The Powerful Combination of OpenVault's PNM and PMA Solutions

Identifying the root cause of network problems and providing automated prescriptive software tools for DOCSIS® providers.

A detailed briefing from the experts at OpenVault



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Partner with the industry's only provider of a holistic PNM and PMA solution



INTRODUCTION

Healthy networks are the lifeblood of broadband providers and it's imperative that the inevitable problems, such as plant impairments, congestion, and abusive subscribers are properly diagnosed in real-time so that providers can deploy swift resolutions. Fortunately, service providers can leverage the data from network infrastructure and subscriber usage to generate meaningful insights and take such action resulting in optimized performance, improved subscriber satisfaction, greater revenue and cost savings.

That's why hundreds of broadband providers have turned to OpenVault. Our unique ability to leverage IPDR, SNMP, RxMER and other types of data to diagnose the root cause of network problems, combined with broadband's only set of PNM and PMA software solutions, help broadband providers optimize the capacity and resiliency of their networks. The



results are happier subscribers, more efficient operations and the extension of the life expectancy of the network.

Open Vault's Proactive Network Maintenance Solution (OV PNM)

- Swiftly detect and capture RF impairments
- Optimize resource allocation for precise issue resolution
- Enhance subscriber quality of experience
- Minimize workforce-related costs

Our user-friendly interface is well-suited for plant technicians, facilitating seamless adoption across large-scale deployments.

OpenVault's Profile Management Application (OV PMA)

- Dynamically control network resources to alleviate congestion
- Enhance overall network capacity by up to 40%
- Improve the resiliency of DOCSIS 3.1 modems by ensuring they use the OFDM(A) channels in the presence of impairments

OpenVault's Network Insights Dashboard

- Collect and analyze network traffic and resource utilization, subscriber data usage behavior and package trends
- Provides a complete subscriber-network topology to identify points of congestion, subscribers causing issues, usage levels and behaviors

It's a quick access to network health and individual subscriber usage statistics with the ability to drill down to granular data levels.

Turn to OpenVault for a winning combination to overcome impairments and improve performance.



AT A GLANCE: OV PNM

Our OV PNM solution excels at swiftly detecting and capturing RF impairments, optimizing resource allocation for precise issue resolution. This enhances subscriber quality of experience while minimizing workforce-related costs. The user-friendly interface is well-suited for plant technicians, facilitating seamless adoption across large-scale deployments.



With its intuitive design, OV PNM enables technicians to quickly identify RF impairment sources, reducing repair times and the potential for system outages. OV PNM serves as a versatile tool for both proactive and reactive maintenance needs, adaptable to various situations.

OV PNM Key Functionality

- PNM Data, Analytics, Machine Learning and AI
- US Analyzer
- US Monitor
- FBC
- CM Birth Certificate
- Mobile app
- Back office integrations
- 3rd party test equipment agnostic



BENEFITS: OV PNM

OV PNM Delivers

REDUCED OPEX & CAPEX EXPENDITURES

- Decrease spikes in summertime calls significantly and reduce churn
- Detect plant faults before the customer calls you and reduce churn
- Reduce resolution time and repeat truck rolls up to 45% typical
- Approximately 70% of the proactive troubles are repaired on the first truck roll
- Save Money with the mobile app and reduce the need for test equipment and yearly recalibration
- Evaluate your ROI on contractors' cable modem installs with cable modem installer
- Make sure RF levels and Micro Reflections are good before you leave the premise for no return visits from the install and reduce churn
- Successfully manage your CSRs and Field Force
- Reduce Network sweeps





OV PMM Use Case

USE CASE Featuring OV PNM Identify and Prioritize RF Plant Impairment Issues

	Problem		Analysis		Solution
•	Subscribers are calling into customer care complaining about slow internet speeds Businesses are having issues with ATM transactions Subscriber speed tests are showing	•	Leveraging RxMER to pinpoint whether the issue is due to signal impairments. A lower RxMER per subcarrier value indicates a weaker signal quality, which could be caused by factors such as noise, interference, or signal attenuation.	•	OpenVault's PNM product determines the appropriate actions to address the issue. This may involve amplifier re-balancing, noise mitigation, coaxial cable repairs, or other necessary interventions to improve the signal quality.
	receiving the bandwidth they are paying for in their package	•	By monitoring RxMER per subcarrier values over time and correlating them with customer complaints or service disruptions, cable operators can proactively identify areas of the network that require attention.	•	By performing proactive network maintenance network operators can minimize service disruptions, optimize network performance, and enhance customer satisfaction.



OV PNM Use Case DEEP DIVE

BENEFITS: SAVINGS/COST AVOIDANCE

(An actual customer analysis)

APRIL (30 Nodes)





JUNE (32 Nodes)



Total Savings to Date	Projected 12 Months	Avg. Savings/ Month
\$249,987	\$599,967	\$ 51%

Total Savings to Date	Projected 12 Months	Avg. Savings/ Month
\$160,245	\$480,735	\$ 51%

Total Savings to Date	Projected 12 Months	Avg. Savings/ Month
\$117,974	\$471,896	4 7%

Typical Savings/Cost Avoidance



LEGEND

6 Months Average: Monthly Cost to Maintain

MTR: Maintenance Truck Rolls STR: Service Truck Rolls

TSR: Customer Technical Cases



AT A GLANCE: OV PMA

Finally, a closed-loop and automated data-driven solution that dynamically creates bandwidth without human intervention. Through persistent analysis of data from each CM and CMTS, our **OpenVault Profile Management Application** (OV PMA) learns the state of the system and creates optimized profile sets tailored to the unique real-world environment of each OFDM/OFDMA channel and opening up more usable bandwidth. Now you fully benefit from investment in your DOCSIS 3.1 network by improving performance and resiliency without incremental capital investment.



OV PMA Functionality

ENVIRONMENT • Works with DOCSIS

- 3.1 Networks
- Learns current state from CMTS/R-PHY & CMs
- Optimizes all OFDM / OFDMA channels Creates CMTS-specific configurations

FEATURES

- Measures and displays % gain in bandwidth each cycle on a perchannel, CMTS, and system-wide basis
- Gathers a wide variety of data including RXMER. FEC from CMs and CMTS topology data
- Creates a tailored set of per-subcarrier profiles for each ÖFDM / OFDMA channel – around 10⁵⁷⁰⁰⁰ combinations per channel
- Solves this difficult problem in record time – milliseconds per channel
- Proactive alerts for LTE ingresses, suckouts. roll-offs and more!





BENEFITS: OV PMA

OV PMA Delivers

CAPEX SAVINGS

 Automatically identify and deliver the optimal set of OFDM/OFDMA profiles for improving bandwidth without the expense of line drops or other network build-out costs



OPEX SAVINGS

 All configurations are determined and implemented automatically and remotely; less time needed for engineers to monitor, customer service to handle QoE issues, less time for technician installations, and overall fewer truck rolls

TOP LINE GROWTH

 Greater bandwidth allows for upgrading subscribers to higher speed plans on existing infrastructure generating greater ARPU





OV PMA Use Case

USE CASE

featuring OV PMA Work Around Impairments to Optimize Capacity and Network Resiliency and Stability

Problem	Analysis	Solution
 Until impairments can be addressed, subscribers are not receiving the quality of service they expect 	 Persistent analysis of data from cable modems and the CMTS is done to learn the state of the system 	 Tailored profiles are automatically applied in order to provide the optimal bandwidth the network can support, even in light of impairments
 Bandwidth is reduced, causing a degradation of bandwidth needed for streaming, gaming and other application usage 	 OpenVault's PMA solution uses complex algorithms to determine the optimal modulation profile for each area of the network 	 This results in up to a 40% capacity gain for both upstream and downstream along with improved resiliency

Upstream Traffic Before OV PMA

Upstream Traffic After OV PMA



PMA Upstream Traffic

PMA Upstream Traffic





AT A GLANCE: OV NETWORK INSIGHTS DASHBOARD

Web-Based Platform for Complete Subscriber-Network Topology

The OV Network Insights Dashboard is a cloudbased tool provided in a SaaS model that collects and analyzes network traffic and resource utilization, subscriber data usage behavior and package trends. Broadband providers rely upon Operations & Analytics for:

- Network capacity monitoring and planning at the MAC Domain, node and channel level
- Reporting and analytics portal
- Ongoing data analyst support
- Quarterly management briefings

OV Network Insights Dashboard

- Provides a complete subscribernetwork topology and identifies points of congestion, subscribers causing issues, usage levels and behaviors, etc.
- Highlights interface utilization in real time

Contract Description Model Model

OV NETWORK INSIGHTS DASHBOARD

Highlights

- Web-based dashboard with cloud-based vendor agnostic data collection and processing
- Complete networksubscriber topology views
- Quick access to network health and individual subscriber usage statistics
- Drill down to granular data
 levels
- Flexible exports and scheduling
- User role-based access

From top level dashboard to drill down by select criteria, broadband providers have never had this kind of actionable visibility.



OV NETWORK INSIGHTS DASHBOARD Use Case

USE CASE

featuring OV Network Insights Dashboard Prioritize Subscribers to Move to DOCSIS 3.1

Problem	Analysis	Solution
 In a DOCSIS 3.1 network with an OFDM channel deployed, there is significant capacity on the OFDM channel. It is critical to ensure that: 1. Heavy data-using subscribers are upgraded DOCSIS 3.1 modems 2. Heavy data-using subscribers with DOCSIS 3.1 modems are locked on the OFDM(A) channel thus eliminating congestion on SC-QAM 	 By using OpenVault's tools, we are able to see that the SC-QAM channels are at or near 100% capacity, especially during peak utilization times OpenVault also identifies which subscribers are heavy users causing congestion issues. 	 IPDRs are collected to identify power users causing congestion SNMP data is leveraged to collect channel utilization data from the CMTS The data sets are combined and analyzed to prioritize which subscribers should be upgraded to 3.1 and removed from the SC-QAM channels



Broadband's Only Combination of PNM and PMA to Overcome Impairments and Deliver Optimum Network Performance

Dramatically increase the success of your DOCSIS 3.1 Deployment

By combining PNM and PMA tools, cable operators can proactively identify and mitigate impairments, provide optimal bandwidth to customers, and schedule necessary repairs to enhance the overall network performance and customer experience.

Contact OpenVault to learn how your network can benefit from the industry's only holistic PNM and PMA solution.

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