# Pseudowire Gateway

MX408e
Low-profile, High-density PWE3 Solution

Product Features

- **High capacity** delivering up to eight T1 or E1 circuits over packet-switched networks

- Increased service support via **fractional T1/E1 delivery**

- Flexible implementation due to standards-based Circuit Emulation Services delivering **both SAToP and CESoPSN** for bandwidth efficiency and application flexibility respectively.

- **Carrier-grade TDM delivery** over best-effort packet networks provided by adaptive timing recovery

- TDM voice quality preserved through **automatic jitter buffer** management and support for BITS clock input

- Prioritizes voice traffic through **VLAN tagging** and priority labeling

- Supports **remote management** through an intuitive CLI interface, ADTRAN Total Access EMS, or SNMP

- **Configurable** Pseudowire payload length for tuning of bandwidth and latency

- Industry leading ten-year warranty

Migration to IP/Ethernet

The prevalence of new Ethernet delivered services requires increased investment in new packet networks. Customers demand the continued support of non-Ethernet services such as TDM voice and data which raises a concern regarding the cost impact of supporting two networks — one IP and one TDM-based. With the ADTRAN® MX408e Pseudowire Gateway, Ethernet service delivery is consolidated onto a single multi-service network supporting the delivery of cost-effective broadband service and legacy service revenue streams. ADTRAN's pseudowire solution reduces operational costs by retiring expensive TDM leased lines.
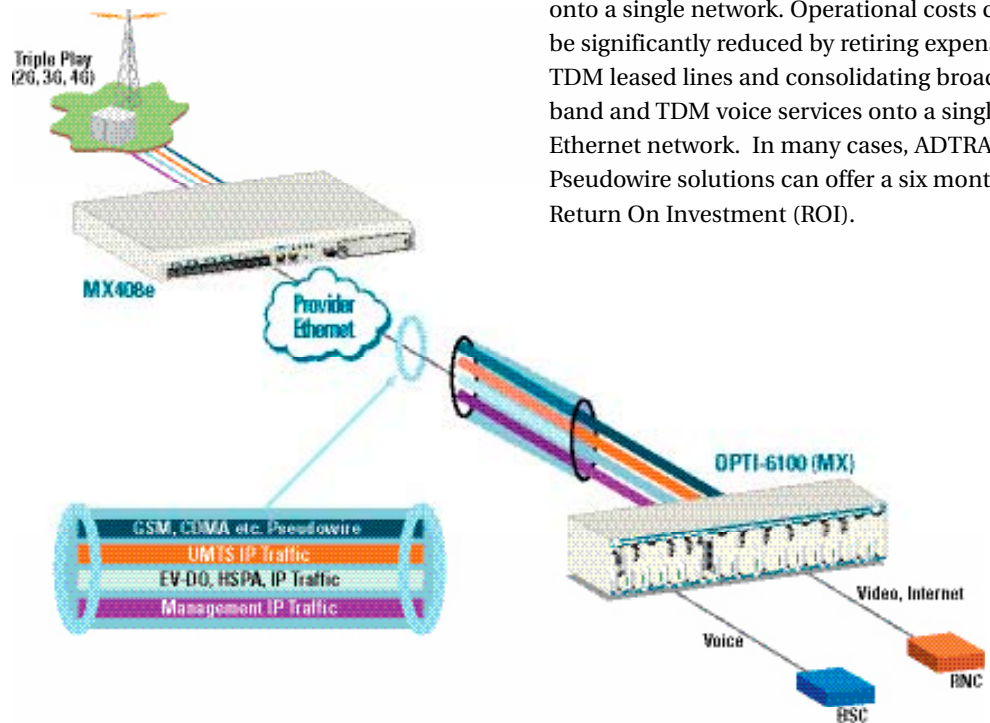
Evolution to IP Backhaul

Service Providers are constantly looking for ways to drive down the operating costs of delivering both new broadband and legacy voice services. As Triple Play, 1xEV-DO, PON, HSPA, and IP Multimedia Subsystems (IMS), drive the transformation of both the access and core networks to IP, the backhaul network that resides between must keep pace. Since it is difficult to scale TDM backhaul as bandwidth needs grow, long-term profitability is not viable with TDM-based backhaul.

Pseudowire Extends the Value of Ethernet Access

ADTRAN Pseudowire Ethernet solutions enable the consolidation of service delivery onto a single network. Operational costs can be significantly reduced by retiring expensive TDM leased lines and consolidating broadband and TDM voice services onto a single Ethernet network. In many cases, ADTRAN Pseudowire solutions can offer a six month Return On Investment (ROI).

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Product Specifications

Customer Access Interfaces

■ **T1 Interfaces**
- Interface type: DSX-1
- Connectors: 8x RJ-48
- Line build out: 0 to 655 feet
- Line rate: 1.544 Mbps
- Line code: AMI, B8ZS
- Framing: ESF, D4, Unframed

■ **T1/E1 Interfaces**
- Connectors: 8xRJ-48 (120 Ω Balanced)
- Line rate: 2.048 Mbps
- Line code: HDB3 or AMI
- Framing: CAS, CCS, Unframed
- Compliance: ITU G.703, G.704

■ **10/100Base-T Ethernet Interfaces**
- Interface type: 10/100BaseT
- Connectors: 4x RJ-45
- Compliance: IEEE 802.3, 802.1D, 802.1Q

Network Uplink Interfaces

■ **10/100Base-T Ethernet Interface**
- Interface type: 10/100BaseT
- Connector: Single RJ-45
- Compliance: IEEE 802.3, 802.1D, 802.1Q

■ **Gigabit Ethernet Interface**
- Interface type: 1000Base-X
- Connector: Single SFP
- Compliance: IEEE 802.3, 802.1D, 802.1Q

T1/E1-based Pseudowire

■ **T1/E1 Interfaces**
- Structure-agnostic: IETF RFC 4553 Structure-Agnostic Time division multiplexing over Packet (SAToP)
- Structure-aware: IETF draft- Vainshtein circuit emulation services over packet-switched network (CESoPSN) pseudowire support
- Jitter Buffer: Programmable up to 100 milliseconds
- Automatic Jitter Buffer Adjustment: Optimizes jitter buffer settings based on observed packet jitter in delivery network

QoS Management
- Layer 2 Marking: 802.1Q VLAN tagging per emulated T1
- Compliance: IEEE 802.1D, 802.1Q
- Maximum simultaneous VLANs: 256
- Class of Service: 4 Priority Levels
- Diffserv code point marking

Mechanical

■ **Dimensions**
- 1.7H x 7.7D x 17.1W (in.)
- 44H x 196D x 435W (mm)

■ **Weight**
- 8 lbs. (3.6 kg)

Alarms
- External alarm contacts for critical, major and minor alarms
- Normally open and normally closed pinouts
- 4 Auxiliary Input pins

Electrical
- Power: ±24 VDC or -48 VDC, 20 Watts

Regulatory Standards
- NEBS Level 3
- UL 60950 and ETL
- IEC/EN 60950 RoHS compliance

Management

■ **VT100 Interface**
- EIA-232 compatible, female DB-9 connector
- Embedded CLI access

Remote Management

■ **Management VLAN**
- Telnet access of up to 6 simultaneous users

■ **SNMP**
- Supported MIBs: RFC1213, RFC2863, RFC3635, RFC4188, RFC4363, ADTRAN Enterprise MIB

Environment
- Operating Temperature: -40°C to 65 °C
- Storage Temperature: -40°C to 85 °C
- Relative Humidity: GR-63-CORE

Ordering Information

Equipment	Part #
MX408e (T1/E1)	1189608L1
MX408e (T1/E1, RoHS)	1189608G1
AC Power Supply	1175043L3