NetVanta 8044M

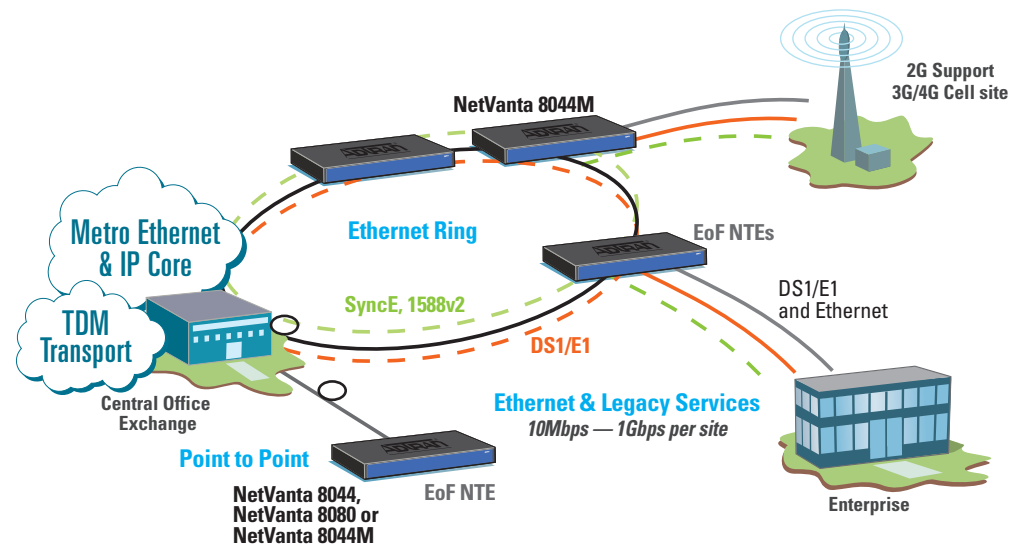## Carrier Ethernet Network Termination

Product Features

- Unique modular architecture provides service and network flexibility

- Low cost/scalable bandwidth using 64 kbps increments

- Scalable 4G/LTE bandwidth up to 2.5 Gbps of Ethernet service

- Time to market for Universal Service Ubiquity with support for virtually any customer access medium

- A single, common operational model regardless of customer access method

- Transition path to all-packet architecture, SyncE and 1588v2 support

- SLA management via Ethernet OAM based trouble-shooting and performance monitoring tool sets

- Resilient access support via Link Aggregation Control Protocol (LACP), Ethernet Ring and Protection Switching (ERPS)

- Hardened for cell site deployment; both extreme temperature and metallic interface isolation

ADTRAN® introduces a versatile Ethernet Network Termination Equipment (NTE) that brings together the value of several ADTRAN solutions: Ethernet over Fiber NTE (NetVanta® 8044), Ethernet ring (RPR and ERPS) and pseudowire solutions (MX408e). The core Ethernet access features of this product include a powerful Ethernet processor, four flexible SFP interfaces, and four 10/100/1000 Mbps electrical interfaces. Flexible bandwidth management; Ethernet flow mapping, prioritization, and tagging; and versatile management options make the NetVanta 8044M an excellent choice as an Ethernet services termination device.

For additional versatility, the NetVanta 8044M provides two expansion slots for flexibility in both network access and services migration. Expansion options include DS1/E1 circuit emulation service expansion and a 10GigE ERPS network expansion to allow ring scalability. The eight-port circuit emulation expansion module allows service providers and enterprise customers to leverage ADTRAN's experience in developing and deploying pseudowire (CESoPSN and SAToP) networks. This can be used in providing a transition path for DS1/E1 legacy services to all-IP services migration. The NetVanta 8044M also will allow an operator to recover network clocking at the customer site using only packet transport via a variety of methods. ADTRAN employs both differential clock and adaptive timing distribution over packet methods as well as supports new timing over packet standards such as Synchronous Ethernet and Precision timing Protocol (IEEE 1588v2).

The NetVanta 8044M supports three variations of fiber access topology: Point to Point, Ethernet ring, and shared PON fiber to deliver both legacy ATM/TDM and next generation IP/Ethernet services.

Total Access® System

Smart Solutions for a Connected World.

ADTRAN®

NetVanta 8044M

Carrier Ethernet Network Termination

Physical Specifications

Front Panel Interfaces

- Four 10/100/1000 BaseT Ethernet interface via RJ-45
- Four Gigabit Ethernet interface via SFP cages, angled to reduce overall product depth and improve cable management
- All Ethernet ports may be used for either network WAN or customer-side LAN connections
- 100BaseX SFP also supported to allow Fast Ethernet fiber lease
- Ethernet faceplate ports support either 1Gbps or 2.5 Gbps ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)
- Optional ERPS optical bypass switch connector provided to protect ring from NetVanta 8044M NTE power failure. (future hardware)
- DB9 local craft port for support of RS-232 interface for local management
- Two expansion access/service module slots (see next sub-sections for options)
- Field replaceable fan module (may be required to support future expansion modules)

Physical Dimensions

- Desk, rack and wall mountable
- Rack mountable solution in 19" or 23" wide telecom racks
- **Height:** 1.7 inches (44mm) (1 RU)
- **Width:** 17.2 inches (437mm) or 19.0 inches (483mm) (with mounting brackets)
- **Depth:** 10.7 inches (273 mm) IEC compliant with fiber bend radius included
- **Weight:** 6 lbs (2.7 kg) with empty slots 8 lbs (3.6 kg) with both module slots and fan tray installed

Power Supply, Power Consumption, Heat Dissipation

- Redundant, Dual A and B fed +/- 24/-48 VDC version (P/N 1174801G1)
- Ground/Earth provided via Post and Lug type connector
- Typical power consumption is 31W maximum without additional modules nor fan tray installed
- Maximum power consumption is 37W without additional modules nor fan tray installed

Operations and Maintenance

Environmental Hardening

- **Operating Temperature:** -40°C to 65 °C
- **Storage Temperature:** -40°C to 85 °C
- **Relative Humidity:** GR-63-CORE 5% to 95%, non-condensing
- **Operating altitude range**
  - At 30°C: -197 to 13000 feet (-60 to 4000 meters)
  - At 40°C: -197 to 6000 feet (-60 to 1800 meters)
- Metallic interface voltage surge protection and isolation

Ethernet Services Support

- Classification of Traffic based on:
  - Per UNI port, CE VLAN ID (C-Tag) and/or CE VLAN P-bits, Soure and/or destination MAC address, DSCP fields
- Single stack VLAN and double stack VLANs (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, ELAN, ETREE
  - 8 Queues, Strict Priority and/or Weighted Fair Schedulers
  - Configurable EtherType and TPID for service flexibility
  - VLAN IDs 0 – 4095; EVC configurable in the range of 2–4094
  - Configurable MTU from 1500 to 10k Jumbo frame in four bytes increments
  - 16k active MAC address; Ability to disable MAC learning (32k 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 and per up to 16 VLAN groups in future)

Fault and Performance Management

- IEEE 802.3ah Link OAM
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IETF TWAMP Layer 3 Performance Monitoring (PM) (reflector)
- ITU-T Y.1731 Layer 2 Performance Monitoring (sender and responder PM measurements are accurate to sub millisecond levels)
- Supports customer viewable PM/SLA statistics via Web portal

Security

- TACACS+ Authentication, Authorization
- RADUIS Authentication, Authorization
- SSHv1/v2 and SFTP
- SNMPv1/v2 (today), SNMPv3 (future software)

Clock Synchronization/Recovery

- ADTRAN Differential and Adaptive timing methods
- Synchronous Ethernet defined by ITU-T G.8261/8262
- Precision Timing Protocol defined by IEEE 1588v2 (future software)

Facilities Protection

- Ethernet Ring Protection Switching (ERPS) ITU-T G.8032
  - 50ms failover
  - Optional optical bypass (P/N TBD) to eliminate failover in event of equipment failure, or customer location power failure (future)
  - 1 or 2.5 Gbps unblocked ring capacity
- Link Aggregation Control Protocol (LACP) IEEE 802.1AX (future)
  - Link Aggregation Group (LAG) support is not currently planned

Regulatory Agency Approvals

- FCC Part 15 Class A
- FCC Part 68
- UL 60950, CAN/CSA C22.2 No. 60950
- EN 60950, IEC 60950, AS 3260/ AS NZS60950
- NEBS Level 3
- RoHS 2002/95/EC
- ITU-T K21:2000 Basic

Device Management

- Common operational model (i.e. FCAPS) used for every Ethernet access method
- Local management via DB-9 RS232 or via a 10/100/1000 copper port
- Integrated OMCI management for GPON connectivity compliant with G.984.4 and BBF WT-167
- Telnet via an IP-based connection
  - Inband management on any VLAN from 2 to 4094
  - Secure Shell (SSH) via any secure client/server application (future software)
- Total Access EMS, element management system
  - SNMPv1/2, SNMPv3 (future software)
  - TL1 or XML (future) gateway
- The unit can be managed by and report to up to 16 different users simultaneously
  - Accounts of existing and new users can be defined/changed remotely, using a dedicated RADIUS or TACACS+ server.
  - The current date and time can be retrieved from a centralized location by synchronizing with an NTP (Network Timing Protocol) server
  - Software upgrades and configuration files can be downloaded/uploaded to/from NTE via SFTP, FTP, X-modem, and Y-modem

Expansion Modules Supported

Along with its robust Ethernet services support this network device can simultaneously support the delivery of up to 16 DS1/E1 services drops to the customer using Circuit Emulation Services Expansion Module (CES EM).

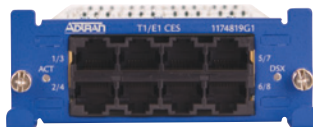## 8-port DS1/E1 Circuit Emulation Service Expansion Module

- CESoPSN per ITU Y.1453, RFC 5086/ IETF pwe3-cesopsn
- SAToP per ITU Y.1453, RFC 4553
- MEF8/18 compliant CESoETH service delivery (future software)
- 8W maximum power consumption
- ITU-T K21:2000 basic

DSX-1 Interfaces

- **Connectors:** 8x RJ-48
- **Line rate:** 1.544 Mbps
- **Line build out:** 0 to 655 ft
- **Line code:** AMI, B8ZS
- **Framing:** ESF, D4, Unframed
- **Compliance:** ITU G.703, G.704

E1 Interfaces

- **Connectors:** 8xRJ-48 (120 Ω Balanced)
- **Line rate:** 2.048 Mbps
- **Line build out:** 0 to 655 feet
- **Line code:** HDB3 or AMI
- **Framing:** CAS, CCS, Unframed
- **Compliance:** ITU G.703, G.704
- **Jitter Buffer:** Programmable up to 20 milliseconds
- **Automatic Jitter Buffer Adjustment:** Optimizes jitter buffer settings based on observed packet jitter in delivery network

The NetVanta 8044M T1/E1 Circuit Emulation Service Expansion Module can be used to deliver clock sync services via adaptive clock recovery methods as well as delivers legacy TDM or ATM service traffic.

TL9000
TL19.1270

nsai
TL 9000
TELECOMMUNICATIONS
ISO 9001:2000
QUALITY
ISO 14001
ENVIRONMENT

NetVanta 8044M

Carrier Ethernet Network Termination

Total Access® System

Ordering Information

Equipment	Part #
Bundles	
NetVanta 8044M DC Power (with empty expansion module slots with blank panels)	1174801G1
NetVanta 8044M DC Power (with single 8-port DS1/E1 PW Service Module installed)	4174819G1
NetVanta 8044M DC Power (with both 8-port DS1/E1 PW Service Modules installed)	4174819G2
Expansion Modules	
8-port DS1/E1 PW Service	1174819G1

Supported Small Form Factor Pluggables (SFPs) for this product may be found at www.adtran.com/sfp

NetVanta 8044M with two expansion module slots to allow a graceful transition path from both TDM/ATM services and copper access to IP/Ethernet services and fiber access.