Alcatel-Lucent
1850 TSS Product Family

Alcatel·Lucent

Seamlessly migrate from
SDH/SONET to packet

The Alcatel-Lucent 1850 Transport Service Switch (TSS) products are a family of Packet-Optical Transport switches that support any mix of traffic, from all-circuit to all-packet. The Alcatel-Lucent 1850 TSS products fully leverage existing SDH/SONET networks with carrier-class reliability for packet and TDM services and transport. Using Alcatel-Lucent 1850 TSS models that span from the metro and regional core to the customer premises equipment (CPE), service providers can offer a complete array of TDM and packet services, regardless of the underlying transport, and can seamlessly migrate to pure packet transport when packet traffic dominates.

Transforming your networks

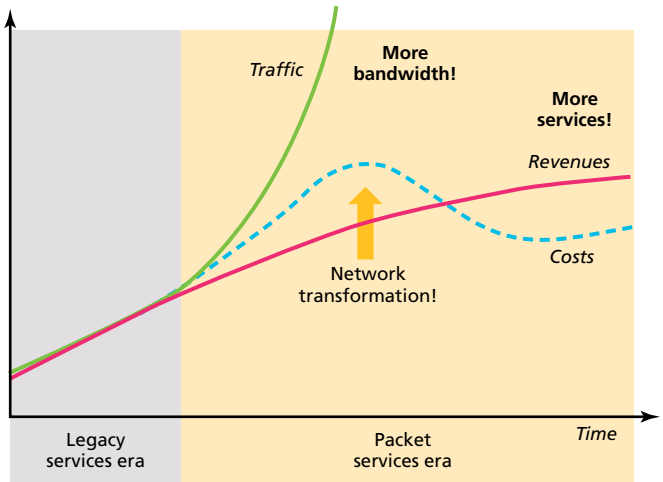
There is an ever-increasing demand for new packet-oriented services from all segments of the market. IP and Ethernet applications for consumers and businesses are emerging across wireless and fixed devices. Video streaming, interactive gaming, high-speed Internet and always-on business services are just a few examples. As shown in Figure 1, service providers face a number of challenges in addressing this dynamic market:

- A network traffic explosion, resulting in lower revenue per bit transported
- The need to expand and deploy future-ready networks while leveraging SDH/SONET assets and expertise
- New-services penetration for predominantly packet-based applications, particularly Carrier Ethernet
- Increasing network complexity from the intricate interaction of multiple services

These forces have created the need for a new approach, Packet-Optical Transport (P-OT). The Alcatel-Lucent 1850 TSS is a pioneering product family for this emerging market segment, offering service providers a powerful tool for seamlessly transforming their transport networks.

The Alcatel-Lucent 1850 TSS provides the features and capacity to deliver a mix of TDM and Ethernet service, leveraging both SDH/SONET and Ethernet transport and using models that range from the metro and regional core to CPE.

Figure 1. Challenges faced by service providers



Alcatel-Lucent and Packet-Optical Transport

The Alcatel-Lucent 1850 TSS family answers the challenges facing service providers. With the Alcatel-Lucent 1850 TSS, service providers can respond with a P-OT solution — packet-optimized networks that leverage the installed SDH/SONET infrastructure and provide carrier-class transport capabilities with strong operations, administration and maintenance (OAM).

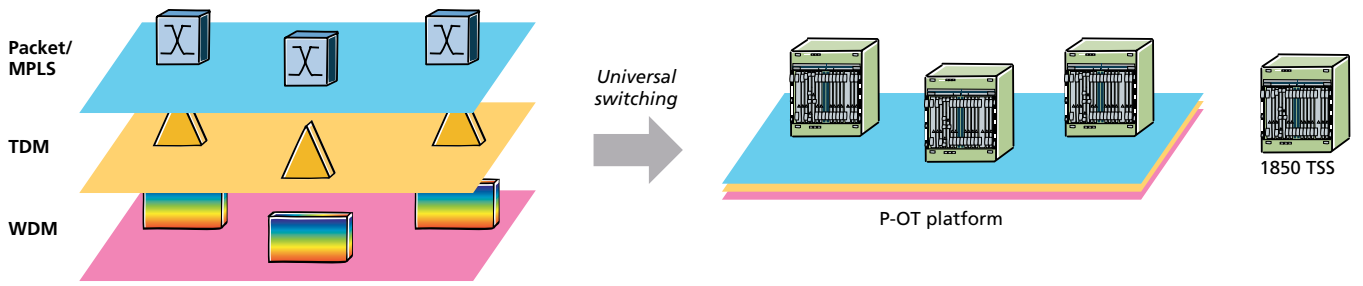
As shown in Figure 2, the Alcatel-Lucent 1850 TSS P-OT approach incorporates the following capabilities:

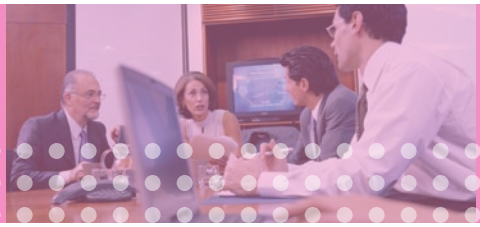
- Converged support for SDH/SONET, Ethernet packet and wavelength division multiplexing (WDM)
- Connection-oriented support for TDM and packet services
- OAM for services and transport

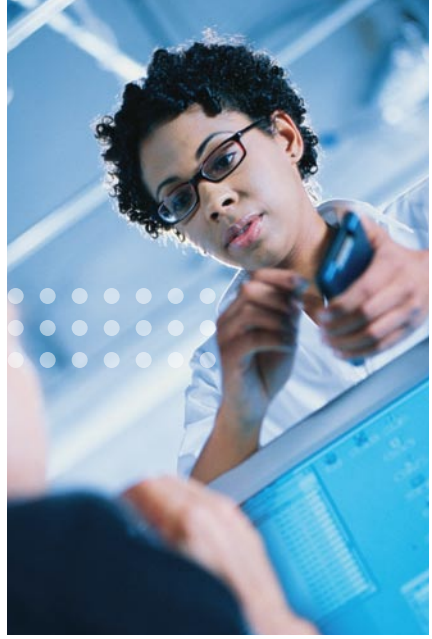
Converged support for SDH/SONET and Ethernet is vital because P-OT systems must support both widely deployed TDM services and traffic from fast-growing IP and Ethernet applications. WDM support is needed to efficiently switch and transport traffic at the optics level. Connection-oriented transport, embodied in the closely related Transport-Multi-Protocol Label Switching (T-MPLS) and MPLS Transport Profile (MPLS-TP), leverages the flexibility of MPLS with transport-oriented OAM features to ensure service reliability and robustness.

The 1850 TSS products have the scale and features for the most challenging network transformations you are facing.

Figure 2. 1850 TSS capabilities







The Alcatel-Lucent 1850 TSS family

Scaling from the metro and regional core to the customer premises, the Alcatel-Lucent 1850 TSS family provides a cost-effective and graceful transformation from SDH/SONET to P-OT.

1850 TSS-320

1850 TSS-160

1850 TSS-100

Alcatel-Lucent 1850 TSS-320/160

The Alcatel-Lucent 1850 TSS-320 and its compact chassis version, the Alcatel-Lucent 1850 TSS-160, are next-generation P-OT platforms for the metro- and regional-core. Their unique universal matrix seamlessly switches packets or circuits in their native format.

With the Alcatel-Lucent 1850 TSS-320/160, you can begin with circuit-based transport and gradually ramp up packet transport by simply changing line cards. They support SDH/SONET up to STM-64/OC-192 as well as Gigabit Ethernet (GE) and 10 GE with rich service and resiliency features and also support reconfigurable optical add/drop multiplexer (ROADM) functionality. The Alcatel-Lucent 1850 TSS-320/160 features the first industry implementation of T-MPLS and will support the closely related MPLS-TP when it is approved.

The Alcatel-Lucent 1850 TSS-320 and Alcatel-Lucent 1850 TSS-160 operate on a common software release, use the same universal-switch matrix architecture and share input/output (I/O) modules to ensure full-feature transparency and operating simplicity.

Alcatel-Lucent 1850 TSS-100

The Alcatel-Lucent 1850 TSS-100 is a high-capacity metro-edge and core switch with rich TDM and Ethernet services and transport features. This product is positioned to provide capacity relief for traditional MSPP networks that have reached their capacity limits and to seamlessly transition to P-OT networks.

The Alcatel-Lucent 1850 TSS-100 shares the innovative Alcatel-Lucent universal-switch matrix architecture and common SDH/SONET hardware modules with the Alcatel-Lucent 1850 TSS-320/160. This architecture and equipment sharing ensures feature transparency and capital expenditure (CAPEX) and operating expenditure (OPEX) savings.

1850 TSS-40

Alcatel-Lucent 1850 TSS-40

The Alcatel-Lucent 1850 TSS-40 supports circuit and packet services over STM16/64 rings using MPLS-based traffic-management mechanisms to support multiple QoS levels. This product enables carrier-class service provisioning and resilience and supports multilayer OAM. It delivers sub-50 ms ring protection for high service availability and end-to-end SLA guarantees over multiring metro-access architectures.

1850 TSS-5

Alcatel-Lucent 1850 TSS-5

The Alcatel-Lucent 1850 TSS-5 is purpose-built for aggregation at the network edge and customer premises. Outside-plant hardened, the Alcatel-Lucent 1850 TSS-5 suits mobile backhaul and is also applicable anywhere TDM and Ethernet services co-exist.

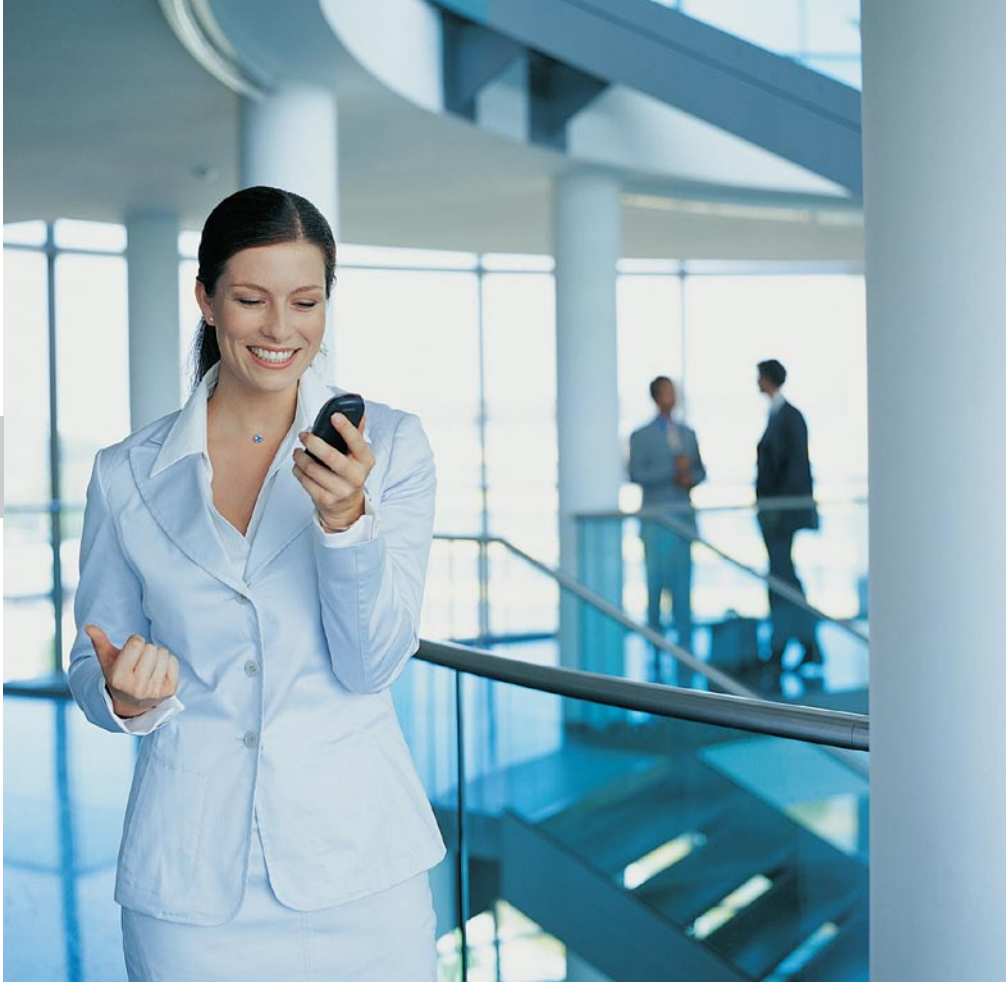
The Alcatel-Lucent 1850 TSS-5 transports any service over any transport: TDM and Ethernet services are supported over SDH/SONET transport as well as over Ethernet transport. For mobile backhaul, the Alcatel-Lucent 1850 TSS-5 provides a single platform that gracefully transitions from SDH/SONET to Ethernet transport. It can be configured for SDH/SONET transport for native TDM and Ethernet over SDH/SONET services. As packet traffic grows with the deployment of Ethernet-enabled 3G and 4G base stations, the 1850 TSS-5 can be reconfigured for Ethernet transport for native Ethernet and can support legacy T1/E1 via circuit emulation service (CES).

1850 TSS-3

Alcatel-Lucent 1850 TSS-3

A carrier-grade network termination unit (NTU), the Alcatel-Lucent 1850 TSS-3 provides intelligent Ethernet service demarcation between the end customer and the service provider, going beyond simple media conversion and physical presence. It provides a rich mix of connectivity and network services, offering diagnostics, service monitoring, protection, QoS, rate limiting and virtual local area network (VLAN) stacking for Metro Ethernet Forum (MEF)-compliant Ethernet services. The Alcatel-Lucent 1850 TSS-3 serves locations with either fiber access or PDH services.

A key feature of the Alcatel-Lucent 1850 TSS-3 is hardware-based Y.1731 Ethernet OAM. Performance data gathered by hardware-based Y.1731 is significantly more accurate than data gathered by software-based mechanisms. More accurate data means stronger QoS and SLA support, key to end-to-end Ethernet service delivery.



Network management

The Alcatel-Lucent 1850 TSS complements any installed Alcatel-Lucent transport platform and interworks with any transport installed base that is currently managed by the Alcatel-Lucent 1350 Optical Management System (OMS). Northbound data interfaces from the Alcatel-Lucent 1350 OMS allow the Alcatel 1850 TSS to be integrated in any multi-vendor data-transport scenario.

Eco-sustainability: green networking

The Alcatel-Lucent 1850 TSS products are developed with attention to footprint, power consumption and in compliance with global ecostandards for materials and packing. These platforms incorporate power saving next-generation electronics and optics components and implement software- and hardware-driven power and cooling enhancements.

Flexible solutions

Service providers must make strategic decisions concerning how to adequately serve the TDM installed base while competing for markets with fast-growing applications and services based on IP and Ethernet. The 1850 TSS product family offers a Layer 1 and Layer 2 approach that leverages existing SDH/SONET network infrastructure, systems and operating expertise. With the Alcatel-Lucent 1850 TSS platforms, service providers can transition gracefully from all-TDM to all-packet transport, while maintaining current transport operating paradigms.

Some key solutions classes supported by the Alcatel-Lucent 1850 TSS family include the following.

Mobile backhaul

Mobile backhaul provides transport from the cell site through the aggregation networks to the MTSO and mobile core. The mobile market is experiencing revolutionary growth in applications innovation and traffic volumes with 3G and 4G services deployment. Deployment of IP and Ethernet devices creates an environment demanding backhaul for both Ethernet and the installed base of TDM traffic. With the Alcatel-Lucent 1850 TSS service providers can backhaul TDM and Ethernet over SDH/SONET or Ethernet, depending on the dominant traffic. As traffic shifts more and more toward Ethernet, the Alcatel-Lucent 1850 TSS allows a graceful transition toward a 100 percent packet network at the pace the service provider chooses.

Triple play

Packet-optical nodes provide an optimized, reliable transport infrastructure for triple play services. Operators globally are responding to customer demands with bundled voice, data and video services. Clearly, video is the bandwidth driver for these services and IP services are critical to cost-effective delivery. The Alcatel-Lucent 1850 TSS can provide efficient traffic aggregation, regardless of the access methods employed, and deliver this traffic to the appropriate service points in the network for IP routing and other higher layer services.

Carrier Ethernet

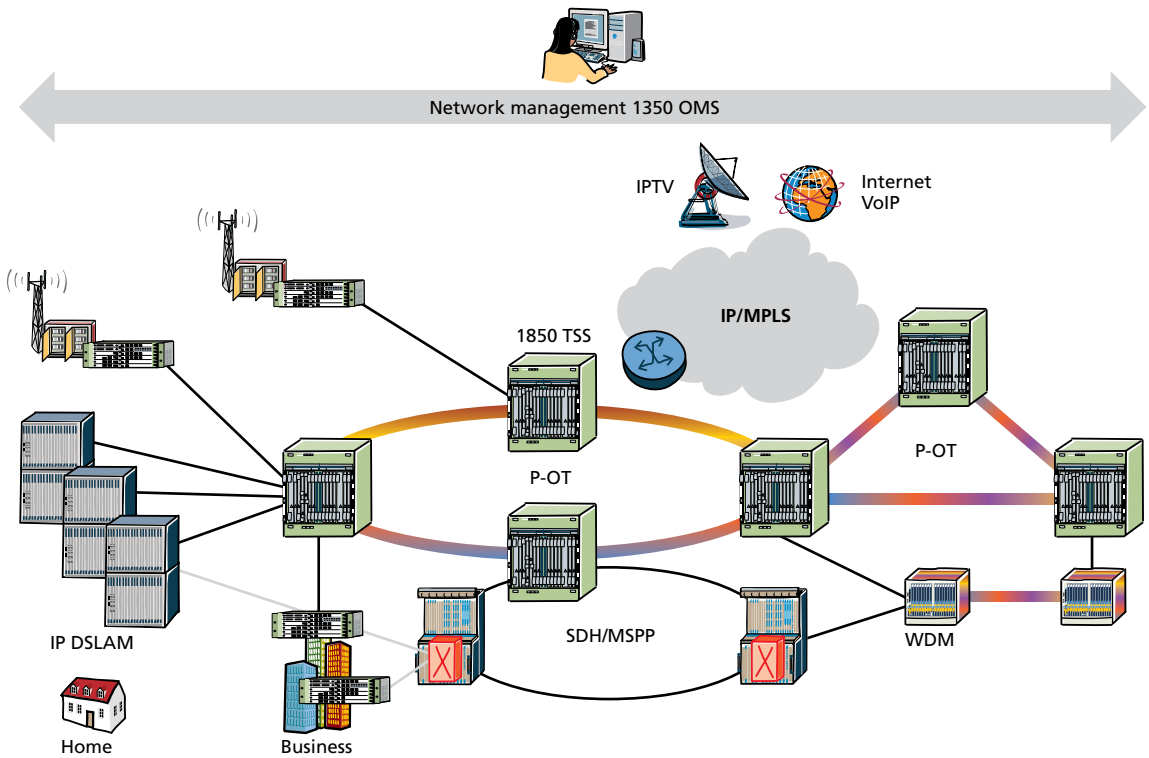
Scalable, robust and secure Ethernet allows service providers to offer Carrier Ethernet service to their business customers and to provide infrastructure for higher level services that rely on Ethernet transport. Key attributes recognized across standards bodies, and enumerated by the Metro Ethernet Forum (MEF), include scalability, hard quality of service (QoS), protection, TDM support through CES, and carrier-class service provisioning and OAM. The Alcatel-Lucent 1850 TSS family offers a range of MEF-certified Carrier Ethernet platforms meeting these criteria.

Industry and public sector (IPS)

The 1850 TSS has the resilience, flexibility and reliability to support real-time, mission-critical business operations. Many large organizations in industry and public sectors, such as utilities, government and large corporations, deploy networks for their internal mission-critical communications. These networks can be leveraged to offer services to other corporations or government entities. Alcatel-Lucent 1850 TSS solutions offer the flexibility to offer high-bandwidth TDM and packet services to multiple customer organizations with high reliability and resiliency.

The Alcatel-Lucent 1850 TSS creates a flexible network that enables quick introduction of new services and allows you to leverage SDH/SONET expertise with transport-oriented packet network operations (see Figure 3).

Figure 3. 1850 TSS solutions



Move to P-OT with confidence

As a leader in optics, transport and MPLS and with a committed and comprehensive vision of packet transport, Alcatel-Lucent is the partner of choice for moving into P-OT. The Alcatel-Lucent 1850 TSS product line delivers complete coverage from the core to the customer premises, offering rich feature support, scalability and transport OAM. The Alcatel-Lucent 1850 TSS enables maximum leverage of current SDH/SONET networks and operations resources with a graceful migration to 100-percent packet transport.

Recognized world leader in optical networking

Alcatel-Lucent delivers end-to-end communications solutions to service providers and enterprises anywhere in the world. Leveraging its networks equipment as well as services, Alcatel-Lucent facilitates its customers' service offerings and revenue streams. As the recognized world leader in optical networking, Alcatel-Lucent is in a unique position to help service providers navigate through current market conditions. Alcatel-Lucent, with its global reach and scale, combined with local presence in over 130 countries, makes use of a deep understanding of global-market dynamics, as well as the ability to anticipate local requirements.

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