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USER REPORT

Axia Eases Route Planning

By Chris Moran

CUMBERLAND, Maryland Recently, Allegany Radio Corporation stations in this region needed new STL links.

Allegany Radio Corporation is a part of West Virginia Radio Corporation, which owns and operates 23 radio stations throughout West Virginia and Maryland.

Studio at Allegany's Cumberland Facility

For our STL needs, 950 MHz links had served us well, but HD Radio requirements — sending multiple audio channels and PAD/RDS data to the transmitter site — meant it was time for something new.

Natural extension

The terrain around some transmitter sites, coupled with their distance from our studios, keeps personnel from monitoring these stations off-the-air, so we also needed backhauls.

Racks at Allegany's Cumberland Facility

Rather than license multiple STL channels, it made sense to consolidate all of these services into one transmission route.

We considered T1, but leasing proved costly. Ultimately, the combination of Ethernet microwave radios with Axia IP audio equipment satisfied our needs, eliminating monthly costs while providing over 70 times the bandwidth of a landline T1.

Axia was a perfect solution for us, since we had previously built new Axia-based studios and seen how well the system worked. Expanding the network to the transmitters was a natural extension of proven technology.

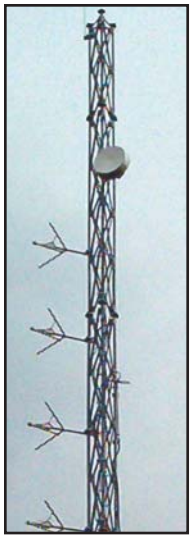
Using Axia, we could "see" all of the audio nodes through their Web interfaces, and remotely change their settings anytime, from anywhere.

At first, we considered various low-cost wireless Ethernet systems, but the risk of using unlicensed gear on such critical links was too high. We researched possibly better-qualified models, and Axia technical support examined the specs of those units to verify their suitability.

The radios we chose are VLAN configurable, so we were able to dedicate 98 Mbps to our Axia network — the equivalent of one Axia audio node — and still maintain 5 Mbps on a separate VLAN for our business LAN.

This gave us Internet at the transmitter sites and supplied a channel for PAD and other data such as transmitter power readings. We installed redundant microwave transmitters with automatic failover at the first two primary hops.

Our installation is unique since it is not strictly a point-to-point STL. The first transmitter site relays signal to two others.



Tower with Microwave Link

The first leg is a direct shot to one of our AM stations where a Cisco switch distributes audio to an Axia analog node, and to another wireless Ethernet link, which sends signal to a distribution tower for forwarding to two other sites likewise equipped with analog nodes.

By configuring the system for a total of eight active I/Os, we effectively use one 100 Mbps pipe to serve three locations!

Mindful of backhaul, we were concerned about end-to-end latency, but roundtrip time from the studio to the farthest site and back, across three separate radio links, is less than 2 ms — the same performance you would get from a copper-based LAN.

Plot studies

The key to successfully deploying Ethernet for STL is finding an integrator familiar with Ethernet radio technology.

They can provide accurate plot studies and rain-fade margin calculations that facilitate proper path alignment and dish sizing to guarantee uptime even during the worst weather, which we have experienced.

Our system has now been in service for over two months and we have literally had zero packet loss. We plan on using similar Axia/wireless Ethernet radio combinations for future builds at our other locations.

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Chris Moran is project manager with West Virginia Radio Corporation in Morgantown, West Virginia.

For information from Axia Audio, contact the company in the United States at telephone: +1-216-241-7225; FAX: +1-216-241-4103; e-mail: inquiry@axiaaudio.com*; or visit* http://www.axiaaudio.com/ *on the World Wide Web.*

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