WorshipAVL

A/V | LIGHTING | SOUND REINFORCEMENT | RECORDING | STAGE SOUND | BROADCAST | May-June 2017

DEFYING IMPOSSIBILITY

Sound atop the Stairway from Heaven

LIGHTING CONSOLES

Analysing application: a buying guide

CREATIVITY IN WORSHIP

Enhancing sound and visuals

WIRELESS WORLDWIDE

Adapting to global RF spectrum change

Singapore: MICA (P) 100/07/2016 PPS 1644/05/2013(022954)

The view across the Allen & Heath dLive S7000 digital console at FOH

A church on the rise

Fellowship Alliance Chapel's new technically-sophisticated facility employs expansive AVL systems with the capacity to accommodate growth, reports **Claudia Kienzle**

FELLOWSHIP ALLIANCE CHAPEL (FAC) had a vision of relocating to a new ground-up facility. There is something special about a greenfield project. A completely fresh slate gives a greater opportunity for both the house of worship and its systems integrator to bring an entire vision together, with preparation for future opportunities. Horizon AVL, a full-service systems design and integration firm, found such an opportunity with FAC, a long-time client. The new Medford, New Jersey facility's infrastructure includes an audio, video and lighting system big enough to host live concerts and events in the centrepiece main sanctuary, which seats 1,700 on the floor and 500 in the balcony.

'The overarching trend in houses of worship is that churches are really looking forward now from a technology perspective, especially with things like LED wall technology, digital signage, audio networking and 4K video,' says Horizon AV COO Joshua Kell. 'This facility really captures all of that, and brings it together into a full system that saved us time and labour on the integration side, while giving the end user a strong foundation to build on for future A/V opportunities.' General plans have already been outlined for new spaces when expected growth demands.

Fellowship Alliance Chapel's new home

From the project start, the Horizon AVL team interfaced with Medford-based architectural design firm, Holberg and Adison. 'We looked at every aspect as the blueprints were drawn and the site was prepped for construction,' says Mr Kell. 'First and foremost, we paid special attention to the audio side, as we needed to eliminate the grounding, hum and other issues they were having in the old sanctuary. We quickly turned to video, with the goal of establishing reliable video distribution that would support HD, 4K and beyond.'

The specification called for network cabling to support all signal transport, which reduced costs and labour while providing plenty of headroom for future needs. Even in the present, the multitude of signals moving around the facility are impressive: In addition to switching camera signals, graphics and text to display screens from an Analog Way switcher, a headend with Atlona gear supports all video distribution around the building – to a broadcast control room, children's rooms, and common areas.

'We went with shielded Cat-6A for video to achieve very long transport distances totalling several hundred metres, and we needed to futureproof beyond 1080p video,' says Mr Kell. 'Most of the building is prepped for 4K with that backbone in place.'

Brand new sound

Cat-6 network cable was also run for a quick roll-out of a digital audio network. Horizon AVL set its sights early on a Dante network from Audinate, which was reportedly about two-thirds the costs of deploying a legacy system. 'One thing we focus on at Horizon AVL is remaining at the cutting edge of technology, as changes happen fast,' elaborated Mr Kell. 'Dante is the most versatile option and the easiest to deploy; the total time to run cables, and configure the network and switches was well under a week.'

The overwhelming majority of the church's audio signals and connections live on the Dante network, outside of a copper wiring run between a legacy stagebox and the front of house Allen & Heath S7000 mixer. From that mixer, the Dante network passes through an Allen & Heath DM64 digital signal processor, with a Shure ULX-D wireless microphone system also Dante connected.

Mr Kell points to the simplicity of bringing the various microphones onto the network as a key example of Dante's value from an integration standpoint. 'These are all wireless mics that we brought right onto the Dante network, without taking up any physical channels on the mixing rack. The Allen

A hallway monitor used for digital signage and images from services

Video distribution is via HDBaseT interconnection, using an Atlona AT-UHD-PRO3-88M matrix as the control room hub

The Fellowship Alliance Chapel main sanctuary

& Heath system itself has several I/O slots, five of which we can utilise right now. With Dante, we only need to use one of those slots to achieve a 64x64 routing architecture – and we have maybe $^1/_5$ of those channels spoken for. That is a lot of capacity for future needs.'

Beyond the microphones, the Dante network extends straight to the loudspeaker systems, which comprise steerable line arrays from PreSonus with integrated Dante-enabled amplifiers. This not only slims down the infrastructure, but keeps everything on the network through the end point.

'This is the first line array system to move beyond steerable FIR filtering for sound management,' claims Mr Kell. 'PreSonus set the stage for this when they purchased Worx Audio a few years ago. We have all been in discussions about making Fellowship Alliance Chapel the model for this innovation.'

Mr Kell adds that audio quality is massively improved, compared to the old sanctuary. 'The labour and troubleshooting of adding transformers, isolating hum and managing ground noise all goes away in the digital realm, because phase grounding issues are eliminated all the way to the electrical panel. The speech and overall intelligibility through to the steerable line arrays is top-notch – you can hear every syllable, every nuance in the vocals and every instrument, with the low latency that is important in live worship.'

An engaging vision

Horizon AVL's Cat-6A shielded backbone also laid the foundation for moving signals around the sanctuary from acquisition to projection. An Analog Way Ascender 32 4K switcher is used to switch Vaddio PTZ cameras and other source equipment. These signals are sent direct to a curved LED video wall for live image magnification, and into the Atlona switching and distribution headend. An Atlona AT-UHD-PRO3-88M acts as the matrix to distribute camera sources to the internet and to eight NEC displays around the building.

Fellowship Alliance Chapel's video control room

The unusual 68:13 LED video wall dimensions were chosen to take full advantage of the architecture from a height perspective, and limit the width to ensure the line arrays didn't obscure anyone's view. As a result, the Horizon AVL team had to design a system that could support a 3,744 x 832 pixel resolution. 'That's an unusual resolution,' says Mr Kell, 'and to scale to that size we are using Matrox TripleHead2Go systems to take two outputs from a Renewed Vision ProPresenter 6 system, which feeds the Ascender 32 4K switcher. We're also taking in the lyrics from another ProPresenter 6 feed and producing an overlay. We can basically take multiple inputs and layer them over each other, and then we use the Ascender to produce a hard-edge blend of two outputs.'

The Ascender is a key element for addressing both the unusual aspect ratio for the 68:13 wall, as well as standard 16:9 feeds. As camera shots change on the big screen, it produces the effect of appearing like two projector screens. However, it's acting as one projection due to the multi-layer effect. 'Because we have multiple layers, the exact camera shot moving through the Ascender is output as a single camera feed to the building, with the lyrics and other elements on top,' continues Mr Kell. 'The result is a multi-camera experience coming from one box.'

Making connections

With so many video switching and distribution needs beyond the stage displays, Mr Kell wanted a dedicated system to support a variety of formats and I/O connections. 'That is what particularly attracted me to Atlona,' he shares. 'They have a lot of different options to serve different capacity needs. The AT-UHD-PRO3-88M is one of their largest matrix switchers, and provides the team with the I/O capacity and distribution flexibility they need.'

At present, the FAC team is using four inputs and eight outputs, the latter of which distribute signals over the Cat-6A backbone to eight Atlona AT-UHD-EX-100CE-RX receivers. These receivers were selected as they could be hidden behind the displays, with an HDMI out feeding each display with live and digital signage content.

The four inputs on the 8x8 matrix include the live building feed from the Ascender switcher for the camera shots and Renewed Vision feeds, as well as an Apple TV. The other two inputs feed digital signage content: When live sermons are not in progress, the system immediately switches to distribute the signage content, including wayfinding maps and information on upcoming events in the various rooms.

Mr Kell notes that all the Atlona gear is HDBaseT capable, which allowed his team to cleanly accommodate signal extension and audio/video control within the same system. 'Just as Dante changed audio, HDBaseT has been an important driving force when selecting displays, projectors, input and outputs,' he explains. 'It saves a tremendous amount of time and labour compared to dealing with fibre terminations, which kept us within budget on the video side.'

The drummer's view from inside an on-stage isolation booth

The headend resides in a tabletop rack in production control with the Vaddio camera controller and supporting video equipment. The FAC team has the flexibility to change inputs on the fly, and route video to different places. They can also turn the web interface on and off as needed, which helps them control what content they want to broadcast to internet viewers from the headend.

'What's nice is that the video is being distributed throughout the service, and everyone knows where everything is headed at a moment's notice from the stage to the pastor's prep area,' Mr Kell continues. 'Atlona helps us reliably target all this content to very specific destinations.'

Video and audio infrastructure converge in how the church distributes digital music with Dante Via, Audinate's computer-to-computer networking software. This includes an integration with Renewed Vision's ProPresenter 6 software for audio track playout in alignment with video and lyric presentation.

With its facility vision realised, the church's focus is on fulfilling its spiritual mission, until that bears fruit and necessitates the planned expansions.

www.faconline.org
www.horizon-av.com