Volume 49 Number 5

SOUND & COMMUNICATIONS

May 19, 2003

INFOCOMM ISSUE

THE MAGAZINE FOR SYSTEMS INTEGRATORS, CONTRACTORS AND CONSULTANTS

MEDICAL SCHOOL UPGRADES AV

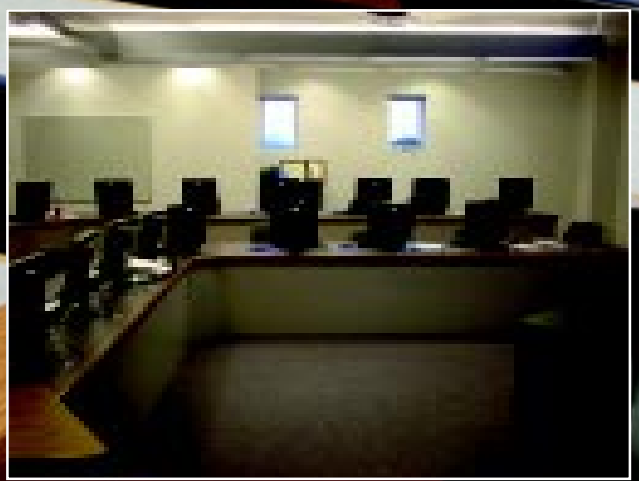
DARTMOUTH MEDICAL SCHOOL STAYS AHEAD OF THE TECHNOLOGY CURVE.

SCHOOLS' WAN PROVIDES AV ACCESS

DEER PARK (TX) ISD COMPLETES ITS WAN AND ADDS VIDEO-PROJECTION TO EXISTING AUDIO.

ADVANCED TECHNOLOGY FOR 'ACADEMIC VILLAGE'

TIDEWATER COMMUNITY COLLEGE NETWORKS 2000-PLUS COMPUTERS FOR DISTANCE-LEARNING.



SCHOOL SYSTEM'S WAN PROVIDES SMOOTH AV ACCESS

BY JIM STOKES

Texas-based Deer Park Independent School District completes its Wide Area Network and adds video-projection to complement its existing audio.

The Technology Building is the district network operations center, or main head-end.

The Deer Park (TX) ISD (Independent School District) in suburban Houston has completed the last phase of the district's WAN (Wide Area Network). In addition, Deer Park's Performing Arts Center (PAC) has been outfitted with a video-projection system to complement its existing audio system. Matching the capability of other Deer Park classrooms and administrative locations, the PAC can send and receive programming via the WAN.

Credits

AV credits go to our key interviewees, Garry Wilkison, design engineer, OTM Engineering, Austin TX, and the integrator, Tom Palmer, vice president, QC TV Corp, Houston TX. Contributing other technical details at QC TV were operations manager Steve Peters and audio/video integration manager Michael Reilly. Because the entire AV/WAN project started in 1999 and went through the various phases, about 50 technicians worked on the job.

According to OTM's Wilkison, the Deer Park school district wanted to preserve its analog-based AV technology to maintain ease of using the existing distribution systems throughout the schools, then allow digital integration. "Working with Tom [Palmer of QC TV], we were able to put up a 111 channel network and four return channels per campus," explained Wilkison. "Four return channels are sent back by each remote head end and to the network operation center [NOC] central head end." The 18 "mini"/remote head ends are located throughout the district's elementary, junior high and senior high schools. Programming can be originated via a teacher-friendly custom audio/video cart, which is fed to its respective, dedicated remote head end.

Jim Stokes has been involved in the AV industry for more than 30 years and is a Sound & Communications *Contributing Editor.*

"In addition, there was a late change order to provide connectivity to the football stadium, so they can broadcast football games and, of more concern, broadcast graduation exercises with local access through cable TV, should the school choose that option." More on this later. Wilkison noted that the "final jewel" in the system was the video projector and AV connectivity in the Performing Arts Center.

Performing Arts Center

The PAC, which adjoins a district high school, is open to the entire district for not only theatricals but also other events. For instance, during inclement weather, graduation could be held in the auditorium.

The large theater auditorium, which seats more than a thousand, has three AMX touchscreen controllers at convenient locations: the portable podium, in center audience and at the control-room Middle Atlantic rack. In addition, all PAC functions are controlled via AMX. Palmer pointed out that the Digital Projections 10,000 lumens projector was chosen for its illumination that has to throw 200 feet to the 30-foot-wide Stewart Filmscreen. QC TV's Michael Reilly noted "it was bit of a challenge" to mount the heavy 195-pound projector in the cramped area above the control booth.

He also related that Liberty Wire & Cable's five-wire RGBHV cable was chosen for its attribute of admirably carrying the signal more than 400 feet from the stage to the control room. "We used the Extron System 7 scaler in the podium to scale the devices," said Reilly. "Then we run it through an Extron DVS406 digital video scaler, which also acts as a switcher."

The instructor uses a portable presenter workstation/podium customized by CT Executive Furniture in Houston, based on QC TV's specifications. The red oak veneer exterior matches the auditorium's decor as well. The workstation desk is fully ADA-compliant, with correct knee space for a presenter in a wheelchair. Housed in the approximately 6x3-foot podium are a computer and audiovisual equipment that cover all current playback formats. Although the podium has a built-in main computer with an accompanying 17-inch LCD panel/monitor, there's a provision for a laptop that's brought in. In addition, there are two USB ports on the top side of the desk that connect any external drives or AV devices directly to the mounted computer. A control POD allows convenient selection of presentation equipment.

Presentation AV Devices

For podium audio, there are a Shure lectern mic, wireless lavalier and mic mixer. A WolfVision VZ-5F document video camera outputs to VGA. A Sony DVD/CD can play DVDs as well as MP3 audio CDs. A JVC mini-DV/S-VHS player/recorder allows recording of presentations, and a Communications Specialties Scan-Do Pro II VGA-to-video converter permits recording or televising an event in the PAC.

Although we'll be covering the local origination video cart in detail under "Wide Area Network/WAN," the cart can also be used to televise a PAC event over the school's WAN and, by arrangement, into the city's cable network. The video cart has the coverage advantage of a camcorder mounted on a professional fluid head tripod.

The black equipment cabinets house the fiberoptic transmitters and receivers, demodulators, the routing switcher and V channel modulators.

Looking at Deer Park's existing technology, in a previous school district project, QC TV installed cabling and more than 1000 Philips 27-inch TV monitors. In addition, the fiber plant was installed by Reliant Energy, the local utility company, previously. And teachers already had the ability to display cable programming at S-Video resolution on the classroom's desktop computer monitor via a fixed-install cable interface.

In the job just completed, QC TV installed remote origination video carts, remote head ends and a central head end/NOC.

Video Programming Carts

With the installation of 18 remote origination video carts, the district raised its presence on the cable network. Correspondingly, each school is able to send back to the entire district four channels wise,

These are two of the remote local origination video carts, including monitors, RF modulators and audio mixers.

from 18 remote "mini" head ends. Specifically, each video programming cart is equipped with a Canon camcorder, Bogen fluid head tripod, Sony VCR, Electro-Voice handheld microphone, Shure four-channel mic mixer and Blonder Tongue sub-band fixed agile AV modulator.

The equipment is mounted on a sturdy Da-Lite cart equipped with large pneumatic wheels to withstand rugged movement. "Everything is labeled on the cart and there are easy instructions as well," explained Palmer. "It's no problem for a layman to walk in, fire up and go."

According to design engineer Wilkison, the classroom teacher can implement digital video-on-demand via the VBrick streaming video system, which goes across the school's data network rather than over the sub-band modulators that carry the analog AV signals. VBrick encoders/decoders were supplied by IDS/Interactive Digital Solutions, Indianapolis IN, which partnered with QC TV on this project. VBrick also provides teleconferencing to the teacher's desktop. Other analog teleconferencing can be done as described next.

Teleconferencing to Emergency Messaging

The WAN allows for analog teleconferencing between two classrooms, where there's an origination cart in each room. Any classroom can be broadcast to the whole district as well. Furthermore, any or all classroom channels can be interrupted for any alert or emergency announcements. That function can be done via the heart of the WAN: the Extron MTX12800 audio/video matrix routing switchers at the central head end.

Here's an example of broadcasting emergency announcements to the entire district using the override function. The Deer Park district is right on the Houston ship channel where there are a lot of petroleum storage facilities and storage plants. If there were a leak or fire, they'd have to go to lockdown, in which they'd have to tape windows and doors, and not go outside.

In lockdown or any other emergency, the WAN provides three ways of announcing district-wide: the aforementioned all-channel program interrupt; automated emergency call outs over the fiber-connected PBX system; an interconnect can be made with all the public-address systems in the schools.

In addition, each school has a character generator messaging system via a Key West Media Xtreme information channel with Media Creator software, which is located in the central head end and accessible via TCP/IP. Announcements can be updated at 18 campus locations. Media Xtreme allows each campus to have its own a presence on the district's network.

The system renders professional broadcast-quality effects, graphics and fonts on the display pages, rather than the plain, dull text of yesteryear. Administration can have pages updated into the system, district-wide, for such uses as staff development days and holidays. Routine uses by each school include bulletin-board items of daily and

EQUIPMENT

PERFORMING ARTS CENTER

3 AMX AXLink 10.4" touchscreens

1 Communications Specialties Scan-Do Pro II VGA-to-video converter

1 CT Executive Furniture custom podium

1 Digital Projections 9000GV 10,000 lumens projector, lens, mount

1 Extron long-line amp RGBHV

1 Extron System 7 scaler w/audio

1 Extron DVS 406A digital video scaler/switcher w/audio

2 JVC HR-DVS3U mini-DV/S-VHS player recorders

100 Liberty Wire & Cable mini hi-res connectors

2 Liberty Wire & Cable 70V speaker cable (1000')

1 Liberty Wire & Cable mic/audio cable (1000')

1 Liberty Wire & Cable AXLink bus cable

1 Liberty Wire & Cable wall plate (podium umbilical)

1 Liberty Wire & Cable PVC RGBHV cable

1 Middle Atlantic PTRK-21 floor rack, accessories (control booth)

2 Sony DVPNS315 DVD/CD players

1 Shure M367 mic mixer

1 Shure MX412SE/C lectern mic

1 Shure UC14/93 wireless lav mic sys

1 Stewart Filmscreen 30Wx22.5H projection screen

1 Wolfvision VZ-5F document camera

(continued on next page)

EQUIPMENT

WIDE AREA NETWORK (WAN)

6 Atlas Sound racks
18 Blonder Tongue AD-1-17 agile demodulators w/sub-band option
108 Blonder Tongue AMCM 806 agile micro modulators
2 Blonder Tongue BIDA-86A-30 distribution amps
2 Blonder Tongue MAVM-60-T8 fixed agile AV modulators
16 Blonder Tongue MAVM-60-T9 fixed agile AV modulators
18 Bogen 3124N tripods w/fluid head
18 Canon ZR40 camcorders
4 CommScope 2275 1000' plenum RG-6 cables
1 CSC Cat5 plenum 1000' cable
18 Da-Lite PM6C-54J black carts
108 Drake DMM806 demodulators
18 Electro-Voice 635A/B handheld mics
1 Extron 60-410-DH00 MTX12800 WB 128x128 composite video matrix routing switcher
1 Extron 60-412-HOHO00 MTX 12800 mono audio 128x128 composite audio matrix routing switcher
15 Hoffman 7'x19" data racks
18 Key West Media Xtreme info channels with Media Creator software
1 Liberty Wire & Cable 4000' high-res 59 cable
1 Liberty Wire & Cable 1000' cable
500 Liberty Wire & Cable F fittings
500 Liberty Wire & Cable FS59RCA-R RCA fittings
500 Liberty Wire & Cable FSBNC BNC fittings
2 Liberty Wire & Cable RG6-quad 1000' quad 6 PVC cables
10 Olson Technologies OTLL-RMKIT
23 Olson Technologies OTOT-870-6 fiber transmitters SC/APC
36 Olson Technologies OTPN-1000 fiber receivers SC/APC
20 Panasonic CT1389VY 13" monitors
15 Panduit WMPV45 vertical cable management
18 Shure 200M 4-channel mic mixers
18 Sony DVPNS315B DVDs
54 Sony SLVN55 VCRs
18 TecNec OS-6 6-outlet surge protectors
4 Toner 1x3 #C203101 optical couplers
1 Toner 1x5 #C203110 optical coupler
10 Toner XHC12-1G combiners
VBrick encoders/decoders streaming video system

Tom Palmer, vice president of QC TV Corp. (right) demonstrates to Garry Wilkison, AV consultant with OTM Engineering, operation of AMX touchpanel control of the Extron 128x128 AV routing switcher.

This rack houses the V-brick decoders and 14 Media Xtreme character generators.

The Technology Room houses the servers for the entire district.

upcoming events. "Because QC TV is an authorized stocking dealer for Key West, we provide training and ongoing support as needed," said Palmer. "The Media Xtreme system is very intuitive, easy to use and user-friendly."

Head Ends

There are 18 remote head ends, one for each campus in the district. Each "mini" head end transmits the video signal to the central head and provides VCR and DVD access to each campus. Each mini head end has a Blonder Tongue agile demodulator with sub-band option, two Sony VCRs, one Sony DVD and four fixed-channel Blonder Tongue modulators for channels 2, 4, 6 and 16C. There are 18 Olson Technologies fiber transmitters used for the return feed to the head end. And there are 18 Olson Technologies fiber receivers to receive broadband. Equipment at each remote head end is housed in a Hoffman data rack.

The last link in the video signal chain is the network operation center or central head end. Looking at how the NOC functions, there are 18 Olson Technologies fiber receivers, one for each remote transmitter. The receivers feed Drake demodulators. There are four Drake demods per each campus, with the balance used for receiving cable TV programming from the local cable company. The Drake demod outputs are switched and routed through AMCM 806 agile micro Blonder Tongue modulators via the Extron MTX12800 composite video and composite audio routing switchers, which are AMX accessed and controlled.

Now we're up to the 111 TV channels on the forward end. These channels are then combined and returned to the central head end and to the remaining Olson Technologies fiber transmitters, which in turn go to the toner optical couplers and back into the fiber plant to the remaining number of Olson Technologies fiber receivers that go to each of the individual campus remote head ends.

Liberty cable was used exclusively in the central head end because "of the quality," according to Palmer. "There's the availability of Liberty specialty connectors: the BNC, F and RCA type fittings, that allowed us to use those compression fittings all on the same cable. That way, we didn't have to use additional adaptors."

All central head end equipment is housed in six Atlas Sound racks.

Late Change Order

Near the conclusion of this huge project, there was a late change order to wire the football stadium, which adjoins a district high school. Steve Peters, operations manager at QC TV, offered the last word on this project: "We wired to the cameraman, the press box and the concession area. That way they can have connectivity like an honest-to-goodness sports stadium where people don't miss the action when they're getting their soda and hot dogs." The stadium connects to the fiber plant so football games and graduation can be televised as well. ■

From left: Ryan Petru, director of Network Systems; Garry Wilkison, AV consultant, and Kari Rhame, executive director of technology.

QC TV CORP.

QC TV Corp., Houston TX, has been specializing in audio-video integration and RF or cable-type distribution systems since 1986. Schools are the primary niche of QC TV. For example, QC TV completed LaPorte Independent School District (ISD), which adjoins Deer Park, our subject here. The company also completed two high schools in the McKinney ISD, north of Dallas TX, where AMX Synergy allows the school to control clocks and bells in addition to paging to any room and video retrieval.

In the corporate sector, QC TV did the audio-video/teleconferencing integration systems in the boardrooms for the new Compaq (HP) Telecom building in Dallas. In Houston, the company designed and built a 35-channel head end for Compaq's 15-building campus.

"There's a lot of technology in our projects," said Tom Palmer, QC TV vice president. "We try to stay on the leading edge. We're working on the digital side of surveillance as well, with IP-based streaming video cameras."

OTM ENGINEERING

Headquartered in Austin TX, OTM Engineering is a 20-year-old independent engineering and consulting firm. The company provides design and engineering service for security systems, voice, data and video networks, and audiovisual systems, and has done projects for numerous local, national and international companies.

Some of OTM Engineering's many clients include Texas Rangers Ballpark, Austin Convention Center, University of Texas, Rice University, Austin Cablevision, Texas Utilities and Dell Computer.

The Technology Room houses the servers for the entire district.