NetVanta

# 6360

## Integrated Layer 2/3 Carrier Ethernet

Security · Redundancy · VQM · Multi-layer

## Benefits

- **MEF 9/14 certified supporting standard Ethernet OAM**
- **Layer 2 OAM (Y.1731 CFM, Y.1731 PM) and Layer 3 OAM (TWAMP) support**
- **Full-featured IP router for data support and Internet access**
- **Auto-failover and recovery for improved service robustness**
- **Plug-and-play auto line detection for easy installation**
- **RapidRoute technology for increased performance**
- **Stateful inspection firewall for network security**
- **QoS for delay-sensitive traffic like VoIP**
- **Supports 802.1q VLAN trunking**
- **Utilizes recognizable CLI**
- **NAT for IP address concealment**
- **Supports terminal and facility MAC-swap loopback to validate service turn up and troubleshooting**
- **VQM ensures VoIP call quality**
- **eSBC to normalize, secure and troubleshoot SIP to SIP communications Flexibility to meet all levels of VoIP migration**

## Overview

The ADTRAN NetVanta® 6360 is an integrated Layer 2/3 carrier Ethernet services IP Business Gateway providing a universal edge device supporting any mix of Layer 3 IP VPN, Layer 2 VPN (E-LINE/E-LAN), voice, and internet access services. Many carriers are facing the customer demand for receiving carrier Ethernet services and supporting Layer 3 services, which often requires multiple hardware platforms. The NetVanta 6360 is designed to alleviate this burden by providing the functionality of both devices in a single platform.

### Modular Hardware

The NetVanta 6360 is a modular platform for global deployments with WAN interface options for quad bonded VDSL2 as well as quad and octal SHDSL(EoCu). There are five Gigabit interfaces available — all with Carrier Ethernet functionality — one SFP, one combo (Copper or SFP), and three copper.

### Hardware-based SLA

The NetVanta 6360 supports SLA-based services like small-cell backhaul and hosted enterprise services though hardware-based SLA monitoring with automated data export offering the flexibility to fit your service delivery model.

### Converging Layer 2 and 3 Services

The NetVanta 6360 eases the transition from Layer 3 IP VPN services delivered over TDM-based PPP/FR circuits to Ethernet-based services delivered over broadband access networks (EoX, VDSL2, GPON, point-to-point Ethernet). Key carrier Ethernet features:

- MAC-swap loopbacks
- Y.1731 carrier Ethernet OAM
- MEF-compliant traffic management

**Redundancy**

In the event that a single EFM loop fails, the NetVanta 6360 will continue to operate on the remaining loop, providing additional resiliency. Once the failed loop becomes operational, the NetVanta 6360 will automatically detect its availability and auto-recover to the original configuration.

**VoIP Gateway**

The NetVanta 6360 utilizes SIP for VoIP applications, providing interoperability with industry-leading soft switches, feature servers, and gateways. Acting as a gateway, the Total Access 900e converts IP signaling from the carrier into traditional TDM analog and digital voice services. This functionality allows the NetVanta 6360 to deliver voice services to both IP phones and traditional telephony equipment simultaneously.

For customers implementing a hosted PBX or IP Centrex service, the NetVanta 6360 is ideal for providing customers additional analog ports necessary to support their remaining analog phones, fax machines, or modems. The NetVanta 6360 supports many popular calling features such ascaller ID, call hold, forward, transfer, and call waiting. Voice Activity Detection (VAD) and silence suppression are supported to ensure reliable VoIP call quality.
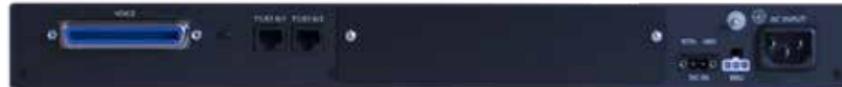
**Remote Survivability**

The NetVanta 6360 can act as a registrar and Back-to-Back User Agent or as a SIP-transparent proxy to facilitate remote survivability and NAT traversal. In the event of a service interruption on the WAN or if the carrier's call agent were to become unavailable, calls can continue locally at the customer premises between IP-based or analog phones. In addition, the embedded FXO or T1/PRI port can be used as a survivable interface for outbound calls to the PSTN.

**Quality of Service Flexibility**

The NetVanta 6360 offers QoS support for delay-sensitive traffic like VoIP or video, and enhanced QoS support for Ethernet WAN connections providing the ability to prioritize traffic by VLAN. This solution also delivers packet flow capabilities certified compliant per the MEF. These packet flow capabilities provide the traffic classification and bandwidth profiling functionality required to offer customers a flexible, tiered service offering with up to eight CoS queues.

## Product Specifications

### Physical Interfaces

Modular WAN Options
- Quad Bonded VDSL2
- Quad and Octal SHDSL (EoCu)

Gigabit Ethernet
- One Combo (Copper or SFP)
- One SFP Only
- Three Copper
  - All Ports Included in Chassis
  - All Ethernet Interfaces Include Carrier
- Ethernet Functionality
- Full Duplex
- RJ-45
- WAN/LAN Support
- Supports 802.1q VLAN Trunking

### Processor and Memory
- **RAM:** 512 MB RAM
- **Flash:** 256 MB Flash

### Digital Voice
- PRI, T1, CAS Support
- Signaling Methods
  - E&M Wink
  - E&M Immediate
- Feature Group D
- RJ-48C

### Analog Voice
- 8, 16, and 24 FXS POTS via 50-pin Amphenol
- 68.5 Vrms with 20VDC Offset Maximum Ring Voltage
- Sinusoidal Ringer Waveform
- 48 V, Nominal On-hook Battery Voltage
- 30 mA, Nominal Loop Current
- FXS 2-Wire Impedances
  - 600Ω
  - 900Ω
  - 600Ω +2.16μF
  - 900Ω +2.16μF

### Craft
- DB-9

### VoIP
- SIP

### Packet-based Voice Resources
- CODECs
  - G.711-64k PCM
  - oG.729a-8k CS-ACELP
- G.168 Echo Cancellation
- Up to 64ms Echo-tail Length
- Supports up to 72 Channels DSP
- Supports 60 T.38 Sessions

### Media Stream
- RTP/UDP/IP (RFC 3550)
- RTP Payload for DTMF Digits (RFC 2833)
- Supports Port-to-Port Hairpin Call
- SDP (RFC 2327)

# NETVANTA 6360

## VQM

- Packet Capture (PCAP)
- MOS Prediction
- Jitter, Delay and Packet Loss
- Past and Active Calls

## NAT Traversal and Remote Survivability

- B2BUA
- SIP Registrar for IP Phones
- SIP Proxy with Survivability
- Transparent/Stateful/Outbound

## Tone Services

- Local DTMF Detection
- Local Tone Generation
  - Dialtone
  - Busy
  - Call Waiting
  - Alternate Call Waiting
  - Receiver Off Hook
- Ringing
  - Distinctive Ring

## Calling Feature Support
### (Varies with Feature Server/Gateway)

- Caller ID
  - Name and Number (MDMF, SDMF)
  - Call Waiting Caller ID
- Voice Mail
  - Stutter Dialtone
  - Visual Message Waiting Indicator (VMWI)
- Call Hold
- Call Forward
  - Busy Line
  - No Answer
- Call Transfer
  - Blind, Attended
- Call Waiting
- Distinctive Ring
- Do Not Disturb
- Three-way Calling
- Call Return
- Speed Dial
- Three-way Conferencing (3WC)

## Management and Utilities

- Familiar CLI
- n-Command MSP Support
- SNMP v3
- SYSLOG Logging
- Telnet
  - Craft/Console Port
  - SSH
  - Ping
  - Trace Route
  - NTP
- TCL Scripting
- Policy Statistics
- Email Alerts (SMTP)

## LEDs

- Status
- Module
- EFM
- USB
- Voice T1/E1 1
- T1/E1 2

## Quality of Service (QoS)

- Low Latency and Weighted Fair Queuing (WFQ)
- DiffServ Packet Marking and Recognition
- Frame Relay Fragmentation
- Traffic Monitoring (NetFlow 9)
- Weighted Random Early Detection (WRED)

## Security

### Firewall

- Stateful Inspection Firewall
- Denial of Service (DoS) Protection
- Access Control Lists
- Application Level Gateways (ALGs)
- Packet Filtering

## Network Address Translation

- Basic NAT (1:1)
- NAPT (Many:1)
- 1:1 Port Translation
- NAT-compatible SIP ALG

## Protocols

- eBGP/iBGP
- OSPF
- RIP (v1 and v2)
- Demand Routing
- GRE
- IGMP v2
- EFM
- Layer 3 Backup
- Multi-VRF CE
- PPPoE
- RFC 1483
- Multihoming

## Secure Management

- Multi-level Access Control
- TACACS+
- RADIUS AAA
- SSH CLI and SSL GUI
- Port Authentication (802.1x)

## Content Filtering

- Inherent URL Filter
- Top Website Reports
- Integration with Websense

## DSL Features

- Variable Rate Bonding for the SHDSL Loops
- Auto-failover and Recovery
- Plug-and-play Auto-line Detection
- ITU-G.991.2-2003, Annex A&B-SHDSL

## Ethernet Features

- IEEE 802.1p Priority Marking
- IEEE 802.1d Dynamic/Transparent Bridging
- IEEE 802.1Q VLAN Tagging
- IEEE 802.3u Ethernet
- MEF 9/14
- Network Synchronization (SyncE)

## Ethernet Services Support

- Priority Queuing of Traffic Based on VLAN Priority
  - Supports Eight Class of Service Queues
  - Per UNI Port, CE VLAN ID (C-Tag) and/or CE VLAN P-bits, DSCP Fields
- Single/Double Stack VLAN/s (Q-in-Q)
  - Manipulation Based on 802.1p and DSCP Fields
  - STAG TPID Provisioning Supports 802.1ad and 802.1Q Standards
  - Port-based Service Support
- Services Scale and Flexibility
  - MEF 9, 14 compliant EPL, EVPL
  - Configurable EtherType and TPID for Service Flexibility
  - VLAN IDs 0–4095; EVC Configurable in the Range of 1–4,094
  - Configurable MTU Mini Jumbo Frame Support (2,000 Bytes)
  - 16 kbps Active MAC Address; Ability to Disable MAC Learning (32 kbps Support Future Software)
  - Ingress Policers (tr3CM), CIR and EIR Settings to 64 kbps Granularity, Configurable Burst Through EBS, CBS Settings
  - Egress Shaping Per Port (Per Port Per Queue)
  - Up to 8 Shapers Per Interface

# NETVANTA 6360

### Fault and Performance Management

- IEEE 802.3ah Link OAM
- ITU-T Y.1731 CFM, PM
- Supports OAM Management Status and Loopback Messaging
- Network Monitoring Enhancements

### Environment

- **Operating Temperature:** -32° to 122 °F (0° to 50 °C)
- **Storage Temperature:** -4° to 158 °F (-20° to 70 °C)
- **Relative Humidity:** Up to 95%, Non-condensing
- **Maximum Altitude:** 10,000 Feet (3.05m)

### Physical

- **Chassis:** 1U, 19 in. (48.26 cm) Rackmountable Metal Enclosure
- **Dimensions:** 1.72 in. x 17.22 in. x 13.4 in. (H x W x D) (4.37 cm x 43.74 cm x 29.21 cm)
- **Weight:** 7 lbs. (3.2 kg)

### Power

- 110 – 240 VAC, 50/60 Hz, 48 VDC

### Agency Approvals

- FCC Part 15, Class A
- FCC Part 68 n UL 60950-1 n EN 50950
- AS/N25 60950
- ACA 5016
- CSA C22.2 No 950-95
- CE Ma
- Industry Canada CS03
- ETSI 300
- RoHS

## Ordering Information

| Equipment | Part No. |
|---|---|
| NetVanta 6360 16 FXS | 47006364F1 |
| NetVanta 6360 24 FXS | 47006366F1 |
| NetVanta CE Quad SHDSL EFM Module | 17406368F1 |
| NetVanta CE Quad VDSL2 EFM Module | 17406369F1 |
| NetVanta 1000BaseSX SFP Transceiver | 1200480E1 |
| NetVanta 1000BaseLX SFP Transceiver | 1200481E1 |
| NetVanta 6360 Eight-hour, Wallmount/Rackmount | 1175044L1 |
| NetVanta 6360 Eight-hour, Wallmount | 1175044L2 |



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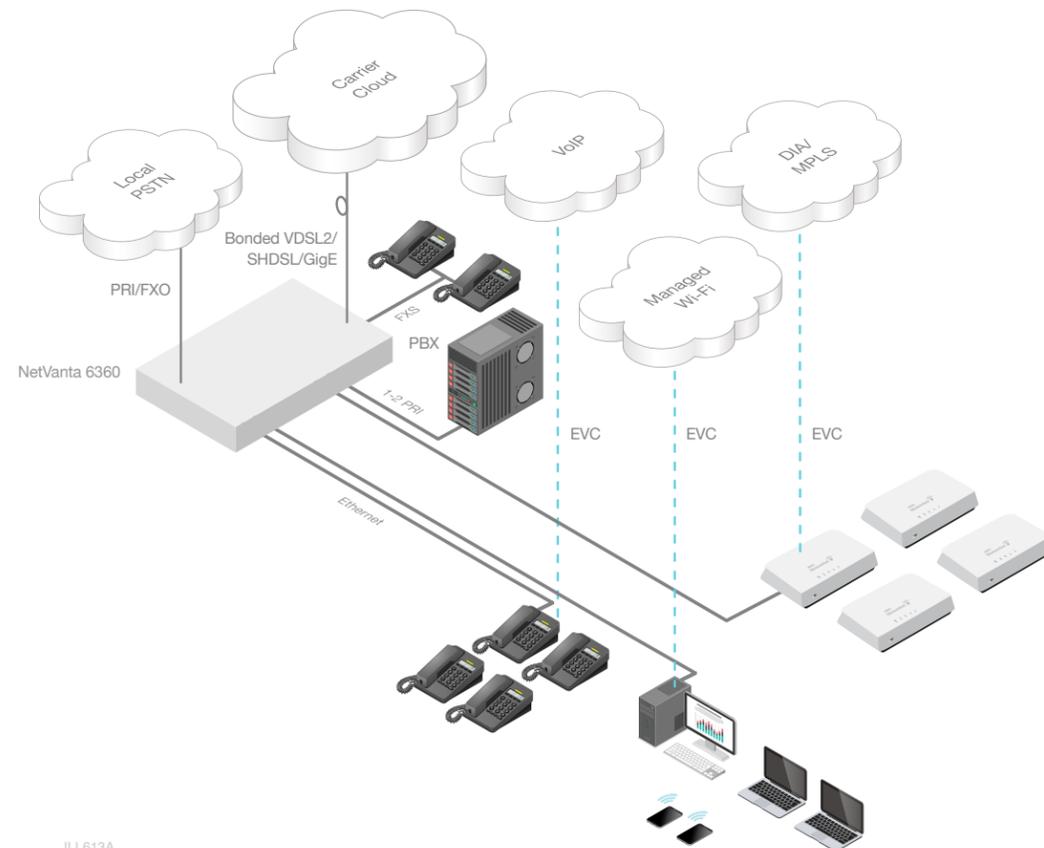
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TL19.1270

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TL 9000

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ISO 9000
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ISO 14001
ENVIRONMENT