



ADTRAN®

OPTI-6100® Series
Optical Access
Multi-Service Provisioning
Platform (MSPP)

A high-density, compact, multi-service optical access and aggregation platform.

Service providers globally have identified ADTRAN's OPTI-6100® as the best choice for optical access multi-service delivery and aggregation. This compact, yet high-density, full featured global platform enables the flexible delivery of high bandwidth fiber-based services, such as DS1/E1, DS3/E3/EC-1, Ethernet (10/100/1000), OC-3/STM-1, OC-12/STM-4 and OC-48.



**ADTRAN's OPTI-6100
SMX and MX chassis**

The OPTI-6100 is perfectly suited for delivery of high density DS1s or E1s, Ethernet over SONET, Ethernet over PDH, TDM over Pseudowire, multiple DS3/E3 delivery, customer premises service delivery, and mobile backhaul.

Interworking with both SONET and SDH optical networks is achieved through the use of industry standard protocols and extensive field testing. Services are configured via plug-in units, which are provisioned according to the service needs of individual locations. This flexibility of multiple plug-in units eliminates the need for separate network elements and minimizes CAPEX and OPEX by delivering multiple services from one system. Most plug-in units may be optionally protected, minimizing possible service failures to either the network facilities or to end customers, and enabling "carrier class" reliability. System upgrades are easily made through in-service software downloads, through either local systems or ADTRAN's Total Access Element Management System (EMS).



OPTI-6100 SMX and MX chassis

- **MX:** High-speed, 15-slot, multi-protocol backplane
- **MX:** Compact footprint
(17" W x 11.75" D x 3.5" H)
- **SMX:** High-speed, 7-slot, multi-protocol backplane
- **SMX:** Compact footprint
(8.5" W x 10.5" D x 3.5" H)



This robust platform offers carrier class reliability and is engineered to integrate easily into existing networks. The OPTI-6100 is interoperable with many other vendors' Telcordia GR-253 and ITU-T G70x compliant multiplexers, and is fully compatible with the complete suite of ADTRAN multiservice access and aggregation platforms and NTUs. In addition to being reliable and interoperable, this platform is fully supported by ADTRAN's legendary extended warranty, which is included with the purchase of the OPTI-6100.

This high-density platform delivers maximum performance in an efficient package. A high degree of integration results in reduction of inventory and operational expenses while supporting delivery of multiple network access services. In fact, the industry's most diverse set of network interfaces (OC-3/STM-1 through OC-48) is offered from this SONET/SDH access network element. SONET and SDH operation are selectable by loading the appropriate software onto the individual modules.



Interchangeable Application Modules

- DS1/E1
- EC-1
- DS3/E3-clear channel and Transmux
- OC-3/STM-1
- OC-12/STM-4
- 10/100/1000- EoS
- OC-48
- EoPDH
- Pseudowires

Where space is of primary concern, the OPTI-6100 SMX chassis requires less space, battery capacity, and power. It is a compact version of the OPTI-6100 MX chassis and uses all the same plug-in units. The reduced installed first cost is further improved by decreased real estate costs and enhanced by the optional complete and self-contained wallmount system.

Featuring built-in versatility, this platform is perfect for a wide variety of applications, topologies, and locations. Metro Ethernet service delivery, mobile backhaul, customer premises services delivery (i.e., DS1/E1 and Ethernet delivery), high density, flexible cross connect provisioning, pseudowire conversion, and large enterprise applications are all supported. In addition, an expanding suite of applications is supported from the same platform facilitated by a high-capacity backplane. Numerous network topologies are supported and include terminal mode, hub, end-to-end OPTI-6100 (MX or SMX chassis) and rings. The mechanical and physical design supports installation in both outdoor and indoor cabinets.



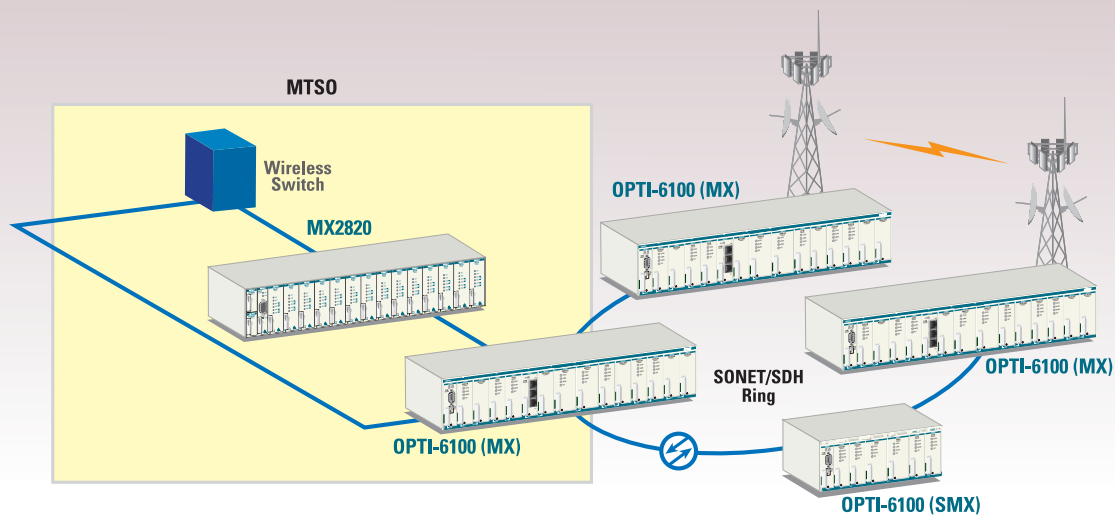
Total Access EMS

- Fault, configuration, accounting, performance, and security management functions
- Single management platform for ADTRAN systems

The OPTI-6100® Series At-a-Glance

- Single or double ended deployment into most GR-253 SONET multiplexers
- Ethernet over SONET/SDH capability; GFP ITU-T G.7041 compliant
- Compact 2U (3U with fan assembly)
- Supports high- and low-order VCAT
- OSI and IP/PPP over DCC
- ±24 or -48VDC operation without the need for external converters
- Optional auto in-service and auto frame format for network and tributary connections
- OC-3/STM-1, OC-12/STM-4 and OC-48 network interfaces with optional redundancy
- DS1, DS3/E3/EC-1, Ethernet, OC-3/STM-1 and OC-12/STM-4 transport services with optional redundancy
- Integrated DS1/E1 and DS3/E3 framers-eliminate the need for external devices to perform the NIU function
- Range of up to 70 km using 1310/1550 nm one or two fibers; LC or SC connectors
- SFP optical connectors on many optical modules
- Fully featured with software control and maintenance features
- Full suite of security features EFM and PWE3 termination and aggregation capability

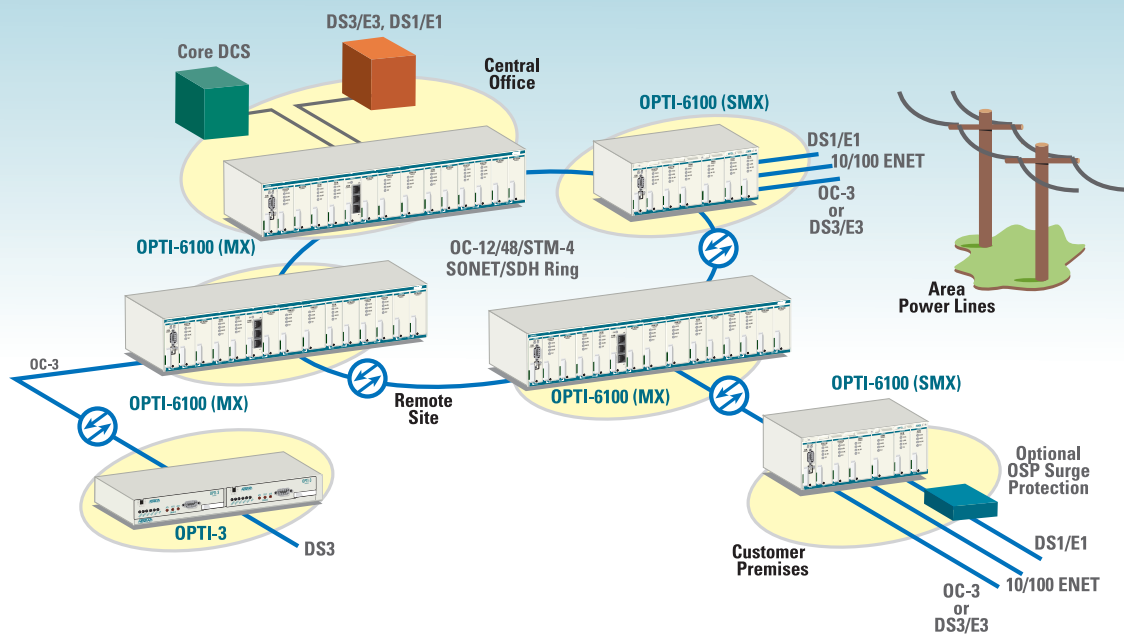
SONET/SDH Ring/Term/Subtending/Cell Sites/OSP Cabs (mobile backhaul)



Lighting up existing dark fiber is a significant source of revenue for service providers. The high capacity DCS functionality facilitates this application by adding flexibility to data routing. Independent of the type service

being delivered, from DS1s/E1s to high-speed Ethernet delivery, this chassis supports a wide variety of service offerings.

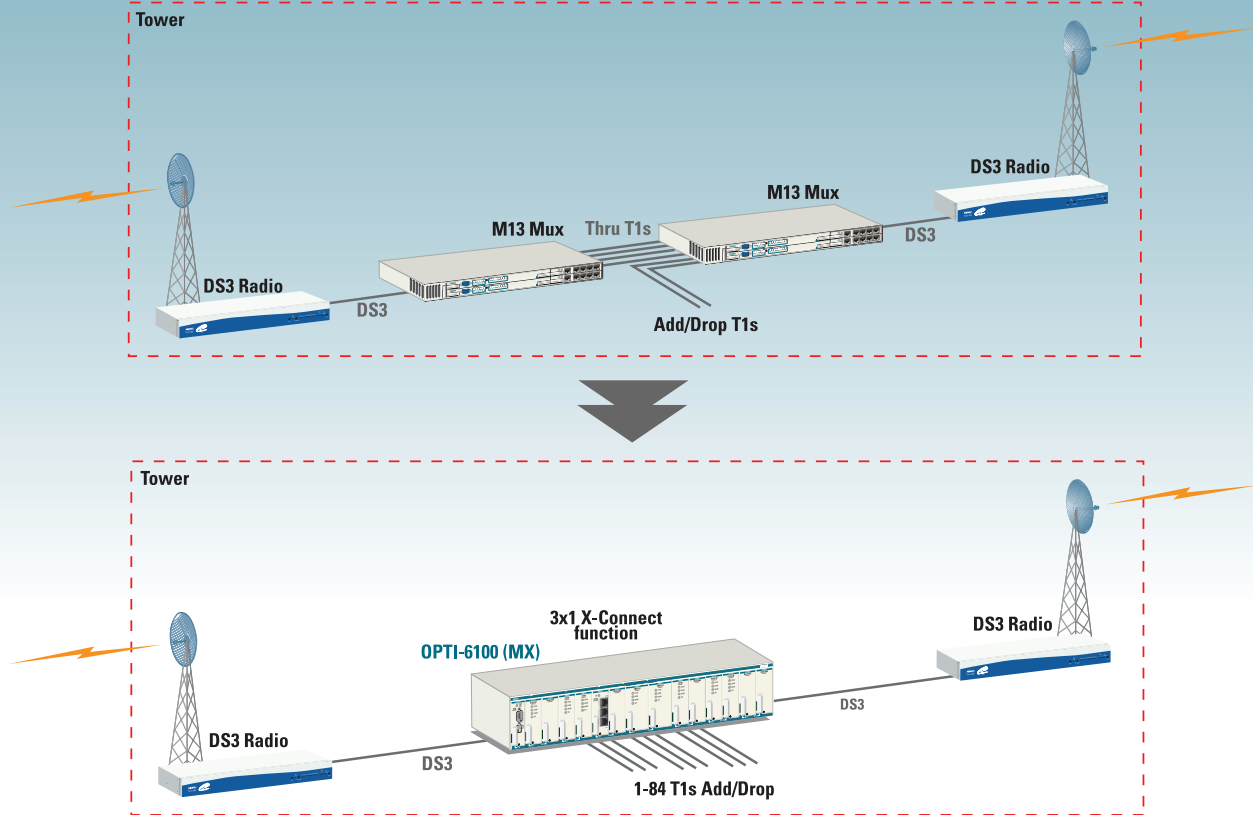
High voltage–colocated and lightning–prone Cell Sites–DS1/E1 delivery



Optimized for DS1/E1 and Ethernet delivery, this application is characterized by an architecture of low-speed (OC-3) survivable rings, connecting remote microwave radio sites. The integrated DCS functionality of the chassis performs grooming and routing of the ring traffic. To improve the transport quality, specific modifications have been made to the chassis to support direct physical connection to radio/microwave equipment reducing

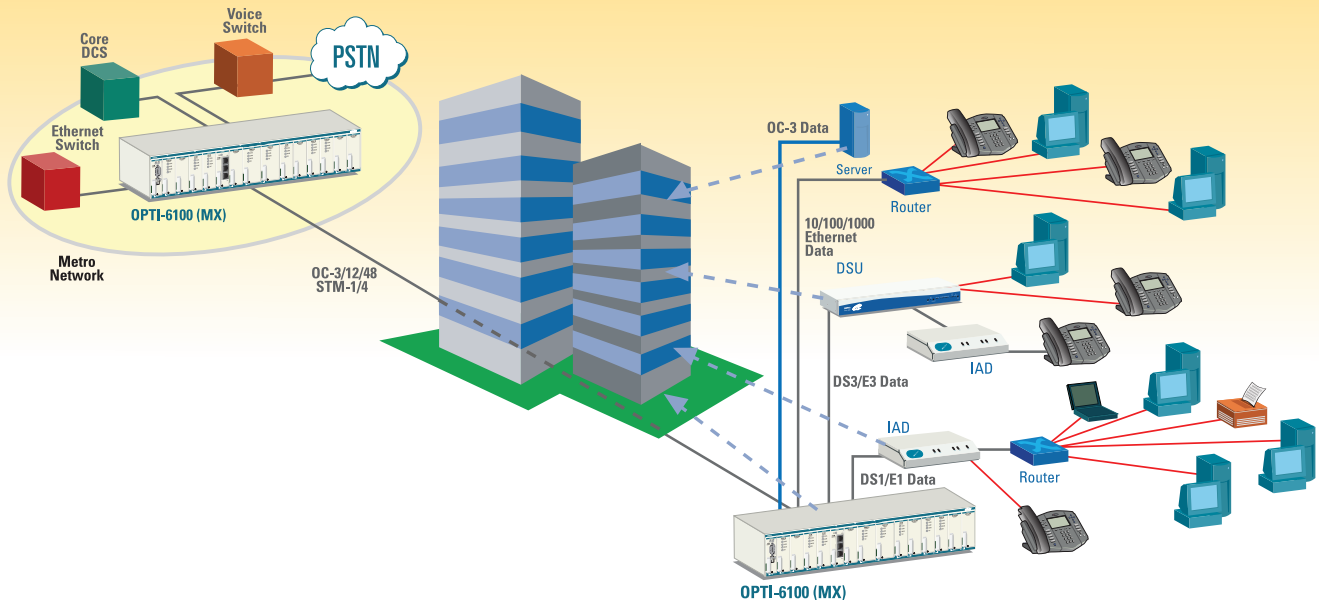
the number of active and passive network elements and interfaces. This application requires remote maintenance which is supported by an SNMP/TL1 interface, which can be tailored to service providers' specific operations infrastructure implementation. ADTRAN's ESPM and SPPM modules provide the necessary for outside plant protection and powering for DS1/E1 interfaces.

High Density cross connect and grooming (for wireless-microwave and ADM applications)



The OPTI-6100 is an ideal solution for microwave-based networks. It has the ability to provide for any-to-any cross connect. For example, in an OC-3 radio system, any DS1 from any DS3 may be dropped and added at any location.

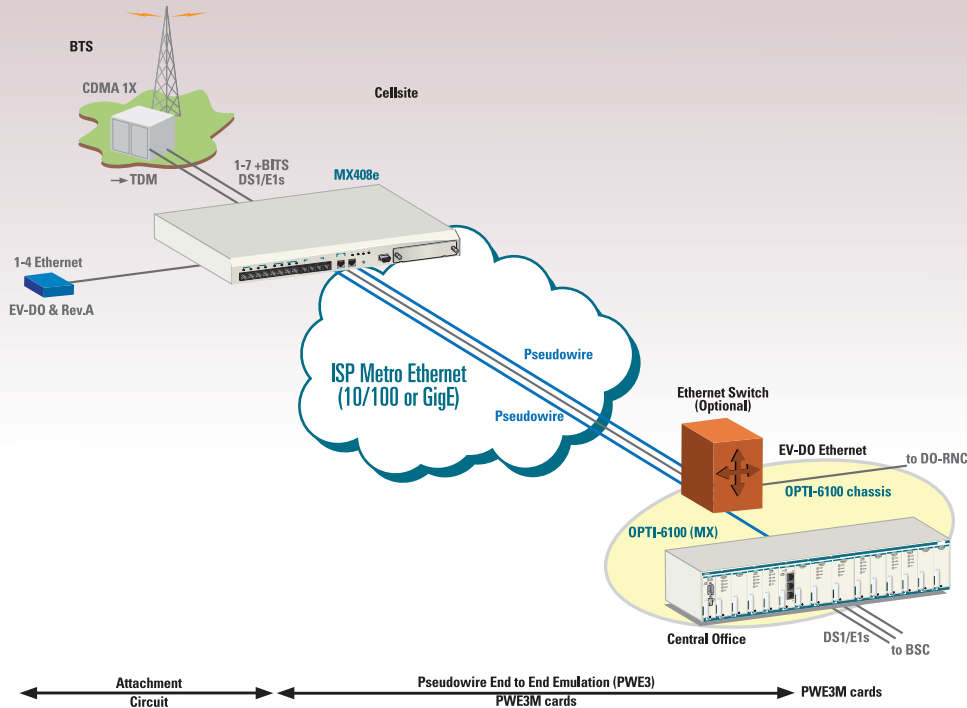
Converged business services (TDM and Packet)



Through the utilization of next-generation SONET/SDH technology, the OPTI-6100 provides the ability to combine traditional TDM services with

emerging packet-based services within the same compact network element.

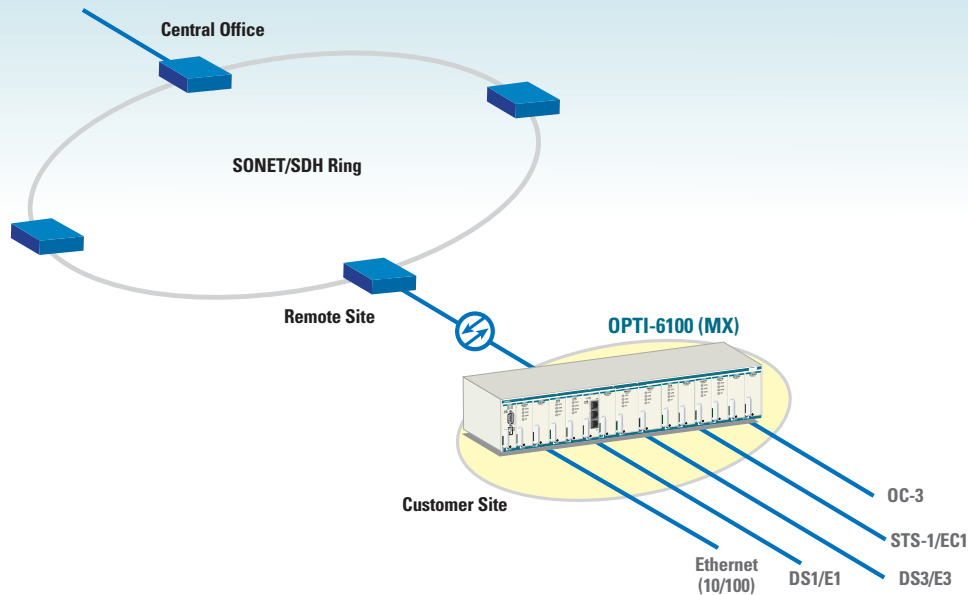
Converged network migrations/Deployments/Network Modernization



The OPTI-6100, through its extended environmental performance, enables network operators to deploy services in rugged outside plant environments.

Protection and powering modules are available to provide for interface to OSP facilities for DS1/E1s and to power remote NIUs when needed.

Building out/upgrading legacy SONET/SDH rings



Through its ability to interoperate with legacy gateway network element (GNE) nodes in existing SONET/SDH networks, the OPTI-6100 has the ability to provide services as a natural evolution to an installed ring network.

The OAM&P capabilities of the platform enable full access to system data and menus over a variety of media.

OPTI-6100 Flexibility At-A-Glance

	SONET		SDH	
	MX	SMX	MX	SMX
Tributary (Customer) Interfaces	84 DS1s 12 DS3/EC1 12 OC-3s 12 OC-12s 12 DS3 TRANSMUX 48 Ethernet ports	28 DS1s 6 DS3/EC1 4 OC-3s 4 OC-12s 6 DS3 TRANSMUX 16 Ethernet ports	63 E1s 12 DS3/EC1 12 E3s 48 Ethernet ports E3 TRANSMUX	21 E1s 6 DS3 6 E3s 16 Ethernet ports
Mounting Options	Rackmount	Wallmount or Rackmount	Rackmount	Wallmount or Rackmount
Dimensions	3.5 in. H x 17.5 in. W x 11.5 in. D	3.5 in. H x 8.5 in. W x 11.5 in. D	89 mm H x 445 mm W x 293 mm D	89 mm H x 216 mm W x 293 mm D
Optionally Protected Low-Speed Interfaces	DS1, DS3/EC1, OC-3, OC-12		E1 and DS3	
Network Interfaces	OC-3, OC-12, OC-48		STM1, STM4	
Optional Redundancy	1+1 (SONET APS or UPSR)		1+1 (Linear MSP or SNCP)	
Topology	UPSR ADM ring, OC-3/OC-12/OC-48		SNCP ADM ring, STM-1/4 Architecture	
Range	Up to 80 km using 1310/1550 nm, one or two fiber		Up to 80 km using 1310/1550 nm, one or two fiber	
Terminal Mode	Subtended off a GR-253 compliant SONET ADM		Subtended off an SDH compliant multiplexer	
Rings	UPSR ADM ring, OC-3/12/48		SNCP ADM ring, STM-1/4 Architecture	
Manageability	DCC within the SONET framework		DCC with the TMN framework	

ADTRAN's Total Access Element Management System (EMS) supports the full suite of ADTRAN Total Access products, including the OPTI-6100 (MX and SMX Chassis). Total Access EMS is an all-Java application that provides configuration, performance, network assurance, and provisioning functions for ADTRAN's systems. The OPTI-6100 is manageable in both IP and OSI domains. Both TL-1 and SNMP interfaces are supported and the craft

menus enable easier, quicker operations. The DCC implementation facilitates the communication of alarms, maintenance information, control functions, and administration capabilities back to the central operations office.

ADTRAN makes available TL-1 commands and SNMP MIBS for customer use in supporting the OPTI-6100 via third-party OSS systems.

OPTI-6100 Cabinet and Wallmount Solutions



OPTI-6100 Cabinet Solutions

- OC-3/12/48
- Variety of capacities
- Wall, pad, and pole mounting



OPTI-6100 Wallmount Enclosure

- Tilt-down access
- Four tributary module slots
- OC-3/12

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Smart Solutions for a
Connected World.

