

New Sound for Late Night

By: David Barbour

Jimmy Fallon moves into a new studio with a new rig.



At NBC, 2009 has been the year of the Talk Show Shuffle. Jay Leno has surrendered his long-held *Tonight Show* gig, to be replaced by Conan O'Brien. To take over the new gig, O'Brien abandoned New York and the 12:30-1:30 late night slot, moving into a new studio in Burbank. (See *LSA*, September). O'Brien's late night slot is now occupied by Jimmy Fallon, whose show was installed in Studio 6B at 30 Rockefeller Center. And Leno has taken over the last hour of prime time Monday through Friday.

For the new *Late Night with Jimmy Fallon*, Studio 6B got a makeover, including an extremely lively sound system, designed by Duncan Edwards. Edwards may be best known to readers of *LSA* for his theatre work, including the national tour of Disney's *High School Musical*. However, he has extensive television experience as well, having worked on different versions of *Saturday Night Live*, *Late Night with Conan O'Brien*, *Last Call with Carson Daly*, and the opening and closing ceremonies of the 2008 Olympics in Beijing, as well as the subsequent Paralympics ceremonies.

A solid live sound system is a vital component of a successful talk show, especially one with a strong basis in comedy. It's important to create a party atmosphere in the studio, which will translate to the viewer at home. Therefore, it's critical that comedy segments and interviews land well with the studio audience. Edwards notes that music is especially important to the success of Fallon's show—the house band,

microphone. A fourth row of UPQs are placed on their sides, to accommodate the spotlight catwalk and video screens in the restricted space between the bottom of the catwalk and the lighting grid.

Edwards says he chose the UPQ-2Ps as the foundation of the design because "they belong to the same family as the Meyer UPAs, UPJs, and UP-Juniors," and provide the narrow coverage he needs to punch through the lighting instruments; they also seamlessly integrate with the three rows of UPJ-1Ps hung for the upper section of audience seating. Although the UPJs have their horns rotated and are hung horizontally and tight to the lighting grid, they're still close to the audience. "Both speaker models provide a similar sonic quality and a sound that is punchy, transparent, and free from distortion, allowing for very high SPLs at extremely close distances without ear fatigue," he says. Some might be bemused by the idea of placing speakers so close to the audience, but that's part of the point, says Edwards, who notes he went for a natural sound with "a little extra crispness." The Meyer gear, he adds, "helps put the crackle in the comedy." During Fallon's opening monologue, it becomes clear that this arrangement creates a very present, slightly edgy, sound level that kicks up the laughter a notch without being too intrusive. It's the kind of sound quality one often hears when products are being shown in a demo room at a trade show—a sound that one rarely

The Roots, is given ample time to rock the house—and nearly every episode features a musical guest.

The audience in Studio 6B, where the show is taped, is placed in stadium seating. Video monitors are hung from the low ceiling, allowing one to see the action from the live and on-camera points of view. Edwards' loud-speaker rig features three rows of Meyer UPQ-2Ps, each hung with its horn facing down and placed directly above a video screen and an audience

encounters in live performance.

The rest of the loudspeaker rig includes a surround system of 16 Meyer MM-4s, arranged in opposing pairs and set to increasing delay times as one moves back into the audience. These are used for reverb and production sound effects elements. As for subwoofer energy, Edwards has two Meyer M3D cardioid subs, one placed under the bleachers, for extreme low-end reinforcement, and the other on center of the first row of UPQs. "The M3D provides a remarkably wide and present sound while keeping low energy from contaminating the stage area and compromising the on air audio," he says.

For many of the guest musical numbers, selected members of the audience are invited to on stage platforms, which are fitted out with two Meyer UPJ-1Ps—one stage right and one stage left—to cover the on-camera audience. Two additional UPJ-1Ps are placed in the lighting grid over the interview area; these function as monitors for Fallon and his guests. Also, says Edwards, a UPJ is placed, on its side, behind Fallon's desk, where it serves as a vocal/production monitor; another unit is placed to the left of Steve Higgins, the show's announcer. A final UPJ, placed on casters, acts as a roving monitor for moments when Fallon is up and about, working the house. Filling out the monitor rig, the members of the band use a combination of Aviom personal monitor mixers and Shure wireless in-ear; guest acts use a combination of in-ears and Clair Brothers 12AM floor monitors.

All loudspeakers are managed by two Meyer Matrix3 audio show control systems. As Meyer Sound literature notes, "Matrix3 delivers analog and/or digital inputs and outputs, matrix mixing and routing, signal processing, n-channel surround panning, hard disk playback, and more, all under complete automation control." Edwards adds, "Each Matrix 3 frame is configured with 16 digital inputs and 32 analog outputs; the production console feeds the Matrix 3s digitally and the analog outputs feed each speaker directly, providing individual control of nearly each speaker in the system." Each loudspeaker has an RMS connection to the main system computer, allowing for monitoring and muting. The designer adds that, though the system is multi-channel, the restrictions of the space require it to be used mostly in mono except for effects, reverb, and sound effects; he briefly considered an A-B (vocal/band) arrangement, but, given the configuration of the room, decided that it would be too difficult to implement.

Happily, Edwards says, "On this project, I was able to plot and integrate the video screens with the loudspeaker system, and the audience mics. This provides a clear link between the auditory and visual experience, which is important because most audience members watch the show on the video screens at least part of the time; when they look up, the sound is there, in alignment with the screen, as you would expect."

The front-of-house sound is operated by Nathaniel Hare, using a pair of Digidesign Profiles; a production console



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with 48 channels assigned to Fallon, Higgins, the guests and audience lav mics, and a music console with 96 channels for the Roots and musical guests. The latter is submixed to the 48-channel board. The monitor console, operated by Paul Klimson, is a Yamaha PM1D, which, Edwards says, is "one of my favorite monitor desks." It is set up with 72 outputs, 48 busses and 96 inputs. The music mixer, Lawrence Manchester, uses a Digidesign ICON desk, with 144 channels, to create a detailed 5.1 music

mix for the band and guest artists. Assisting him is a set of five carefully tuned JBL LSR3628P loudspeakers.

The show is broadcast in HD with a 5.1 soundtrack; the final arbiter of on-air sound is the production mixer, Fred Zeller, who uses a Calrec console with which he handles the final mixdown of all the production mics, production sound effects, the 5.1 music mix, and the 5.1 audience mic mix. (The audience mics are Audio Technica ES 933MLs, mixed through Protools mic preamps and 192 hardware.)

Edwards adds that this project gave him the opportunity to design the signal flow from the ground up. While working on the Beijing Olympics, he made use of an Optocore digital audio network. "It was another of my design requirements that the signal remain in the digital domain from start to finish. To that end, we have an Optocore system capable of using 504 audio inputs and up to 24 nodes. We are well below the input capability and are using 10 nodes distributed between the three analog patch points and seven digital (MADI and AES) patch points. While waiting for completion of the firmware upgrade, we started broadcasting with two separate fiber loops capable of 256 channels of I/O each. We then linked the two loops together via MADI to gain the required 10 nodes; the previous Optocore firmware was limited to eight nodes. With the latest firmware and software upgrade we have all input channels on one loop with multiple master control points.... a big step forward operationally."

The main equipment racks, located below the audience bleachers, house the Digidesign console patch frames, the Matrix 3 frames, the RF receivers, the main computers and networking devices, the various Optocore devices and an extensive patchbay: "The LX4P mic/line converters are at the RF rack, house band patch point, and guest band patch point," says Edwards, with the DD-32s in the main racks and the MADI outputs for ProTools, the Icon desk, and for the Calrec in their respective rack rooms. He adds, "The beauty of the Optocore system and its integration with the consoles is that the source signals are converted once and never come out of digital until they reach the live studio audience and the broadcast audience at home."

Of course, the live sound aspect is only one part of the complex broadcast setup. But, by deploying his gear as cannily, Edwards ensures that the live sound, the first step on the sonic path, provides a solid foundation for a high-quality sound all the way to the viewer's living room. It's a setup that keeps *Late Night* lively. 



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