Upstream ANALYZER
REMOTE SPECTRUM ANALYSIS

CaseStudy

Highlands wanted a better way to view their upstream spectrum

We gave them the remote

Spectrum Readings Right on Their Phones...Without a Meter!

Highlands found that in some cases, the new advanced meters they had weren't giving them as detailed a noise reading as Upstream Analyzer was displaying. With Upstream Analyzer, their field technicians would go out to a location and have detailed readings right on their phones.

THE CHALLENGE

In early 2014, Highlands Cable Group underwent a major upheaval when their long-time managed service provider for their provisioning, telephone service and diagnostics was acquired by another company. Facing the sudden release from their contract and disruption of their service to their subscribers, Highlands immediately went looking for another partner that could help them stay on track with the least impact to their subscribers.

Highlands had built their reputation on quality service to their subscribers by having the tools in place to monitor and manage their network with diagnostics software. They were hoping to have that same advantage with a new provider.

With the deadline approaching and having found ZCorum through a recommendation, Highlands's executives met with ZCorum and came away knowing ZCorum would be a good match for them. Their next objective was to get transitioned over to ZCorum as soon as possible.

THE RESULTS

After implementation, Highlands found that the new tools were far superior to the ones they had used before transitioning to ZCorum.

Their technicians are using the remote diagnostics tools out in the field and as a result they have seen the number of tech support calls and truck rolls decrease significantly.

They realized that their subscribers were calling in less and less. And when they did call to say hello they commented that they hadn't seen anyone from Highlands in a while.

THE SOLUTION

In order to accomplish their goals, Highlands signed on with ZCorum for their provisioning, NOC monitoring and VoIP service. At the same time they implemented a full suite of DOCSIS diagnostics tools from ZCorum. Owner Nin Bond quickly realized that ZCorum's tools were far superior to what they had previously been using.

One of the advanced diagnostics applications that Highlands now had access to is Upstream Analyzer, a software-based spectrum analysis tool for the return path that displays the

> *"We use Upstream Analyzer out in the field because there are situations, even with the new advanced meters that we have, where you just don't see quite the same noise that you get with this tool."*
>
> Rick Yinger, Network Engineer, Highlands Cable Group

spectrum passing through the CMTS. With Upstream Analyzer there is no proprietary spectrum analysis equipment needed because the spectrum is read directly from the CMTS. This makes the readings more accurate, and the upstream spectrum can be viewed on a PC or mobile device from any location, not just in the headend.

Comparing Upstream Analyzer to the Hardware Spectrum Analyer

For Highlands, testing the accuracy of the readings in Upstream Analyzer was the first step. They began by isolating a node in the headend and getting a reading with a hardware spectrum analyzer. Then they compared it to the reading in the Upstream Analyzer software they were seeing on their phones. They were happy to see that the readings were nearly identical. Highlands determined that Upstream Analyzer is probably one of the most helpful tools for their Chief Technician. When doing line balancing he found that the live data was very accurate.

How they Use Upstream Analyzer

Highlands found that in some cases, the new advanced meters that they had weren't giving them as detailed a noise reading as Upstream Analyzer was displaying. With Upstream Analyzer their field technicians would go out to a location and have greater detailed readings right on their phones. This was eliminating the need for carrying around a big o-scope. And best of all, the techs were seeing exactly what was going through to the CMTS on their mobile devices without even leaving their trucks.

They would generate a signal and see it immediately coming back into the CMTS right on their mobile device. Then when killing the signal and seeing it immediately drop, they could easily determine which frequency the noise was on.

Not only did Highlands see the benefits of a remote access spectrum analyzer, they also found having Upstream Analyzer to be quicker in determining problems because there's no dragging out a heavy spectrum analyzer. Now they can just click on their device and see the exact same readings that a spectrum analyzer would show them.

Highlands began turning on all the features in Upstream Analyzer, including the ingress under the carrier button that shows noise under the modem. They found it gave them a heads up especially when there was pulse modulation in a lot of the amplifiers.

"In testing our AGCs, when an amplifier started running too hot, the forward signal was bleeding into the return and the 6 megahertz carriers were popping in on the return. You could turn on that ingress under the carrier and see them consistently there," said Rick Yinger, Highlands Network Engineer. "You could clearly see that your SNR is now 26 and the carrier is 26 DB below the actual carrier for the modem."

THE BOTTOM LINE

ZCorum helped Highlands transition from another provider which resulted in Highlands having superior tools and faster time to repair any issues in the plant. In addition Highlands is able to utilize all the features in each of the diagnostics tools in tandem with each other to gain a complete and clear picture of their plant.

ZCorum™

ZCorum is the leading provider of innovative diagnostics and managed broadband solutions to telecommunications companies, helping them reduce costs, increase operational efficiency and improve the subscriber experience.

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