Scripps Networks under Stardraw Control

Scripps Networks could easily be described as the last word in consumer TV, particularly in the US. Since the launch of HGTV (Home & Garden TV) in 1994, Scripps Networks is now firmly established at the head of the leader board for lifestyle media with an impressive portfolio of television brands including Food Network, DIY Network, Cooking Channel, country music network Great American Country (GAC), recent addition the Travel Channel, and of course HGTV. Scripps Networks is also a force to be reckoned with outside the US, and has identified international expansion as a key growth strategy.

Scripps Networks brands are currently available in more than 170 countries and territories on all seven continents, and are also distributed to more than 1,000 outlets on US military bases and US embassies around the world via American Forces Radio and Television service.

This is, of course, a HUGE amount of content to be delivered and the mere term "delivered" plays down what is, in fact, a mammoth task – the content has to be received, processed and QC'd, scheduled, uplinked to satellite and then broadcast to the world. It's a huge exercise in content management and delivery. Furthermore, there are back-up systems throughout the chain so that if anything fails, the back-up

systems take over to ensure that there is no break in transmission. At the heart of it all, managing all of the on-air monitoring and routing is a sophisticated Stardraw Control solution, designed and implemented by Birmingham, Alabama-based systems integration company, MediaMerge, Inc.

Scripps Networks is itself headquartered in Knoxville, Tenn., which is where their ever expanding broadcast facility is located. MediaMerge was called in to replace Scripps' existing control solution; firstly because it had occasional reliability issues, but as much so because the proprietary nature of it made it highly inflexible when it came to expanding, upgrading, and managing the constant growth and change of the facilities.

The slightest change required the services of an outside specialist programmer and the prospect of adding additional hardware was expensive. Systems engineer Tim Ogletree of MediaMerge explained, "Scripps Networks was weary of the complexity and headaches involved with the current structure and paying for programmers every time they needed to change text on a button in the GUI. They needed a reliable, cost-effective solution that would evolve with them and allow them to make their own changes where necessary. Stardraw Control gave them all of that and more. In fact, they even bought their own copy of the Stardraw Control development application so that they can make basic future changes themselves whenever and wherever they

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like. As long as it's not a change that requires, say, huge modifications to the underlying code framework, they now have a system in place that makes it a piece of cake for them to manage basic changes and evolutions. They simply couldn't do that with their legacy system."

"In essence, what we have here is a **massive** routing matrix," said Ogletree. "What we required from the control solution was the ability to switch between all the audio and video sources quickly and easily, constantly showing real-time status in a manner that was as close to instantaneous as possible. Fault monitoring was also a key element – if something goes wrong with control communications, we had to be able to see instantly where the problem had occurred and to provide a systematic means for troubleshooting. I have to say that Stardraw

in general has proven to be extremely low latency – when you press a button, you can expect changes to happen instantly, even when using real-time feedback assuming the hardware you're controlling is reasonably responsive. In the case of Scripps, nothing updates in the Control rooms until the hardware at the other end has initiated it in response to a command or a person physically pressing buttons on the switchers themselves. In the midst of these random control functions you have a fair amount of traffic ongoing to monitor communications as well provide audio metering for stereo and surround channels. Stardraw handles all this with relative ease. We were all pretty impressed with that."

The reason for this is that Stardraw Control is an *event-driven* system which means that it's entirely passive until something *happens*.

The alternative approach, which would be a system that continuously polls devices to interrogate their states, has the drawback that network traffic and processor loading is increased by constantly asking if something has changed, even though the answer is, more often than not, 'no, my state is the same as the last time you asked'. With an event-driven methodology, the system core is usually doing nothing, just waiting to be notified that something has happened. This optimizes network and processor bandwidth since data is only sent when it needs to be. What's more, the amount of data to be processed and transmitted is usually just a few bytes so, in terms of responsiveness, Stardraw Control systems are lightning-fast.

The solution designed by Ogletree and his team for Scripps Networks is a four-client system governed by a 3.0GHz Intel Core Duo rack-mount server with 2GB RAM, 160GB hot-swappable drives and redundant power supply. There are two master control rooms with LCD displays showing everything that is airing in real time. Each control room uses a rackmount PC and 22" touchscreens for its Stardraw Control UI from which can be managed all of the facility video and audio routing for the main and back-up paths, as well as local controls such as surround mode and the audio and lighting levels for the control room itself. There are also two quality control stations in separate areas that are dedicated purely to reviewing content

before airing: these use 7" touchscreen tabletPCs for the control system UI.

Tim Ogletree explained that the GUI layout and custom graphics were all done in-house at MediaMerge. "One of the advantages of Stardraw Control is that it's fairly quick and simple to create really good-looking, user-friendly graphic interfaces with working code using the built in tools while at the same time allowing whatever degree of customization you desire," he remarked. "Ours, despite the fact that it is running a pretty complex system, really couldn't be much more intuitive. For example, we developed the graphics for the video routing page to look like a physical router which is a piece of gear that everyone here is familiar with, so there was an immediate level of comfort with the interface."

"The first page of the GUI is the audio monitor page," he continued. "There is a row for each different network and each network variation (like time zone, HD etc.). Each network has four possible audio sources represented by buttons: A = main; B = Backup; Mass DR = disaster recovery, which would be used in the instance of a catastrophic event at the main facility in which case the audio can be played out from an alternative location; and SAT = satellite return – to listen to the audio coming BACK from the satellite."

On the same screen, a panel on the far right-hand side enables the operator to control sound level in the control room, select the listening mode (either standard 2-channel stereo or HD 5.1 surround sound) and finally to control the level of lighting in the room. "You know, it's often the simple things that we included almost as an afterthought that clients really appreciate," reflected Ogletree. "Room level is controlled by a familiar looking fader graphic on the GUI and we also included meters for visual cue – it's mostly customized versions of standard controls in the Stardraw library for building GUIs, but rarely do you find the ability for real-time metering as part of a typical control system interface."

It is worth noting at this point that all the audio in the control and QC rooms (completely separate from the broadcast network) is managed by a Biamp AudiaFLEX audio DSP fed digital audio via Cobranet from AudioScience AES/EBU to Cobranet converters. This in turn is controlled via Ethernet by Stardraw Control, both directly through a manufacturer control protocol as well as, in the case of the Cobranet, a hardware API. The driver enabling Stardraw Control to communicate with the Biamp box was written by Mediamerge. "We don't mind writing drivers," admitted Ogletree.

"For one thing, Stardraw's modular topology approach makes it very easy to manage, and for another, once it's written it's easily transportable to other projects."

The next page is the one that looks like a rack of switchers and it controls the routing of the video signals. There is a button for each network, and then two rows of source buttons, one row for each path (A = main or B = backup). When the channel button is selected for the video feed, the monitored audio is automatically switched over to that channel as well. An alarm button at the bottom of the page flashes if there is a communications drop-out anywhere in the routing.

"There is no doubt that this is a mission-critical system," confirmed Ogletree. "For the video routing alone, Stardraw Control is talking to around 32 individual 12-input SDI switchers for each path, and it's running 24/7. So far, the reliability of Stardraw Control has been stellar. We've heard from

than basic logic. It really is an incredibly powerful tool. Anything we've imagined that we might like to do, there is always a way to do it – in fact, that's perhaps one of the MOST powerful things about Stardraw Control. The .NET platform is so deep and far and wide that you really can do absolutely anything at all."

As far as Scripps Networks is concerned, Ogletree concluded that the client is more than happy with the results. The implementation of the new Stardraw Control solution was definitely a concern to the client with regard to interrupting day-to-day operations. "I spent three days on-site initially to test all of the equipment there, and then went back to our offices for a month to assemble drivers, connect buttons to functions and create all the graphics for the GUIs – build the system, in other words - and then it was back on site for a week to do the switch-over from the old system," he recalled. "We then let the system run for three to four weeks and went back to

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the client maybe once or twice in the months since the switchover, and even then it was for very minor issues. As an integrator, being able to leave a control system with the utmost confidence that it will continue to perform reliably and consistently is paramount both from the perspective of reputation and profitability. That's our primary motivation for using the Stardraw platform"

"However, that's not the only reason," he continued. "Stardraw Control offers lots of other advantages, especially in terms of flexibility and future expandability. For example, the fact that it has an open architecture means that we aren't tied into using proprietary hardware – we can use whatever we (or indeed the client) like. There is such a wide choice of off-the-shelf hardware available on the market today, it give us as integrators much more flexibility when it comes to designing a project. That is a HUGE advantage."

"I also love the simplicity of it – the way it is set up to create code in small meaningful chunks is really very intuitive, and there is a sense of organization and simplicity in the way you can create systems that makes complex tasks seem simple. However, if you're into 'complicated', it will allow you to go as deep and far as you want. There is a lot of basic functionality you can create without needing to understand much more

implement the QC areas and make final tweaks. All things considered it went very smoothly. That was over four months ago, and we've heard little from them since – as far as I'm concerned, no news is good news and a happy client!"

Equipment List

Control Software:

1x Stardraw Control 2010 Developer Software – Software license for single seat development application

1x Stardraw Control Server/Client License – Control system software license for server software with 4 clients

Control Hardware:

1x Generic Network Switch – 24 port switch

1x Generic Network Switch – 8 port switch

36x BTX CD–A9538M – DSub male 9 pin to RJ45 adapter

2x Comtrol DeviceMaster RTS 16–Port – Ethernet device server, 16 port RS232, RJ45 connectors

1x Comtrol DeviceMaster RTS 4–Port – Ethernet device server, 4 port RS232

2x Covid DVI DIGLL–15 – DVI–D cable, 15 FT.

2x Elo 2200L – 22" LCD desktop Touchmonitor w/Intellitouch surface, 1680 x 1050

4x Horizon 6 pr. 24 AWG snake cable type CL–3

1x MediaMerge Control Server – Rackmount server, 3.0 MHZ Core Duo, 2 GB RAM, removable 160 GB drives in RAID 0, redundant power supply

2x MediaMerge Custom Control Panel – 2RU panel with 16 DB–9 female pass–thru jacks

2x MediaMerge Rackmount PC – Control system client PC

3x Moxa ioLogik E1210 – Remote Ethernet I/O with 2–port Ethernet switch and 16 DIs

14x Neutrik NYS 231BAG – 3.5 mm TRS plug black/nickel

2x Sahara eo a7330T – 7" mobile touchscreen PC, 1 GB RAM, Windows XP embedded OS

2x Sahara TK–a73XX–Dock – Docking cradle w/ built in battery charger

245x Stock CAT5E – 22AWG/4 PR CAT5E CABLE

Digital Audio DSP:

2x AudioScience, Inc. ASI2416–4400–1100 – Rackmount Cobranet interface, AES/EBU 8 in, 8 out (16 channels in and out), terminal block connectors

2x BiAmp AudiaFLEX CM – AudiaFLEX chassis

12x BiAmp OP2e – AudiaFLEX 2 channel mic/line output card

16x Horizon VTG–AES/EBU 8PR – 8 pair 24 AWG AES snake cable

2x MediaMerge Custom rack panel – 1RU flanged rack panel, 8 XLR female

System User Interface

Master Control A

Master Control A - Routing Control Page 1

Quality Control A

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