Louisiana Public Television connects to new high-speed IP network

Category

New studio or RF technology — station

Submitted by

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Design team

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Technology at work

- Ensemble Designs 4455 ASI failover switches
- Evertz 7760CCM-HD caption translation
- Harmonic
  - Electra SD encoders
  - MV-500 HD encoders
  - ProStream multiplexers
- KTech DVM-150E MPEG decoders
- Miranda Densite distribution
- TANDBERG
  - SM6620 DVB-S2 satellite modulators
  - TT1260 IP receivers
  - RX1290 satellite receivers
  - TT6120 PSIP rebranding
  - TT6120 TS converter
- Triveni GuideBuilder PSIP generators
- TV Logic LVM-171W LCD monitor
- Wohler ATSC3 audio monitor

Louisiana Public Broadcasting (LPB), headquartered in Baton Rouge, provides local and national PBS programming for six separate DMAs as well as to partner stations WLAE and WYES in New Orleans. Before 2008, all LPB programming was delivered via satellite; this recent upgrade provides for IP network delivery with a satellite backup.

LPB is a partner with the Louisiana Optical Network Initiative (LONI), a high-speed university-based super computing network. This high-speed network provides LPB with a 10Gb backbone for interconnecting its remote sites to do program delivery, real-time backhauls, distance learning, file transfers, archives and more. This new MPEG encoding and decoding equipment is the first real-time broadcast use of the network.

The design called for a new ATSC-compatible MPEG encoding system to replace the first-generation encoding system. It needed to provide for IP and satellite delivery as well as mechanisms for remote control, monitoring and emergency failover. LPB selected a redundant Harmonic HD/multi SD ATSC encoding system consisting of MV-500 HD encoders, Electra SD encoders and ProStream multiplexers. The Harmonic system has the ability to simultaneously provide IP outputs for the LONI network, and ASI outputs for the local cable headends and the TANDBERG DVB-S2 satellite modulators. Because WLAE and WYES also purchased similar Harmonic encoding systems, there is great flexibility for LPB to share equipment as needed and for creating remote statmux pools. Given how flaky ATSC receivers can be without PSIP information, the new system also includes redundant Triveni GuideBuilder PSIP generators that interface with the existing ProTrack traffic system.

Since most non-LPB sites do not have an IP connection yet, satellite delivery is still needed but it serves as a backup to the IP system. In fall 2008, LPB (in conjunction with PBS) is moving from AMC-3 to AMC-21. The new DVB-S2 transmission system will be used with AMC-21 to simplify this move for our field personnel. The LPB transmitter sites utilize TANDBERG IP and satellite receivers, Ensemble Designs ASI failover switches, and TANDBERG PSIP rebranding/SMPTE-310 conversion to create an ATSC-ready stream for each DTV transmitter.

A concern during the design was that transmission over a packet-based network creates the potential for occasional dropped packets. To maintain real-time data integrity over LONI and other last mile networks, all IP equipment provided supports ProMPEG Forward Error Correction.

The duplex nature of the IP network also allows remote monitoring and control of all

hardware on the network. A KTech DVM-150E at each transmitter provides a 19.39Mb/s ATSC stream that is converted to IP with a TANDBERG TT6120 transport stream converter and monitored in the Baton Rouge master control.

The connection to such a high-speed IP network will create many new opportunities for LPB to serve the people of Louisiana. The MPEG delivery system deployed is just the first step and provides a flexible platform for expansion into local insertion, IPTV, VOD, and wherever else technology leads us in the coming years.