

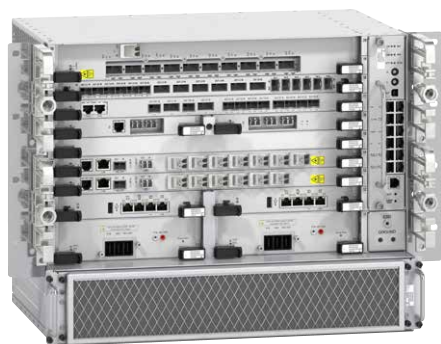
Alcatel-Lucent 1830 PSS-8 and PSS-16 Photonic Service Switch

Release 8

The Alcatel-Lucent 1830 Photonic Service Switch (PSS-8 and PSS-16) provides a high-capacity aggregation and transport solution for optical transport, packet and photonic networks. This solution delivers a versatile, scalable, metro-optimized form factor with distributed switching. The packet-optical transport (P-OT) platforms offer metro networks the scalability, agility and efficiency to maximize revenue generation and ROI by accelerating services availability and improving network operational efficiency.



1830 PSS-8



1830 PSS-16

Features

- Scalable architecture supports up to 1.6 Tb of capacity per shelf to aggregate and transport sub-10G, 10G, 40G and 100G-plus services
- Agile and intelligent no-compromise distributed switching to dynamically reconfigure network resources and deploy services
- Efficient metro-optimized design featuring a flexible backplane, high 10G port density and low power consumption in a compact footprint
- Integrated IP and optical technologies across the data, management and control planes to maximize the design and efficiency of multilayer IP and optical networks

Benefits

- Maximize revenue generation and ROI by accelerating services availability
- Improve network efficiency with increased performance and reduced space and power
- Minimize initial first cost with pay-as-you-grow scaling
- Enable rapid instantiation of on-demand, application-driven network services

Overview

The 1830 PSS-8 and 1830 PSS-16 enhance the widely deployed 1830 PSS portfolio by adding advanced metro-specific features and capabilities. The multifunction platforms are optimized for multiservice metro transport network applications by leveraging Alcatel-Lucent Photonic Service Engine (PSE)-based 100G technology, scalable distributed switching, and a highly-integrated, efficient architecture.

The platforms provide the scalability to support a variety of sub-10G, 10G, 40G or 100G services over 10G/100/200G xWDM channels; the switching agility and intelligence to dynamically reconfigure network resources and deploy services on demand; and a compact and low-power architecture for maximum network operational efficiency.

Like all products in the 1830 PSS portfolio, the PSS-8 and PSS-16 transform a traditional wavelength division multiplexing (WDM) solution into a platform that offers a versatile transport layer with managed agile photonics, multi-layer switched services and network intelligence.

The PSS-8 and PSS-16 extend an already comprehensive range of applications and services supported by the 1830 PSS portfolio, including:

- Business services
- Mobile and broadband backhaul
- Multicast video
- Data Center Interconnect (DCI)
- Cloud services

With 1830 PSS platforms ranging from access through converged Optical Transport Network/wavelength division multiplexing (OTN/WDM) core to long-haul transport, network operators can seamlessly grow and optimize multiservice networks to meet unpredictable traffic demands in the cloud services era.

The Alcatel-Lucent 5620 Service Aware Manager (SAM) provides management for the 1830 PSS portfolio.

Detailed features

Scalability

The PSS-8 and PSS-16 aggregate and transport sub-10G, 10G, 40G and 100G services within and beyond the metro with multidimensional packet, OTN and photonic scalability in a single, compact platform.

- Platform scalability
 - PSS-8 aggregation shelf up to 800-Gb capacity in 3RU
 - PSS-16 small CO shelf up to 1.6-Tb capacity in 8RU
 - High-capacity, slot-to-slot interconnectivity
 - Multi-shelf node scaling
- 100G-and-beyond support
 - In-house PSE innovation
 - Rate-adaptive 100G /200G module
- Integrated OTN/Packet Transport
 - Sub-10G and 10G switching/grooming onto 100G/200G wavelengths
 - High-density n x 10G transport
 - Family of scalable MEF CE 2.0, SR OS-based modules and network interface devices
 - Carrier grade packet transport solution with: SROS-based services model, Ethernet OAM, ERP, LAG, MPLS-TP and PTP
 - Integrated Wavelength Tracker™ (WT) encoding

Agility

Graceful, pay-as-you-grow, scaling with no-compromise distributed switching enables cost-effective and rapid instantiation of high-performance, on-demand, application-driven network services.

- Multiservice transport
 - 10G/100G/200G xWDM lines
 - xWDM lines
 - Client-line connectivity
 - Photonic, packet and OTN switching
 - High-capacity 100G coherent muxponder
- Dynamic photonic layer: Integrated flexible photonic switching with integrated ROADM

- Flexible, open architecture: Four-slot-group interconnectivity for high-capacity, versatile configurations
- On-demand features
 - Rate adaptive 100G/200G
 - Configurable FEC, modulation, power, SE, latency measurement
 - SDN-WAN controller/APIs

Efficiency

The PSS-8 and PSS-16 deliver high performance in a compact, modular and low-power architecture for maximum network operational efficiency.

- Converge multiple metro networks
- Class-leading switching density and power consumption
- SDN toolset to more efficiently visualize and manage network resources
- Metro-optimized architecture
 - Open, flexible backplane
 - High-density, low-power, small-footprint platform
 - Common modules and software stream
 - Backwards compatibility
 - Integrated ROADM
- Optimized 10G transport: High port density and WT encoding
- Network intelligence
 - Distributed control plane/Multiregion Networking (MRN)
 - Common management and operations across the portfolio
 - Network Planning Tool (NPT) for optimized multilayer network planning/deployment
 - SDN-WAN Controller
 - Integrated Wavelength Tracker 2.0

Integrated IP and optical technologies

The PSS-8 and PSS-16 integrate class-leading IP and optical technologies to maximize the design and efficiency of multilayer IP and optical networks.

- Data plane: The Alcatel-Lucent Integrated Packet Transport family of SR OS-based Carrier Ethernet modules enables a fully managed, end-to-end packet solution with a common service, operations and management model across the optical and Ethernet/IP/MPLS portfolio.
- Management plane: The 5620 SAM provides cross-layer visibility and common management tools to simplify operations of a converged IP and optical network.
- Control plane: SDN-enabled control interfaces, multi-layer topology, resource management and path compute capabilities provide optimal IP and optical convergence.

Technical specifications

Applications

- Scalable photonic applications for metro aggregation and core networks
 - ROADM/FOADM with optical transponders
 - ROADM/FOADM with ODUk/packet switched cards
- Metro aggregation nodes offer:
 - Small footprint/power
 - ROADM and ODUk/packet switching capability
 - Pay-as-you-grow expansion
- Backwards compatible with existing products, enabling smooth introduction of new configurations in a variety of deployed networks
- High-capacity multiservice packet/OTN aggregation of sub-10G and 10G services onto a 100G+ carrier
- Data Center Interconnection
- Footprint-optimized Optical Extension Shelf (OES) configuration for high degree nodes
- Small-footprint, start-up ROADM (up to 4D ROADM) or OES configurations
- Extended temperature range (hardened) support for 10G applications

Interfaces

- SDH: STM-1/-4/-16/-64
- SONET: OC-3/-12/-48/-192
- OTN: OTU1/2/2e/4
- Ethernet
 - Fast Ethernet
 - Gigabit Ethernet (GE)
 - 10 GE LAN and WAN
 - 40 GE
 - 100 GE
- Video: SD-SDI/HD-SDI/3D-SDI
- SAN
 - FC-100 (1G FC)
 - FC-200 (2G FC)
 - FC-400 (4G FC)
 - FICON
 - FICON Express
 - ISC-3
 - FC-800 (8G FC)
 - FC-1200 (10G FC)
 - FC-1600 (16G FC)
 - IB SDR (2.5G)
 - IB DDR (5G)

- Pluggable interfaces
 - SFP
 - XFP
 - SFP+
 - QSFP+
 - CFP
 - CFP2

Capacity and performance

- PSS-8: 800G capacity
- PSS-16: 1.6T capacity
- High-capacity slot-to-slot interconnectivity

System configuration

- PSS-8 and PSS-16 support redundant control, power and timing
- Multi-shelf support with redundant control chain
- Extension to existing 1830 PSS platform with full service card compatibility
- Integration with 1830 Versatile WDM Module (VWM) and Alcatel-Lucent 44-channel Mux/Demux SFD44 for more flexibility and scalability

12P120

Full-slot 6x10G transponder or 12x10G as client ports

- Pluggable interfaces
 - 6x SFP+ at client side
 - 6x XFP at line side or client side
 - 6x VOA (optionally for Wavelength Tracker or power management)
- Wave key encoding by Wavelength Tracker Encoder (WTE)-XFPs or VOA
- Client types
 - 10GE, OC-192/STM64 or OTU2/2e on SFP+ ports
 - OTU2/2e on XFP ports
- LO-ODUK grooming and switching
- Remote node interconnect using GCCO/1/2
- Service protection
 - ODUK SNCP
 - Y-cable

1UD200

Full-slot uplink card with one line port

- Configurable line rate
 - 100G mode: PDM-16QAM modulation; SD-FEC or HD-FEC supported
 - 200G mode: PDM-QPSK modulation
- Provides an uplink card to 20P200 or 12P120 through backplane data plane bus

20P200

Full-slot client card with 20x10G client ports

- Client port: SFP+ pluggable modules (B&W, CWDM, DWDM)
 - 10 SFP+ enables integrated WTE support
 - Remote node interconnect using GCCO/1/2
- Client types: 10GE, OTU2/2e, OC-192/STM64
- Application
 - High-capacity 200G Muxponder: 1UD200+20P200
 - ODUK switched Add/Drop Multiplexer (10G/sub-10G to 100G/200G lines): 1UD200+20P200
 - 40x10G ODUK switched card pair (utilizing mate interconnection)
 - ODU2/1/0/flex grooming and switching

IROADM

Single-slot, full-height module supporting 1D to 4D ROADM configurations

- In-service ROADM degree growth
- Card type
 - Short-span (up to 50 km) IROADMF
 - Long-span (up to 100 km) IROADMV
- Support for 10G, 100G and 200G transport
- Integrates:
 - Ingress/egress amplifiers
 - Wavelength Selective Switching (WSS)
 - Optical Supervisory Channel (OSC)
 - Wavelength Tracker channel monitoring
- Compatible with existing ROADM architecture

Physical dimensions (PSS-8)

- Height: 133 mm (5.2 in.)
- Width: 438.9 mm (17.2 in.)
- Depth: 325 mm (12.7 in.)

Physical dimensions (PSS-16)

- Height: 354.8 mm (13.9 in.)
- Width: 440 mm (17.3 in.)
- Depth: 325 mm (12.7 in.)

Power

- PSS-8
 - Max. 1200 W (up to 240 W/slot)
 - Typical: 520 W
- PSS-16
 - Max. 2400 W (up to 240 W/slot)
 - Typical: 1350 W
- Power supply
 - 48 V DC or 110 /220 V AC
 - External AC converter (110/220V->48V)

Operating temperature

- PSS-8
 - -5°C to +55°C (23°F to 131°F)
 - -40°C to +65°C (-40°F to +149°F) for Outside Plant (OSP) deployments
- PSS-16
 - -5°C to +55°C (23°F to 131°F)

Humidity

- 5% to 95% non-condensing

Regulatory and standards compliance

- PSS-8
 - EMC level: Class A,
- PSS-16
 - EMC Level: Class A
- Details in following table

Table 1. Regulatory and standards compliance

ANSI STANDARDS	ETSI STANDARDS
Supported countries	
<ul style="list-style-type: none"> • Canada • United States 	<ul style="list-style-type: none"> • Europe • Latin America • Asia Pacific • Middle East and Africa
EMC (Class A)	
<ul style="list-style-type: none"> • ICES-003, Issue 4, February 2004, Class A (Canada) • Telcordia® GR-1089-CORE, Issue 6, May 2011 (NEBS Level 3) • Telcordia Special Report SR-3580, Issue 3, January 2007 • FCC 47CFR15, Class A Part B (2006) 	<ul style="list-style-type: none"> • EN 300 386 v1.6.1 (2012-4) (CE) • CISPR 32 - (2008) Class A. (1G ~ 6 GHz) • CISPR 24 - First edition (1997-09) and Amendment 1 (2001-07) and Amendment 2 (2002-10) • EN 55032: Ed2006 + A1:2007: Class A (Class B is objective) • EN 55024:1998 - CENELEC Amendment A1:2001 and Amendment A2:2003 • VCCI V-3/2006.04 (Japan) • EU Directive 2014/30/EU • EC Directive 93/465/EEC • ES 201468 (1.3.1), ITC (Class A)
EMC (Class B): Class B is objective	
<ul style="list-style-type: none"> • Telcordia GR-1089-CORE Class B Limit (may cover FCC) • FCC 47CFR15 Class B Limit • ICES-003, Issue 4, Class B Limit 	<ul style="list-style-type: none"> • EN 300 386 v1.5.1 OTC • ES 201468 (1.3.1) OTC (Class B) • EN 55022: Ed2006 + A1:2007: Class B • CISPR 22 Class B
Safety	
<ul style="list-style-type: none"> • UL/CSA 60950 - 1 • Telcordia GR-1089-CORE, Issue 6 • Telcordia GR-63-CORE (NEBS Requirements: Physical Protection) • FDA 21 CFR 1040, Laser Notice No. 50 to CDRH • ITU-T G.664(2006) - G.783 (ALS/APR) 	<ul style="list-style-type: none"> • IEC 60950-1:2005 (2nd Edition); Am 1:2009 • EN 60950-1-1:2006 + A11:2009 • EN 60825-1, Edition 2.0, 2007-03 • EN 60825-2 Third Edition, 2010-09
Environmental	
<ul style="list-style-type: none"> • Telcordia GR-63-CORE, Issue 4 • Telcordia GR-3108-CORE (Equipment, Class 2 (-40C~+65C) 	<ul style="list-style-type: none"> • EN 300 019-1-1 (Storage, Class 1.2) • EN 300 019-1-2 (Transportation, Class 2.3) • EN 300 019-1-3 (Operational, Class 3.2) -5C~+45C • EU WEEE directive 2002/96/EC • EU RoHS6: RoHS2.0 Directive 2011/65/EC • China RoHS regulation
Power and grounding	
<ul style="list-style-type: none"> • Telcordia GR-1089-CORE, Issue 6, section 10 (DC) • ANSI T1-315 [DC module] (PSI) 	<ul style="list-style-type: none"> • ETS 300 132-2 (DC) • ETS 300 132-1 (AC)
Acoustic noise	
<ul style="list-style-type: none"> • Telcordia GR-63-CORE (78dB at 27C ambient temperature) • Telcordia GR-3108-CORE (acoustic refers to GR-63) 	<ul style="list-style-type: none"> • EN 300 753, Environmental Class 3.2 • YDT 1816-2008
Miscellaneous	
<ul style="list-style-type: none"> • Mechanical Shock & Bumps <ul style="list-style-type: none"> – Telcordia GR-63 Zone-4 (earthquake) – YD-5083 • Country-specific requirements: <ul style="list-style-type: none"> – AS/NZS 60950.1:2003: Information technology equipment - Safety- General requirements 	
Railway	
<ul style="list-style-type: none"> • EN 50121-4: Railway applications – Electromagnetic compatibility – Part 4 • IEC 62236-4 (2008-12): Railway applications – Electromagnetic compatibility – Part 4 	
Power substation	
<ul style="list-style-type: none"> • IEEE 1613 • IEC 61850-3: Communication networks and systems in substations – Part 3 • IEC 61000-6-5(2001-7,HV): Electromagnetic compatibility (EMC) – Part 6-5 	

