MISSION CONTROL

UNDERSTANDING THE INTRICACIES OF A DIGITAL MEDIA GENIE

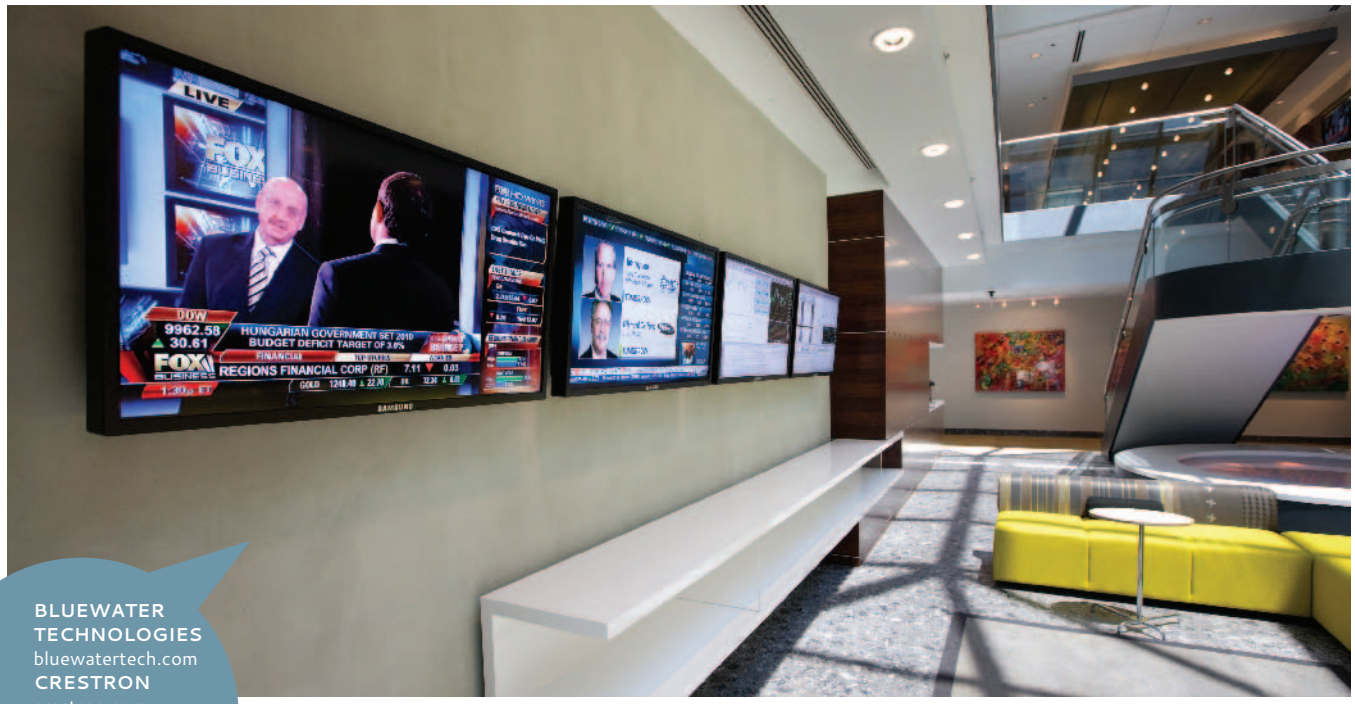
by Don Kreski

Global Forex Trading (GFT) is a currency trading company or "foreign exchange" (forex) provider. Forex is an extremely high volume, low margin, high stress business. Unlike trading in stocks and bonds, there are no central exchanges. GFT facilitates direct client to client trades through their DealBook software trading platform. According to Kirk Griffes, Systems Engineer and Programmer for the Grand Rapids, Michigan branch of Bluewater Technologies, technology is a key component to GFT's success. Connectivity, however, particularly HDMI, can be tricky. Perhaps the biggest source of frustration is HDCP, or "High-Bandwidth Digital Content Protection," designed to prevent users from pirating high-definition programming.

"Let's say you're trying to show content from a single Blu-ray player on two displays," Griffes explains. "It works fine on one display, but as soon as you plug in the second both go black. Or perhaps in a multi-display situation, the first 16 you plug in work fine, but with the 17th you turn into a pumpkin. With standard HDMI components, you don't really have any way of knowing why that happens."

The problem, most likely, is that the Blu-ray player you've chosen does not support enough HDCP keys. Enter in Crestron's DigitalMedia solution. "If you are using DigitalMedia, you can open up Crestron Toolbox and find out why something doesn't work when you think it should." Toolbox checks device status, detects network devices, sets network IDs, logs error messages, and provides a wide range of diagnostic and communications tools, giving you real-time feedback on any problem it uncovers. It also configures all the audio processing and video switching features of Crestron products installed in a system.

Another major issue Toolbox addresses is EDID handshaking, the ability for an HDMI source device to communicate with the display and supply the proper signal. "The display says, 'I can show these resolutions'



Reception area at Global Forex Trading

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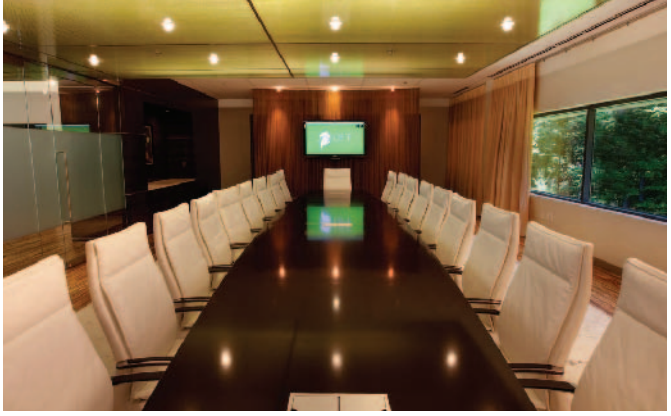

The boardroom at Global Forex Trading

and the source, usually a computer source, says 'here you go' and sends out the best resolution supported."

In a matrix switching situation, it can happen that the handshake does not occur and the computer shuts off its monitor output. If this is the case, it will not activate it again until you reboot. In most cases, DigitalMedia keeps that handshake active. If for some reason you lose it, Toolbox will tell you immediately, so you know what to do.

SIGNAL STABILITY AND MANAGEMENT

Another major issue that DigitalMedia solves is confusion over distance limitations. As cable runs get longer, DigitalMedia becomes not only more cost-effective, but also solves the bigger issues, according to Griffes.

"The rule of thumb for HDMI is that the signal will be stable for 15 meters or about 50 feet," Griffes notes. "Using larger gauge wires, you can extend that a little more, but with copper wire there's a point where the signal is not there. And sometimes when it's not, it's not obvious why." DigitalMedia will carry a signal up to 150 feet without repeaters, 450 feet with repeaters, and after that Crestron has its CresFiber fiber optic solution that supports up to 1000 feet. Toolbox tells you when you reach your limit.

You may ask if it would make sense, especially for smaller systems, to avoid HDMI completely and send your HD signals over component connections.

That's a bad idea, Griffes says, because of the "analog sunset" that will take place at the end of 2010. There are two issues here, both a result of regulatory changes.

First, after December 31, no manufacturer will be allowed to introduce a Blu-ray player, cable box, satellite receiver or other video component using an analog output to carry a high definition signal. Any existing devices must be phased out of production by the end of 2013.

Second, starting on January 1, 2011, software producers will be allowed to include an "Image Constraint Token" which will disable the transmission of HD signals over component outputs. Some content may not play at all on a component-based system, and the rest will be downgraded from HD to standard definition. "So, truthfully, any system we design now should either be digital or allow for expandability into the digital world," Griffes says.

OPTIMIZING THE SYSTEM

It's no secret that Griffes appreciates (and recommends) the DigitalMedia system, but he says the first time he used it, he didn't completely understand how to implement it properly. Even though proper installation is covered in Crestron's online training, he feels there are some points worth emphasizing.

First, you have to use the proper cable. The DigitalMedia cable is not the same as CAT5 or CAT6; if you attempt to use one of them, either resolution or distance will be severely limited. "This is super CAT cable, shielded all the way down and able to carry a higher bandwidth than anything else available," Griffes says.

Second, you need to learn how to make the connectors correctly, and this is where Griffes had trouble on his first installation. "This is something new. It's not a common connector style," he explains. "The most similar connector is a CAT6a, but it's not a 6a. It turns out, too, that if you put a CAT5 tester on it, the tester might say it's okay, but it still might not pass that high bandwidth."

Griffes says making the connectors is not difficult, but you need to understand how they're different than other connectors. "The best thing I found was to watch the video online, look through the manual, and just make sure that the shield makes contact with the shielded connector. When you do go through and set up the system, Crestron Toolbox gives you a data rate check. If you don't get 6.75 gigabits per second, then more than likely there's something wrong with your connectors."

Third, there's a firmware update that must be done correctly and at the proper time. "The most important thing is to make sure that every Crestron component is connected and installed before you start the download." For that reason, it's best to launch the firmware update in the field, rather than back at your office. Once you have everything connected, it's a one-button process, but it can take time. For a very large system, it can take as long as two to four hours. "Start the update, go to lunch and come back," Griffes suggests.

Once the firmware is updated, "you can do your HDCP and data rate check, and assuming you've learned how to make the connectors correctly, that takes maybe five minutes," Griffes says. After that, load your programming into the system, then start tweaking and fine tuning.

Don Kreski is president of Kreski Marketing Consultants, Inc. What's your opinion of HDMI? Weigh in on the debate by emailing AVTIntern@nbmedia.com.

KEY ELEMENTS /// FOR THE END USER

NETWORK IMPACT

GFT refurbished an existing building, rather than starting from scratch. It was very helpful to be able to run only one set of wires in some places. It made it possible to use the space we had without having to make architectural changes. Using category-type cable eliminated the need to make changes to the structure to accommodate the large conduits that would have been necessary to carry HD signals over component cables.

ROI

We wanted to be able to handle any kind of media in high definition: detailed high-resolution images from our software, videoconferencing, TV news, even entertainment media, and Blu-ray down in our cafe area. It's also true that time is of the essence in this business. You will make it or break it based on how quickly you can make decisions; our systems have to work.

EASE OF USE

Anyone in the company might potentially use these AV systems. We're not all IT people. We don't want a meeting with a high value client to crash because the person leading it is not a computer genius.

—Eric Johns, IT Facilities Coordinator, Global Forex Trading

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