

INSTALL IN-DEPTH: Central Synagogue



A two-phase installation inside Manhattan's Central Synagogue included the installation of two separate systems inside the sanctuary: a reinforcement system with a fully redundant Dante audio network and a separate acoustic enhancement system.

BY LARRY JAFFEE

NEW YORK CITY, NY—Manhattan's Central Synagogue celebrated the Jewish New Year 5776 in aural style last fall, as its congregation welcomed a new audio system. Built in 1872, Central Synagogue, the oldest Jewish house of worship in continuous use in New York City, earned a National Historic Landmark designation in 1975.

The sanctuary's audio overhaul was completed just before this past Rosh Hashana, and entailed updating its enhancement system. "The reaction has been phenomenal," says Jesse Lauter, Central Synagogue's audio-visual manager. "There's definitely a standard of excellence here, and I wanted to make sure whatever we had here installed sound-wise would reflect that, but also be transparent enough to not take away from the aesthetic of the space. The congregants come up to me all the time and just thank me

for it."

The audio upgrade was necessary as the previous system was designed for speech, but Central Synagogue is often music-centric—regular Friday-night services feature two cantors and a head rabbi who sings, as well as a live band of drums, bass, clarinet, violin, mandolin, and piano. In addition, there's a very prominent organ in the sanctuary. "It's everything from traditional Jewish music to classical music and even pop music," explains Lauter. "It really runs the gamut,

and it changes week to week." All that—streamed live on centralsynagogue.org and the Jewish Broadcasting Service at shalomtv.com—is among the most viewed Jewish services online throughout the world, so an impressive mix is important not just for the on-premises congregation.

For the audio update, which is based around LARES (Lexicon Acoustic Reinforcement and Enhancement System) products, now rebranded as E-coustic Systems, Central Synagogue selected acoustical consultation firm Akustiks to provide the design, and in turn, Akustiks (Norwalk, CT) principal Anthony Nittoli commissioned Masque Sound & Recording (East Rutherford, NJ), a theatrical sound reinforcement, installation and design company, to be the integrator on the two-stage project that began in April, 2014.

"For [Masque Sound], the goal was to integrate this new equipment and commission that equipment under a tight timeline during the summer when they're not using them on a daily basis," explains Gabriel Bennett, system engineer/project manager. With the exception of the occasional bar/bat mitzvah, wedding or funeral, the sanctuary is not used during the summer months, during which the pavilion runs language classes and is used for community outreach and performances. With this in mind, the audio team focused on outfitting the sanctuary this past fall, and on the synagogue's multi-purpose space in 2014.

It's not the first time the synagogue has had a substantial audio overhaul; an accidental fire 1999 caused substantial structural and property damage, including the audio system, which required replacement. The congregation's rededication ceremony took place two days before 9/11.

When Lauter arrived at Central a decade later to oversee a 10-person staff, he discovered the existing sound system, although adequate, was out of date and inconsistent throughout the room. "It was time to make a radical change. It was not meeting the needs of the clergy or the

direction of the Friday night services. I knew it was time to put in a system like this. Now everything is crystal clear—you can stick in your hand in the mix and you feel all the instruments, whereas before it was sort of like a wash. It's a very large room, almost like a cathedral with very high ceilings," he adds.

The sanctuary features a tall central nave and two side aisles, with galleries and an organ loft above, and includes seating for up to 1,200 people on both the main and balcony levels. The space is subdivided into six bays by 10 slender cast-iron columns with high relief. Akustik's aural design goal in separating the sanctuary's two discrete enhancement and reinforcement systems was to enhance the acoustical space to seem larger or more intimate by augmenting or diminishing its reverberance.

Masque was well conscious of the 142-year-old building's landmark status. "Once we got into some annoying cable pulls between floors, or a hand-painted wall, then it was a bit tense," admits Bennett. "If you messed up and put a hole in the wrong spot, that's a \$10,000 hole. You'd have to have a craftsman or artisan come in and patch the wall with hand stencil." That said, Bennett emphasizes, "We did not have any mishaps fortunately."

For the first part of the work—the pavilion installation in 2014—Masque staff began work in the space just following July 4, and acquisition of the equipment occurred over those months because the need for some Danley custom, color-specific speakers. The maximum number of staff Masque had on-site was five, but usually two- or three-man crews handled the work on a day-to-day basis.

From the pavilion, Masque removed 76 ceiling speakers, all amplifiers and signal processing and replaced them with the Danley loudspeaker system, 76 JBL 26CT ceiling speakers for multi-zone coverage, Lab.gruppen amplifiers and a Rane Halogen DSP gear for system control and routing.

Then last summer in the sanctuary, all the existing amplifiers were tested and some needed maintenance. Some cabling needed to be replaced. The existing LARES digital signal processing was upgraded



Built in 1872, Manhattan's Central Synagogue is among the oldest synagogue buildings still standing in the United States. The building was restored in 2001 in its original style after an accidental fire in August, 1998; the 2014-15 sound installation was the first audio upgrade since then.

with new LARES equipment. Bennett notes technical advances resulted in "two racks of equipment going to a single rack to do the same job of digital signal processing for the enhancement system."

Dante had been part of the legacy system getting upgraded. "Akustik's wanted to work with Masque on the project because of [Masque's] experience with Dante," explains Bennett. The Dante arrangement already in place may have had something to do with Akustik's choice of a Yamaha CL3 as the sanctuary's primary mixing FOH desk, replacing an existing LS9 that was moved to the pavilion, where the weekly streaming machinations occur.

"A Dante card was then integrated into the LS9, so we'd have all Yamaha equipment across the facility and the Dante network could reach any room," Bennett explains. The record archive desk is a CL1. "Another suggestion we made was that for archive purposes, they use Dante Virtual Soundcard on their Pro Tools machine so they can integrate with the Dante network, as opposed to using some kind of third-party audio interface, allowing the freedom to patch either individual channels or mixes from the desk just by a couple of mouse clicks.

For the reinforcement system, Masque installed 48 d&b audiotechnik speakers, along with a couple of subwoofers and column speakers, supported by d&b amplification and the new Yamaha CL3 console. In the sanctuary's system, all

amplifiers and processing came out; a new Electro-Voice 70 V amplifier that provides a cleaner signal for program distribution to the back-of-house areas of the Synagogue was installed. Rounding out the effort, a new Shure wireless mic system was also put in place.

With a deadline of Rosh Hashana this past fall, falling on the evening of September 13, Masque was ready with a trial run of the reinforcement and archive/record systems by September 4. "The reinforcement system was a bit down to the wire," admits Bennett. "It was tight turnaround for all they wanted to achieve, but we had a couple of days of comfort."

Bennett helped mix the first two Rosh Hashana services, in which music played a major role, and was impressed with the outcome of integrating both systems. "There was a very strong positive reaction [from clergy and the congregation]," remembers Bennett. "The enhancement system was a little more subdued because that is the whole point of the system. It is essentially meant to create an environment that seems like the natural environment. It's a subtle thing that somehow really affects the listeners—but you only get a verbal confirmation if you let them know there's something going on there. So while the clergy knew what was happening, the congregants may not have. You might get a 'It really sounded great tonight,' but they really couldn't tell you why.

"On the reinforcement side of things, they saw new speakers hanging in the space; and the clarity of the system had such greater detail and better coverage, it was very clear to everyone that the sound system had been upgraded. There was a very strong reception to that," Bennett adds.

Lauter was enthused with the results, too: "With Anthony's design and the way Masque installed the system, we really do have one of the best-sounding systems in the city, maybe even in the country."

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