



# **Product Highlights**

- Standards-based one-way network performance assurance solution using ETH-OAM, TWAMP and Accedian Standards+
- Standards+ supports extended measurement types for even greater performance visibility
- Patented, high-accuracy oneway delay measurement technique without need for synchronized hardware test points at each end of connection
- Centralized or distributed measurement injection using the V-NID<sup>™</sup> Actuator
- Centralized provisioning, management, mediation and reporting via the V-NID<sup>™</sup> Manager
- IPv4 and IPv6 dual stack for both management and TWAMP measurements
- IP, Ethernet and OAM enduser experience metrics summarized and displayed via V-NID<sup>™</sup> Analyzer performance monitoring charts or exported to 3rd party reporting tools via XML NBI.

# V-NID<sup>™</sup> Product Suite

Network Performance Assurance & SLA Monitoring

Standards-Based, One-Way and Two-Way

# **Network and Operational Considerations**

Accedian Networks has leveraged its industry-leading Ethernet OAM-based performance assurance technology to introduce the V-NID<sup>™</sup> product suite. By using and extending the existing standards for performance assurance, V-NID<sup>™</sup> offers a unique solution to provide detailed one-way network KPI's and SLA monitoring without the need for external synchronization.

## Verify, Validate, Visualize

The V-NID<sup>™</sup> performance assurance suite provides a comprenhensive solution for verifying networks on a granular and continuous basis, and validating SLA conformance. By utilizing standard reflectors such as ETH-OAM or TWAMP integrated into the network components, in combination with Accedian's patented measurement technique, the V-NID<sup>™</sup> product suite enables one-way monitoring of network performance with high accuracy without the need for external synchronization.

Optionally, endpoints equipped with the V-NID<sup>™</sup> Standards+ software reflector offers you an even larger set of high accuracy one-way metrics as well as the option to disguise your measurements to look like any other end-user frame on the network such as VoIP flows, SCTP signals or HTTP streams.

## **End-to-end SLA Monitoring**



## **A Comprehensive Suite of Tools**

- V-NID<sup>™</sup> Actuator the active performance measurement component in the V-NID<sup>™</sup> performance management architecture
- Performance Monitoring (PM) Reflector an Accedian, or 3rd party, standards-based responder of the measurement frames sent from a V-NID<sup>™</sup> Actuator
- V-NID<sup>™</sup> Manager the main controller unit in the V-NID<sup>™</sup> application performance and SLA monitoring suite
- V-NID<sup>TM</sup> Analyzer Stand-alone GUI application for visualizing performance metrics and generating detailed reports

#### **V-NID™** Actuator

V-NID<sup>™</sup> Actuator is an end-to-end service performance management, network performance and SLA monitoring system that resides at the core of the network. This centralized approach enables the unit to send and receive active performance assurance messages to and from PM Reflectors at the edge. Using a patented, highaccuracy one-way delay measurement technique, the V-NID<sup>™</sup> Actuator is capable of measuring thousands of end-points to remotely assure the performance of specific classes of service without requiring synchronized hardware test points at each end of the connection. Ethernet OAM and performance data gathered by the V-NID<sup>™</sup> Actuator is then summarized and displayed by Accedian's V-NID<sup>™</sup> Analyzer in a visual performance monitoring dashboard. The V-NID<sup>™</sup> Actuator is a 19" 1U rack mounted unit equipped with 7 GbE (10/100/1000) ports and is suitable for access, metro or core networks. It is accessible through the serial port or by remote login using SSH (secure shell), and easily managed and configured by using the built-in Command Line Interface (CLI).

#### **PM Reflector**

Accedian or 3rd party standards - based responder of the measurement streams injected by the Actuator. Supported PM reflectors include RFC 5357 TWAMP-Lite and TWAMP-Control, Y.1731 ETH-DM, IEEE 802.1ag, ETH-LB, UDP echo, ICMP.

#### V-NID<sup>™</sup> Manager

As the main controller unit in the V-NID<sup>™</sup> application performance and SLA monitoring suite, V-NID<sup>™</sup> Manager supervises and monitors application performance in multiple networks. The V-NID<sup>™</sup> Manager manages the V-NID<sup>™</sup> Actuators, sessions and SLAs in the supervision domain, and conducts performance measurement analysis, alarm filtering as well as report generation. The V-NID<sup>™</sup> Manager provides interfaces for external management system to retrieve result data and alarm notifications:

• Notification via Accedian Networks' SNMP Trap MIB

- Data Export via XML/HTTPS interface
- Web Reporting, standalone GUI client for off-line reporting

The unit is easily managed and configured by using the built-in Command Line Interface (CLI) or using the V-NID<sup>™</sup> Analyzer client. The V-NID<sup>™</sup> Manager is accessible through the serial port (CLI only) or remote login using SSH (Secure Shell).

#### **Open Northbound API**

Performance statistics measured, collected, summarized and correlated by the V-NID<sup>™</sup> Actuator are made available via the Accedian Analyzer GUI as well as through a M2M XML interface carried over HTTP(s). Over 100 unique Key Performance Indicators (KPIs), and application performance data are instantly available for reporting or troubleshooting. The V-NID<sup>™</sup> product suite provides you with accurate network performance data and concrete proof that your SLAs are being met.





# **Feature Highlights**

# Supported PM Reflectors

- TWAMP Two-Way Active Measurement Protocol as specified in RFC-5357
- Ethernet OAM as specified in ITU-T Y.1731 and IEEE 802.1ag
- ICMP and UDP Echo

#### **V-NID™** Actuator

- VLAN and QoS Configurable VLAN interfaces (IEEE 802.1q) and support for QoS settings: IP-TOS, DSCP and VLAN Priority Bits (PBIT).
- Extensive IP Networking Capabilities Support for attaching multiple interfaces to one IP subnet, and to direct a measurement stream via selected interface and configurable gateway (nexthop).
- IPv4 and IPv6 dual stack for both management and TWAMP measurements
- One-way Data and VoIP Sessions One Way measurement streams supporting unicast and multicast addressing and a complete set of configurable traffic streams: UDP, TCP, SCTP, RTP, ICMP and GRE.
- VoIP MOS and R-value calculations for any measurement type (TWAMP, ETH-DM) providing a complete set of configurable codec parameters enabling MOS scores according to AMR-WB (G.722.2), G.729, G.711, G.723.1, G.729a, GSMEfr and GSMHr.
- 2xOneWay Data Sessions Dual One Way unicast measurement streams toward a hosted reflector agent (UDP) or an Actuator (UDP, TCP, SCTP, RTP, ICMP and GRE).
- Bandwidth Monitoring Sessions Bandwidth monitoring sessions, measure and report E2E (endto- end) available bandwidth, link capacity and link bandwidth occupancy.
- Ethernet OAM Sessions Support for ITU-T Y.1731 (and IEEE 802.1ag) sessions. Ethernet Loopback (ETH-LB), Two-way Frame Delay Measurement (ETHDM)and Vendor Specific OAM PDU (ETH-VSP) implementing a layer-2 version of 2xOneWay.
- TWAMP Sessions Support for Two-Way Active Measurement Protocol (TWAMP) sessions as specified in RFC-5357, including both light mode and control protocol.
- Echo Sessions Support for bidirectional ICMP Echo (RFC- 792) and UDP Echo (RFC-862) sessions.
- Multicast Zapper Multicast channel zapper, IGMP (join/leave) performance test and channel/link bandwidth monitoring.
- Utility Tools CLI commands: Network scanning, Throughput tests (2xOneWay, TWAMP-Lite and UDP Echo), ICMP-Ping, UDP-Echo, TCP-Connect, Trace- Route, 2xOneWay, TWAMP-Lite, ETH-LB, ETH-DM and ETH-VSP (layer-2 2xOneWay).

#### V-NID<sup>™</sup> Manager

- Session Management Configuration and management of a complete set of supervision sessions types including: 1xOneWay Data (unicast and multicast), 1xOneWay VoIP, 2xOneWay, Ethernet OAM Sessions.
- Centralized provisioning, management, mediation and reporting.
- SLA Configuration and Management including alarm filters, reporting rules as well as customer related information.
- Report Engine For periodic report generation, the report engine will automatically aggregate measurement data with configurable intervals (hours to months). The report engine is accessed through a user-friendly web-based interface.
- Result Data Export Interface enables export of data to any external management system. The export interface is based on XML and is accessed using HTTPS or SSH.
- NTP Support The V-NID™ Manager global time and date may be synchronized by using NTP.



## **Specifications**

V-NID™ Actuator	
Form Factor	19" 1U Rack Mounted
Ports (GbE+Eth)	7 (7 + 0)
Number of Sessions	1,000
Number of Reflectors	1,000
Max PPS (Meas.)	25,000 pps
Dim. (HxWxD in mm)	44 x 430 x 305
Weight	7.0 kg
Operating Temperature	5-40 C
Power Supply	100-240VAC or 48VDC
Power Consumption	125W (427 BTU/h)
Heat Dissipation	125W (427 BTU/h)

## Accedian Networks Inc.

#### 2351 Alfred-Nobel, Suite N-410, St-Laurent, Quebec, Canada H4S 2A9 Toll free: 1-866-685-8181

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V-NID™ Analyzer	
CPU Requirement	Core i5 or better
Available Memory Requirement	2Gb
Disk space required	1Gb, more for off-line reporting

