

# CASE STUDY



Frustrating troubleshooting had Cunningham Telephone and Cable looking for a better way.

Our *advanced diagnostics* gave them the insight they needed.

"With the aid of PreEqualization Analyzer there's been a difference already. We were able to find problems that we didn't know were there."

**Brent Cunningham**  
General Manager,  
Cunningham Telephone and Cable



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## CUNNINGHAM TELEPHONE & CABLE

# CUNNINGHAM'S TROUBLESHOOTING AIDED BY ZCORUM'S PNM TOOLS

ZCORUM'S PNM TOOLS INITIATED A MAJOR LEAP FORWARD IN PLANT MAINTENANCE AND TROUBLESHOOTING FOR THE KANSAS OPERATOR.

## INTRODUCTION

Founded by Dean and Hazel Cunningham in 1944, Cunningham Telephone and Cable has been serving areas of North Central Kansas for over 65 years and is still run by the Cunningham family. They've always been dedicated to providing high quality service to their customers and they're so hands-on the General Manager, Brent Cunningham, even has his email address right on the company website so subscribers can contact him personally. Built from humble beginnings, Cunningham continues to base their growing local business on customer service and advanced products through a large network of fiber optics with digital and IP equipment.

## THE CHALLENGE

Cunningham had been having issues in certain areas with those elusive impairments that drive field technicians crazy and cost the company money. The old adage that 'trouble comes in threes' was certainly the case in Kansas. Over the course of three months customers were calling in about problems and poor service. Three different techs on three separate truck rolls had been sent out to troubleshoot and fix whatever was causing the problems. When multiple trips were involved with no resolution, customers were getting frustrated with the techs. And Cunningham was frustrated because they couldn't find the problems. This was unacceptable to Cunningham and their search for a better way became priority one.

Looking for ways to take their troubleshooting and plant maintenance to the next level, they started doing research into the new Proactive Network Maintenance (PNM) technology they had been hearing about. PNM is the process of using DOCSIS pre-equalization data to identify upstream impairments in the cable network. Cunningham wanted to find out what it could do for their network.

## THE SOLUTION

During their research they learned that the same DOCSIS pre-equalization data that helps adjust cable modem signals to overcome an upstream impairment can also be used by a PNM application. With

the right tool, the same data can show the approximate location and severity of upstream issues, sometimes within only a few feet of the problem. Cunningham read about PNM technology helping cable operators by proactively pointing out issues before they became major problems. PNM software was also helping operators find problems they had been unable to find before and if multiple subscribers were being affected.

A lot of these success stories were from big MSOs who had developed their own PNM tools, and like most independent operators, Cunningham does not have an in-house development team. Fortunately, Brent Cunningham heard ZCorum had introduced a new PNM application. Having been a ZCorum customer and user of their TruVizion diagnostics software for several years, his positive experience led him to look at ZCorum's PNM tools, PreEqualization Analyzer and Upstream Analyzer.

Armed with white papers, case studies, and webinars made available on ZCorum's website, they read how operators like themselves were finding elusive issues buried somewhere in miles of plant. In addition, Upstream Analyzer was displaying the return path spectrum from the CMTS in real time and even showing ingress under the carrier. Cunningham realized this could mean an immediate and significant improvement in their troubleshooting efforts. They had to try these tools!





# SEE and ADDRESS UPSTREAM IMPAIRMENTS and INGRESS in ONE INTERFACE

Cunningham took the next step and signed on for free trials of PreEqualization Analyzer and Upstream Analyzer to see if these tools were as good as the reports sounded.

## THE RESULTS

During the thirty day trial period, Cunningham was able to analyze several prior occurrences of problems where they couldn't find the source before. "With the aid of PreEqualization Analyzer there's been a difference already," says Brent. "We were able to find problems that we didn't know were there. For example, we were able to go back and fix the customer who we visited three other times before. PreEqualization Analyzer showed us that some of the high-pass filters we had been using for years were causing microreflections that we couldn't detect." As they began to check problems off the list, Brent said the frustrated customers and field techs were happy again.

They also found the reports in PreEqualization Analyzer to be a tremendous help in tracking down problems, and they could review the history of those modems with issues to see if the issues were reoccurring. Doyle Nelson, Cunningham's Cable TV/Internet Tech, says one of his favorite reports displays the modems that are the worst performers, showing the customer's info, and stats like TDR, virtual TDR, and microreflections. "We can look at that one page and tell instantly whether there is a problem and which modems should be addressed first. Before we had these tools we didn't know the modem itself was causing problems unless you happened to check each one individually.

That report has saved me tons and tons of hours".

Another issue Cunningham can now address more effectively is ingress. The PreEqualization Analyzer software looks for a correlation between any fluctuations in the cable modem's transmit power over time and its pre-equalization coefficients. This data is displayed in an Intermittent Modem Report that identifies the modems most likely to be letting in a high level of noise. Plus, with Upstream Analyzer, Cunningham technicians have the ability to see the return path spectrum directly from the CMTS from any location, including ingress under the carrier, without any additional equipment. This makes it a lot easier to see in real time whether a change a technician makes has a positive impact on the amount of ingress.

**"BEFORE WE HAD THESE TOOLS, WE DIDN'T KNOW THE  
MODEM ITSELF WAS CAUSING PROBLEMS UNLESS YOU  
HAPPENED TO CHECK EACH ONE INDIVIDUALLY"**

**Doyle Nelson,**  
Cable TV/Internet Tech,  
Cunningham Telephone and Cable

## THE BOTTOM LINE

Cunningham deployed PreEqualization Analyzer and Upstream Analyzer to put the tools to a test. The results were beyond their expectations. They have happier customers; and much happier technicians. The bonus is they have been able to reduce truck rolls which has lowered their maintenance costs. From now on it's the good things that come in threes for Cunningham Telephone and Cable.

**CUNNINGHAM TELEPHONE AND CABLE**

# ADDITIONAL RESOURCES

## FREE TRIAL

**START YOUR FREE 30 DAY TRIAL OF PreEqualization Analyzer TODAY**

**COMPLETE THE FORM TO GET STARTED**



**CLICK HERE TO START YOUR FREE 30 DAY TRIAL OF PREEQUALIZATION ANALYZER**

## CASE STUDIES



**Click here** to learn how Fidelity implemented a PNM plan that allows them to proactively address network issues.



**Click here** to learn what Sweetwater Cable TV did when they ran into impairments that defied discovery by their technicians and how they finally solved their issues.

## WHITE PAPERS



**Click here** to read "DOCSIS 3.1 and the PNM Toolbox", and learn how to evolve from the "break-fix" method to a proactive approach towards plant maintenance.



**Click here** to learn how you can see an immediate 5 to 10 dB improvement in upstream MER (SNR)



**Click here** to read "DOCSIS Evolution and How 3.1 Will Change Everything", a white paper on the evolution of DOCSIS technology.



## VIDEOS



**WHAT IS PREEQUALIZATION? WITH RICK YUZZI**



**BENEFITS OF PNM TOOLS**



**How do I integrate PNM with my current maintenance operations?**



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