

NetVanta

# 5660

## Gigabit Carrier Ethernet Services Router



## Benefits

- Offers Gigabit line rate Layer 2/3 routing
- Universal edge device supporting modular Layer 2/3 Carrier Ethernet services with four Gigabit combo interfaces (copper or small formfactor SFP)
- All Ethernet interfaces include carrier Ethernet functionality
- Multiple WAN interface options:
  - Quad and octal SHDSL (EoCu)
  - Quad VDSL2
- Hardware-based SLA monitoring with automated data exporting
- 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
- Stateful inspection firewall for network security
- Quality of Service (QoS) for delay sensitive traffic like VoIP
- Supports 802.1q Virtual LAN (VLAN) trunking
- Network Address Translation (NAT) for IP address concealment
- Supports terminal and facility MAC-swap loopback to validate service turn up and trouble-shooting
- SyncE for reliable timing
- Full featured SBC for robust network security and voice interoperability

## Overview

ADTRAN's NetVanta® 5660 is an integrated Layer 2/3 carrier Ethernet services router providing a universal edge device supporting any mix of Layer 3 IP VPN, Layer 2 VPN (E-LINE/E-LAN), and internet access services. Many carriers are facing the customer demand for receiving carrier Ethernet services while supporting Layer 3 services, which often times requires multiple hardware platforms. ADTRAN's NetVanta 5660 is designed to alleviate the burden of these multiple platforms into a single piece of CPE.

### Gigabit Access for Business Services

Service Providers around the world are delivering higher bandwidth services to their customers everyday with the explosion of bandwidth hungry mobile devices as well as cloud based applications. These applications are increasingly becoming line of business, or business critical, increasing the importance of reliable and fast cloud connectivity. ADTRAN's NetVanta 5660 is designed to allow service providers to meet and exceed their customer expectations with an integrated Layer 2 and Layer 3 carrier services platform delivering Gigabit throughput and increasing the value passed on to the end customer.

### Redundancy

The NetVanta 5660 provides multiple levels of redundancy for carrier access services. Intelligent failover can be provided via applications with redundant Ethernet links failing over to the active link anytime a link down event occurs. In the event that a single EFM loop fails, the NetVanta 5660 will continue to operate on the remaining loop, providing additional resiliency. Once the failed loop is operational again, the NetVanta 5660 will automatically detect its availability and will auto-recover to the original configuration.

### Quality of Service Flexibility

The NetVanta 5660 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 Metro Ethernet Forum. These packet flow capabilities offer the traffic classification and bandwidth profiling functionality required to offer customers a flexible, tiered service offering with up to eight class of service queues.



# NV 5660

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## Modular Hardware

The NetVanta 5660 is a modular platform for global deployments with WAN interface options for quad bonded VDSL2, quad and octal SHDSL (EoCu). There are 4 Gigabit combination (copper or SFP) LAN interfaces—all with carrier Ethernet functionality—and one fiber interface.

## Converging Layer 2 and 3 Services

The NetVanta 5660 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

## Enterprise Session Border Control (eSBC)

The Total Access 900e also can provide eSBC functionality delivering a truly converged application platform at the customer premises. This feature is becoming mandatory in today's service deployment to normalize, secure and troubleshoot the SIP to SIP communication between a carrier network and the customer's SIP compliant equipment.

## Product Specifications

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### Physical Interfaces

#### Modular WAN Options

- Quad and Octal SHDSL (EoCu)

#### LAN

- Four 10/100/1000 Dual Copper or SFP (One Fiber Interface)
  - All Ports Included in Chassis
  - All Ethernet Interfaces Include Carrier Ethernet Functionality
- Full Duplex
- RJ-45
- May also be used as the WAN Interface
- Supports 802.1q VLAN Trunking

#### Timing Interfaces

- T4 Output                      ■ 1 PPS Output

### Processor and Memory

- RAM: 512 MB RAM            ■ Flash: 128 MB Flash

### Protocols

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

### Management and Utilities

- Familiar Command Line Interface (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
- Fan
- Gig 0/1 – 0/5

### 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)

# Gigabit Carrier Ethernet Services

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## Network Address Translation

- Basic NAT (1:1), NAT (Many:1), and 1:1 Port Translation

## 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

## 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

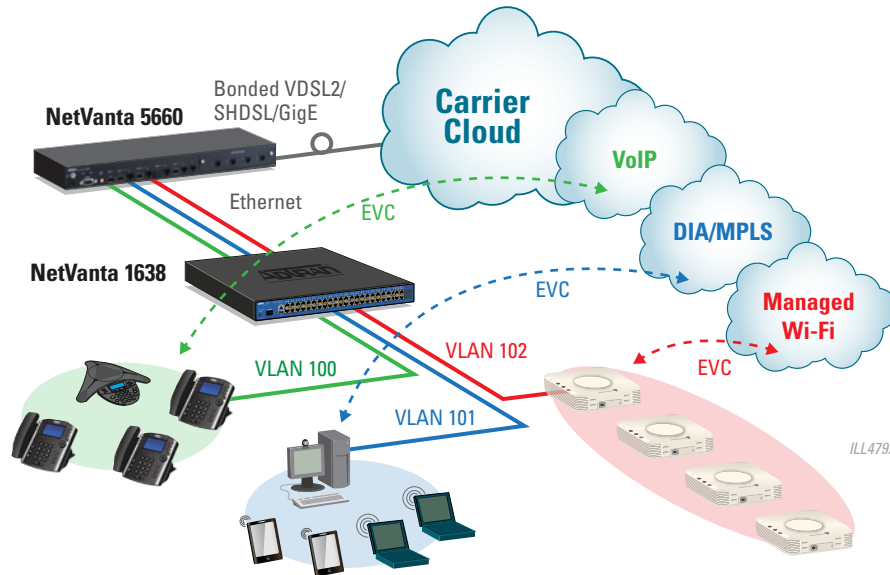
- **Operating Temperature:**  
-13° to 158 °F (-25° to 70 °C)
- **Storage Temperature:**  
-40° to 194 °F (-40° to 90 °C)
- **Relative Humidity:**  
Up to 95%, Non-condensing
- **Maximum Altitude:**  
10,000 Feet (3.05m)

## Physical and Power

- **Chassis:** 1U, 19 in. (48.26 cm)  
Rackmountable Metal Enclosure
- **Dimensions:** 1.72 in. x 17.22 in. x 11.5 in.  
(H x W x D) (4.37 cm x 43.74 cm x 29.21 cm)
- **Weight:** 7 lbs. (3.2 kg)
- **Power:**
  - 48V DC, External Transformer for AC Powering
  - 40W Max Power Consumption

## Agency Approvals

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



## Ordering Information

Hardware Options	Part No.
NetVanta 5660 Chassis	17005660F1
NetVanta 5660 48V Power Supply (Spare)	17004661F1
NetVanta 1000BaseSX SFP Transceiver	1200480E1
NetVanta 1000BaseLX SFP Transceiver	1200481E1
NV 5660 with 5 SESSION SBC	47005660F1#5
NV 5660 with 25 SESSION SBC	47005660F1#25
NV 5660 with 100 SESSION SBC	47005660F1#100
NV 5660 with 300 SESSION SBC	47005660F1#300
Software Upgrade Options	Part No.
NV5660 SBC Upgrade, 5 CALL	1964SBCF5
NV5660 SBC Upgrade, 10 CALL	1964SBCF10
NV5660 SBC Upgrade, 25 CALL	1964SBCF25
NV5600 SBC Upgrade, 50 CALL	1964SBCF50
NV5660 SBC Upgrade, 100 CALL	1964SBCF100
NV5660 SBC Upgrade, 300 CALL	1964SBCF300



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