

# Bridging the digital divide

May 1, 2003



By **Dave Supplee**

When Cumulus Broadcasting purchased the Harrisburg, PA, cluster of radio stations in late 2000, the four stations were operating from two facilities. The stations — WTPA, WNCE (now WWKL), WNNK and WTCY-AM — had been under common ownership since 1999, but the planned consolidation of the facilities never took place due to the AMFM-Clear Channel merger, and nearly two years of uncertain status that ranged from being on a divestiture list to being operated by a trust.

Prior to the purchase of WTPA and WWKL, the WNNK/WTCY Harrisburg location was crowded. With 45 full-time employees in a 4,500 square foot building, there was



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not a lot of room to move. To the amusement of visitors, the continuity director worked out of a converted bathroom, with his filing cabinet in a shower stall. The situation became even more difficult when management decided to move the sales and administrative staff from the WTPA building in Mechanicsburg, at which time we lost our conference room to sales cubicles and began having our meetings in vacant office buildings nearby. We also had aging equipment at both facilities. While we had no reliability issues, the numerous ownership changes had limited our ability to replace much of the equipment that was near the end of its expected life.



The WTPA studio is centered around a Wheatstone D-4000 console.



Like the WWKL studio shown here, all the studios have low equipment profiles to maintain easy sight lines.



Another view of the WWKL studio.

## The light ahead

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By 2002, the pieces were finally in place to start the integration process. We had identified a new location with sufficient room to house all stations and provide some room to grow, and our new owners, Cumulus Broadcasting, were committed to building a showcase facility. There were several meetings with our director of engineering, Gary Kline, to discuss each of our visions for new the facility. We agreed that we wanted digital technology where possible, simplicity of design and maximum flexibility. We also



The central rack room is a showcase of its own.



The wiring wall, behind the main racks, uses Krone blocks for the multipair cable terminations.



The outer racks face into a common hallway.

wanted to avoid any single point of failure items that could potentially take the entire cluster off the air.



The reception area presents a professional business image to visitors.

I became the integrator, calling on contractors and other Cumulus engineers as needed to complete the build. The new consoles were furnished by Wheatstone. We purchased one D-5000 console for WNNK and four D-4000 consoles for WTPA, WWKL and two production rooms. We recycled several analog consoles and a refurbished A-500. The old WNNK console was installed in the WTCY-AM studio. WTCY programs an urban A/C satellite format so the primary use of the studio is WTCY production. We also had two Audioarts R-60 consoles that were in nearly new condition that we installed in our two newsrooms.

### **The audio system**

In our production rooms, we replaced our aging Roland DM80 and DM800 editors with Cool Edit Pro using Lynx2-LS-AES cards.

As former Capstar/AMFM stations, the stations were equipped with Prophet CFS16 systems, which had performed reliably, and in the case of WTPA the hardware was only three years old. Rather than replace these systems with an entirely new automation, we chose to purchase a new server capable of handling all four stations and several additional audio cards to complete the system. All inputs and outputs from the Prophet system are

running AES Digital in both production studios and on our three FM stations. I discovered that only a few stations had attempted to run digital in and out of the Antex cards in the CFS system. Part of the difficulty originated from the DIN connector on the Antex cards. To correct this problem, we used an adapter cable that takes the four DIN connections and provides a single DB15 connector, wired like the Audio Science card used in the newer systems. This allows me to mix-and-match newer cards as needed.

We maintain the digital path as far as possible on our FM stations, converting to analog just prior to the preprocessors, which are analog-only. For the D/A converter, Kline specified a high quality unit, the Benchmark DAC 104. It handles two streams per card, so we are able to handle the three stations with two D/A converters. Each of the AES streams is fed from a single RAM 6×4 switcher, which allows fast switching of any digital studio into any of the on-air stations processing. This offers a patch-panel-free way of bypassing a failed console, or vacating a control room for maintenance. Two of the three FMs are then processed and sent to the transmitter via composite analog.

In the case of WNNK, we returned to digital for the STL using a Moseley SL9003. The uncompressed AES audio enters an automatic switcher made by Titus Industries at the transmitter site, and then into the main processor. In the event of STL failure, the Titus will sense the loss of AES and automatically switch to a backup STL, a Moseley 6000 series with 6000 DSP.

We did not install a facility-wide central router. Instead, we installed a smaller system to handle



only satellite, RPU and other remote feeds, as well as air monitor routing. These sources are analog, so the SAS 16000 with expansion chassis worked well. The ability to route air monitoring is useful when the air talent is handling production at the same time. Dual remote units for this router were installed in each on-air studio. Production rooms access the router through PC controls.

### **Full integration**

The programming department demands high quality telephone calls. All three of the FMs rely heavily on callers, so we incorporated the Telos 2×12 ISDN dual hybrid into each of our studios. These, like most of the other equipment that does not need to be accessed regularly, resides in the central rack room, offering convenient access for maintenance and troubleshooting. As anyone who has dealt with the local telephone company can understand, it is much faster troubleshooting a suspect ISDN line when you have more than one unit available at a single location.

We did not begin the integration process until September 2002. I was able to take advantage of the delays by planning virtually every aspect of how the facility was to be wired and plan the station moves down to the last detail.

The first station, WTCY-AM moved on Nov. 15. WNNK followed several days later. The last station to arrive was WTPA, which moved in on Feb. 14, two days before a big blizzard hit the northeast.

During the project we relied on many time-saving devices, such as the Broadcast Tools COP and COA devices for wiring satellite receivers. We also used Wheatstone Phase 2 prewire, with the in-studio

equipment prewired and preconnectorized to the harness, resulting in savings of many days of time.

*Supplee is regional engineering coordinator of Cumulus Media, Harrisburg, PA.*

## **Equipment List**

360 Systems Shortcut

360 Systems Instant Replay

Ariane audio processing

Omnia audio processing

ATI Dual 1×6 digital DA

ATI Dual 1×6 digital DA

Audioarts R-60 audio console

Audiometrics CD10 CD players

Belden 8451 audio cable

Belden 89758 18-pair digital audio plenum cable

Benchmark DA104 D/A converter with mainframe

Betabrite messaging signs

Broadcast Tools 1×2 Switcher

Broadcast Tools Connect-o-adapter

Broadcast Tools Connect-o-pad

Broadcast Tools Silence Sense

Comscope 5624 24-pair CAT5 plenum cable

Cumulus Custom Furniture

Cybex KVM extenders

Dell Optiplex PCs

Denon C630 CD players

Denon C680 CD player

EV RE-20 microphones

Event 20/20 BAS powered monitors

Gepco 552624GFC 24 pair digital audio trunk cables

Gepco 5596 EZ digital cable

Gepco D5526 dual digital audio cable

Gepco D61801 dual analog digital cable

Harris monitor mounts  
Henry Engineering Super Relay  
HHB 800 CD recorder  
HHB CDR-850 CD recorder  
JBL studio monitors  
Krone termination blocks  
Liebert 1500kVA UPS  
Lynx One and Two sound cards  
Mackie HR824 powered monitors  
Marantz PMD520 cassette recorder  
Middle Atlantic racks  
Moseley 6010 and 606 composite STL  
Moseley SL9003 uncompressed digital STL  
NEC LCD 1550 V 15" LCD monitors  
O.C. White microphone arms  
Presonus VXP mic processors  
Prophet Systems Audio Wizard CFS 16 automation system  
Radio Systems 4×4 analog DA  
RAM SR64 6×4 switcher  
Rolls headphone amplifier  
Sage EAS  
Samson S-Phone headphone amplifier  
SAS 16000 32×32 Stereo Analog Router  
SAS dual router controller  
Shure KSM-44 microphones  
Sine Sytems MBC-1 Message Board Controller  
Sony MDS E12 MD recorder  
Sony PCM R500 DAT recorder  
Starguide II and III satellite receivers  
Symetrix mic processors  
Tannoy Reveal powered monitors  
Tascam 112 cassette recorder  
Telos 2×12 ISDN studio telephone system  
Telos Xstream  
Telos Zephyr  
Wheatstone A-500 console



Wheatstone D-4000 digital console  
Wheatstone D-5000 digital console

### Active Participants

The facility integration was handled by Dave Supplee, with the help of Gary Zocolo, Cumulus - Youngstown who handled much of the detail wiring in the studios. Lightner Electronics of Claysburg, PA, punched down the studio trunk cables and provided several harnesses for the recycled consoles. Alf Long and Mike Mackenzie of Cumulus - Harrisburg assisted in the construction and the move of the stations. IT wiring and satellite work was done by Skyline Communications, Indianapolis, IN. Photos by Scott Giambalvo, [HarrisburgPA.com](http://HarrisburgPA.com).

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