- Total System Management for Trilithic Field and Headend Measurement & Monitoring Devices that Shows the Real-Time Performance of Your Entire Network
- Proactive Network Maintenance Helps to Increase Service Availability and Reduce Operational Expenses by Finding and Fixing Problems Early
- Consolidated Platform for Physical and Virtual Platforms with an Intuitive Web Browser Based User Interface
- Automated Dashboards with Customizable Reporting & Analysis Tools


**Monitor, Assess & Improve Plant Performance**

**Unified Data Management**

The ViewPoint Data Management System is the first ever server, software, or hosted platform to unify testing, troubleshooting, and monitoring of an entire MSO's plant operations into one comprehensive management solution.

The ViewPoint platform provides operations managers with a convenient, easy-to-use platform for verifying field operation compliance while monitoring the performance of your forward and return paths. ViewPoint also has the capability to monitor the historical performance of all of your MIB (management information base) devices and proactively diagnose issues before they affect your plant by using Proactive Network Maintenance (PNM) metrics and trending.

ViewPoint displays all of this information using convenient, easy-to-use dashboards powered by an extensive selection of customizable reports.

The monitoring, reporting, and proactive network maintenance tools provided within ViewPoint give operators an unparalleled view into the overall health of their entire system from a single, consolidated platform.

**Mobile Connectivity**

The ViewPoint system not only works for management, but is also designed with the technician in mind. The simplified web-based user interface of ViewPoint allows users to quickly and easily seek out problem areas within your plant either from the office using a PC or in the field from any portable smart device with an Internet connection and web browser. These mobile reporting features within ViewPoint allow you to view your data anytime and anywhere.

Technicians in the field also have the ability to use ViewPoint's customizable reports that can display a continuously updating dashboard with poorly performing nodes so they can always be targeting the most critical problem areas within your plant. Additionally, with mobile connectivity managers can also see a quick view of their entire field operations at-a-glance, in near real-time without interrupting their normal work routine.

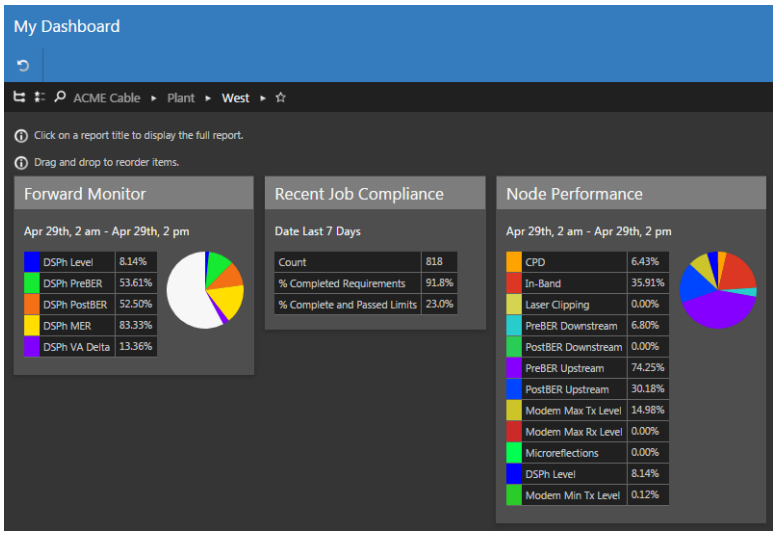
**Comprehensive All-In-One Solution**

By using the ViewPoint Data Management System to monitor the health of your plant, it can lead to improved team communication, finding and fixing issues before they become problems, and the ability to diagnose reoccurring problems over time.

When combined, these features provide operators with all of the tools needed to reduce truck rolls, lower operating costs, and improve service quality.

**Custom Dashboards**

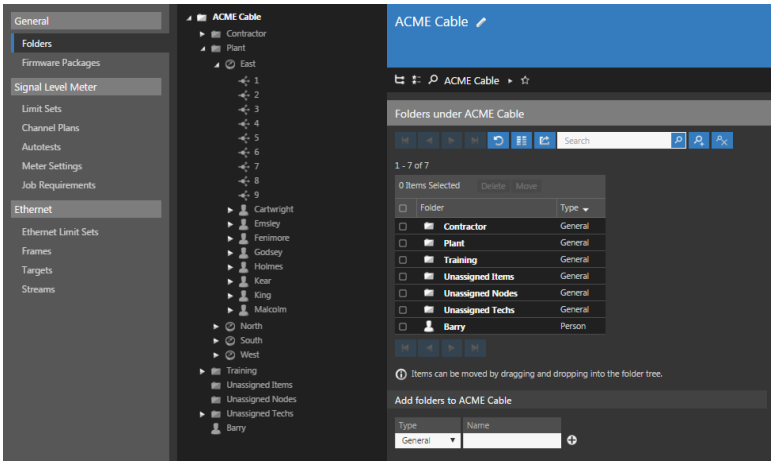
The My Dashboard feature within the ViewPoint system provides users with the ability to save their favorite reports to a common dashboard. This dashboard also acts as the user's home screen, which allows quick navigation to their favorite reports or areas of interest with a single click.




**Organization Management**

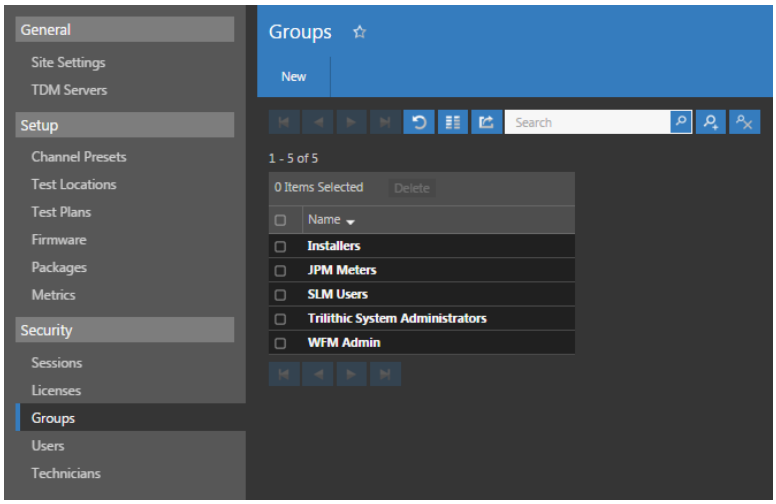
The organizational structure within the ViewPoint system provides supervisors with the ability to easily customize the software to match the MSO's operational structure. With customizable folders, areas, people, technicians, and nodes, the organizational possibilities are nearly endless.

Users can quickly navigate within the organization using a "bread crumb" trail or an easy-to-use tree structure to navigate anywhere within the system in just a few clicks.



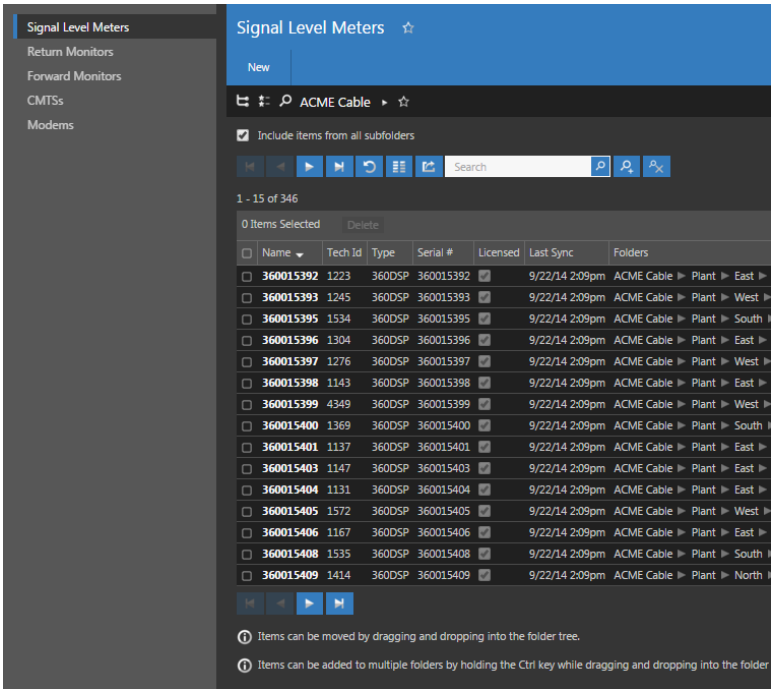
**User & Groups Management**

Comprehensive user management features allow supervisors to control user profile info, passwords, group membership and organizational access within ViewPoint. Additionally, supervisors can use group permission sets to control user access to specific features within ViewPoint including profile info, meter settings, jobs, reports, dashboards, metrics, live spectrum views, return monitors, watch lists, CMTS, modems, and site administration.




**Inventory Management**

Within ViewPoint, supervisors have the ability to manage all of their Trilithic test, measurement, and monitoring equipment. This allows you to easily keep track of your assets to determine which units are operating normally and identify those in need of upgrades or calibration that may affect their measurement accuracy.



## WORKFORCE MANAGEMENT (WFM) MODULE

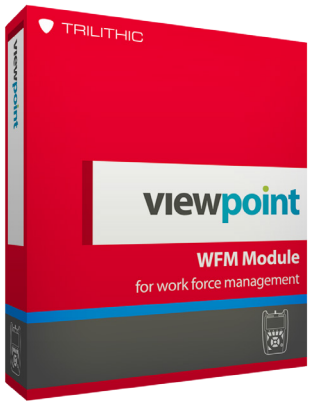
**Total Field Workforce Management**
The ViewPoint WFM Module is designed to unify an entire MSO's field installation, service, and maintenance operations into one convenient platform. This system provides managers with the ability to easily verify installation certification compliance throughout the entire plant and help to identify both localized problems and high-level system issues.

Whether by home, system, region, division, or even at a corporate level, these insights allow the operator to make better decisions based on a clearer understanding of the impact to overall operations and the associated ROI.

**Monitor & Assess Field Efficiencies**
Combining Trilithic's field meters with the ViewPoint WFM Module is designed to help drive standardization and consistency in the field and manage installation and troubleshooting.

The WFM Module provides managers an at-a-glance view of their total field operations in near real-time. This provides MSOs the ability to assess field efficiencies by monitoring and analyzing the health of their overall field operations.

Additionally, automated testing apps and certification processes eliminate mistakes, decrease installation, maintenance, and troubleshooting time.




### KEY FEATURES & BENEFITS:

- Enables management to view team reports through any web browser
- Consistent, efficient, and accountable quality assurance improves installation service quality, resulting in retention of satisfied customers
- Improves installation technician performance with measurable results while eliminating costly rework
- Proactive and automated test processes save maintenance technicians' troubleshooting time, also cutting operational expenses
- Auto Test Apps speed up installation technicians' measurement and data collection time, thereby improving productivity

**Improve Performance & Productivity**
The ViewPoint WFM Module integrates Trilithic's original and new DSP series of field analyzers into a single, unified platform that collects data from technicians in the field, while allowing managers to distribute standardized testing packages, track meter inventory, and update firmware.

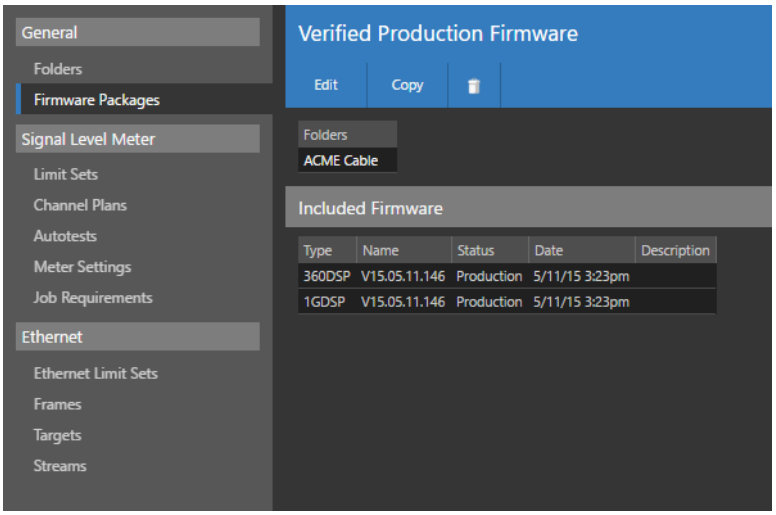
As a result, field operations managers are able to easily verify installation compliance, track technician performance, and decrease operational expenses by ensuring their technicians are performing the proper tests, to the proper standards, and at the right place and time.

The ViewPoint WFM Module provides additional benefits to managers, such as the ability to compare results between each location in the system and potentially identify techs who need additional training. Additional training for your technicians leads to improved individual performance, while simultaneously increasing overall team performance.

By verifying your team performs consistent, efficient, and quality installations at all times, you could have reduced truck rolls, improved service quality, more satisfied customers, and less churn, all while driving down operational costs.

**Firmware Update Management**

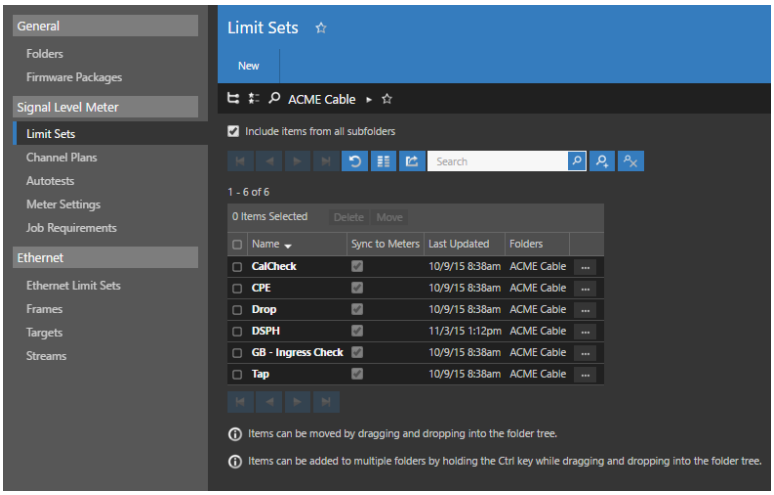
The WFM Module allows you to manage your meter firmware deployment within your organization. This feature is designed to help you keep your meters up-to-date with the latest and greatest firmware, while ensuring that all technicians are only using firmware that is approved for use within your system. New firmware updates (when available) are automatically delivered to ViewPoint on a daily basis.




ViewPoint provides managers with the flexibility to choose whether to automatically require all meters to use the most recent firmware or manually manage delivery using custom firmware packages. These custom firmware packages allow you to individually control where and when to apply updates within your organization. This feature also allows you to easily perform controlled beta testing of new firmware using only a few meters before rolling out the update to all meters.

**Meter Configuration Management**

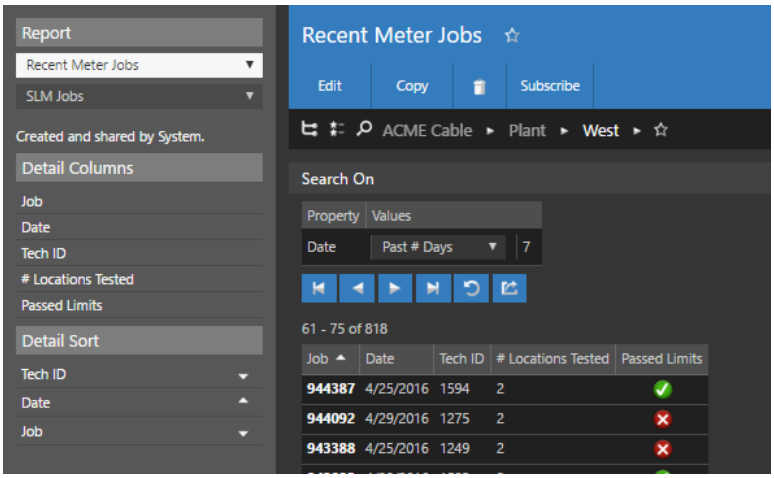
The WFM Module enables you to control what settings are delivered to which field meters within your organization. These settings include measurement limit sets, channel plans, autotests, meter settings, job requirements, and Ethernet test settings. Management can then distribute these settings throughout your organization so every meter has the proper setup. This ensures that the right tests are done on the right channels with the correct limit sets, every time.



**Jobs Reports**

The Jobs Report provides supervisors with the ability to view which technicians have performed what types of jobs and the locations where the jobs were performed. Additionally, this report allows you to view the number of distinct locations where tests were performed and if they passed measurement limits.

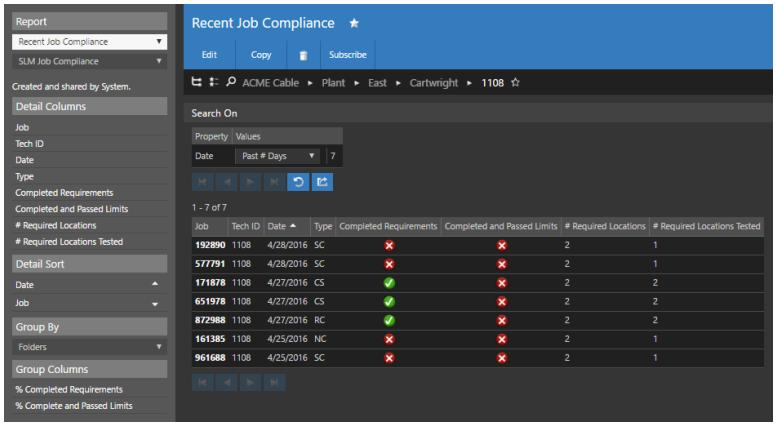
Drilling down into specific jobs and their accompanying measurement data provides supervisors with the ability to view which technicians are completing their jobs and whether their tests are passing or failing.




**Job Compliance Reports**

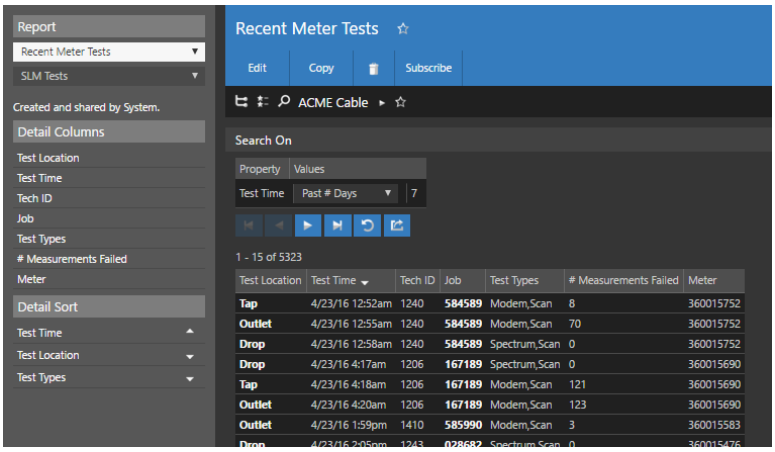
The Jobs Compliance Report allows management to verify whether technicians are completing all of their required tests, where they are performing tests, and if their tests are passing or failing.

This allows managers to analyze what is working on some jobs and what needs to be addressed on other jobs. Reports like this give managers the ability to address and improve productivity by proactively eliminating rework.




**Test Reports**

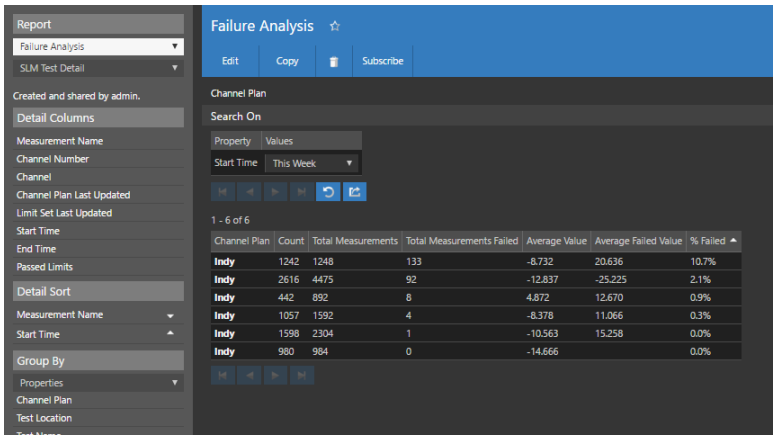
The Test Report provides management with the ability to view which types of tests are being performed and at what locations. This report is designed to help supervisors address any concerns in technician performance as well as provide a history for that subscriber location for future troubleshooting.



**Test Detail Reports**

The Test Detail Report allows management to create custom reports using channel testing details. These reports can be based on time, location, channel details, channel plan, or failed measurement results.

This report is intended for use in analyzing which tests are being performed, the specified testing standards being used, and how many are passing those standards. Reports like this give managers the ability to address and improve productivity by proactively eliminating rework.



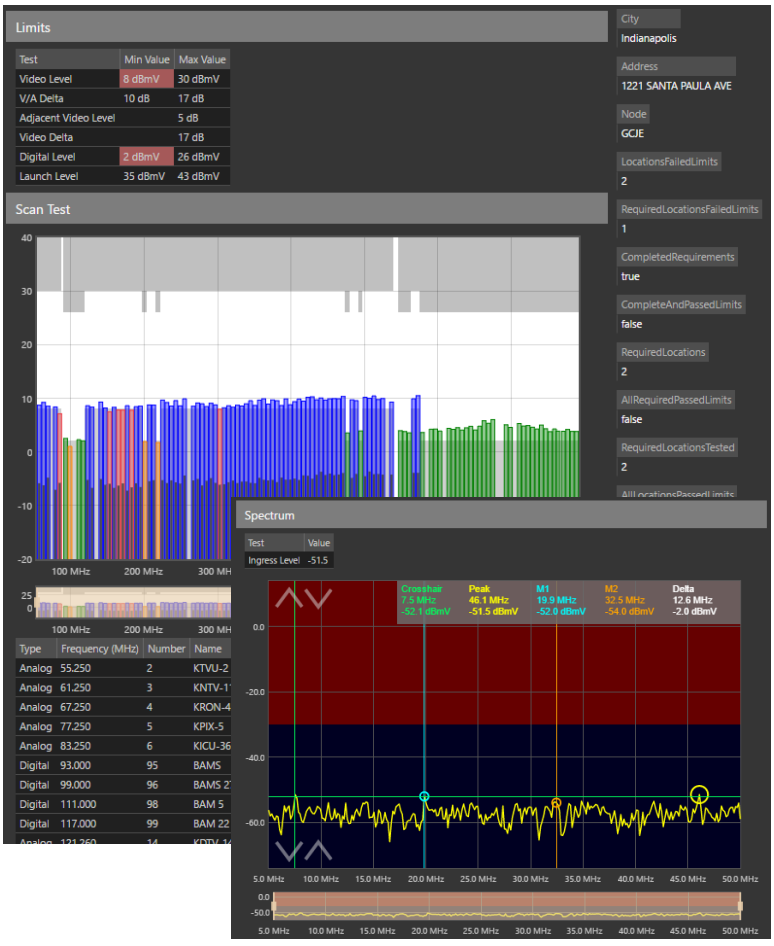

**Detailed Meter Autotest Results**

Detailed autotest results are available for all Job, Job Compliance, and Tests reports. This feature allows you to view meter autotest results by location tested.

The autotest results include job, location, meter information, and modem results as well as channel scan measurement results. Within the detailed measurement results, you will be able to determine which limit sets are failing and on what channels. The WFM Module also allows you to use interactive channel and ingress scan graphs to isolate desired points of interest within your plant.

The channel scan graph allows you to inspect each measured channel and features adjustable span and center frequency controls, along with limit level overlays, color-coded channel types, and hover text that displays the measurement results of the highlighted channel.

The ingress scan graph allows you to inspect the return spectrum scan performed during autotesting and features adjustable span, center frequency, and amplitude controls. This graph also features limit level overlays and adjustable markers that display the measurement results at points of interest within the return band.



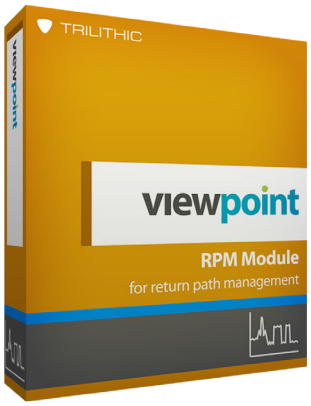
# RETURN PATH MAINTENANCE (RPM) MODULE

**Unified Return Path Management**
The ViewPoint Return Path Management (RPM) Module simplifies the management of your return path monitoring and maintenance using Trilithic's 9581 SST Return Path Analyzer. The RPM Module displays the percent over limit for each return path measurement metric and node monitored by the 9581 SST.

The RPM module's simplified dashboard provides operators with the needed flexibility of being both a master report dashboard for supervisors and a web portal for technicians in the field to view return path performance directly on their smart devices or PC.

**Search and Trending Capabilities**
The RPM module gives managers and technicians the ability to search out the "X" amount of worst performing nodes using continuously updating report dashboards which allow you to always target the most critical problems within your plant.

Along with these extensive search capabilities, the dashboards within the RPM Module use custom color-coded metric summaries to highlight specific trends or problems affecting your nodes, which are useful when trying to diagnose reoccurring problems.




## KEY FEATURES & BENEFITS:

- Unified web browser-based interface with extensive reporting tools for all return path nodes in the system
- Automated dashboard enables management to view the entire system at a glance
- Automatically displays each node metric's percent over the limit
- Live views of active return nodes and all of the data for each node is captured by the system and saved for historical analysis and trending
- Unlimited amount of connections for field users to view return nodes with no side effects
- Accessible via any smart device with a browser and broadband Internet connection
- Profile interaction allows for multi-profile views or targeted profiles for unique data sets

**Everyday Usage for the Field**
The RPM Module not only works for management, but is also designed with the technician in mind. With the new, unified web browser-based interface, all nodes monitored by the platform can be accessed via any smart device with a browser and Internet connection.

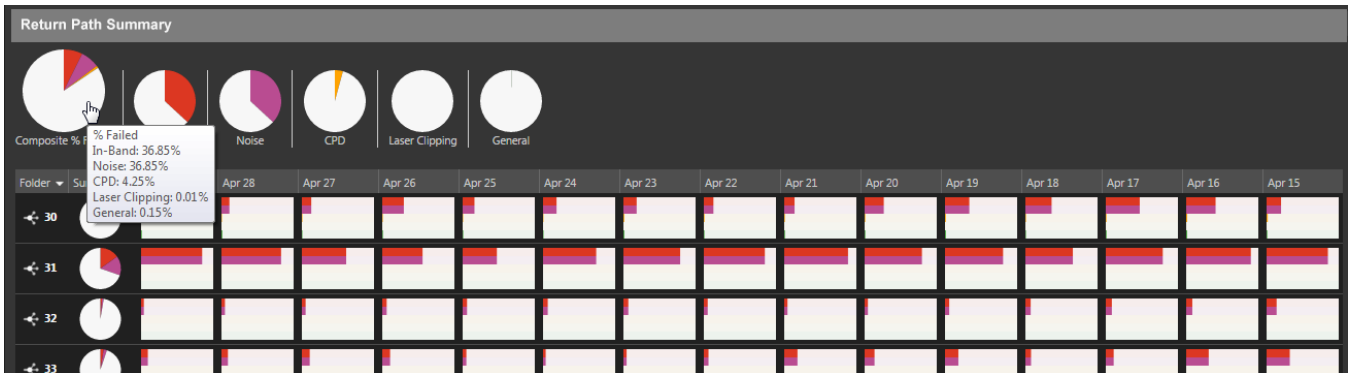
**Measurement Profiles**
The RPM Module imports and displays the measurement profiles that are used in the 9581 SST and allows you to customize the names of these profiles to mimic the profiles set up on the 9581 SST.

When trying to target an area of concern, the customizable dashboard can display any of the eight available profiles. This adjustability allows each individual user to set limits for the individual monitoring profiles of the 9581 SST. The adjustable look and feel of the dashboard enables users to quickly and easily view the areas or nodes that are of the most interest to them.

**Return Path Metric Summary**

The RPM Module provides a simple and intuitive color-coded dashboard that summarizes the percent over limit for each return path metric that was monitored within the selected area of the organization. Additionally, each node's return path metrics measured over a set time period are displayed in a tabular format.

These features greatly enhance maintenance efforts by enabling simple identification of return path issues and which areas or nodes are affected. The metric summary can also be fully customized to suit each user's needs by adjusting the grouping, columns, sort order, normalization, and time span displayed by the table.




**Spectrum and Alarm Snapshots**

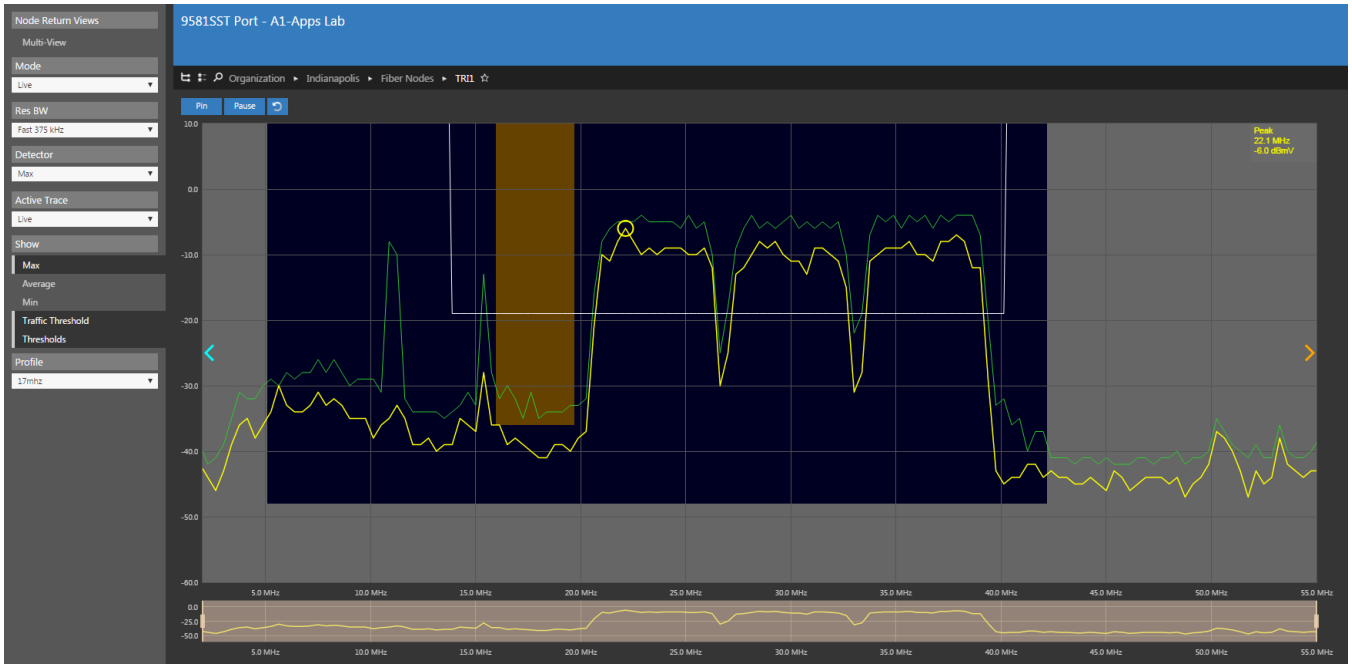
The RPM Module provides the ability to display summary snapshots of the recent and historical spectrum for the selected nodes. These snapshots allow users to quickly view the condition of the return path to identify noise and ingress that may be negatively affecting subscribers.

Additionally, the RPM Module collects return path alarm information on a continual basis and displays these statistics for both the most recent alarms and historical alarms. By simply selecting any of these graphs, users have the ability to display a larger detailed view of the graph with adjustable amplitude and span settings for isolating desired points of interest within the return band.

**Live Return Path Spectrum**

Selecting the recent return spectrum snapshot from the node dashboard provides users with the ability to view the live return spectrum being monitored by the 9581 SST. The live return spectrum graph includes the ability to adjust amplitude, span, resolution bandwidth, and detector type for fine tuning of the spectrum graph to isolate trouble spots within the return band.

Furthermore, this graph has the ability to display not only live traces but min, max, and average traces when trying to identify issues that may occur over a given time period. The RPM Module also provides users with the ability to display traffic and alarm thresholds from the 9581 SST when viewing live or historical return spectrum and alarms.




**Multi-View Live Return Spectrum**

Multiple live return path spectrum analysis graphs can be viewed in the multi-view display. This feature allows users to display dozens of live return spectrum traces on a single dashboard for multiple areas and nodes.

The multi-view display enables monitoring of multiple nodes for easier identification and analysis of common path distortion and ingress issues within the return path.

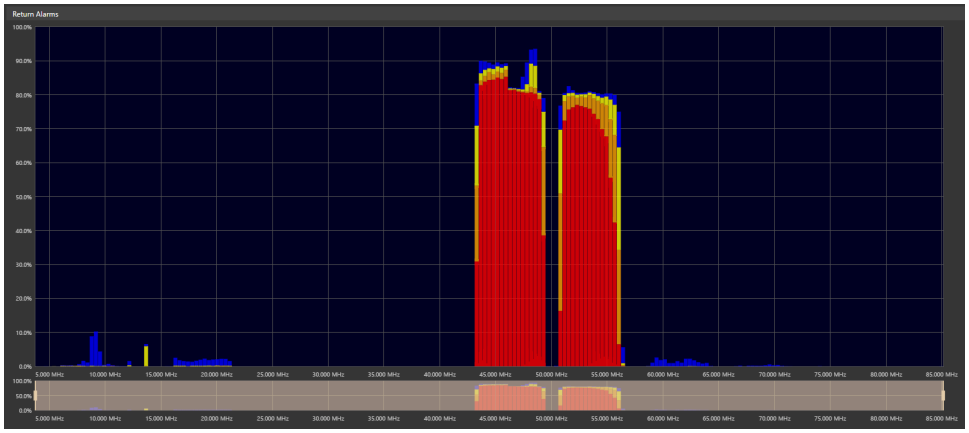
**Historical Return Path Analysis**

The historical return path analysis graph allows users to investigate issues long after they have disappeared. Users can quickly and easily select the time span for analysis in minutes, hours, or for an entire day. Additionally, users have the ability to adjust the amplitude and span of the spectrum and choose the type of traces and alarm profiles in a manner similar to the live return spectrum display.


**Historical Alarm Details**

The RPM Module also collects and displays historical alarm data for monitored nodes.

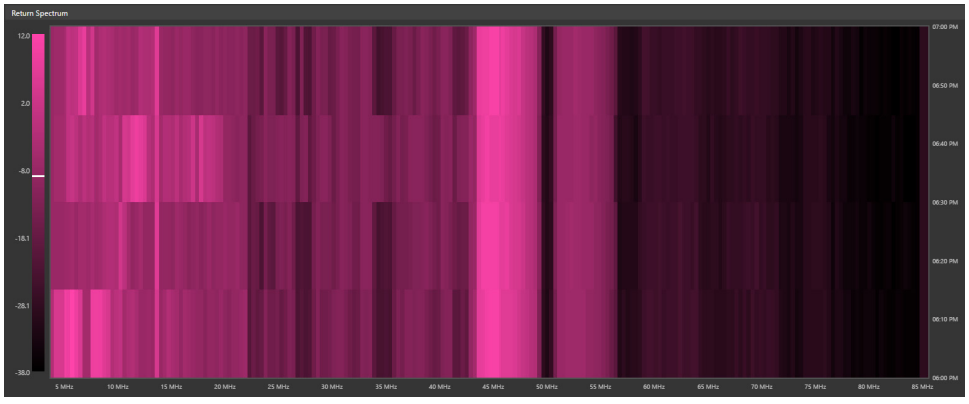
From this display, users have the ability to view any type of return alarm over a chosen period of time. Additionally, users have the ability to adjust the amplitude, span, and displayed alarm profiles in a manner similar to the live return spectrum display.




**Historical Waterfall Analysis**

A waterfall graph also provides useful insight into the overall magnitude of return path signals at specific frequencies or over a given period of time.

Within this view, users can choose from a time or frequency-based horizontal axis and whether to display time in an ascending or descending fashion. Additionally, users have the ability to choose the type of traces, normalization, and displayed alarm profiles in a manner similar to the live return spectrum display.



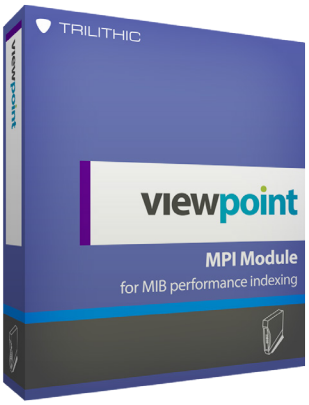
# MIB PERFORMANCE INDEXING (MPI) MODULE

**In-Depth MIB Monitoring & Analysis**
The ViewPoint Managed Information Base (MIB) Performance Indexing (MPI) Module is specifically designed to provide the NOC (Network Operation Center) with the capability to poll modems in real-time for up-to-date diagnostic information. This information is combined into a simplified dashboard that automatically displays each area's MIB Performance Index, or MPI.

The MPI module provides operators with the needed flexibility of being both a master report dashboard for supervisors and a web portal for technicians in the field to view modem performance directly on their smart devices or PC.

**Search and Trending Capabilities**
The MPI module gives managers and technicians the ability to search out the "X" amount of worst performing modems using continuously updating report dashboards, which allow you to always be targeting the problem areas within your plant.

Along with these extensive search capabilities, the dashboards within the MPI Module use custom color-coded metric summaries to highlight specific trends or problems affecting a node, which are useful when trying to diagnose reoccurring problems that may be affecting your modems.




## KEY FEATURES & BENEFITS:

- Unified web browser-based interface with extensive reporting tools for all MIB devices in the system
- Automated dashboard enables management to view the entire system at a glance
- Automatically displays each modem metric's percent over the limit
- Performance data for each device is continuously monitored and saved for historical analysis and trending
- Unlimited amount of connections for field users to view MIB devices with no side effects
- Accessible via any smart device with a browser and broadband internet connection

**Everyday Usage for the Field**
The MPI Module not only works for management, but is also designed with the technician in mind. With the new, unified web browser-based interface, all modems monitored by the platform can be accessed via any smart device with a browser and Internet connection. This allows all team members to target any period of time to view the modem test results for further analysis and troubleshooting.

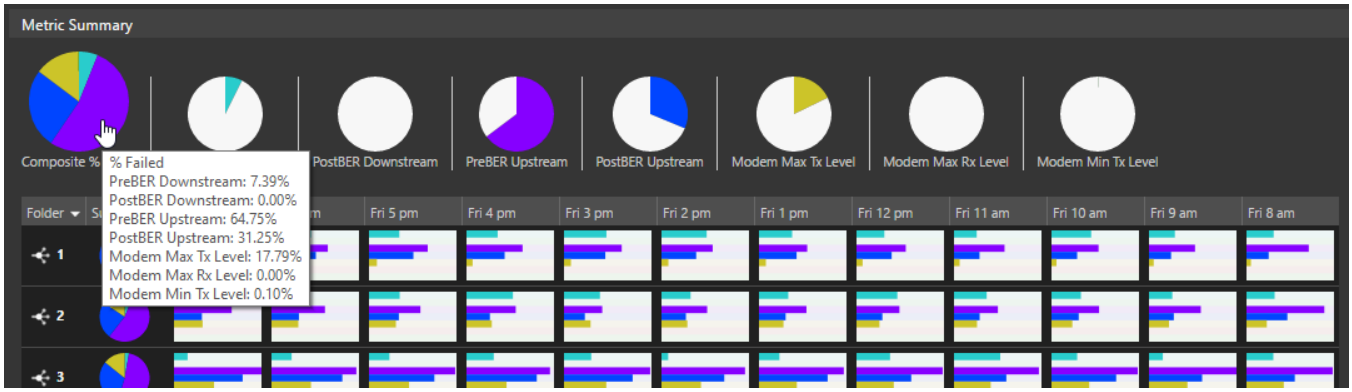
**Quick & Easy MIB Monitoring**
The MPI Module is designed with your whole team in mind by having all of the tools in place for management to quickly and easily isolate problem areas within the return path. This can lead to a decrease in the mean-time to repair by allowing supervisors to proactively dispatch crews to fix the problem before they begin affecting customers.

With field access to the MPI Module, service and maintenance technicians will also benefit by receiving feedback about the impact of their work on return path performance, which can reduce the time needed for them to isolate and correct impairments.

**Modem Performance Metric Summary**

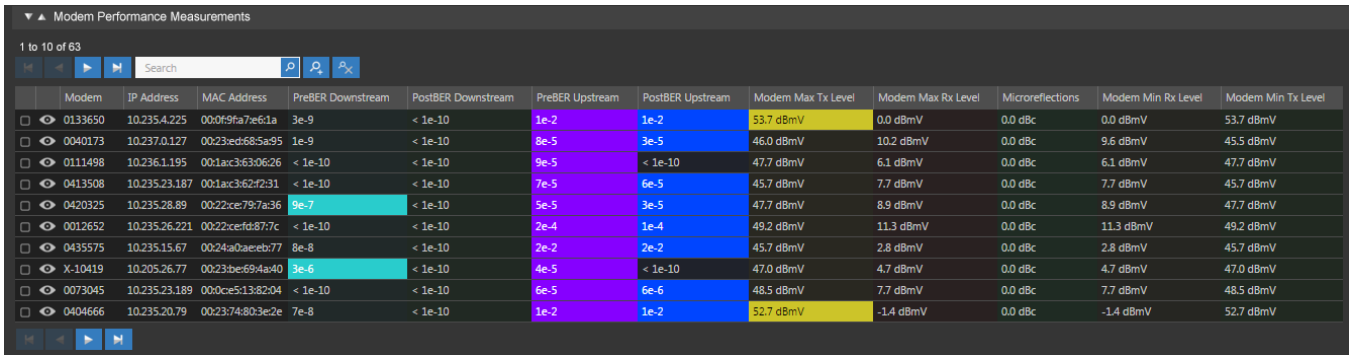
The MPI Module provides a simple and intuitive color-coded dashboard that summarizes the percent over limit for each modem metric that was monitored within the selected area of the organization. Additionally, each modem's performance metrics measured over a set time period are displayed in a tabular format.

These features greatly enhance maintenance efforts by enabling simple identification of modem issues and which nodes are affected. The metric summary can also be fully customized to suit each user's needs by adjusting the grouping, columns, sort order, normalization, and time span displayed by the table.




**Modem Performance Detailed Measurement Results**

The MPI Module also provides simple and intuitive color-coded measurement results for the modems on the selected node. Additionally, basic information about the modem such as name, IP address, and MAC address are displayed to enable simple identification of modems with performance issues.




| Modem | IP Address | MAC Address | PreBER Downstream | PostBER Downstream | PreBER Upstream | PostBER Upstream | Modem Max Tx Level | Modem Max Rx Level | Microreflections | Modem Min Rx Level | Modem Min Tx Level |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0133650 | 10.235.4.225 | 00:0f:9f:a7:e6:1a | 3e-9 | < 1e-10 | 1e-2 | 1e-2 | 53.7 dBmV | 0.0 dBmV | 0.0 dBc | 0.0 dBmV | 53.7 dBmV |
| 0040173 | 10.237.0.127 | 00:23:ed:68:5a:95 | 1e-9 | < 1e-10 | 8e-5 | 3e-5 | 46.0 dBmV | 10.2 dBmV | 0.0 dBc | 9.6 dBmV | 45.5 dBmV |
| 0111498 | 10.236.1.195 | 00:1a:c3:63:06:26 | < 1e-10 | < 1e-10 | 9e-5 | < 1e-10 | 47.7 dBmV | 6.1 dBmV | 0.0 dBc | 6.1 dBmV | 47.7 dBmV |
| 0413508 | 10.235.23.187 | 00:1a:c3:62:f2:31 | < 1e-10 | < 1e-10 | 7e-5 | 6e-5 | 45.7 dBmV | 7.7 dBmV | 0.0 dBc | 7.7 dBmV | 45.7 dBmV |
| 0420325 | 10.235.28.89 | 00:22:ce:79:7a:36 | 9e-7 | < 1e-10 | 5e-5 | 3e-5 | 47.7 dBmV | 8.9 dBmV | 0.0 dBc | 8.9 dBmV | 47.7 dBmV |
| 0012652 | 10.235.26.221 | 00:22:ce:fd:87:7c | < 1e-10 | < 1e-10 | 2e-4 | 1e-4 | 49.2 dBmV | 11.3 dBmV | 0.0 dBc | 11.3 dBmV | 49.2 dBmV |
| 0435575 | 10.235.15.67 | 00:24:a0:ae:eb:77 | 8e-8 | < 1e-10 | 2e-2 | 2e-2 | 45.7 dBmV | 2.8 dBmV | 0.0 dBc | 2.8 dBmV | 45.7 dBmV |
| X-10419 | 10.205.26.77 | 00:23:be:69:4a:40 | 3e-6 | < 1e-10 | 4e-5 | < 1e-10 | 47.0 dBmV | 4.7 dBmV | 0.0 dBc | 4.7 dBmV | 47.0 dBmV |
| 0073045 | 10.235.23.189 | 00:0c:e5:13:82:04 | < 1e-10 | < 1e-10 | 6e-5 | 6e-6 | 48.5 dBmV | 7.7 dBmV | 0.0 dBc | 7.7 dBmV | 48.5 dBmV |
| 0404666 | 10.235.20.79 | 00:23:74:80:3e:2e | 7e-8 | < 1e-10 | 1e-2 | 1e-2 | 52.7 dBmV | -1.4 dBmV | 0.0 dBc | -1.4 dBmV | 52.7 dBmV |

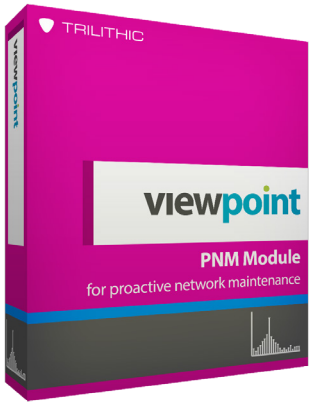
# PROACTIVE NETWORK MAINTENANCE (PNM) MODULE

**Truly Proactive Maintenance**
The ViewPoint Proactive Network Maintenance (PNM) Module is specifically designed to provide the NOC (Network Operation Center) the capability to use your cable modems as troubleshooting devices by analyzing their pre-equalization data for any indication of potential impairments in your outside plant.

By using active cable modem data, operators can automatically identify potential problems affecting their upstream and work to correct these issues before they impact customers.

**Search and Trending Capabilities**
The PNM Module gives managers and technicians the ability to search out the "X" amount of worst performing modems using continuously updating report dashboards, which allow you to always be targeting the problem areas within your plant.

Along with these extensive search capabilities, the dashboards within the PNM Module use custom color-coded metric summaries to highlight specific trends or problems affecting a node, which is useful when trying to diagnose reoccurring problems that may be affecting your modems.




**Simplified Linear Distortions Testing**
The PNM Module uses headend and cable modem pre-equalizer tap values to calculate several key performance metrics and display the taps, in-channel response, and group delay graphs. These metrics are used to automatically classify the severity of group delay and microreflection impairments present in the upstream and identify the distance to faults.

**Automated Severity Classification**
The key performance metrics calculated by the PNM Module are also analyzed over time to identify whether impairments are related to trending or intermittent behaviors. The PNM Module also uses these metrics to automatically classify the severity level of impairments and adjust the polling rates for the affected modems.

**Group Correlation**
To make identification of common path issues even easier on operators, the PNM Module also performs correlation analysis on the linear distortion measurements for all modems within the system. This correlation analysis is then used to group together modems that are experiencing similar issues within single nodes, across multiple nodes, or throughout your entire plant.

**Intelligent Plant Maps**

The ViewPoint PNM Module is equipped with an interactive mapping feature that provides the ability to map all of the cable modems within your system. Modems are displayed on the map based on their physical location and are grouped according to their common impairment correlation signatures.

The advanced mapping features built-in to ViewPoint provide operators with the ability to import their aerial and underground strand maps. This feature enables correlation of modems with impairments to the location of the devices within the physical plant. In addition to strand maps, the PNM Module can also display plant devices that are tagged with geo-spatial coordinates, such as amplifiers, taps, and power supplies.

Correlation groups also allow supervisors to quickly identify which areas within their plant are experiencing performance issues and how many modems are affected. Selecting a correlation group from the map will automatically display the affected area and the location of every modem that is affected by the common path distortion.

## KEY FEATURES & BENEFITS:

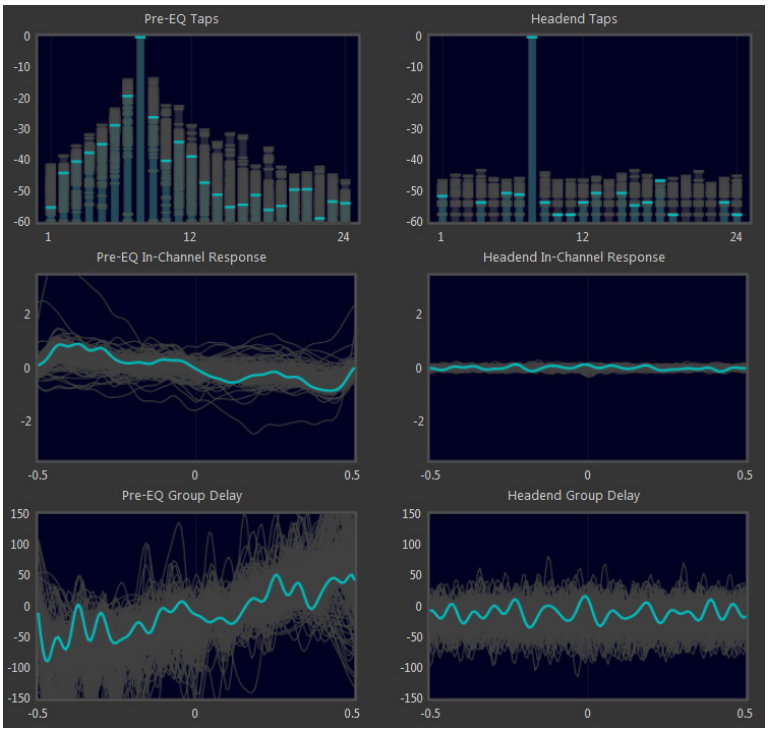
- Unified web browser-based interface with extensive reporting tools for all modem and CMTS data
- Automated dashboard enables management to view the entire system at a glance
- Automatically displays correlated modem issues on a map
- Performance data for each device is continuously monitored and saved for historical analysis and trending
- Unlimited amount of connections for field users to view modem performance with no side effects
- Accessible via any smart device with a browser and broadband Internet connection

**Linear Distortion Metrics**

The ViewPoint PNM Module is designed around the ability to analyze the equalizer taps, in-channel response, and group delay values collected from your CMTS and the active modems within your system.

The collected data is used to calculate several key performance metrics that are useful in classifying the severity of group delay and microreflection impairments present in the upstream and identifying the distance to faults.

The key performance metrics calculated by ViewPoint are also displayed in a tabular format with color-coded pass/fail results for easy identification of dominant impairment signatures.




Modems

Add Display Field... | Clear | Add Measurement... | Clear

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| Modem | Status | NMTTER | MTC | Peak to Valley | Ripple | Microreflection Level | Distance to fault | Problem | Trend |
|---|---|---|---|---|---|---|---|---|---|
| [redacted] | Nominal | -29.8 dB | 0.005 dB | 0.9 dB | 1.0 dB | -26.2 dB | | | |
| [redacted] | Nominal | -28.0 dB | 0.007 dB | 0.8 dB | 1.0 dB | -26.3 dB | | | |
| [redacted] | Nominal | -30.4 dB | 0.004 dB | 0.8 dB | 1.0 dB | -26.5 dB | | | |
| [redacted] | Critical | -23.1 dB | 0.022 dB | 1.2 dB | 3.0 dB | -23.4 dB | 551 ft - 709 ft | Microreflections | Intermittent |
| [redacted] | Nominal | -27.1 dB | 0.009 dB | 0.8 dB | 1.0 dB | -26.9 dB | | | |
| [redacted] | Critical | -21.4 dB | 0.032 dB | 2.3 dB | 4.0 dB | -17.7 dB | 551 ft - 709 ft | Microreflections | |
| [redacted] | Nominal | -28.0 dB | 0.007 dB | 1.1 dB | 3.0 dB | -23.6 dB | | | |
| [redacted] | Critical | -19.9 dB | 0.045 dB | 2.2 dB | 4.0 dB | -17.9 dB | 79 ft - 236 ft | Microreflections | |
| [redacted] | Nominal | -26.0 dB | 0.011 dB | 0.6 dB | 0.0 dB | -29.3 dB | | | |
| [redacted] | Critical | -19.2 dB | 0.052 dB | 2.6 dB | 5.0 dB | -16.5 dB | 79 ft - 236 ft | Microreflections | |
| [redacted] | Nominal | -26.5 dB | 0.010 dB | 1.1 dB | 2.0 dB | -23.7 dB | | | |

# FORWARD PATH MAINTENANCE (FPM) MODULE

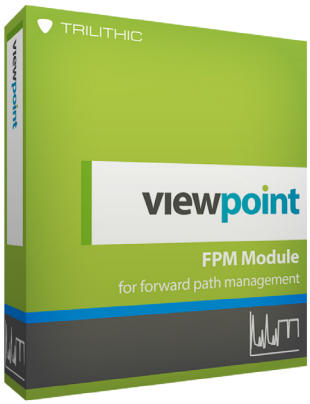
**Continuous Forward Path Analysis**
The ViewPoint Forward Path Management (FPM) Module simplifies the management of your forward path monitoring and maintenance. The FPM Module displays an entire system of 860 DSPh Remote Headend Analyzers within one simplified dashboard that automatically displays each area's percent over the limit.

The FPM module gives the operator the flexibility to be used as a master report dashboard, as well as gives the technicians in the field a web portal to pull live views of active forward nodes directly to their smart devices or PC.

**Search and Trending Capabilities**
The FPM module uses the 860 DSPh to provide continuous visibility of signal quality to technicians for monitoring and troubleshooting in remote headends or other facilities where access is restricted or local technical personnel are not available.

The dashboard view within the FPM Module also allows you to monitor various measurement parameters including channel level, depth of modulation, FM deviation, hum, carrier-to-noise ratio, MER (modulation error ratio), and BER (bit error ratio).

These extensive monitoring capabilities can be used to highlight specific trends or impairments affecting the forward path and can be useful in diagnosing reoccurring problems over any period of time.




## KEY FEATURES & BENEFITS:

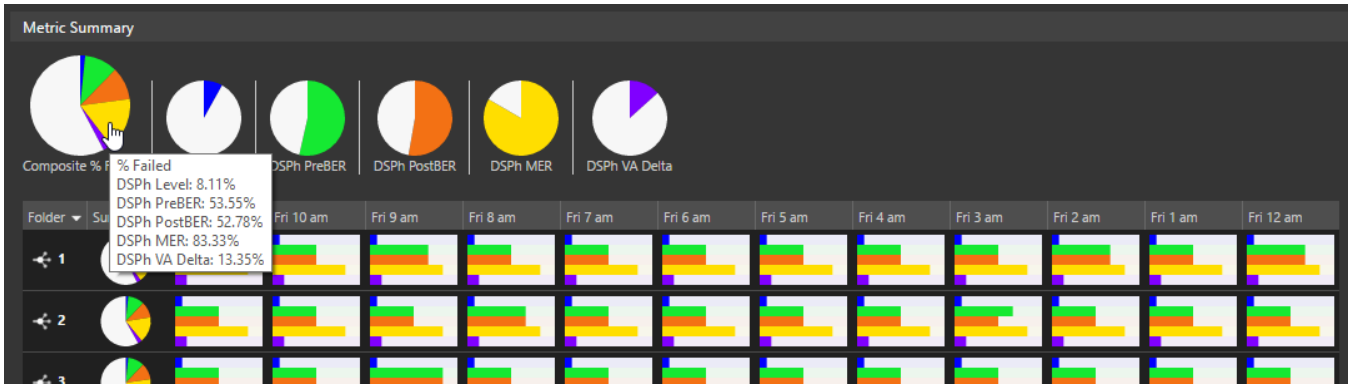
- Unified web browser-based interface with extensive reporting tools for all forward path nodes in the system
- Automated dashboard enables management to view the entire system at a glance
- Automatically displays each node metric's percent over the limit
- Forward path channel scans and all of the data for each node monitored by the system are captured and saved for historical analysis and trending
- Unlimited amount of connections for field users to view forward nodes with no side effects
- Accessible via any smart device with a browser and broadband internet connection


**Everyday Usage for the Field**
The FPM Module not only works for management, but is also designed with the technician in mind. With the new, unified web browser-based interface, all forward path nodes monitored by the platform can be accessed via any smart device with a browser and Internet connection. This allows all team members to target any period of time to view the modem test results for further analysis and troubleshooting.

**Quick & Easy Forward Monitoring**
The FPM Module is designed with your whole team in mind by having all of the tools in place for management to quickly and easily isolate problem areas within the forward path. This can lead to a decrease in the mean-time to repair by allowing supervisors to proactively dispatch crews to fix the problem before they begin affecting customers. With field access to the FPM Module, service and maintenance technicians will also benefit by receiving feedback about the impact of their work on forward path performance, which can reduce the time needed for them to isolate and correct impairments.

**Forward Path Metric Summary**

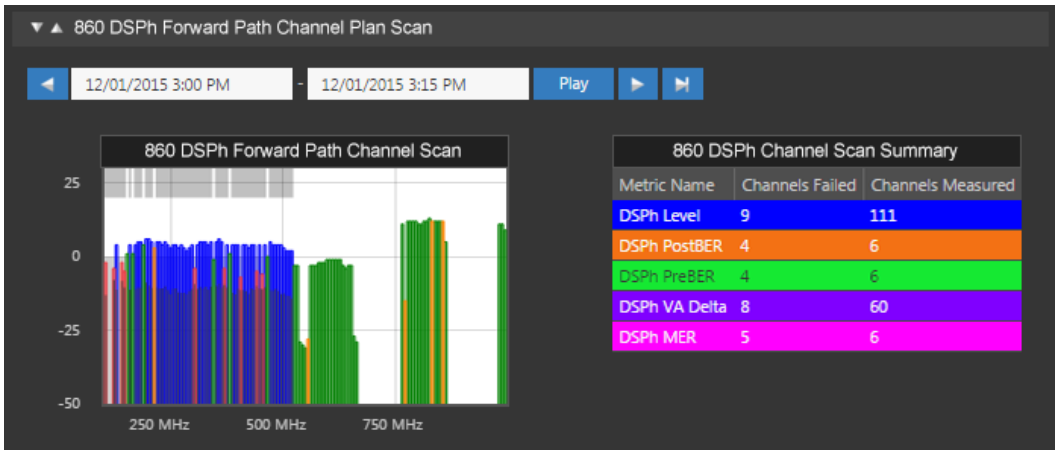
The FPM Module provides a simple and intuitive color-coded dashboard that summarizes the percent over limit for each forward path metric that was monitored within the selected area of the organization. Additionally, each node's forward path metrics measured over a set time period are displayed in a tabular format. These features greatly enhance maintenance efforts by enabling simple identification of forward path issues and which nodes are affected. The metric summary can also be fully customized to suit each user's needs by adjusting the grouping, columns, sort order, normalization, and time span displayed by the table.




**Channel Scan Snapshot & Failure Summary**

The FPM Module allows for an unlimited amount of connections for field users to view forward path channel scan results for a selected node. When a node is selected, the channel scan results for the selected time period are displayed as a summary channel scan snapshot graph and channel scan summary table. The channel scan snapshot provides a graphical view of the performance of your forward path channels.

This graph also features the ability to view measurement results of individual channels by hovering your mouse over the graph. By simply selecting this graph, users have the ability to display a larger detailed view of the graph with adjustable span and center frequency settings for isolating desired points of interest within the forward path. When combined, these features allow users to quickly view the condition of the forward path to identify performance issues that may be negatively affecting subscribers.



**Detailed Channel Plan Scan Results**

Selecting the channel plan scan snapshot from the node dashboard allows users to view the 860 DSPh device information and detailed measurement results for the currently selected forward node.

The detailed test results include tables displaying which limit sets failed and which channels failed what limits sets using color-coded pass/fail results. Each of these tables is designed so that you can quickly and easily determine which areas of your forward plant are having issues.

Additionally, the detailed measurement results include an interactive channel scan graph which includes adjustable span and center frequency controls for isolating desired points of interest within the forward path. The graph also provides users with limit level overlays, color coded channel types, and hover text that displays the measurement results of the selected channel.

## INTEGRATED SERVER PACKAGE SPECIFICATIONS

| | Enterprise Edition | Economy Edition |
|---|---|---|
| **Hardware Manufacturer** | Dell | Dell |
| **Model** | R520 | R210 II |
| **Server Rack Height** | 2U - 3.50 in (8.89 cm) | 1U - 1.75 in (4.45 cm) |
| **Microsoft Windows Server Software** | 2012 R2 Standard Edition | 2012 R2 Foundation Edition |
| **Microsoft SQL Server Software** | 2012 Standard Edition | 2012 Standard Edition |
| **Microsoft SQL User Client Access Licenses (CALs)** | Five (5) | Five (5) |
| **Processor** | Two (2) Intel Xeon E5-2420 (1.90 GHz, 15 MB Cache) | One (1) Intel Celeron G530 (2.40 GHz, 2 MB Cache) |
| **Memory** | 32 GB (1600 MHz) | 4 GB (1600 MHz) |
| **Storage** | Four (4) 1 TB SATA (7200 RPM) Two (2) 500 GB (7200 RPM) | One (1) 500 GB (7200 RPM) |
| **Power Supply** | Dual Redundant (750 Watt x 2) | Single (750 Watt x 1) |
| **3 Year Warranty (Provided by Dell)** | Next business day, parts and labor, on-site response | |
| **Maintenance & Support** | Included for first year of ownership, after first year of ownership a yearly maintenance & support fee applies. | |

A backup storage system is also recommended for prevention of data loss.

## PREREQUISITE SUPPORTING SOFTWARE

✓ - Included
⃠ - Not Included

| | Microsoft Windows Server Software (2012 R2 Standard) | Microsoft SQL Server Software (2012 Standard) | SQL User Licenses |
|---|---|---|---|
| **Integrated Server Package - Enterprise Edition** | ✓ | ✓ | Five (5) |
| **Integrated Server Package - Economy Edition** | ✓ | ✓ | Five (5) |
| **Stand-Alone Server Software** | ⃠ | ⃠ | ⃠ |
| **Software as a Service (SaaS)** | ✓ | ✓ | Five (5) |

ViewPoint Stand-Alone Server Software does not include Windows Server and SQL Server Software. This software is required for proper operation of the ViewPoint Stand-Alone Server Software and must be provided by the end-user.

## STAND-ALONE SERVER SOFTWARE REQUIREMENTS

| | Minimum Requirements |
|---|---|
| **Microsoft Windows Server Software** | 2008 Standard Edition (x86-64) or Higher |
| **Microsoft SQL Server Software** | 2008 Workgroup Edition or Higher |
| **Processor** | Dual Core (1.40 GHz) |
| **Storage** | 300 GB (RAID Level 5 or 10) |
| **Memory** | 4 GB |
| **Other Optional Components** | Optical Drive, Video Adapter, Monitor, Keyboard & Mouse |

A backup storage system is also recommended for prevention of data loss.

ViewPoint Stand-Alone Server Software does not include Windows Server and SQL Server Software. This software is required for proper operation of the ViewPoint Stand-Alone Server Software and must be provided by the end-user.

## VIEWPOINT TOTAL SYSTEM MANAGEMENT


**innovative technology** to keep you a ***step ahead***