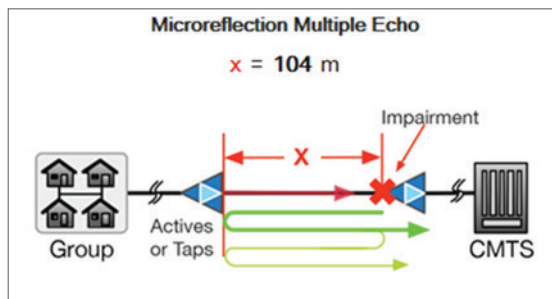


# PathTrak™ PNM

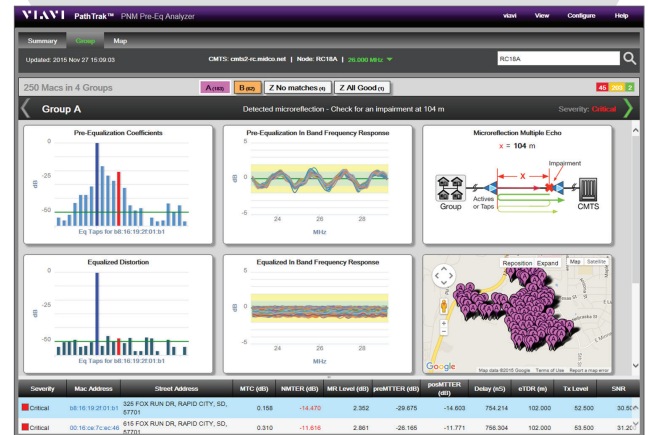
## Proactive network maintenance

PathTrak is the long-established, industry-leading system from Viavi Solutions® that detects a multitude of HFC upstream issues. It actively alerts you to changes in node spectral health and DOCSIS upstream-carrier RF and data health. Now, PathTrak integrates proven CableLabs PNM technology to deliver an even more comprehensive HFC upstream monitoring and troubleshooting platform.

PNM technology lets PathTrak collect and analyze insightful pre-equalization (pre-eq) data from cable modems. This capability gives maintenance teams simple, actionable data for quicker proactive network maintenance that improves plant reliability and increases customer satisfaction.



Plant weaknesses typically manifest as upstream impairments such as impedance mismatches that cause micro-reflections or unintentional filtering that causes group delay. All these issues degrade cable modem services. While CPE pre-eq technology can compensate for these plant weaknesses, it can also mask their presence until an impairment degrades to the point where service is abruptly impacted. With no warning for you or your subscribers, you are put in a reactive mode, scrambling to roll a truck with minimal direction and just the address of an already-unsatisfied subscriber. And, the address may not even be the actual fault location.



### Key Benefits

- Harden HFC plant for faster, smoother DOCSIS 3.1 rollouts
- Shorten time-to-fix and improve first-time fix rates
- Avoid callbacks with on-the-spot repair validation
- Improve downstream quality by addressing upstream issues
- Retain customers with truly proactive maintenance practices

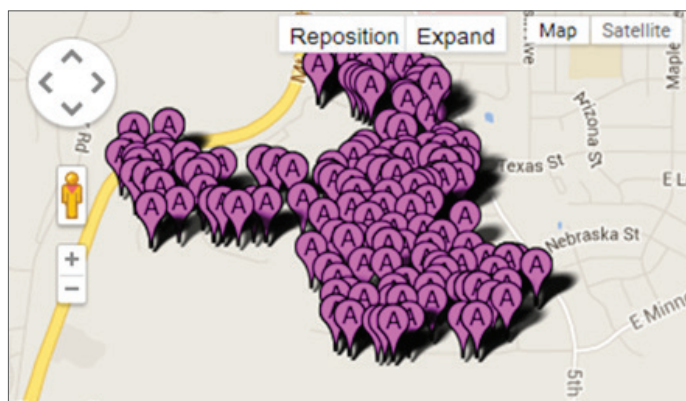
### Key Features

- PNM Home Check
- Integrates CableLabs® technology
- Collects and analyzes pre-equalization data
- Pinpoints problem locations with maps
- Identifies high-value service targets

### Applications

- Proactive HFC Plant maintenance
- Network prep and readiness for deploying DOCSIS 3.1
- Accurate upstream fault location
- Isolate in-home wiring vs. outside plant as problem source

PathTrak PNM lets you regain full visibility of plant weaknesses so you can assess and prioritize those impacting the largest number of subscribers. You can then proactively roll a truck to the known fault location. PNM gives users easy-to-understand data, including a list of high-value service targets backed up with a simple map showing impacted subscribers and distance-to-fault, pinpointing the problem source.



Geo-location of impacted subscribers

## Harden the HFC Plant for DOCSIS 3.1 Rollouts

Hardening improves performance and reliability, but expected speeds are unattainable if there is impulse noise (detectable by PathTrak and MACTrak) or micro-reflections (detectable by PathTrak PNM). Cleaning up impulse noise and micro-reflections lets D3.1 run with optimal OFDM modulation profiles that maximize the capacity gains promised with DOCSIS 3.1. As the number of upstream modulation profiles reaches a practical limit, it makes sense to improve plant performance to give a better base modulation profile (more base capacity).

## Shorten Time-to-Fix and Improve First-Time Fix Rates

Eliminate guesswork with mapped-location and distance-to-fault information prior to truck rolls so your techs know exactly where they are going. This avoids unnecessary trips to locate problems while dramatically reducing troubleshooting and repair times. You'll know that when you dispatch a tech, they're going to the right place and an actual fault.

## Validate Fixes on the Spot

Verifying/validating fixes on-the-spot reduces callbacks. PathTrak PNM Home Check enables a single-click query of any one of a group of impacted modems to prove a fix.

## Impact Downstream Service Quality

Using the upstream to find and fix plant weaknesses improves the downstream as well; a single impedance mismatch causing micro-reflections affects both upstream and downstream, so finding and fixing a single issue can double your impact.

## Prioritize Maintenance Efforts

PathTrak PNM analysis provides a simple list of high-value service targets, a prioritized list of issues showing the most severe issues and the number of subscribers they impact. Tackling prioritized targets gives the biggest return on your maintenance efforts (service quality improved/restored to the largest number of subscribers for a single truck roll).

## Monitor with Node-Level Views/Summaries

Those who monitor and maintain the HFC plant typically think in terms of fiber nodes, not CMTS ports. When is the last time you assigned a maintenance tech to sweep a CMTS port? To make life easy for your workgroups, PathTrak and PathTrak PNM continue the practice of displaying everything in terms of nodes, even automating the process of correlating which CPE ties back to which fiber node in properly equipped systems.

However, beyond technician convenience, there are a number of reasons to use a fiber node-centric approach. A single node is typically supported by multiple CMTS upstream ports. When performing PNM fault correlation, it is important to view the node as a whole and not per CMTS port. Otherwise, you will miss the larger issues and lose maintenance efficiencies. You could be rolling multiple trucks to fix what is actually a single fault impacting modems serviced by different CMTS ports.

## Retain Customers with Truly Proactive Maintenance Practices

Improving network reliability by detecting plant impairments before they impact customers or catastrophically fail increases satisfaction and reduces churn. Add PNM to PathTrak and see all impairment types with the industry's most-comprehensive, most-trusted go-to tool for upstream issues.

For more information about PathTrak PNM and related products, visit [www.viavisolutions.com/en-us/products/product-families/pathtrak/pathtrak-return-path-monitoring-system](http://www.viavisolutions.com/en-us/products/product-families/pathtrak/pathtrak-return-path-monitoring-system) or contact your Viavi representative.



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