Total Access 5000 ONE

OTN Transport Optical Switch (OTOS-1-8)

Systems at the core are increasingly more elaborate and complex and are being developed to handle even more data. The requirements at the edge are entirely different; simplicity, multiservice, integration, and cost rule. Typically, only a few wavelengths are required to start. Space is often a premium, especially in huts and street cabinets. In some cases, the equipment needs to be environmentally and temperature hardened. The ADTRAN® Optical Networking Edge (ONE) delivers an innovative right-sized packet optical solution integrated with services access and aggregation. ONE™ is optimized for small to medium networks providing pay-as-you-grow scalability up to 44 or 88 DWDM wavelengths. Designed for the video and mobility era, ONE supports a variety of applications including mobile backhaul, business Ethernet, residential broadband, and data center connectivity. ONE delivers greater service flexibility, lower initial cost, smaller footprint, and lower power as compared to core systems designed for high initial capacity and long haul networks.
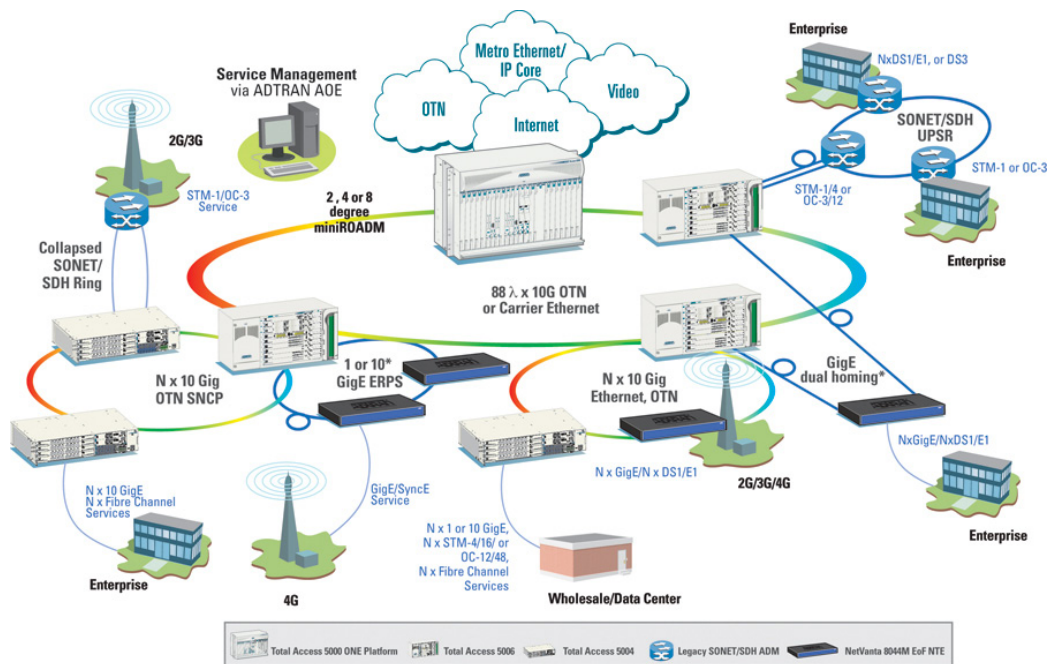
The ONE solution delivers right-sized, multi-service OTN (G.709) switching and transport capabilities. The OTN Transport Optical Switch (OTOS-1-8) extends the OTN switching to the network edge while supporting "any service any port" and non-blocking OTN add-drop multiplexing (ADM) functionality. The single slot OTOS-1-8 includes eight multi-service client ports and an OTU-2 line port. OTOS-1-8 also supports an OTU-1 transponder mode connecting mid-speed to other mid-speed configured for OTN transport.

The OTOS-1-8 module may be combined with any other Total Access® 5000 ONE and Access functionality, and when specifically paired with the ETOS (Ethernet Transport Optical Switch) and WDM modules, the Total Access 5000 delivers a powerful, versatile, yet compact packet optical networking platform.

Product Features

- Eliminates multi-box complexity with converged access, aggregation and packet optical transport via a single platform

- Provides cost effective multi-service 10 Gig aggregation and transport of SONET/SDH, Ethernet, OTN, Fibre Channel, and CPRI

- Multi-service provisionable ports

- Non blocking OTN switching enabling flexible service add/drop at each site

- Carrier class resiliency and redundancy with cross slot OTN ring

- SLA Management via OTN OAM performance monitoring tool sets

- Supports delay sensitive applications due to solution's ultra low latency

- Extreme temperature hardened for street cabinet deployments

Total Access® System

Smart Solutions for a Connected World.

ADTRAN®

TL9000
TL19.1270

ADTRAN is an ISO 9001, ISO 14001, and a TL 9000 certified supplier.

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Total Access 5000 ONE

Product Specifications

Front Panel Interfaces
- One High-Speed (HS) network port: OTU2
  - FEC support: No FEC, GFEC, EFEC (I.4)
  - Auto payload type support on HS ports for interoperability with legacy OTN equipment
- Eight provisionable Mid-Speed (MS) client ports:
  - GigE
  - OC-3/STM-1, OC-12/STM-4, OC-48/STM-16
    — maximum of four OC48/STM16 clients
  - OTU-1
    — maximum of four OTU-1 clients
    — FEC support: No FEC, GFEC
  - Fibre channel (future release),
  - Common Public Radio Interface (CPRI™) (future release)

Wavelength-Division Multiplexing Interfaces
- Dense WDM (DWDM) support
- The HS 10 Gig XFP and the MS SPF interfaces support 44/88 DWDM wavelengths for interfacing the optical DWDM layer and delivery of high bit rate multi wavelengths network connection
- Coarse WDM (CWDM) support
  - The MS SFP and the HS XFP interfaces support eight MS and two HS CWDM wavelengths for interfacing with the optical WDM layer enabling the delivery of multi wavelengths over a single fiber.

Physical Dimensions
- Standard Total Access 5000 single slot width, standard height card
- Rack mountable solution in 19 in. (482.6 mm) or 23 in. (584.2 mm) wide telecom racks

Power Considerations
- Redundant, dual A and B fed -48 VDC
- Total Access 5000 chassis provides power connection
- Typical power consumption is 40W

Environmental Hardening
- **Operating Temperature:** -40° F to 149° F (-40°C to 65 °C)
- **Storage Temperature:** -40° F to 185° F (-40°C to 85 °C)
- **Relative Humidity:** GR-63-CORE 5% to 95%, non-condensing

Regulatory Agency Approvals
- FCC Part 15 Class A and Part 68
- UL 60950, CAN/CSA C22.2 No. 60950
- EN 60950, IEC 60950, AS 3260/ AS NZS60950
- GR-63-CORE
- NEBS Level 3
- RoHS 2002/95/EC
- ITU-T K21:2000 Basic

OTN Switching and Mapping
- Two modes of operations: HS muxponder (switchponder) or 2.5G (OTU-1) transponder
  - Muxponder mode: MS to HS (add/drop) mappings
  - Transponder mode: MS to MS mappings
- HS muxponder mode add/drop mappings:
  - OTU1/ODU1 into OTU2/ODU1
  - OTU1/ODU0 into OTU2/ODU0
  - OTU1/ODU0 into OTU2/ODU1/ODU0
  - OC48 (STM16) into OTU2/ODU1
  - OC12 (STM4) into OTU2/ODU0
  - OC12 (STM4) into OTU2/ODU1/ODU0
  - OC3 (STM1) into OTU2/ODU0
  - OC3 (STM1) into OTU2/ODU1/ODU0
  - 1GigE into OTU2/ODU0
  - 1GigE into OTU2/ODU1/ODU0
- OTU-1 Transponder mode mappings:
  - OTU1/ODU1 into OTU1/ODU1
  - OTU1/ODU0 into OTU1/ODU0
  - OC48 (STM16) into OTU1/ODU1
  - OC12 (STM4) into OTU1/ODU0
  - OC3 (STM1) into OTU1/ODU0
  - 1GigE into OTU1/ODU0

Redundancy and Protection
- Supports both equipment-redundant and non-equipment redundant operations
- Protection group on HS (OTU2) port:
  - SNC/N ODU1 path protection with redundant card
  - SNC/N ODU0 path protection with redundant card
  - SNC/I line uni-directional protection with redundant card
  - Y-cable support with redundant card
  - Revertive/non-revertive switching
- Protection group on MS ports:
  - SONET/SDH 1+1 uni-directional APS
  - OTU1 SNC/I line uni-directional APS
  - Y-cable support for all clients with redundant card
  - Revertive/non-revertive switching

Connectivity Fault Management
- Loopbacks support:
  - Facility (HS and MS ports)
  - Terminal (HS and MS ports)

Performance Monitoring
- OTN section and path
- SONET/SDH Section/Regenerator Section (RS)
- Ethernet Physical Coding Sublayer (PCS).
- 15 min, 24 hour (current and history)
- Real-time

Device Management
- CLI and SNMP/MIB controls via the ONE (SCM)
- Remote management via backplane interface
- TFTP software download
- ADTRAN Operational Environment (AOE) Management
  - SNMP v1/2

Key Applications
- Transparent wholesale services
- Private line migration
- Multi-service transport
- Data center connectivity
- Migration from SONET/SDH to next generation OTN
- On-ramp aggregation to an OTN core
- Transport solution for special protocols (such as CPRI)

Ordering Information

Equipment	Part #
Total Access 5000 ONE OTOS-1-8 Module	1174121F1
OTOS-1-8 LMIO2 ANSI Personality Module	1174122F1
OTOS-1-8 LMIO2 ETSI Personality Module	1174122F2