



CRESTRON DIGITALMEDIA

by Christopher Maione



I don't typically write about specific products, but I feel this product line has a significant impact on our industry.

So first, the excitement. Crestron DigitalMedia is amazing stuff. Hats off to them for being ahead of the game and out of the gate first with this sort of product. A matrix switcher system with inputs and outputs specifically designed to accommodate an end-to-end solution for switching and routing HDCP-compliant digital signals.

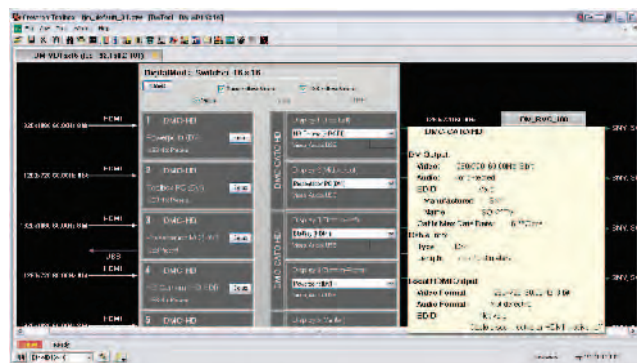
Next, we enter a brave new digital world. My head spins with the complexity of the commercial AV world and having to deal with HDCP compliant devices. What happened to my simple DA? Gone. Routing HDCP compliant devices (Cable/Satellite TV Tuners, Blu-ray DVD, Xbox etc.) is no simple feat. Basically the Hollywood piracy police (copy guard protection) have taken over the world of HD content and created a near impenetrable system for "protecting" the distribution of content (Movies, Games etc.).

Unfortunately for the commercial AV world, we are going to have to deal with this stuff and figure a way to route and distribute the digital signals while maintaining the HDCP and AACS (Advanced Access Content Protection System) compliancy. Enter Crestron DigitalMedia. This product line consists of various digital interfaces (HDMI, DVI, SDI) and a slot based matrix switcher provide an end to end solution for

moving audio/video/control (such as HDMI) from a source device (Blu-ray DVD, Xbox, Cable/Satellite TV) to a display (flat panel, video projector) while maintaining the required HDCP "handshake." Without the handshake from source to display you get nothing but a black screen. Maintaining the handshake involves passing a complex control signal and authenticating "keys" between the source and display to allow the content to be viewed?

REALITY CHECK

Okay, now for some disillusionment. Hollywood and the copyright police will dictate how we must design AV systems? This is bad...real bad. I think the fact that the world of consumer copyright content control is influencing how we now must design commercial AV systems is ridiculous. Is this the so-called "convergence" of consumer and commercial



AV? I don't think so. This is just the copyright police shooting at the bad guys and hitting the innocent by-standing AV industry (where there really aren't copyright protection issues), and forcing us to react. Take, for example, a basic boardroom, which in addition to the staples of PC and laptop display, we would typically include—you guessed it—a Blu-ray DVD player and an HD Cable or Satellite TV box. We've now entered the world of HDCP compliance where without the proper digital "handshake" the video signals will not be displayed.

Pre-digital, many AV system designs would have included Extron interfaces, and Extron/AMX (AutoPatch) matrix switchers, now Crestron DigitalMedia has provided an end-to-end solution. I'm sure the folks at Extron and AMX are not happy about this at all and why they are also selling HDCP compliant switchers. From what I hear and see, the product line has taken off like wildfire, and AV consultants and AV systems integrators have joined the DM revolution.

DO YOUR HOMEWORK

Heads up—this stuff is complex. It's also a bit finicky when it comes to strict adherence of cable distances and proper terminations. In addition, the matrix switch requires a boatload of IP addresses and its configuration

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key features

- An integrated solution that manages, controls, and distributes all analog and uncompressed HD digital content over twisted pair or fiber.
- DM matrix switchers are flexible, modular systems that can accept virtually every signal type and transmit them long distance as digital DM signals.
- Built-in QuickSwitch HD technology pre-authorizes HDCP keys and maintains a constant handshake for glitch-free HD switching.
- At the end points, DM receivers control and output HDMI to the display, data such as HDCP, EDID and CEC.

moreonline

Watch a video explaining HDCP and how it relates to DigitalMedia. Learn about how HDCP works as well as its limitations. Visit avtechnologyonline.com/nov10



performances is the automatic mic mixer which increases the gain on the active mic and lowers it on the others, reducing feedback and interference, explains inventor Dan Dugan. Variable pattern mikes are complementary to automatic mike mixers, assuring that the mixer selects the correct mike in challenging conditions, adds Dixon.

Architecture and hardware aside, the key to achieving good sound is ultimately the systems design and, in turn, the AV technician at the controls.

"Sound systems are more than a microphone and a speaker," says Dixon. "It takes a trained engineer who has experience in the applied science of sound to set up the system and adapt it for the needs of the environment and the event.

tune. Rane's Mongoose matrix and its RAD (Remote Audio Device) remote, which convert audio to and from digital at the end of the run, are self-testing. Installers and users verify that everything is properly connected. The Mongoose, which was recently installed in Arizona State University Memorial Union, helps eliminate problems with ground loops and EMI, thus improving audio quality.

TRINITY: GOOD STUFF, STILL A CHALLENGE

Robert Miller, media support coordinator with Trinity University, says the sound systems there are good, typically six years old or less, with high-end speakers and amplifiers.

Still, AV techs face challenges synchronizing

Michigan University, says sound systems have become much more sophisticated over the last two decades but are more challenging to operate.

A good technician needs to know how sound systems work and understand 1/3 octave equalization in order to eliminate unwanted ringing, he says. A technician also needs to know something about music and speech to run systems for concerts and lectures, respectively, he adds.

"Don't walk into the room five minutes ahead of time," Campbell warns. "You have to test everything in advance, know what peripherals they will be using and what you need to do to have a successful meeting. And if something goes wrong, you have to know what to do. You must strive for perfection."



Rane's Mongoose Matrix and RAD (Remote Audio Devices) convert analog audio to or from 24-bit, 48 kHz digital audio. Rane's RAD Network uses standard CAT-5 cable and termination transports four digital audio channels, two channels in each direction, as well as power, and device communication. Mongoose can replace the analog mic and line level portions of an audio system with digitized audio over regular CAT 5 cable. Mongoose can be used with or without CobraNet.

The quality of sound in manufactured devices is there; it's the technician who must adapt the equipment to the situation."

KEY AV ROLE: SYSTEM TUNING

A popular complaint from contractors is the "novice" making adjustments that send the system into feedback distortion, and sometimes, even damage the equipment, Dixon says.

"[Proper] system tuning is key," agrees Young. "Without proper gain structure and equalization even the best system designs will not perform optimally."

Their recommendation for onsite managers: Take courses from InfoComm or other organizations offering audio education programs. And work closely with the sound engineer who designed the system.

Manufacturers can also help end-users test and

sound with video in large venues because audio signals have a longer path to travel than the video counterparts, he says.

The AV staff is pleased with its touch panel controls, however, which are very intuitive, and the timers which automatically shut down projectors after three hours, saving energy and lamp life, he adds.

The department uses Energy Star 2.0 amplifiers to save on power and will buy Extron self-idling amplifiers with the next upgrade, he says.

Sometimes, the university experiences hearing problems with videoconferencing, especially when the other party uses a different brand, Miller says. But Trinity solves the problem with a bridging company that is able to adjust for the differences, he says.

PREPARATION IS KEY

Kevin Campbell, who manages communications for a division of Dow Corning and teaches at Central

Sometimes, for example, an AV technician might arrive before a meeting and discover a hum in the system. This is often created when there are multiple points of grounding, creating a loop. The solution is to locate and isolate the problem component with an isolation filter or transformer, he says.

Wireless microphones also can be subject to interference, but this can be avoided with a "wireless sweep" a day in advance, he adds.

Finally, AV systems near powerful radio stations can be plagued with signal interference. This happened to Campbell once in New York City and during a presentation on a football field. In both cases, the microphones acted as antennae for the radio station signals and the problem was solved by isolating the lines with transformers, he adds.

The point of the stories is, "The unexpected happens," he says. "You have to be prepared."

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can be challenging. There is also a moving target in the world of HDCP compliance as the standard evolves (changes). Patches and firmware updates are being pushed out "chasing" the ever-changing world of consumer electronics equipment.

I think it's great the migration to fully digital signal is challenging our industry and requiring us to learn new skills as we leave the analog world for digital. It will be interesting to see which consultants and AV system integrators actually pur-

sue their certification, which comes in two flavors, Certified Designer and Certified Engineer.

MESSAGE TO THE END-USER

One word of advice to the end-user world: the analog sunset is going to bring some very challenging and interesting items we are going to have to address, in regards to AV systems design and engineering. Digital is here to stay, and there will undoubtedly be a variety of unknowns popping

up as the HDCP standards evolve. If your project has a Crestron DM solution, make sure the consultant, designer, engineer and installers all have their certification to ensure they have the training required to successfully navigate through the complexities of routing HDCP-compliant devices.

FYI, You can verify a person's certification on the Crestron DigitalMedia Website.

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