few DAWs are made specifically for radio station use. Some of those listed are geared toward budget markets, while others are targeted to high-end, post-production users. Together, they show the broad range of DAW choices available today. Contact your broadcast equipment distributor for more information on these products.

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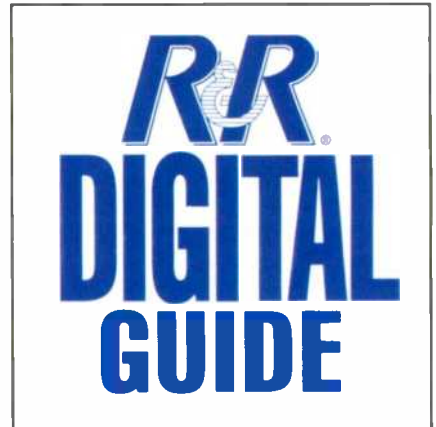
Audion Voxpro

Audion
Voxpro
$6995 for Audion hardware and software; $2995 for software alone

This unit is a different from most of those described in this article. The Audion Voxpro is a digital recorder designed for *control rooms*, particularly at stations that use many incoming program elements. This system differs from computer control room systems (see next story) in that it's designed to store phone bits, traffic reports, and newsfeeds — not commercials and music.

The Voxpro front-ends a Macintosh and is controlled from a rather simple keyboard that sits near the console. Once the air personality logs on with a password, he or she can then record and edit bits and assign them to 10 "cart keys" located across the top of the controller.

The on-screen waveform moves across a stationary cursor to simu-late analog tape moving across a playback head. There's no scrub wheel, but the operator can jog in small increments by jockeying with momentary keys. Bits can be fired by using the remote start on the broadcast console.

Several new features were added late last year in version 1.5: The unit now operates in stereo; it offers a "time slip" feature that allows one channel to run delayed from the other; and it also operates in native format to a Power Mac.

Digidesign Session 8

Digidesign
Session 8
Pro Tools III
$1999 for Session 8 software; $995-$2995 for I/O options; $6995 for Pro Tools III software

Designed for budget-minded users who desire to enhance an existing Mac or PC, Digidesign's Ses-sion 8 software comes with three interface options:

• The 882 Studio is an integrated all-digital system;

• The 882 I/O hooks up to an existing mixer; and

• The Session XL comes with balanced XLR inputs (available in PC version only).

The 882 Studio interface is a black box that accepts inputs from various musical instruments and keeps sound in the digital domain. The eight-in/eight-out I/O is advertised as the company's lowest-priced option, while the XL is designed for hookup to professional consoles.

The interface allows users to record eight tracks simultaneously, and it can output eight discreet tracks for external mixing. There are six parametric EQs.

Digidesign has also introduced Pro Tools III, a 16- to 48- track simultaneous record/playback software package designed solely for the Macintosh. Users can plug in as many as three I/O cards, each capable of trafficking 16 tracks of record/playback audio. Four plug-ins complement the Pro Tools III, including EQ, compressor/limiter, and a Mod Delay for flanging and other effects.
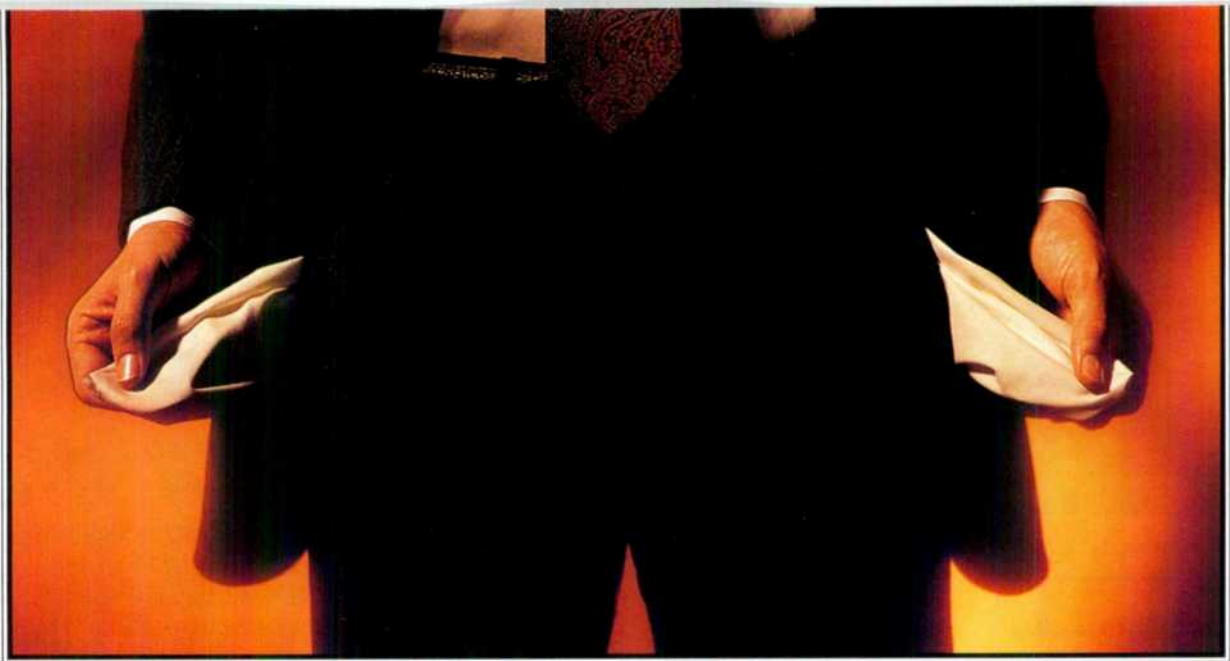
Why so many TIGHTFISTED Penny-pinching FM stations are willing to dig deeper for an OPTIMOD.

Seems everyone has gotten a little tighter, and more savvy, since the recession. To attract and hold a wider audience, stations have learned to invest in what keeps working. Like better programming. And pure digital sound.

With all–digital processing, the OPTIMOD 8200 delivers what no analog FM processor can: the unmistakable punch and clarity of "the OPTIMOD sound," with the power and flexibility of four built-in digital processors. So you can tailor your station's sound precisely to your format. Add new sounds simply by adding a new board. And never have to worry about out-growing, or unloading, a capital investment.

The 8200 frees you to go wherever digital FM goes. While analog boxes only dig you in deeper.

orban

Digital Audio CardD

Digital Audio Labs
Fast Eddie
The EdDitor Plus
$199 for FastEddie software;
$349 for EdDitor Plus software;
$795 for CardD Plus DSP card

For a rock-bottom $200, Digital Audio Labs' Fast Eddie is an entry-level Windows editor that does non-destructive editing, cut and paste, sample-accurate editing, and overlays of two elements. Markers can be placed in the waveform window in order to remember key edit points. And there are 10 undo levels.

Two bonus programs include Sound Catalog, which triggers sound files from a hot key on the computer or by MIDI, and Playlist Editor, which can assemble sound files in a specific play order.

The EdDitor Plus, which requires the proprietary CardD Plus sound card, adds simultaneous record/play functions; Punch In, which allows the rerecording of one section of a sound file; and scrub software, which emulates a scrub wheel with a mouse.

Innovative Quality Software
SAW
$599 for SAW software;
$999 for SAW Plus software

Developed in Nevada by a sound engineer for Las Vegas shows, SAW (which stands for Software Audio Workshop) is a software-only product that promises fast eight-

track editing on a PC with Windows. It's among the most inexpensive DAW options in this article.

SAW's developers claim its editing features are more reliable than many of its competitors, thanks to much of its code being written in 32-bit register assembly language. This presumably eliminates slow screen redraws when scrolling and zooming through the waveform data.

The program allows you to combine as many as 40 sound files in one session. A real-time preview feature allows edits to be heard before the instruction is committed to memory, thus eliminating the need for an undo command. The folks at Innovative also promise faster backups by capturing audio data in real time via DAT, while editing session information goes to a 3.5" floppy.

Innovative Quality SAW

An optional $349 plug-in, "Utilities Rack #1," adds a file format converter to help switch between WAV and SND files, an audio compressor/limiter, a paragraphic equalizer, an echo effects generator, and an auto panner.

At the NAB, Innovative will release SAW Plus, which will mix 16 tracks on any Windows sound card and automatically mix different file formats (eight-bit, 16-bit, mono, stereo, etc.).

KORG USA Inc.
Soundlink
Pricing begins at $25,000

KORG's Soundlink is a high-end, eight-in/eight-out system operating on a PC platform. The opera-

KORG Soundlink

tor works with a digital mixer that includes eight channel faders, one MIDI master fader, and one stereo master fader — all of which can operate under real-time continuous automation.

Soundlink has three-band EQ for each channel, with the middle band featuring parametric EQ with boost/cut, frequency, and Q control. These settings can also be automated. A noise gate and high-pass filter are also on each channel, as are several reverb options. A compressor/limiter is hooked up to the L/R mix buss, and a time compression/expansion function is also included.

The standard system holds 120 track-minutes at 44kHz; an 8mm tape backup is standard. The latest software version (4.0) adds several editing, auto save, take numbering, keyboard shortcut, and improved scrubbing functions.

Micro Technology
MicroSound
$6595 for 486/33 workstation
with 1.2gb drive

MicroSound is available as a fully integrated workstation or as a hardware or software peripheral. A minimum configuration includes a proprietary DSP, cable, and a software and I/O module — which features analog/digital converters.

Each production job is called a project; each project can hold up to 60 files. Of some 2900 virtual tracks, 50 can be played simultaneously. On the graphic display, segments receive start, end, fade-in, and fadeout mar-

Micro Technology MicroSound

kets when created, while zone markets and flags appear when added. Some digital effects, such as flanging and echo, can be accomplished on the base model. Several add-on features include noise removal, time and pitch change, sample rate conversion, and filtering.

Orban
DSE-7000
*$19,950 for workstation
with one 65MB RAM card*

Some users might know this as an AKG machine. However, sister company **Orban** took over its production last year. It was also one of the first digital decks to grace radio production rooms five years ago.

This model is unique because it is a RAM-based workstation. Virtually all other models do their work via sound on the hard drive. The advan-

Orban DSE-7000

tage: RAM is instantly accessible. Accessing various sound clips on far-flung areas of the hard drive can strain even the fastest processors. But most manufacturers don't use RAM because this memory function is very expensive.

The base version of the DSE-7000 has enough RAM to process eight track minutes of audio. Up to four 64-meg RAM cards can be installed, enough to process 70 track minutes. The user console features relatively few controls over a large amount of real estate. Record/play and scrub functions are handled with the right hand, while mixer functions are done with the left hand.

An editing screen and mixer screen control most functions on the monitor. The editing screen displays pseudo LED input and output meters along with waveform displays of all eight tracks. A fuel gauge monitors available RAM for recording.

This machine doesn't forget the analog user. For example, the "splice" function allows the operator to mark an in-point and out-point — much like using a grease pencil — and the execute key makes the sound between the two points disappear.

Finally, not everything is handled in RAM. The DSE-7000 has a library sound preview function that allows sounds to be heard directly from a hard drive without loading them into RAM.

Software version 5.0 has a compression/expansion utility that can change the length of an element by up to 25%. Other new features include pitch shifting, two-octave varispeed, and reverse audio.

OSC
Deck II
$399 for software

For Mac users searching for a software solution to their editing needs, San Francisco-based **OSC** offers Deck II. It can play back up to 16 tracks of digital audio on a Power Mac 8100/110 without any addi-

OSC Deck II

tional hardware. The Power Mac 7100 is capable of handling 10 tracks; the 6100 can handle eight tracks.

Users can record up to 1000 virtual record tracks on Deck II. OSC also manufactures an enhancement product, the 16-Track Tool, that quadruples the playback track capacity of any four-channel Digideisgn Pro Tools system.

By the way, OSC stands for "Our Stinking Corporation." It's run by a bunch of whiz kids with irreverent attitudes. But they've managed to create rather high-end software that costs just $400.

Otari Corporation
RADAR
*$14,764 for eight-track version,
RE-8 controller, and 8mm backup*

Manufactured by **Creation Technologies** of Vancouver, this 40-pound package — using proprietary computer technology rather than off-the-shelf PC or Mac products — is available in eight-, 16-, or 24-track versions. Its main unit houses as many dedicated inputs and outputs as there are tracks.

Track-arming buttons indicate each track's record or playback status; a peak LED meter monitors each track's record/playback levels. A 32-character LCD screen displays the project label and status of the work in progress. And there are specific function buttons, such as
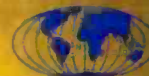
Otari RADAR

varispeed. In addition to a 3.5" floppy disk drive for software upgrades, the RADAR also has standard analog-type transport controls, such as record and play.

Although RADAR can be operated as is, it works best with the optional RE-8 session controller, which also has a 32-character LCD status screen. It sports a QWERTY keyboard for project and cue point labels, dedicated transport control buttons, and a weighted scrub wheel. The unit can handle up to 99 projects, each with 99 cut points.

Pacific Recorders

ADX Pro
ADX Eight
ADX Ensemble
$23,980 for ADX Pro;
$42,960 for ADX Eight with Mixstation;
$34,980 for ADX Ensemble

This longtime manufacturer of broadcast equipment offers three versions of its ADX series of workstations.

The most economical is the ADX Pro. This unit records two channels, which can then be distributed to eight channels internally. Material is recorded onto a removable 2.4 GB hard drive; control is accomplished via a compact console that includes tape recorder-like controls and a scrub wheel. Status lights monitor each of the eight internal tracks. Other status functions appear on the monitor, including, of course, waveform information. There are 32 levels of undo.

At the high end of the product spectrum is the ADX Eight, which offers eight-track simultaneous recording and playback. Plus it holds more than six track-hours of material. Control can be accomplished via the dedicated ADX console, the computer keyboard, or on-screen controls. The control panel includes typical recorder functions such as a scrub wheel. But the heart of this system is the ADX Mixstation, which resembles a broadcast console but offers much more. It features motorized fader automation and snapshot recall of EQ, pan, and other console settings. The moving faders remember all settings at all times, and all other settings are made according to their intended positions. On-screen monitoring is done with vertical waveform displays of all eight tracks in a graphically appealing layout.

Designed to fit between these two models is Pacific's ADX Ensemble, a roll-around workstation with some of the features of the more expensive model. Several controls — such as trackball, scrub wheel, faders, and EQ adjustments — are closest to the operator. A keyboard rests on the level above; recorder controls are under the monitor. While there are only two inputs with this unit, eight tracks can be mixed internally. And the faders will operate automatically, adjusting to the preselected position as with the ADX Eight.

Pacific Recorders ADX Pro

Roland DM-800

Roland

DM-800
DM-80
$8995 for DM-80 eight-track
with remote and fader;
$7195 for DM-800
with two internal 500MB hard drives

This well-known manufacturer of recording industry equipment offers the DM-80 in four- to 32-track configurations. The hardware, which front-ends a Macintosh, consists of a rack-mountable multitrack disk recorder and controller with scrub wheel, track selectors, and graphic display.

The DM-80 uses tape recorder metaphors, such as record and play. A preview mode provides up to five seconds of loopable play time. A large number of virtual record tracks can be laid down. Optional DM-80-S Track Manager software increases the number of ways tracks can be viewed. It also provides complete transport control of the DM-80.

Just out from Roland is the DM-800, a lower-priced version of the DM-80. Weighing just 12 pounds, the unit is designed not just for studio use but for mobile production as well. The unit records eight tracks, can handle up to 300 virtual tracks, has full dynamic automation, and has semi-parametric digital EQ. It also features tape transport-like controls. Sound is processed via Roland's proprietary DSP.

Despite its compact size, the DM-800 can accommodate a couple of 2.5" SCSI hard drives — allowing for several track hours of recording time. It also contains such editing features as time compression and pitch correction.

The Next Generation Digital Audio System

Satellite • Automation • Live • Studio Assistant

SALSA
by LPB

Live Assist Screen
Pictured

User Programmable
Database Search and
Store Parameters

LPB SALSA - $8,995

386DX33 PC System with 1 Gigabyte Hard Drive
Open-ended architecture, always upgradeable
Simultaneous Record and Play of audio
Stereo and Mono audio
User-controlled variable audio overlap for live-sounding segues
Accepts downloads from all standard traffic and music scheduling systems
Provides a 31-Day historical log of everything that aired and when
System support available 24 hours a day, 365 days a year

Live Studio Assist (included)
Full color and easy graphics
Control completely by mouse
Play any hard drive audio immediately or via schedule
Search spots and music by up to 6 different categories
Identification of bad audio files - before they air

Satellite Automation (included)
Up to 15 stereo satellite networks, unlimited events/hour
Record for delayed broadcast - automatically
21 Format clocks - changing automatically as you wish
Up to 8 control outputs for other sources or equipment
Walkaway operation with full confidence

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Choosing the right digital audio system is one of the most important decisions you'll make this year.

Don't play games.
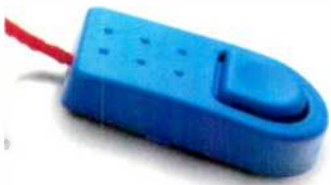
Choose DDS, the digital delivery system from Radio Systems. It's the only audio storage system based on a UNIX-style, multi-user, multi-tasking, real time operating system. This means that, unlike other systems, you can now expand to service multiple studios, channels, and users, easily and inexpensively. And all without the need to add computers or software. Starting at under $10,000, you'll find that DDS is the most economical, flexible, expandable and powerful digital audio system available.

Anything else...is just a toy.

HARRIS ALLIED

Fax: 1.317.966.0623   Southern California: 1.800.690.2828

Studio Audio SADiE

Studio Audio

SADiE
*$6,995 for SADiE
hardware and software
$9,995 for complete system
with computer*

With 200 units in use at the BBC alone, the SADiE workstation is quite popular among European users and has a growing U.S. clientele. SADiE uses a PC with Windows as its platform. Two cards are supplied with the system — the DSP and the analog/digital converter.

This is a two-in/four-out system. However, once inside the computer, sound can be assigned to any of the eight tracks. Standard processing features include time compression, EQ, and noise reduction.

The latest software release adds SCSI CD-R capability, an 8mm Exabyte CD mastering format, an 8mm backup, and up to 24-bit editing. A new process called the Speech Editor has been added as a high-quality time compressor for speech or to automate speech editing. It works by scanning selected clips or editing list entries to find periods of audio and silence. It then forms an edit decision list in memory from the audio in the original clip, but with cuts at the start and end points of the audio.

TimeLine Vista Inc.

DAW-80
*$17,500 for host computer,
DSP, and
170MB drive*

This is a high-end product that's marketed primarily to recording and film studios, hence the California-based company's emphasis on its 24-track prowess.

The DAW-80 sits on a PC/Windows platform and uses the company's Studioframe software (currently using version 6.0). Users can start with an eight-track setup and choose to edit either in film style (with sequential assembly) or random-access multitrack disc style.
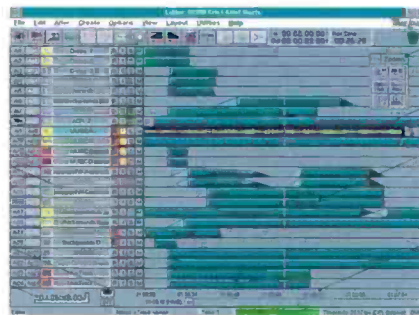
TimeLine DAW-80

The software's graphic display shows tracks horizontally (as if it were a graphic display of analog tape), with a label indicating track type (i.e., Voice 1, music, efx, etc.). Another label in the track area displays what that track contains.

On-screen controls operate everything. But production directors who want physical controls can use the DSC-100 system controller, which has a scrub wheel, dedicated track access keys, and system function keys that map to an on-screen toolbar.

Turtle Beach Systems

56K
*$1,295 for software,
DSP card, and
I/O interface*

Turtle Beach, a renowned manufacturer of sound processing hardware and software, offers this high-end package for your PC. It includes a DSP card, SoundStage editing software, and digital editing box.

The on-screen displays are among the most colorful of the various software packages. Icons on the main editing screen take the operator into audition mode, edit out clicks and pops, define zones that will later be used in the playlist, and attach markets to certain spots. Other icons switch screens into record, playlist, or scrub modes.

SoundStage does both destructive and non-destructive editing. Some destructive functions include cut and paste, sound file mixing, EQ, crossfades, mute, and reverse. Non-destructive functions include varispeed, EQ, and playlist editing in playback mode.

Turtle Beach 56K

For more information about the digital workstations described in this article, contact your broadcast equipment supplier. **R·R**

Computer Control Systems Revisited

I f what they say about "dog years" being equivalent to seven "human years" is true, then a "computer year" is probably worth about 25 of our years. Digital technology moves so quickly that each passing year brings with it a whole new generation of products and advanced capabilities.

Last spring, R&R's Digital Guide took a look at computer control systems and how they were being used in radio facilities. One year later, virtually none of the systems we profiled are the same as they were then. Some systems have added new features, others have overhauled their software, and others have evolved into completely different machines. But in spite of all of the improvements and enhancements that have been made, the overwhelming majority of the systems cost about the same as they did last year.

Here's a brief look at how last year's class of computer control systems has changed for 1995.

R&R DIGITAL GUIDE
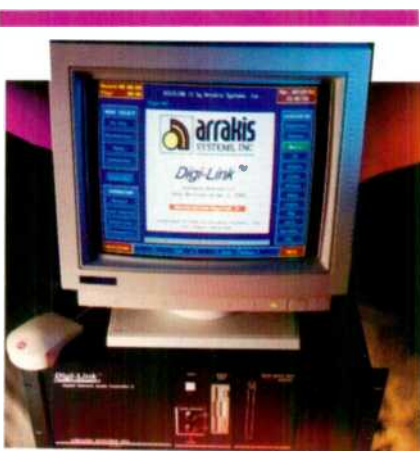
Arrakis Digilink

Arrakis Systems Digilink

There's a new addition to the Arrakis family — "Gemini," an enhanced version of the "Digilink" for live stations. It features "freeform direct start," allowing jocks to run three sound files from the computer's hard disk drive simultaneously and more than 40 "instant start" audio drops each for up to 40 different users. Jocks can also "quick record" items at the touch of a button without having to preassign the event to a file.

Among the other new features: Up to 400 characters of tag text can be assigned to any scheduled event, text-only files can be scheduled as stand-alone events, touchscreen and remote control via modem capabilities are now available, and

e-mail is now included — useful for communications between personalities and call screeners *or* as a high-tech replacement for those infamous "hotline" calls.

BLU Electronics Digistation, Phonebyte

Over the past year, "Phonebyte" has evolved into more than just a tool for recording and editing phone calls. In addition to those functions, it now sports features like "Personal Touch," which lets jocks keep up to 300 drops, jingles, etc. on call from a keyboard. The system also has added increased file portability, with doublers to create mirror files for a second machine, the ability to handle removable hard drives, and transfers of up to one minute of audio via floppy disk.

Meanwhile, the company has also upgraded the "Digistation," which now carries a larger hard drive, has new waveform editing functions, and supports MPEG compression in addition to Dolby AC-2.

Broadcast Electronics AudioVAULT, CORE

New to Broadcast Electronics' "AudioVAULT" this year is a management package for music on hard drive, while the program's screens have been

revamped to give it a more friendly user interface. Network file transfer features have also been added to let it interface with several servers at any given time.

Another BE computer control product, "CORE (Computer Oriented Radio Environment)," has been modified to work with both Denon's 200-CD jukebox and Pioneer's 100- and 300-disc machines. For added reliability, the new "source shadowing standby" feature automatically prepares backup audio in the case of a CD failure. A third BE system, "daBOX," was profiled in last year's Digital Guide, but the company opted not to complete its development.

Enco DAD486X

Enco Systems/ Harris Allied DAD486X

Enco's "DAD486X," marketed by Harris Allied, has added a host of new automation features, including

auto-recording, more segue defaults, and the ability to schedule time-based events on the playlist. This year's model also includes the "DAD Command Language," a simplified way of writing macros to make the machine perform multitask functions. A new interface with the **Orban DSE-7000** also lets files enter the DAD database directly over a network, and remote control software allows most basic tasks to be performed off-site.

While Harris Allied no longer markets the "Audisk," as it did last year, it now offers the "Digital Delivery System." This new unit was built using the new PCI standard bus, which provides a larger conduit for workstations to access sound files. That means the DDS is capable of simultaneously sending out 16 separate tracks of uncompressed audio either over a network or on the air — and with compression, that number jumps to 32. Although the DDS isn't an editor, it does allow for basic "cut & paste" edits on either compressed or uncompressed files. And rather than working out of DOS or Windows, DDS utilizes its own Unix-type operating system specializing in multi-user and multitask functions.

ITC
Digicenter

ITC has expanded the "Digicenter"'s network management capabilities, letting it link as many as 255 workstations to a central audio system and allowing an operator to manage the entire audio database from one machine. Each of the workstations has been equipped to handle multitasking and frectional wave audio support. System security has been augmented by a multivolume hard drive backup feature that saves hard drive files onto DAT cartridges without affecting any other operations.

Digicenter's "PD Mate" software helps programmers merge their music logs with the traffic logs, allowing on-screen edits to be made before the merged log goes into the Digicenter for on-air execution. Meanwhile, its expanded integrated mixer operations lets the computer control audio events from both the hard drive and outside sources as well.

LPB Delivers Hot 'Salsa' For Your Radio Station

LPB Inc.'s "SALSA" — an acronym for Satellite-Automation-Live Studio Assistant — arrived too late to make the pages of last year's **R&R** Digital Guide. So as we update you on the new features of the other computer control systems, we'll introduce you to yet another.

SALSA, as its full name suggests, has the flexibility to be used in a number of studio capacities. Used for satellite automation, SALSA can accommodate up to 21 different format clocks and respond to cue tones from as many as 15 networks. Programs can also be recorded while another is running, even if the other program is playing from hard disk, and all stopsets and break sequences can be preprogrammed. When you order SALSA, LPB determines which satellite services you use and configures your system to meet your needs, with updates provided as needed.

In live-assist mode, SALSA interfaces with most traffic and music scheduling software via floppy disks (although LAN links are available). Operators can navigate the live-assist software using just a mouse and access hard drive audio files instantaneously. Songs or spots can be accessed through any of six categories, and text (song information, news, weather, sports, etc.) can be called up through on-screen databases.
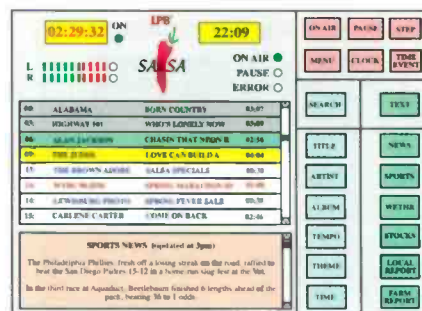
LPB SALSA

In either mode, SALSA maintains traffic log records for up to a year and tests all scheduled events, identifying any bad files before they air. Audio can be overlapped, with the overlap time adjustable by the user, and the unit will control up to eight outside audio sources (DAT machines, CD players, cart machines, etc.).

SALSA comes equipped with a standard 1-gigabyte hard drive — enough to hold eight hours of stereo at 4:1 compression. But LPB's optional "DDS-2 Digital Date Storage Device" allows you to store a much larger library with 4GB of storage (more than 30 hours of music) on a digital tape cartridge smaller than an audio cassette. When needed, a song will be loaded onto the hard drive from the DDS, then discarded once it's played.

Other optional equipment available with SALSA includes: Digital Audio Workstation, providing four-track stereo and waveform editing; a CD Audio Mastering System that lets you custom-create your own CDs with commercials, liners, jingles, etc.; **Dolby** AC-2 compression, yielding 6:1 compression ratios; CD Automation, which hooks the system up to as many as 32 multidisc CD changers; and a remote package that lets you control SALSA over the phone.

SALSA's base system starts at $8995, which includes the computer, monitor, audio card, satellite and I/O control cards, software, and an activator. Starting this month, the SALSA system will be the first of the control systems to ship with an **Intel** Pentium CPU as standard equipment.

The Management AXS

Last year, The Management was offering two products: "Digital DJ/2" for full station automation and "AXS" as an in-studio live-assist aid. This year, the system's features have been combined into a redesigned AXS, making it a more powerful automation tool and providing a wider range of live-assist options. New features include jock-specific digital time announcements and up to 99 "jock boxes," each containing 28 audio events ready at the press of a button, click of a mouse, or touch of the screen.

AXS's new "Power Fill" automatically backtimes to any point within an hour and finds appropriate audio — a song, promo, PSA, etc. — to fill that space. Its real-time scheduler automates background functions such as jock changes and recording incoming audio feeds. Available add-ons also let AXS do simple edits on compressed audio, record up to four stereo digital feeds simultaneously, and play back three tracks from its hard disk drive while also controlling other audio sources (CDs, tapes, satellite feeds, etc.) at the same time.

Media Touch Systems OmniPLAY

Media Touch Systems, which last year brought us the "OpLOG" and "Pick 'N' Play" systems, is introducing an entirely new system this year: "OmniPLAY," designed to handle either live assist or complete automation. Personalities can tape out entire shows while listening to the outros and intros they'll be talking over, including the automatic segues, with the ability to review breaks and re-record if necessary.

Media Touch OmniPLAY

Media Touch has also added cart replacement systems that can access up to 4000 cuts of audio, auto-record functions to record incoming feeds without human intervention, and MTS computer interfaces to run computer-controlled consoles and fader systems.

Pristine Systems MMCS

Last year, the "Music Management & Commercial Control System" was limited to running music off a number of 16-disc CD changers, but this year it has been modified to additionally interface with up to two Pioneer "CAC-V3200" 300-CD jukeboxes. The program itself now includes the "Pristine Audio Commander" and "Pristine Voice Tracks." The former is a utility that simplifies the recording process and automatically trims silence from tracks, while the latter lets your personalities jump to any spot on the log and record liners, back-announces, or other elements as needed.

Often-used audio tracks can now be accessed via the "drop box," which assigns an "alt-key" macro to each event for immediate playback. The system now supports the SAW audio editor and will compress audio in real time as well.
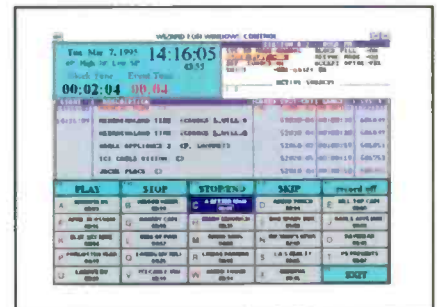
Prophet Wizard For Windows

Prophet Systems Wizard For Windows

Since last year, Prophet Systems has significantly upgraded the digital audio editor for its "Wizard For Windows," letting users edit tracks down to 1/100th of a second (down from 1/10th last year) and adding simultaneous record/playback capabilities, while the unit now accommodates direct digital inputs and outputs. Audio can also now be stored on removable hard disk drives. Changes in the software have greatly speeded up Wizard's reaction time, so items start instantly on demand. It also now sports

a "button bar," a lineup of 26 preset audio tracks available at any time with the push of a key.

For automated stations, Wizard now offers digitized time and temperature inserts, prerecorded by your station's jocks or voice talent (the temperature is determined by a thermometer that plugs directly into the computer). The music automation system has also added the ability to automatically backtime to events and fill when necessary. Wizard has also added security in the form of a six-level backup system — even if the server goes down, workstations continue to function normally.

RCS
Master Control

A unique new feature of the RCS "Master Control" unit is called "voice tracking." It lets jocks "tape" their shows up to eight days in advance, saving not only the jocks' raps, but also memorizing where they hit their segues. Similarly, a feature called "Selector with sound" for programmers lets them test segues and music flow while they're scheduling.

New options available for Master Control include a multitrack digital editor that keeps audio completely in the digital domain until it airs; "Newslink," a wire capture and actuality retrieval/editing device; and varying levels of system security, including uninterruptible power supplies, tape backups, and file server redundancy.

Scott Studios
Scott System

A new name is just the beginning of the changes for the device formerly known as "Troll." The new incar-

Scott System

nation, known as the "Scott System," even looks different — its screen has been revamped and the hardware itself is now available as a rack-mounted unit. Among its new features are triple-overlap audio playback, a preview function to let jocks audition song intros and outros, a phone recorder/editor, and a song/spot database accessible by letter. It can also pull down copy from wire services or from a file.

For production purposes, the Scott System has added its own four-track editor, although it still works with other Windows-based WAV editors. Once spots are finished, the "stretch and squeeze" function will bring them to exactly 30 seconds, 60 seconds, or whatever length you specify. Whereas Troll last year offered only APT-X compression, Scott System now utilizes MPEG and Dolby AC-2 compression schemes.

TM Century
Ultimate
Digital Studio, DCS

TM Century's "Ultimate Digital Studio" has already spawned a sequel, the "UDS II." While keeping all of the features of the original, UDS II

has enhanced the user interface, adding a bar graph display showing how much time remains in an audio event, countdown clocks to the end of tracks, and pop-up windows to display the liners, tags, news, or weather copy pertinent to each break. Programmers wanting to keep tabs on their personalities can — unbeknownst to the jocks — trigger an "aircheck" feature that automatically generates scoped recordings.

UDS II also supports real-time event programming for network shows, expanded CD player support, and data transfers over local-area networks. The machine also includes a new audio controller that sets and maintains sound volume automatically to ensure consistent audio levels.

TM Century UDS II

The **Computer Concepts "DCS (Digital Commercial System),"** marketed by TM Century as part of the UDS packages, is the only system in the bunch that has remained essentially unchanged from last year — but not for long. Enhancements like on-screen VU meters and control room-based digital editing should be rolling out later this year. **RR**

Radio Goes Global Over The Internet

■ Computer revolution spurs new station opportunities

BY JEFF AXELROD
R&R Associate Editor

Once upon a time, radio stations' sphere of influence was limited by the medium's audio-only format and its physical broadcast signal. Not anymore.

Radio has discovered that computers can expand its scope in ways few could have predicted just a few years ago. And this is only the beginning.

In growing numbers, radio stations are realizing that computers can add new interactive dimensions to the relationships they build with their audience. With computers, stations can communicate one-on-one with listeners (and vice versa), engage them in open-forum discussions, and share information with them in exciting new ways. They're also reaching a whole new audience — people who can now visit stations across the country and all over the world without leaving their desks. To accomplish this, stations are turning primarily to two sources: commercial online services and the Internet's World Wide Web.

For now, the Big Three commercial online services — Compuserve, America Online, and Prodigy — are probably the most accessible to your listeners. They are the easiest to navigate and come in the most user-friendly packages. Their graphical interfaces require little computer knowledge, with most operations as simple as clicking a mouse.

Until recently, the Internet was solely the playground of governments, educators, and big business. But as the information superhighway has worked its way into the nation's everyday vocabulary, more and more consumers have discovered the power of the Internet. As a result, service providers and software makers are creating programs that are quickly turning the 'net — which once operated with a language of its own — into a point-and-click medium as well. In fact, Prodigy now offers full Internet access through its service, with America Online and Compuserve both on the verge of making it available to their customers as well.

Going Online

WFLZ/Tampa chose to make its online debut via a commercial service. Asst. PD **Jeff Kapugi** says he first approached America Online about setting up an online presence for the station. "AOL was interested, but it was one of those 'Well, if you spearhead it, we'll run with it' deals. And we're not in the business of putting a whole business online. Obviously, we've got a radio station to run."

So Kapugi approached a fledgling Prodigy-linked regional service, **Tampa Bay Online** — and was initially rebuffed. But persistence paid off. After a few months, WFLZ was invited to join the service in January. The station helped design its online site, but the bulk of the computer work is handled by the service. Since WFLZ just recently went online, the services it offers listeners are somewhat limited. But in coming months, Kapugi says the station hopes to offer interactive capabilities allowing listeners to vote for songs in the station's Top 20 countdown and participate in morning show polls, as well as offering information about regional events.

And it'll only grow from there, Kapugi
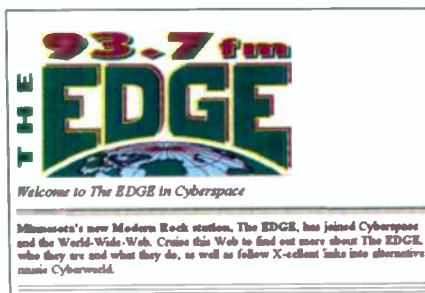
believes: "These types of online services are the wave of the future. And with Windows 95 having its own **Microsoft** network by the end of the year, I think a lot of people will be sampling online services. It's hip and it's cool, and right now there's a very small percentage of your listening audience that's actually involved in it. But I think at one point, it's going to be a very high percentage. And if you're in on the ground floor, the benefits will be greater."

With its own graphics-supported site through Prodigy, though, WFLZ is in the minority among users of consumer-oriented services. With some notable exceptions — i.e., **WLUP/Chicago, WXRT/Chicago,** and **WGN/Chicago** allow you to download pictures and sound clips through their sites in AOL's "Chicago Online" area — most stations are relegated to being running topics of discussion on "message boards" or "forums." Nearly two dozen stations have "folders" on AOL's "Radio Message Board," along with a handful of folders about specific markets, formats, or programs.

Getting It All

While hooking up with one of the commercial online services may restrict your on-screen options, jumping onto the Internet's World Wide Web provides nearly endless possibilities — and it's relatively easy to do. Here's how three stations landed in the 'net:

Internet service provider **Tachyon Communications** originally contacted **WTAI-AM & WAOA-FM/Melbourne, FL** last summer to buy advertising. But as GM **Jeff Kimmel** explains, "When we found out what the Internet was, we figured it was something we needed to be involved with. Every format has its bag-

Welcome to The EDGE in Cyberspace

Minnesota's new Modern Rock station, The EDGE, has joined Cyberspace and the World-Wide-Web. Cruise this Web to find out more about The EDGE, who they are and what they do, as well as follow X-cellent links into alternative music Cyberworld.

gage — you know, all Country listeners are broke, drive pickup trucks, and have their front four teeth missing; all CHR listeners are bubble gum-chewing 14-year-olds.

"What better way to get to these [computer users], who may not be giving us a fair chance, than by presenting ourselves to them in their environment?" So Kimmel arranged a trade agreement with Tachyon, which helped design the stations' Web pages, then created them and put them online.

Fred Pandrok, Promotions & Marketing Director at **KUKQ-AM, KDKB-FM & KUPD-FM/Phoenix,** was making arrangements to set up a BBS (Bulletin Board Service) for KDKB when local access provider **GetNet** made him an offer he couldn't refuse: It would put KDKB and KUPD on the Web for no charge in exchange for promotional announcements. After two weeks of planning, KDKB's pages were up and running. It's been a win-win situation, notes GetNet Director/Marketing **Laura Giacoppo:** "We look at it as an alliance with them. We've had a lot of people sign up and say, 'I heard you on the radio.'"

KRBE/Houston was eager to be the first on the block to join the Web, says Programming Coordinator **Sharon Dastur.** So last November, the station approached local access provider **Neosoft.** "We knew some of the big stations around the country were getting on it. And we wanted to be the first in Houston to get involved, because we knew it was something that's going to be taking place in the future." Like the others, KRBE arranged a trade agreement and receives its Web access at no out-of-pocket cost.

Sky's The Limit

What can stations do with a World Wide Web site? "They can do anything," Giacoppo says. "It's limitless except for the time involved." That's a fairly accurate assessment — the Web gives users full multimedia capabilities, meaning your station could incorporate sound, pictures, text, and even movies into its pages. The only catch? To take advantage of most multimedia effects in real time, the end computer user must have a connection that operates at very high speeds

Deciphering Cyber-Speak

Here are some computerese-to-English translations for terms used in this article:

- **Internet** — All-encompassing term for a loosely grouped network of computers designed to provide information or communications links on demand. Includes **World Wide Web, IRC, Usenet** newsgroups (essentially open letters to those who share your interests), and other methods of file retrieval.
- **IRC (Internet Relay Chat)** — A conference call in cyberspace ... computer users set up "chat areas" wherein groups of two or more people from anywhere in the world can engage in real-time discussions.
- **World Wide Web** — The computer's version of a treasure hunt — information about virtually anything and everything presented in easy-to-use, graphics-oriented screens ... if you know where to look. Good road maps are available along your journey, but sometimes it's more fun to wander aimlessly and take in the sights.
- **Commercial online services** — Like shopping malls for information. Spend as much time as you like browsing, but you're limited to their choice of stores ... and if you spend too much time in there, you'll wind up spending some serious money.
- **BBS (Bulletin Board Service)** — An early ancestor of commercial online services, the BBS makes information available for browsing. But the content is generally local and very limited in scope.
- **Internet service providers** — The real estate brokers of the Internet ... they unite businesses (and their Web screens) with their potential customers — the computer users.

— higher than most (if not all) consumer modems currently available. Without the high-speed connection, users must download the multimedia elements, a somewhat lengthy proposition.

So what *are* stations doing with their Web sites? **InteleCom's Darin Fisher,** who set up **KXRK/Salt Lake City's** Web site, sums it up: "They wanted to disseminate a lot of information, and one of the best ways to do it is someplace where people can go and look themselves. It doesn't take any extra personnel to do it." Nearly all stations use the sites to provide information about their total opera-

tions, although a couple — **KITS/San Francisco** and **KRTR/Honolulu** — focus on their morning shows. Most stations also use the Web as an e-mail gateway, giving visitors the chance to make requests via e-mail or send messages directly to station staffers' mailboxes.

Many stations use the Web to keep listeners abreast of the latest promotions and playlists, while a brave few have started to turn their pages into revenue-generating entities by offering advertising space. Some have even designed interactive surveys that can be filled out on-screen, then submitted to the station

at the click of a button.

Other stations have found unique uses for the new technology. **KEDJ/Phoenix,** in conjunction with the **Marion Foundation,** has brought "Talkzone" onto the Internet. The Sunday evening teen-talk program is simulcast over a part of the Internet known as the "IRC" (Internet Relay Chat), with an in-studio computer operator transcribing the conversation as it happens — while fielding questions from computer "listeners" located all over the world.

Classical **KDFC/San Francisco's** Web site features access to the complete contents of its quarterly music magazine, while WAOA's home page lets you listen to a live feed of the station's signal (see "Truly Global Radio," below).

Hitting The Links

One of the World Wide Web's most unusual features is the hypertext linking ability built into virtually every Web page. These links are a means of transportation around the Web, whether you're traveling to another page of a station's site or heading off to a site half-way around the world.

100.7 WZLX
Boston's Classic Rock

Welcome to WZLX's Home on the Internet

Welcome to WZLX on the Internet. Please feel free to give us your song suggestions and musical ideas anytime! Send E-mail to request@wzlx.com

- **WZLX Promotions**
  Concert tickets, movie screenings, "WZLX Classic Cruiser" appearances, and more
- **Upcoming Classic CD Releases**
  Release dates for all your favorite Classic CDs
- **The WZLX Air Staff**
  Find out more about your favorite WZLX personalities
- **WZLX Rock & Roll Diary**
  What happened today in the history of Classic Rock?
- **WZLX Trivia**
  Test your brain on some Classic Rock Trivia
- **WZLX Feedback**
  Your opinion counts. Let us know what you think about WZLX, and how we can become an even better Classic Rock station for you
- **WZLX Staff Directory**
  All the folks who make it happen here at Boston's Classic Rock

Thanks for tuning into WZLX's Internet Home Page. We invite you to visit us here often! We'll keep you up to date with what's happening in the world of Classic Rock.

A number of music stations use hypertext links to give listeners easy access to Web home pages for their favorite bands (more than 2000 artists currently

have sites). Meanwhile, other stations make news, sports, weather, and even local traffic maps available through their sites.

Of course, stations are free to pick and choose the sites with which they link up. Their selections range from the useful — **KINF-AM & KIRO-AM & FM/ Seattle's** page has a direct link to **NAB's** home page (http://www.nab.org/); **WOOD-AM & FM/Grand Rapids** will send you to the **FCC** (http://www.fcc.gov) — to the unusual: **KZRR/Albuquerque** afternooner **Phil Mahoney** gives you a choice of three beer pages to peruse, while KDKB's Pandrok has filled his "Web Of Weirdness" with unforgettable links like "Froggy Guts," "Butt ... ," "The Captain Kirk Sing-A-Long Page," and "Shakespearean Insults."

The Payoff

What does your station have to gain from Internet exposure? Plenty, according to those whose stations are

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'Truly Global Radio'

■ WAOA/Melbourne broadcasts live over the Internet

This month, WAOA-FM/Melbourne earns the distinction of becoming the first radio station to broadcast a live continuous feed over the Internet.

This technological breakthrough is the brainchild of Tachyon Communications President Sean Franklin, who claims, "It's going to totally revolutionize the way things are done with radio because it's integrating so many things. Now you've got 30 million-50 million people able to access your station — truly global radio. I'd love to be able to click and hear radio stations from other countries."

"You'll be able to punch in and actually listen to the station through your computer," explains station GM Jeff Kimmel, who has nothing but praise for the Tachyon crew. "As far as they're concerned, nothing is impossible. The stuff Sean comes up with ... you wonder where he gets these ideas. But the next thing you know, it shows up on the 'net someplace, and it's just phenomenal."

Broadcasts With Byte

The continuous Internet broadcast evolved from another feature that was unique to WAOA's World Wide Web home page: 10- or 20-second airchecks on demand. "It was an interesting challenge," Franklin says, "and now we're boosting it to the next level by transmitting continuously."

"There were many variables — the space on the system, having a system fast enough to handle multiple requests, setting up high-speed connections, and integrating it with the device so the radio signal can be digitized and sent up the loop. But the people who work with us are very aggressive in trying new things, and we're constantly trying to push the envelope on the Internet."

WA1A 107.1

Welcome to WA1A 107 FM, one of the FIRST commercial radio stations to come onto the net and truly be THE interactive station which surfs the waves of the Infosea.

NEW!!!! - Real Time Radio !!!!
Hear what is playing on WA1A at this very moment.

NEW: Improved AU sampling. This link will be up and down the next few days for multi-source testing and forms support. Enjoy! www@tach.net

Uncompressed:
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- Real Time Radio - 10 Seconds (Uncompressed Stream) 90k
- Real Time Radio - 20 Seconds (Uncompressed Stream) 160k

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- Real Time Radio - 20 Seconds (Resource GZIP) 110k

- WA1A Information
- Station Event Calendar
- Top 10 Song List
- On Line Surf Report
- Concert Listings

WAOA's live Internet feed can be heard at http://www.tach.net/public/realtime.html
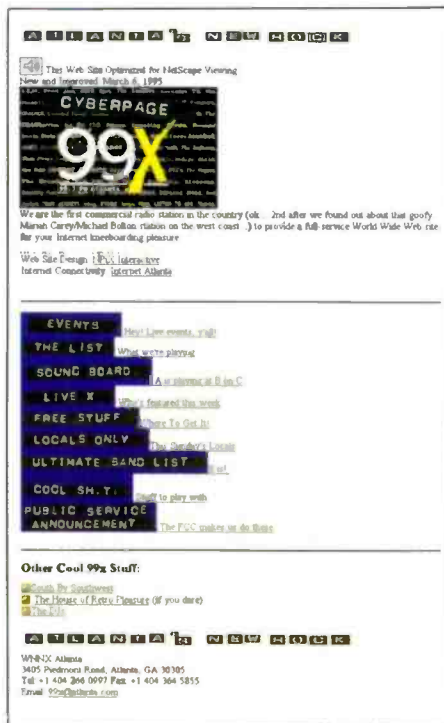
on the Web.

"We have picked up new listeners as a result," says WTAI & WAOA's Kimmel. "And to a lot of these computer types, the fact that we're on the Internet adds a degree of credibility you just can't buy. If you're on the Internet, you've got to be OK."

KXRK Sales Asst. **A.J. Miller,** who supervises the station's Web site, intones, "Listeners always want to be involved with what's going on. They listen all day, they already feel like they know the DJs, and they feel like they have an impact. This gives them even more impact because they can send us messages and also see what's going on. They're always looking for information. Because we're Alternative, we're expected to be ahead of the game all the time. So this is just another way of being ahead of the game."

Pandrok adds that the Web provides "a leading-edge image" for the station, giving the audience "access to us on a dif-

ferent level. You can't always get through on the phone line, but you can always e-mail the morning guys." He also cites Web benefits for air talent: "You can do show prep with it — you can find movie reviews, TV, the **Rolling Stones,** whatever. You can answer e-mail at your leisure. I think that's a nice convenience for everyone."

KRBE's Dastur, who reads the approximately 100 e-mail messages the station receives every day, points out, "A lot of people have mentioned it's great that we're on here, and we're a lot more advanced than the other stations. A lot of people think it's so cool that we're on the Internet that they're tuning in more. The response has been overwhelming."

R&R Associate Editor Jeff Axelrod can be reached with questions or comments via e-mail at AxelJeff@ix.netcom.com.

Webbin' With The Record Labels

Here's a directory of World Wide Web sites for the major labels and their affiliated labels with home pages*:

American Recordings	http://american.recordings.com/
Curb Records	http://www.curb.com/
DGC Records	http://www.iuma.com/DGC/
Geffen Records	http://geffen.com/
Go! Discs	http://www.godiscs.co.uk/godiscs/
Grand Royal	http://www.nando.net/music/gm/GrandRoyal/
Mammoth Records	http://www.nando.net/mammoth/
MoJazz Records	http://www.musicbase.co.uk/music/motown/mojhome.html
Motown Records	http://www.musicbase.co.uk/music/motown
Rhino Records	http://www.w2.com/rhinocatalog.html
Sony Music	http://www.music.sony.com/Music/MusicIndex.html
Sub Pop	http://www.subpop.com/
Warner Bros.	http://www.iuma.com/Warner
Windham Hill	http://www.windham.com/

* Current as of March 8

R·R

Surfing Radio Waves On The World Wide Web

Here's a directory of commercial U.S. radio stations with home pages on the **World Wide Web***:

KDFC-FM/San Francisco	http://www.tbo.com/
KDKB-FM/Phoenix	http://www.getnet.com/kdkb/
KEDJ-FM/Phoenix	http://www.getnet.com/kedj/
KEGE-FM/Minneapolis	http://nic.mr.net:3085/edge/
KHTC-FM/Phoenix	http://www.getnet.com/khits/
KIDR-AM/Phoenix	http://www.getnet.com/kidr/
KIRO-AM & KINF-AM/Seattle	http://www.halcyon.com/kiro/hello.html
KIRO-FM (The Buzz)/Seattle	http://halcyon.com/cathyd/buzz/buzz.html
KITS-FM/San Francisco	http://www.hooked.net/alex/radioa.html
KKSF-FM/San Francisco	http://kksf.tbo.com/kksf.html
KMPS-AM & FM/Seattle	http://www.fine.com/kmps/
KNUU-AM/Las Vegas	http://www.vegas.com/otherside/knews/hompag.html
KOMO-AM/Seattle	http://www.halcyon.com/komo/komohome.html
KRBE-FM/Houston	http://www.neosoft.com/KRBE
KRTR-FM/Honolulu	http://hisurf.aloha.com/Qsengstuff/Qseng.html
KUPD-FM/Phoenix	http://www.getnet.com/kupd/
KXRK-FM (X96)/Salt Lake City	http://www.x96.com/x96/index.html
KZRR-FM/Albuquerque	http://www.swcp.com/kzrr/
WBCN-FM/Boston	http://www.wbcn.com/wbcn.html
WKIS-FM/Miami	http://www.satelnet.org/wkis/
WKLS-FM/Atlanta	http://www.com/radio/96rock/index.html
WNNX-FM (99X)/Atlanta	http://www.com/99x
WOOD-AM & FM/Grand Rapids	http://grfn.org/~radio/combo.html
WRUF-AM & FM/Gainesville, FL	http://www.jou.ufl.edu/about/stations/Rock104
WTAI-AM & WAOA-FM/Melbourne, FL	http://www.wa1a.com/public/wa1a.html
WVLK-FM/Lexington, KY	http://andromeda.mis.net/k93/k93main.html
WZLX-FM/Boston	http://www.wzlx.com/wzlx/index.html
XETRA-FM (91X)/San Diego	http://www.cerf.net/91x.html

* *Current as of March 8*

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FAX: (303) 493-1076
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PL SFX

B

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R&R DIGITAL GUIDE

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John Schmuhl
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D

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Key to Services on Page 28

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Key to Services on Page 28

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