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Joy FM Enjoys the Sound of the Z/IP

Telos IP Codec Sits at the Center of a Redundant IP Network

USERREPORT

BY DAVE ANDERSON
Chief Engineer
The Joy FM

SARASOTA, FLA. — The Joy FM, a network of stations in Florida, has been using C band delivery for many years.

Satellite-based C band worked well for single-stream audio delivery, but it had its limitations. The first drawback that started causing problems was that some tower site locations would not accommodate a 3.7-meter dish due to space limitations.

The second was that it required us to have an automation system with IP connectivity at each individual site. This was required to handle issuing individual station legal IDs and local stop sets, which were triggered by contact closures over the satellite codec. While this system worked, it required that two PCs be installed and maintained at each of the remote tower sites in the state to handle the automation hardware and software. Many of these sites simply were not hospitable locations for such hardware.

SOUND QUALITY

As the network continued to grow, the technology solution we had in place became more difficult to maintain and keep up to date. This prompted our search for a more centralized model of audio distribution over IP.

The search started with a goal of bringing all automation systems back to our main studio in Sarasota. From a programming perspective, this model would allow us to do targeted breaks, thus localizing news and traffic — a win-win for engineering and programming departments.

As we built our sites, I made sure that



we had a resilient self-healing IP path at each transmitter location. At the studio, we enjoy dual diverse fiber-optic Internet connections. At the transmitter sites, however, fiber typically was not an option. In light of this, I put in dual connections at each transmitter using local options available — cable, DSL, 3G/4G or fixed wireless broadband so long as each connection was on a different Internet carrier.

To send the actual audio, IP codecs

would be needed. We needed a unit that could deal with the occasional packet loss and speed restrictions present in the public Internet, without dropping audio or causing problems. And of course, we needed units that not only produced audio as clear as possible to discerning listeners, but that were affordable as well.

The combination of features required quickly narrowed down the list. The Telos Z/IP One appeared to be the solution we

were looking for. At just 1 RU of rack space the Z/IP One can quickly change your mind about audio IP delivery as an STL replacement.

With its support of AAC bitrates up to 320 kbps, the Z/IP simply sounds incredible. In blind tests with our staff, not a single person could tell the difference between AAC at 320 kbps and audio directly off of a CD.

The Z/IP One has a feature called Agile Connection Technology (ACT), which is what gives this hardware the ability to work over the public Internet with no issues. If packet loss or congestion is detected between the two sites, the Z/IP automatically will drop the bitrate of the audio to accommodate the network until the congestion passes, then restore the higher bitrate automatically when the congestion passes. Add in the Z/IP One's support of Axia Livewire AoIP networking, and you have a great piece of hardware that will work for both legacy analog plants and for sites that have embraced IP end-to-end.

We installed the first path to feed our northernmost station in Gainesville, Fla. Before putting it on the air, we decided

to test how quickly switching to a backup Internet connection would happen with the routing system I designed. After several tests we were pleased that it only took two to four seconds to completely recover from any hiccup. This gave us the redundancy and speed of switching to backup that we needed.

Shortly after going on the air at the site, we had a cable modem outage. Thanks to the new Z/IP One and our routing configuration allowing automatic failover of our Internet connections, no one knew it happened outside of the engineering staff.

This "test path" ran for three months with zero problems. We even had listeners telling us that they felt that the station sounded better on air than it had before. After this, we decided that the Z/IP One would be our standard for audio delivery to our remote sites.

Several months later, we are running 22 Telos Z/IP Ones located all over the state of Florida as C band STL satellite replacements with seven different localized feeds leaving the studio.

We have been pleased with the level of Telos' support regarding the hardware. Since our first path was installed, there have

been many software enhancements to the Z/IP One. Those have made it even more useful for our needs.

I am hoping that in the next software development cycle Telos adds the ability to change the MTU (maximum transmission unit), for those of us sending audio over tunnels, to prevent packet fragmentation. We did have one unit that failed shortly after installation, but a replacement was sent by overnight courier.

We've now gone back through and added off-air tuners feeding each of the remote site's Z/IP One inputs. This grants us a confidence backhaul at the studio of what we sound like on-air at all of the remote sites.

The Z/IP One has given us the features we needed as a C band STL replacement with incredible audio quality at a competitive price point. It's given our programming staff more flexibility, and allows us to have all of our automation systems at the studio, cutting down manpower to keep those systems running. We could not be more pleased.

For information, contact Clark Novak at Telos in Ohio at (216) 241-7225 or visit www.telos-systems.com.