

## Articles and whitepapers

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**Product Article: Crestron DigitalMedia Takes Control of HDMI (2/1/2009)**



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HDMI cannot have escaped your notice. It is the talk of the town, it is in great demand, but it does have its challenges! Expectations are high as high-end displays, video games and Blu-ray players are driving HD specs and consumer expectations through the roof. The promise of the High Definition Multimedia Interface (HDMI) is great: one cable carrying uncompressed digital HD video and audio - it's what the market has been dreaming of.

Here at Crestron, we know better than anybody that creating a professional whole-house HD distribution system means handling the challenges that come with HDMI, that's why we have developed DigitalMedia(tm), the first complete HD AV distribution system that allows virtually any mix of AV sources to be distributed throughout the home from a centralised rack.

### **HDMI problems**

Mention HDMI to the average custom installer and you're likely to get a mixed response and more than a few HDMI-related complaints; ranging from annoying switching delays and screen flashing, to complete audio and video failure. Contrary to popular belief, the critical issue with distributing HD content is not how to drive the signal over long distances. There are two primary reasons for HDMI problems: bandwidth and complexity. Uncompressed HD video requires enormous digital bandwidth, which is notoriously difficult to push through copper wire. Add popular features such as 1080p resolution, Deep Color and HDCP, and the issues grow.

### **Managing HDCP**

Developed by Intel to control the distribution of digital content, HDCP is a highly complex technology that is designed to prevent content from being recorded, played, displayed or distributed without authorisation. A simple digital video switcher cannot manage the multiple levels of encryption, key codes and handshakes that are required to distribute an HD signal, so if the HDCP encryption is not properly managed by the mid-stream device, the signal will not be displayed.

### **The DigitalMedia HD AV distribution system**

Our DigitalMedia technology revolutionises the way HDMI signals are routed and distributed, over extended distances, while processing and managing HDCP content protection. It supports a complete range of analogue and digital signal types all through one switcher, and distributes uncompressed digital audio and video signals over a choice of CAT5e/6-based copper wiring or a multimode fibre cable.

The DigitalMedia system comprises DM switchers that serve as the central hub of the system; wall plate transmitters in various configurations for sources located away from the switcher; repeaters;

and copper and fibre room solution boxes designed for installation behind flatpanel displays and ceiling-mounted projectors.



*The DM switcher, shown here in an 8x8 version, serves as the central hub of the DigitalMedia system.*

The DM switchers have a modular architecture and eliminate the need for external converter boxes or twisted-pair extenders. They support a wide selection of input and output cards, each painstakingly designed with extra features to address the usual (and unusual) signal routing and processing requirements of custom installers.



*The rear of the DM-MD8X8 switcher showing a selection of input and output modules.*

DigitalMedia manages all of the different signals and devices within an integrated system, matching each source's output to the capabilities of the selected display(s), without using scaling or compression. Every signal is preserved in its native video resolution and audio format, ensuring a pure, lossless signal path throughout. The system supports HDMI 1.3a with Deep Color and DTS 7.1-channel HD lossless audio, video resolutions up to 1920x1200 or 1080p/60, full 1080p/60 up to 400 feet away using CAT5e/6 cable, and 50/125 and 62.5/125 multimode fibre for distances up to 2200 feet.

### Handling more than audio and video

DigitalMedia offers integrated Gigabit Ethernet and USB mouse and keyboard distribution, allowing computers, media servers and video game consoles to be installed out-of-sight and accessed from anywhere in the house. And of course Crestron control is also built-in for control of displays and other room devices, without the need for additional wiring.

### Eliminating latency

One of the most eye-catching and impressive features of the DigitalMedia system is the complete eradication of switching latency thanks to our exclusive QuickSwitch HDTM technology that maintains a constant HDCP connection with each HDMI device in the system. By eliminating the need to re-authenticate each time a different source is selected, QuickSwitch HDTM achieves very fast switching of HDMI signals - a feature exclusive to our switcher.

## **Conclusion**

Wide support from content providers and the consumer electronics marketplace makes HDMI unequivocally the future of HD video transmission. Processing and managing HDCP requires complex technology, especially where multiple rooms are concerned. On top of which, switching systems must be easily customisable to handle content protection issues. By intelligently managing these complex communication mechanisms and presenting them in an installer-friendly package that expands easily to serve even the most demanding multiroom scenario, our revolutionary DigitalMedia technology will allow custom installers to put these challenges firmly into perspective!

Robin van Meeuwen is the Managing Director of Crestron UK. Crestron is a global leader in advanced control and automation technology for commercial and residential applications.

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