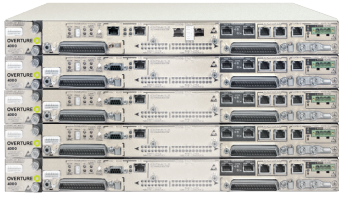
DATASHEET

OVERTURE

Overture 4000e Series

Overture's 4000e is a self-contained service delivery engine. The 4000e is a purpose-built Ethernet switching and VLAN labeling platform for delivering from 2 to over 100 Mbps of symmetrical Ethernet services over a single-bonded-copper-infrastructure. Because it eliminates the need for a local optical switch, it dramatically reduces latency and jitter. It effectively extends a carriers' service reach beyond their existing optical switching footprint - increasing the revenue potential while reducing CapEX. It does all of this while ensuring that Service Level Agreements are being tracked and managed.



Up to 5 4000e (supporting 200 copper pairs) can be redundantly connected using a dedicated ring-based stacking interface. Each 4000e can be hot-inserted into a stack, with no effect on existing deployed services. By adding an 4000e to a stack, TDRplus will become available on each copper pair across the entire stack. The virtual node is managed as a single entity; any copper pair can be bonded to any other pair across the stack.

With the 4000e, a carrier can quickly plan the service offering and optimize the copper pair requirements. To simplify the location of the copper pair, the 4000e supports tone-generation and open/short technologies. To qualify the loop, the 4000e includes Overture's TDRplus, an integrated Time Domain Reflecto-meter. With this technology, a carrier can measure the distance of the loop, analyze the quality of the loop, and detect the presence of the 400 or 600 series CPE (even when it is powered-off). Provisioning is easy and fast because the 4000e will automatically configure the CPE in a plug-and play manner. It will also automatically configure the modulation on the bonded-pair to obtain the highest data rate. The 4000e has an embedded GUI that simplifies installation and trouble-shooting. Powerful programmable macros accelerate provisioning and prevent errors. The 4000e offers multiple uplink interfaces, which includes T3/E3, GigE, and Fast Ethernet.

The 4000e is NEBS level 3 certified, temperature-hardened, and has full front access to all of its cables. It is 1RU high and it can be deployed in a central office, a controlled environmental vault, or an outside plant remote-terminal.

Operators can assign SLAs on each Ethernet Virtual Circuit. It has a comprehensive monitoring system that includes 802.1ag, Y.1731, and IP SLA. It supports VLANs, stacked VLANs (Q-in-Q), Class-of-Service, Quality-of-Service, traffic shaping, and policing. New services can be added to existing customers without service interruption and without the need for a truck roll.

The 4000e enables the proactive monitoring of service variables such as performance, uptime, latency, and jitter. Within the network layer, the 4000e supports multiple levels of resiliency for network protocols, paths, systems, and management. This includes network redundancy with 802.3ad, STP, and RSTP. Within the physical layer, the 4000e provides a dynamic level of protection against service interruptions. This includes self-healing bonding engines, cross-box bonding, and no single point of failure. The 4000e allows carriers to use familiar tools to trouble shoot the service path. This includes intuitive trouble¬shooting tools such as PING and TRACE ROUTE.

The 4000e is a carrier-class Ethernet switch that extends the carrier's Ethernet serving area beyond the limited reach of the optical network. It provides a carrier-class architecture that delivers demanding SLAs, cost-effective growth, fast and flexible deployment, and intuitive management tools.

APPLICATIONS

- Ethernet Business Services
- DSLAM Backhaul
- Ethernet First Mile
- Transparent LAN Service
- Dedicated Internet Access
- Private Line Ethernet Services
- Layered VOIP Transport
- Mobile Wireless Backhaul
- Fixed Wireless Backhaul

KEY FEATURES:

- Up to 15 Mbps per Copper Pair
- Bonds up to 8 Copper Pairs
- Multiple Services per connection
- E-LINE, E-LAN, E-TREE
- Carrier Grade OEM
- Advanced QOS and Buffer Management
- Extensive SLA Management
- Robust Security
- Seamless Stacking
- Time Domain Reflectometer
- IEEE 802.3ah Certified
- MEF 9,14, 21 Certified
- NEBS level 3 Certified
- Environmentally Hardened
- Easy Pair Identification
- Spectrally-Compliant for All Markets
- Supported CPE – 400 Series, 600 Series

CARRIER ETHERNET MEF Certified Compliant

PRODUCT FEATURES

INTERFACES

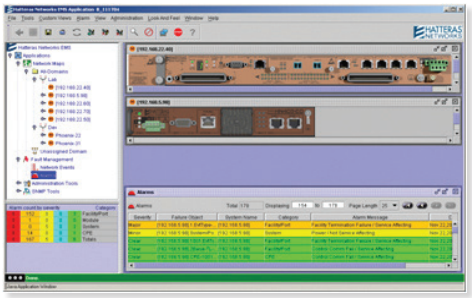
- 2 Port IEEE802.3 100/1000BASE-TX
- 2 Port IEEE 802.3 1000BASE-X optical small form-factor pluggable (SFP)
- 1 Port unchannelized T3/E3-TX port supporting X.86
- 40 Port IEEE 802.3ah, 2BASE-TL, ITU-T G.991.2.bis (Annex A, B, F, & G). ANSI T1.417 Spectral compliance and UK ANFP Spectral compliance via RJ-21. Sealing current applied to all copper pairs.
- Craft Interface 10/100BASE-TX via RJ-45 connector
- DS1/E1 BITS Timing Input via RJ-21 connector
- 2 Port Stacking Interface via RJ-45 connectors, non-blocking
- Alarms Contacts I/O via RJ-45 connector, two form C outputs, one input
- 1 Port In and 1 Port Out - Metallic Loop Test via RJ-45 connectors for Virtual Node Stacking
- Operational Deployment Efficiencies
- Pair Identification via Tone Generation and Opens/Shorts
- Time Domain Reflectometer (TDRplus)
- Prequalify a loop to determine the suit-ability for, and expected performance of, the intended service.
- Detect cable damage (e.g., cuts) without the need to dispatch to the remote site.
- Detect both powered and unpowered CPE unit
- Stacking Features (Virtual Node)
- Stack up to 5 4000e chassis into a virtual node using a single network element
- Automatic master switch failover
- Cross chassis bonding of 2BASE-TL ports for no stranded copper pairs and network resiliency
- 200 pairs per stack, delivering up to 3 Gbps
- TDR and Metallic Loop Test are supported across the virtual node when used with an 4000e

ETHERNET FEATURES

- MEF E-Line, E-LAN, and E-TREE
- 802.1d Bridging
- 802.1q VLANs, VLAN stacking (aka Q-in -Q)
- 802.1p Prioritization
- 802.1d Spanning Tree, 802.1w Rapid Spanning Tree
- 802.3x Flow Control and pause frames
- 802.3ad Link Aggregation
- MAC Learning and Aging, support 64K MAC addresses
- All Ethernet Ports perform auto-negotiation, Full or half duplex
- VLAN Tag ID writing, stacking, stripping, and re-writing and VLAN Bundling
- RFC 791 IP, RFC 792 ICMP, RFC 793 TCP,
- RFC 768 UDP, RFC 826 ARP, RFC 1122 Host Requirements
- 256 EVCs, each supporting up to 4095 UNI Bindings
- Each EVC Supports a unique SLA with full statistic and management reporting
- Each VLAN can be logically mapped to a Unique EVC, enabling multiple SLA per customer

TRAFFIC MANAGEMENT

- 8 Classifications Mapped to 4 Queues
- Queue management using Customizable Weighted Fair Queuing, Strict Priority, and Combination
- COS based upon 802.1p, 802.1q, DSCP, fixed per port
- Multiple services per connection
- Policing with dual leaky bucket algorithm
- Traffic Rate Shaping
- WRED Intelligent discard
- Broadcast, Multicast, and Unknown Storm Control



PERFORMANCE

- High Performance Modems that use 16/32/128 TC-PAM deliver speeds up to 15Mbps per pair
- Industry-leading density of 40 pairs per rack unit, delivering up to 600 Mbps per chassis
- Bond up to 8 discrete pairs into a logical connection with speeds up to 120Mbps
- Hitless addition and removal of copper pairs in a bonded group
- Extensive SLA (Service Level Agreement)

MANAGEMENT

- Automatic span profiling to deliver the optimal bandwidth across a copper pair
- Management, Security, and Diagnostics
- RJ-45 and 10/100BASE-TX Craft Interfaces
- Embedded Web Gui (WebManager), Command Line Interface, Optional EMS (Element Management System)
- Telnet (client and server)
- FTP and TFTP
- RFC 1155 TCP/IP management
- SNMPv1/v2c/v3
- MIB-II, Traps, SMIv2, and Textual Conventions SMIv2
- RMON
- IEEE 802.3ah OAM
- SNTPv3 - Time Synchronization
- DHCP
- Error logging and SNMP Trap alarms based on GR-474-CORE and GR-883-CORE
- SSHv2
- HTTP/HTTPs
- Link Trace
- Test TCP
- Link Loss Forwarding
- Auto Discovery
- SSL
- IP Access Control List
- TACACS+ and RADIUS
- IEEE802.1ag CFM
- ITU Y.1731 ETH-OAM
- Syslog
- SNTP
- CLEI Coded
- OSMINE and IBM Tivoli Netcool / OMNI-busMechanical

MECHANICAL

- Full front access
- Dimensions: Width 17.45" (444mm); Height: 1.72" (44mm); Depth: 9.88" (251mm)
- Weight: 11 lbs (5kg)
- Rack Mounting in 19" and 23" EIA/ANSI and WECO racks; 600mm wide ETSI racks
- Air Exhaust: Rear or side exhaust, factory option
- Cooling: Field replaceable fan unit with field-serviceable fan filters
- Compact 1 RU size

ELECTRICAL

- Power: 85 Watts at 48VDC with Redundant Feeds.
- Optional AC/DC 120/240 power supply.
- Input Voltage: -40VDC to -57.6VDC

CERTIFICATIONS AND COMPLIANCE

- NEBS Level 3 (GR-63-CORE and GR-1089-CORE)

- GR-3108 Class 2
- IEEE 802.3ah-certified, 2BASE-TL, ITU-T G.991.2.bis (Annex A, B, F, & G). ANSI T1.417 Spectral compliance and UK ANFP Spectral compliance
- MEF Certifications: MEF9 and MEF14
- RoHS: Compliance with Directive 2002/95/EC
- FCC Part 15 Class A
- EN 55022 Class A
- C-Tick
- CE Mark
- ITU K.20/K.21
- ETSI 300 386
- ETSI 300 019, T1.2, T2.2, T3.5
- Safety: 60950-1, with CB scheme with all country deviation

ENVIRONMENTAL

- Environmentally hardened with extended temperature range, -40°C (-40°F) to +65°C (+149°F)
- Operating Temperature: -40C (-40F) to +65C (+149F)
- Storage and Transportation Temperature: -40C (-40F) to +70C (+158F)
- Operating Humidity: 5% to 85%
- Storage and Transportation Humidity: 5% to 95% noncondensing

ORDERING INFORMATION

MODEL NUMBER	MODEL NUMBER	DESCRIPTION
4000e	4000e 4000e-s	• Ethernet Edge Switching Platform, Back Air Exhaust • Ethernet Edge Switching Platform, Side Air Exhaust
Network Modules	4000-GbT 4000-GbXA 4000-TE3 4000-CVR	• 2 Port of 100/1000BASE-TX • 2 Port 1000BASE-X small form-factor pluggable (SFP) • 1 Port unchannelized T3/E3-TX port supporting X.86 • Network module slot cover
AC Power	PSA-48C-nn, where nn = NA, UK, EU, IT, AN	• Optional AC power supply
Accessories	4000-FAN FLTR-04	• Spare cooling fan module • N4000 replacement fan filter (includes 10 fan filters)

OVERTURE

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