# Alcatel-Lucent 1850 TSS-100

TRANSPORT SERVICE SWITCH | RELEASE 3.1 (NORTH AMERICAN MARKETS)

The Alcatel-Lucent 1850 TSS-100 is a Packet-Optical Transport platform that supports any mix of traffic, from all-circuit to all-packet. Its unique, technology-independent universal matrix switches packets or circuits in their native format and transports them as they are, optimizing overall network efficiency and applicability. This capability allows service providers to address the transition from TDM/circuit-based transport to packet transport with the flexible provisioning of Carrier Ethernet, SONET/SDH, wavelength division multiplexing (WDM) and optical transport networks (OTNs). The Alcatel-Lucent 1850 TSS-100 supports current and future traffic requirements by eliminating the scalability issues encountered by traditional multiservice provisioning platform (MSPP) solutions. The Alcatel-Lucent 1850 TSS-100 is the ideal building block for evolving transport networks, allowing service providers to flexibly split increasing traffic demands among any combination of carrier transport technologies.

## Features

- Provides Fast Ethernet (FE), Gigabit Ethernet (GE) and 10 Gigabit Ethernet (10 GE) interfaces for interconnection to a customer's equipment or a service provider's access equipment, with up to 120 GE per shelf
- Supports Metro Ethernet Forum (MEF)-certified services
- Provides Ethernet standards-based Q-in-Q and provider-bridged services, Ethernet OAM, Ethernet in the first mile (EFM) and Connectivity Fault Management (CFM)
- Provides SONET/SDH interfaces, up to OC-192/STM-64, as well as protected PDH service interfaces, DS1/E1 and DS3/E3
- Supports carrier-class reliability through a rich set of SONET and Ethernet protection mechanisms
- Integrates WDM using the Alcatel-Lucent 1692 Metrospan Edge (MSE)
- Provides robust and flexible network management, including the Alcatel-Lucent 1350 Optical Management System (OMS) and Alcatel-Lucent 1340 Integrated Network Controller (INC)
- Supports all Small Form Factor Pluggable (SFP) and 10 Gb/s Form Factor Pluggable (XFP) optics

## Benefits

- Supports the transition from MSPP/Multiservice Transport Platform (MSTP) to Packet-Optical Transport
- Provides cost-effective solutions for implementing resilient metro and aggregation networks
- Delivers carrier-class circuit and packet services
- Maximizes return on investment by combining circuit and packet interfaces and by using Ethernet-based traffic management
- Supports multiple Quality of Service (QoS) levels to provide a migration path toward the delivery of advanced packet-based services
- Ensures smooth network evolution by enabling hybrid networks with totally flexible resource allocation between circuit and packet data services

## Technical specifications

### 1850 TSS-100 system

- 100 GB universal switching fabric
- 10 GB data processor card, two slots
  - ¬ 10 GB full-rate data processor
  - ¬ 4 x GE interface, SFP
  - ¬ Connection to two access-expansion cards
- Ethernet-access expansion cards
  - ¬ 8 x GE, 100/1000BASE-T
  - ¬ 1 x 10 GE, SX/LX, XFP
- SONET/SDH cards, single slot
  - ¬ 1 x OC-192/STM-64, XFP
  - ¬ 4 x OC-48/STM-16, SFP
  - ¬ 8 x OC-3/STM-1 or OC-12/STM-4, SFP
- PDH cards, single slot
  - ¬ 56 x DS1/E1 electrical interfaces
  - ¬ 24 x DS3/E3 electrical interfaces
- Coarse Wavelength Division Multiplexing (CWDM) cards (single slot):
  - ¬ CWDM mux/demux
  - ¬ CWDM Optical Add/Drop Multiplexer (OADM)
  - ¬ CWDM transponder
- Flexible high-density TDM cards
  - ¬ Up to eight OC-192/STM-64 interfaces
  - ¬ Up to 40 OC-48/STM-16 interfaces
  - ¬ Up to 96 OC-3/STM-1 or OC-12/STM-4 interfaces in a single shelf
  - ¬ Up to 392 DS1/E1 electrical interfaces, protected
  - ¬ Up to 144 DS3/E3 electrical interfaces, protected

### 1850 TSS-100 subrack

- Two standard versions
  - ¬ 100% front access
  - ¬ Rear access for low-speed interfaces
- Front- and rear-access versions designed to be installed in standard and seismic 19 in. racks
- Front-access subrack dimensions
  - ¬ Height 14 RU: 620 mm/24.4 in.
  - ¬ Depth: 287 mm/11.3 in.
  - ¬ Up to three shelves in a 300 mm (12-in.) deep rack; six shelves in a 600 mm (24 in.) deep rack
- Rear-access subrack dimensions
  - ¬ Height 8 RU: 356 mm/14 in.
  - ¬ Depth: 610 mm/24 in.
  - ¬ Up to four shelves in a 600 mm (24 in.) deep rack
- 12 main slots
  - ¬ 8 x 10 Gb/s slots
  - ¬ 4 x 5 Gb/s slots
- 16 access slots
- 100 Gb/s protected switching fabric

### Service level agreement (SLA) management

- Traffic profiles
  - ¬ Best effort
  - ¬ Bandwidth guaranteed
  - ¬ Regulated: minimum bandwidth guarantee plus burst
- Hitless traffic-profile modification
- Metering
  - ¬ Single-rate token bucket: RFC 2697
  - ¬ Dual-rate token bucket: RFC 2698
  - ¬ Color-blind or color-aware, based on Ethernet priority bits

### Ethernet functionalities

- Ethernet protocol: IEEE 802.3
- Ethernet Media Access Control (MAC) auto-learning and aging
- Ethernet MAC static configuration
- Virtual local area network (VLAN) push, pop, swap: service delimiting
- Ethernet bridging: IEEE 802.1D
- Ethernet virtual bridging: IEEE 802.1Q
- Ethernet provider bridging: IEEE 802.1ad
- Y.1731/802.1ag CFM OAM: loopback (LB)
- 802.3ah EFM OAM
- Spanning tree
- Link aggregation
- Jumbo frame
- Traffic classification: port/VLAN/priority bits
- Forwarding criteria: port/MAC/VLAN
- Unicast/multicast traffic

### Ethernet support

- 1000BASE-xx ports: four per 10 GB data processor card (three in the compact version)
- Two access expansion cards per 10 GB data processor
- 8 x GE, 100/1000BASE-T expansion card
- 1 x 10 GE expansion card
- ¬ Interface: includes SX/LX, XFP
- ¬ Indicators: link, activity
- ¬ Capabilities: auto-sensing, full- and half-duplex
- Standards compliance: IEEE 802.3, 802.1Q, 802.1D, 802.1ad Provider Bridge Link Aggregation Group (PB LAG), GE/10 GE with Link Aggregation Control Protocol (LACP)
- Up to six 10 GB data processor cards per chassis
- Up to 120 interfaces
- MEF 9 and MEF 14 certified

### SONET/SDH functionalities

- Cross-connection
  - ¬ Up to 100 GB STS-1/VC4
  - ¬ Up to 10 GB VT1.5/VC3/VC12
- Termination
- Ethernet mapping over SONET/SDH
- Virtual concatenation (VCAT)
- Link capacity adjustment scheme (LCAS)
- Performance monitoring

### CWDM functionalities

- Configurations: terminal, hub, OADM ring
- Stacked CWDM rings

### Protection

- Ethernet network protection
  - ¬ Spanning Tree Protocol (STP): IEEE 802.1D
  - ¬ Rapid Spanning Tree Protocol (RSTP): IEEE 802.1w
  - ¬ Multiple Spanning Tree Protocol (MSTP): IEEE 802.1s
- SONET/SDH network protection
  - ¬ Linear 1 + 1
  - ¬ Single and dual-ended MSP
  - ¬ UPSR/SNCP
  - ¬ 2F-BLSR/MS-SPRING
- Link aggregation over virtual concatenation group (VCG) links
- PDH interface protection
  - ¬ T1/E1, 7 + 1 EPS protection groups
  - ¬ DS3/E3, 3 + 1 EPS protection groups
- Equipment protection
  - ¬ Power
  - ¬ Controller
  - ¬ Switch
  - ¬ Electrical interface

### Management

- Alcatel-Lucent 1350 Optical Management System (OMS)
- Alcatel-Lucent 1340 Integrated Network Controller (INC)
- Command line interface (CLI)/Simple Network Management Protocol (SNMP): Metro Ethernet configuration
- TL1/CLI/SNMP: MSPP/MSTP configuration
- Secure Shell (SSH) v2/Secure Socket Layer (SSL) for secure connection
- Web-based craft interface for zero-install craft connection

### Environment

***Power and cooling***

- Power supply: DC feed (48-V DC nominal)
- Power consumption: 800 W (typical)
- Cooling: forced air

***Environment***

- Operating temperature: -40°F to +149°F
- Humidity: 0% to 90%, non-condensing

### Regulatory compliance

- CE, UL, FCC, CSA
- Operation: ETS 300 019, Class 3.2
- Storage: ETS 300 019, Class 1.2
- Transportation: ETS 300 019, Class 2.2
- NEBS Level 3

CARRIER ETHERNET MEF Certified Compliant


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