

DATA SHEET

Packet Switching Modules For Z-Series Packet-Optical Platforms

Packet Switching (PSW) modules are highly scalable packet switching and transport modules for Ciena's Z-Series Packet-Optical Platforms.

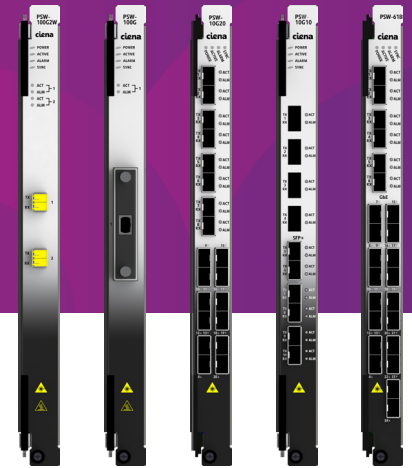
Optimized for high-capacity Carrier Ethernet transport, aggregation, switching, and service delivery in any of the Z-Series platforms, the five modules are distinguished by different port configurations:

- PSW-100G2W supports two integrated 100G coherent interfaces using Ciena's Wavelogic 3 Nano coherent technology
- PSW-100G supports one 100GbE CFP interface
- PSW-10G20 supports 20 10GbE (SFP+) interfaces, or up to eight GbE and 12 10GbE
- PSW-10G10 supports 10 10GbE (4 XFP and 6 SFP+) interfaces
- PSW-618 supports six 10GbE SFP+ and 18 GbE SFP interfaces

All PSW modules provide non-blocking, line-rate switching concurrently across all ports, with granular traffic management and Connection-Oriented Ethernet (COE) transport to ensure superior performance, scalability, and economics compared to traditional router solutions. Support for optional Optical Transport Network (OTN) mapping with Forward Error Correction (FEC) further optimizes packet transport over optical networks.

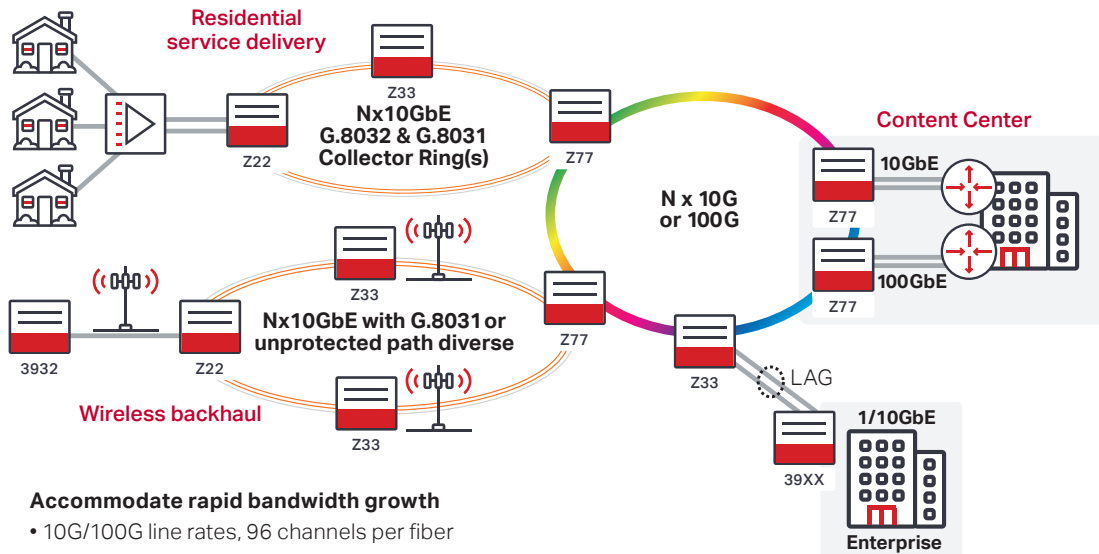
The PSW-100G2W is the newest addition to the PSW family of line cards. It provides two coherent 100G line interfaces that enable high density and efficient transport of traffic originating from other cards in the PSW family such as the PSW-10G20. With the PSW-100G2W and PSW-10G20, operators can offer GbE, 10GbE, and 100G services through cards that enable 200G of capacity per card, maximizing the density and capacity of the Z-Series.

PSW modules share a common connectivity into Z-Series chassis and backplanes. In the Z77, PSW modules interconnect through the 2.8 Tb/s switching fabric. In the



Features and benefits

- Supports advanced Ethernet services: E-Line, E-LAN, E-Access, and E-Tree
- Offers flexible connectivity with GbE, 10GbE, and 100GbE interfaces
- Features scalable, high-capacity aggregation from sub-1GbE to 100GbE
- Facilitates increased performance and scale with COE using PBB-TE
- Provides equipment and network-level protection, as well as hitless software upgrades, to maximize uptime
- Simplifies multi-layer management, visibility, and service orchestration via Ciena's Planet Operate software
- Fits in Z22, Z33, and Z77 platforms for investment protection, common sparing/inventory, and operational consistency



Accommodate rapid bandwidth growth

- 10G/100G line rates, 96 channels per fiber

Advanced Ethernet features for differentiated services

- Performance-assured CE 2.0 services
- G.8031 and G.8032v2 sub 50ms protection
- Advanced QoS mappings

Z33, PSW modules interconnect through the four-slot mesh between slots 1 to 4. In the Z22, PSW modules interconnect using the two primary adjacent slots.

The PSW modules support COE transport functionality using IEEE 802.1Qay to optimize service performance and scalability. In addition, the PSWs support fine-grained QoS with VLANs at both the provider (IEEE 802.1ad) and customer (IEEE 802.1Q) levels to enable advanced Ethernet services.

Ciena's Planet Operate software manages the PSW modules and Z-Series network elements to provide multi-layer management, visibility, and control for scalable, high-performance services with capital and operational efficiency.

Key features

- Aggregation of sub-1GbE to 10GbE and 100GbE on blade or across chassis using the Z77 2.8 Tb/s switch fabric, Z33 full-mesh, or Z22 backplane
- High-density integrated 100G WaveLogic 3 Nano coherent interface for line side transport over DWDM network
- Advanced Ethernet services: E-Line, E-LAN, E-Access, E-Tree
- Simple, multi-vendor A-to-Z provisioning of Ethernet services via Ciena's Planet Operate software

- Advanced Ethernet OAM enabling advanced, carrier-grade SLAs
- COE for high-performance transport and network efficiency based on IEEE 802.1Qay
- ITU-T G.975 Generic Forward Error Correction (GFEC) on DWDM trunk for improved system reach and performance
- OTUk service identifiers on DWDM trunks for granular tracking and visibility
- Supports pluggable optics (SFP, SFP+, XFP, and CFP) for interface and reach flexibility
- Supports jumbo frames (up to 16,000 bytes) for increased utilization of network bandwidth
- Enables simple service migration from legacy Ethernet switches for redeployment and reuse in less transport-intensive applications

Applications

- Aggregation and grooming of Ethernet services into 10GbE and 100GbE
- 10GbE switching with OTU2 and 100GbE switching with OTU4 for transport over OEO or ROADM optical networks
- Achieving transport-grade SLAs with packet services
- 1GbE, 10GbE, and 100GbE router connectivity

Technical information

Optical Transport

Optional 10GbE rates: OTU2, OTU2E or OTU1E (PSW-10G10: all ports; PSW-10G20: up to 12 ports; PSW-618: up to 4 ports)
Optional 100GbE rate: OTU4
Optional ITU-T G.709 and OTN support on all DWDM interfaces
Optional ITU-T G.975 GFEC and Enhanced Forward Error Correction (EFEC)

Interfaces

PSW-100G2W optical ports: 2 x 100G coherent ports cards with integrated WaveLogic 3 Nano optics, LC fiber interface, QPSK modulation, 50 GHz channel spacing, Tunable across 96 channels, ITU channels 13.5 to 61, OTU4 with SD-FEC. Nominal 1200 Km reach (with EDFAs)
PSW-100G: 1 x 100GbE LAN (CFP)
PSW-10G20: 20 x 10GbE LAN/WAN (SFP+), up to 8 of the 20 ports also support GE mode
PSW-10G10: 10 x 10GbE LAN/WAN (four XFP and six SFP+)
PSW-618: 6 x 10GbE LAN/WAN (SFP+) and 18 GbE or 10/100 Ethernet LAN (SFP)
Physical: Front access, CFP, SFP+, SFP, XFP

Capacity

Up to 200 Gb/s switch capacity per module
256K MAC addresses per module
32K VLANs per module (maximum hardware capacity)
32K Ethernet point-to-point or EVPL service flows per chassis (maximum hardware capacity)

Synchronization

Sync-E (Synchronous Ethernet)

Ethernet Services

EPL, EVPL, EP-LAN, EVP-LAN, Access-EPL, Access-EVPL, Tree-EPL, Tree-EVPL services with local bridging between UNI-N and NNI port
VLANs (IEEE 802.1Q)
Q-in-Q (IEEE 802.1ad)
VLAN classification and manipulation based on provider and/or customer VLAN tag
MAC bridging (IEEE 802.1D)
Ethernet service OAM (ITU Y.1731, IEEE 802.1ag)
Link Aggregation Control Protocol (LACP) including IEEE 802.1AX), single- or cross-card
Provider Backbone Bridging – Traffic Engineering (PBB-TE, IEEE 802.1Qay)
Ethernet Ring Protection ITU-T G.8032v2 with sub-50ms switch times
ITU-T G.8031 Linear Protection with sub-50ms switch times
IGMP snooping

QoS

P-bit priority QoS (IEEE 802.1p)
8 class of service queues per port
Weighted Fair Queuing (WFQ) scheduling
Early Discard congestion management
Per-EVC ingress bandwidth profiles
Per-port, per-UNI and per-EVC ingress policing
Per-EVC egress bandwidth profiles / shaping
BUM policers (per port) and BUM storm control

Software and Management

Hitless software upgrades
802.1ag Connectivity Fault Management
Port Mirroring
MAC-swap terminal loopback
A-to-Z provisioning via Planet Operate
SNMP v2, CLI, TL1

Physical

Module dimensions
Depth: 11.6" (295 mm)
Width: 1.2" (30.5 mm)
Height: 13.8" (350 mm)
Weight:
PSW-618, PSW-10G10: 4.8 lbs (2.18 kg)
PSW-100G: 6.5 lbs (2.95kg)
PSW-10G20: 4.9 lbs (2.22kg)
PSW-100G2W: 7.0 lbs (3.18kg)

Power

Dual -48 VDC power feeds to module slots
Power consumption:
PSW-618, PSW-10G10, PSW-100G: 150 watts nominal
PSW-10G20: 170 watts nominal
PSW-100G2W: 245 watts nominal

Environmental

0° to 40° C operating temperature
5% to 85% operating relative humidity (non-condensing)
13,000 ft (4,000 m) altitude

Compliance/Safety

UL/CSA Listed
CE-Marked: EN 60950, EN 55022, EN 61000, ETSI EN 300 386 V.1.3.3
CB Scheme Certified 60950
FCC, Subpart B, Part 15, Class A, GR-1089
RoHS Compliant

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