Optical Networking Solutions

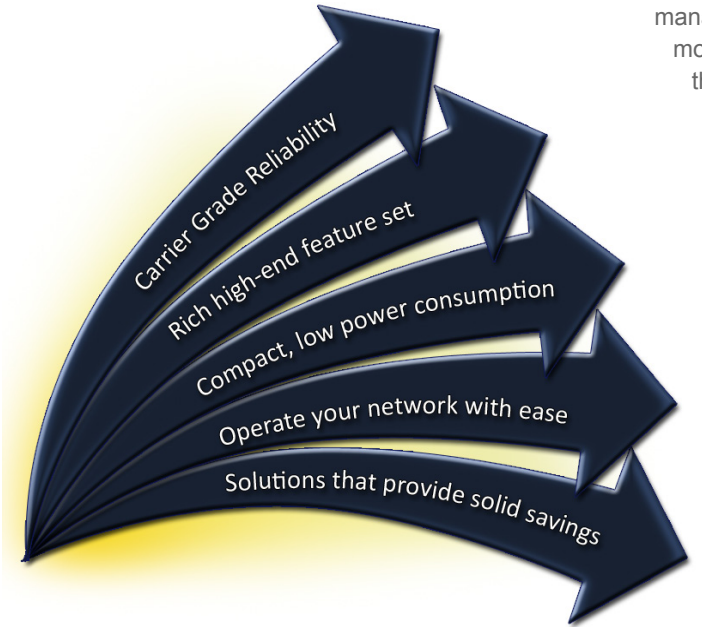
for Telcos and Enterprises

PacketLight™ NETWORKS

Complete Solutions Set for WDM and Dark Fiber Applications

FEATURE OVERVIEW

- CARRIER CLASS FEATURE SET
- INTEGRATED OTN LAYER
- MULTIRATE TRANSPONDERS
- MUXPONDERS FOR HIGH WAVELENGTH UTILIZATION
- SUPPORTS 1.5Mbps UP TO 100Gbps
- SCALES UP TO 96 WAVELENGTHS
- AMPLIFICATION OVER LONG DISTANCES
- LAYER-1 ENCRYPTION FOR SERVICES: GbE, 10G, 40G Eth, 4G/8G/10G and 16G FC
- PERFORMANCE MONITORING
- SUPPORTS SINGLE OR DUAL FIBER
- SUPPORTS TUNABLE DWDM OPTICS
- LOW LATENCY CONNECTIVITY
- HOT SWAPPABLE PSU AND FAN
- EMS/NMS MANAGEMENT PLATFORM
- COMPACT 1U DEVICES
- SIMPLE TO INSTALL AND CONFIGURE
- COST-EFFECTIVE CPE DEVICE



Building agile CWDM/DWDM infrastructure based on the latest technologies providing rich feature set combined with flexible network design to meet the most demanding network needs.

PacketLight's carrier-class CWDM, DWDM and OTN optical platforms offer the flexibility to build a cost-effective, highly efficient network for enterprises, telcos and managed services providers. PacketLight products are compact highly integrated solutions that meet the challenges faced by operators with simplified plug and play deployment and easy management for transport networks, data centers, storage facilities and enterprise connectivity.

PacketLight's product portfolio is designed with the following feature set:

Carrier Grade Reliability
PacketLight Networks offers reliable, carrier grade CWDM, DWDM and OTN solutions that ensure access to business and critical data while protecting investment with scalable, pay-as-you grow architecture without service disruption, and carrier class service with guaranteed SLA (Service Level Agreement).

Rich High-end Feature Set
PacketLight's unique, integrated (1U) architecture is carrier grade feature rich and allows scalability, manageability and ease of use and maintenance to support any WDM infrastructure from simple Point-to-Point networks to carrier class metro access rings and linear add-and-drop networks.

Flexibility and Scalability
PacketLight's product suite offers multirate Transponders, Muxponders, Optical Amplification, pluggable optics and ROADM to provide unlimited flexibility to build a cost effective, scalable, highly efficient optical network infrastructure for carriers, enterprise campuses and Data Centers.

Compact, Low Power Consumption Solution
PacketLight products present the leading edge in small footprint WDM products. They have the highest port density in 1U footprint, thus decreasing the cost of space and power consumption, the two issues that are the biggest challenges for data centers and central offices.

Operate Your Network With Ease

PacketLight's NMS/EMS LightWatch and the built-in free web based management tools provide remote configuration, performance monitoring, fault management, and ease of administration capabilities that enable a user to quickly adapt to the equipment without complicated education process.

Solutions that Provide Solid Savings

PacketLight's modular design allows customers true pay-as-you-grow architecture to significantly decrease CAPEX. In addition, simplified operation and remote management eliminate high maintenance cost decreasing the overall OPEX of the organization.

100G METRO AND LONG HAUL MUXPONDER/TRANSPONDER PLATFORMS

PacketLight's product platform PL-1000GM/GT/T is unique 1RU Metro and Long Haul 100G Muxponder/ Transponder. The PL-1000GM/GT/T is an OIF standards based 1RU 100G platform that aggregates Multirate Multiprotocol 8G/10G and 40G services such as 10G/40G Eth, 8G/10G FC and OC192/STM64, OTU2/OTU3 in a single 100G OTU4 uplink trunk. PacketLight's 100G solutions offer multirate transport capability and a smooth transition from 10G/40G to 100G client interfaces. All solutions can operate over existing 10G networks and seamlessly grow to 100G network. The PL-1000T supports CFP2 and can be used as 100G OTU4 Transponder or as 100G Eth media convertor.

OTN TRANSPONDER PLATFORM

The PL-1000TN is a carrier-class 1U metro CWDM/DWDM platform with a built-in OTN option for transporting 10Gbps of data, SDH/SONET and storage applications over dark fiber and WDM networks. PL-1000TN capabilities, dimensions and competitive cost make it the ideal solution for evolving Metro Ethernet networks, long distance enterprise networks as well as central office connectivity and backbone networks. The 1000TN supports up to six 10G services. Each service is configured independently, using PacketLight's user-friendly web-based management tool.

METRO NETWORKS LOW LATENCY TRANSPONDER PLATFORMS

PacketLight's 1000TE/PL-1000/PL-400 are all-in-one optical transponders, Low Latency, C/DWDM Multirate transponder. The product suite, supporting 8G FC, 10G and 16G FC as well as sub-services. PacketLight platforms provide rich feature set, cost effective compact 1U and low power consumption Transponder based solution. They are designed as efficient transport devices and support a full spectrum of sub-10G and 8G/10G and 16G FC services used for data, SAN, Video and SDH/SONET networks. All our platforms are CLE equipment ideal for satisfying Data Center and Enterprise Transport Needs.

LAYER-1 ENCRYPTION SOLUTION

PL-1000TE-Crypto provides transparent low latency layer-1 encryption solution for both Ethernet and Fiber Channel protocols up to 80G in compact 1U chassis. The PL-1000TE-Crypto is a multi-rate, multi-service DWDM transponder supporting innovative cryptographic capability for 1G/10G/40G Ethernet LAN and 4/8/10/16G FC storage services. With this capability, the PL-1000TE-Crypto provides added security benefit to any DWDM or OTN link by encrypting the data passing between the sites.

OTN MUXPONDER SOLUTIONS

PacketLight's family Muxponder solutions provide transparent multiplexing of up to 16 multirate/ multiprotocol sub-10G services into a single protected 10G OTU2 wavelength or dual independent OTU2 uplinks thus aggregating into a 20G link. With its multiprotocol and multirate support, the OTU2 uplink can aggregate simultaneously SDH/SONET, Eth, Fiber channel and HD-SDI, SD-SDI Video services, thus providing a perfect access platform for multiple clients' needs in an elegant 1U box.

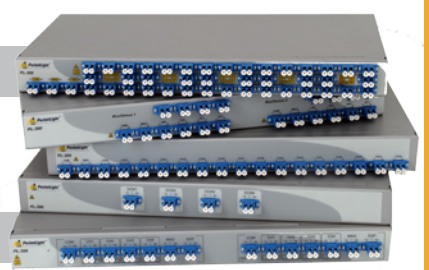
RECONFIGURABLE OPTICAL ADD DROP SOLUTIONS

The PL-1000RO offers the ROADM functionality based on the most advanced next generation WSS (wavelength-selective switching) technology. The PL-1000RO is configured dynamically to add/drop selected wavelengths at any node in the network and seamlessly change the network node capacity as needed. In addition, it automatically maintains the equalization and power balance of the added and bypass wavelengths. The PL-1000RO also integrates EDFAs delivering effective long distance DWDM solutions. Colorless, directionless supporting mesh and both 50GHz and 100GHz ITU grids.

OPTICAL AMPLIFICATION SOLUTIONS

The PL-1000IL is designed to extend the power link budget of DWDM solutions in a cost effective manner. The PL1000IL provides amplification for a range of optical solutions starting from 4 wavelengths to up to full C-Band and incorporates 6 main types of low-noise EDFAs (Erbium-Doped Fiber Amplifiers) Booster, Inline, Midstage, Pre-Amplifier and RAMAN.

DWDM and CWDM PASSIVE MULTIPLEXING SOLUTIONS



The PL-300 family of products extend PacketLight's optical network solution capabilities by providing a wide range of passive optical modules: Mux/Demux, DCM, OADMs. The PL-300 supports both Single Fiber and Dual Fiber infrastructure.

LightWatch OSS MANAGEMENT

LightWatch EMS/NMS is a carrier-class element/network management system for network configuration, provisioning, monitoring and management. Fully compliant with TMN standards, the LightWatch system features advanced FCAPS capabilities

PL-2000AD

200G Optical Transport Solution

The PL-2000AD is an advanced 200G ADM in just 1RU targeted for next generation Metro and Long Haul Applications

FEATURE OVERVIEW

Next generation versatile 200G capacity platform with low power consumption and compact 1U dimensions

Supports multiple user configurable operation modes: Muxponder, Transponder and ADM

Supported clients:
10G LAN, 8G/10G/16G/32G Fibre Channel, STM64/OC192, OTU2, OTU2e, 40G LAN, OTU3, 100G LAN, OTU4

Standards based ITU-T G.709 Forward Error Correction (FEC) GFEC for short haul applications, or HD-FEC and SD-FEC for metro and long haul applications

Dual pluggable CFP2 Coherent tunable DWDM line interfaces

Layer-1 GCM-AES-256 based Encryption

Comprehensive Line and Service performance Monitoring

Integrated EDFAs, Mux/Demux, Optical Switch, providing solution in a box

Remote management with In-band or out-of-band Optical Supervisory Channel (OSC)

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports standard MSA pluggable SFP+ (8G/10G/16G/32G client), QSFP+ (40G client), QSFP28 (100G client) and CFP2 (uplink)

Operates with both dual or single fiber

200G MULTIPROTOCOL MULTIRATE MUXPONDER / TRANSPONDER / ADM FOR METRO AND LONG HAUL OPTICAL TRANSPORT SOLUTIONS

PL-2000AD is the PacketLight's 200G multi-protocol multi-rate Muxponder/ Transponder/ADM solution for building high capacity optical transport networks. Its flexible architecture enables the same device be used in multiple applications and adapt to network growth and changes.

The PL-2000AD product provides high transport capacity of up to 200G in a modular and cost-effective way for rolling out services. It fully meets the market demands for low power consumption, rack space savings and reduction in the overall solution CAPEX and OPEX by increasing the capacity of enterprise, metro and long haul networks.

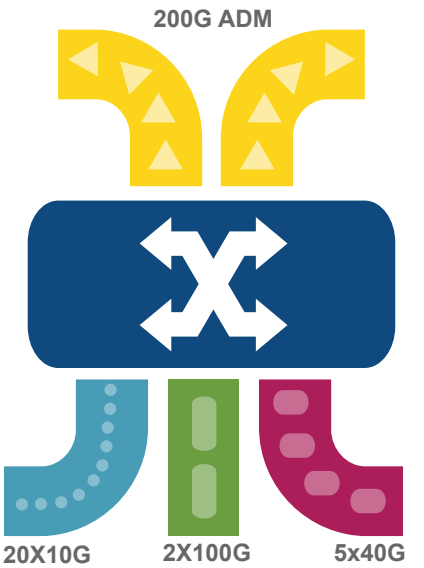
The PL-2000AD supports flexible mix of 10G/40G/100G client interfaces protocols and aggregating them into a 100G OTU4 uplinks. The platform supports various client services, thus allows an easy migration from current to future service requirements (protocols and rates) without replacing the unit.

The PL-2000AD 1U device supports up to two integrated optical amplifiers. It is the smallest, most integrated transport solution of its kind reaching up to 200Km/42dB without intermediate sites and 2500Km with Inline sites.

The PL-2000AD seamlessly integrates with PacketLight's PL-2000 and PL-1000TN to deliver-carrier, grade high-end 100G solutions capable of serving multiple applications and protocols for Enterprise/Data Center, Metro and Long Haul networks such as Data, Storage, TDM, ATM and Video.

Ideal for Metro and Long Haul networks applications ranging up to 2,500km such as:

- High capacity enterprise and campus networks
- Dynamic add/drop of services in ring, linear add/drop topologies
- High bandwidth connectivity for data center and cloud computing
- Last mile access/aggregation CPE for 10G/40G/100G managed service
- Providing 100G links over existing OTN/DWDM infrastructure
- Secured and encrypted communication



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

Product Configurations

Dual 10x10G Mux-ponder	Up to 20 multi-service 10G clients aggregated to 2x OTU4 uplinks
40G and 16x10G Mux-ponder	40G LAN and up to 16 multi-service 10G clients aggregated to 2x OTU4 uplinks
Dual 40G and 12x10G Muxponder	2x 40G LAN and up to 12 multi-service 10G clients aggregated to 2x OTU4 Uplinks
Dual 100G Transponder	2x 100GbE LAN mapped to 2x OTU4 uplinks
100G Transponder and 10X10G Muxponder	100GbE LAN mapped to one OTU4 uplink and up to 10 multi-service 10G clients aggregated to second OTU4 uplink
Optical Amplifiers	Optional up to two EDFA modules
Mux/Demux	Optional 2ch Mux/Demux module
Optical Switch	1+1 Facility Protection

Uplink Characteristics

Bit Rate	LongHaul Metro	127.157Gbps (OTU4v with 20% SD FEC) 111.8Gbps (GFEC)
Optical Interface		CFP2 Coherent (ACO)
Tune-ability range		DWDM ITU-T G.694.1 GRID Channels 13-60.5 ,with 50GHz spacing
FEC Support		Standard ITU-T G.709 GFEC, Enhanced HD-FEC, or SD-FEC
Optical Output Power		2dBm to -2dBm
Optical Reach & Sensitivity		Long Haul: -25dBm, 12.8dB OSNR up to 2,500Km Metro:-25dBm, 18.2dB OSNR up to 1,150Km
Optical Monitoring		Tx and Rx Power, Dispersion, OSNR

Client Interfaces Characteristics

Service type	10GbE LAN/WAN, 40GbE LAN, 100GbE, 8G/10G/16G/32G FC, STM-64/OC-192 OTU2, OTU2e, OTU3, OTU4
Optical Interface	SFP+: LR(1310nm), SR (850nm), ER (1550nm) , ZR (1550nm) and C/DWDM QSFP+:LR-4 (1310nm), SR-4 (850nm) QSFP28: LR-4 (1310nm), SR-10 (850nm)

Amplifier

Applications	Booster, Pre-Amp
Output Power	Booster: +4 to +14 dBm Preamp: +5 dBm
Input Power	Booster: 0 to +10 dBm Pre-Amp: -25 to -9 dBm
Gain	Booster: +4 to +14 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)

Approvals & Standards

CE, FCC, RoHS, REACH
ISO 9000, NEBS Compliant

Network Management

Management Ports	• 2x RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RJ-45 Serial port • RJ-45 External Alarm port • OTN GCC Inband channel
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Log, Alarms Automatic Laser Shut-Down (ALS)
Performance Monitoring	Layer 1 PM for all Services Layer 2 PM for Ethernet OTN PM for Uplinks Optical Power RX levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Power Supply

AC/DC	~100 to ~240 VAC, -36 to -72 VDC, 350W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Environmental

Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RH

Physical Dimensions

Size	1.77" (1 RU) (H) x 17.32"(W) x 11.22"(D) 45 mm (H) x 440mm (W) x 285 mm (D)
Weight	8.5Kg / 18.75 lb (Max)
Mounting	19", ETSI and 23"

Encryption

Functionality	Full speed transparent Layer 1 encryption for selected clients or for the OTU4 uplinks
Compliancy	FIPS 140-2 Level 2 NSA Suite B
Algorithms	Encryption/Decryption: GCM-AES-256 Key Exchange: ECC CDH Message Digest: SHA-256
Authentication	Role based User/Password authentication

PL-1000GT

PL-1000GT Coherent 100G Long Haul Solution

The PL-1000GT is an advanced 1U Multiservice 8G/10G/40G/100G coherent Muxponder/Transponder for Long Haul applications

FEATURE OVERVIEW

Highest 100G density feature set in the market. Compact 1U platform with low power consumption ideal for long haul 100G applications up to 2,000Km

Various Muxponder configurations for aggregation services into a single Coherent OIF standard base 100G OTU4 Uplink:

- **10 x 10G**
- **1x40G + 6x10G**
- **2 x 40G + 2x 10G**

100G coherent Transponder mode supporting 100GBase-SR10/LR4/ER4

Supported clients:
10G LAN/WAN, 8G/10G Fibre Channel, STM64/OC192, OTU2,OTU2e, 40GBase-SR4/LR4, OTU3, OTU3e, 100GBase-SR10, LR4, ER4

Standards based ITU-T G.709 100G Forward Error Correction (FEC) GFEC

Supports Full C-Band Tunable DWDM Line sides

Comprehensive Line and Service performance Monitoring

Integrated EDFA

Remote management with In-band or Out-band Optical Supervisory Channel

Dual DC feeding and pluggable FAN Unit

Supports standard MSA client pluggable SFP+ (8G/10G), QSFP+ (40G), and CFP (100G)

Operates on both dual or single fiber

100G OTU4 OTN COHERENT MUXPONDER & TRANSPONDER SUPPORTING 8G/10G/40G/100G SERVICES

The PL-1000GT is PacketLight's 100G Multiprotocol Multirate Muxponder/ Transponder for high capacity long haul optical transport solutions.

It is ITU-T OIF standard based platform for providing a unified 100G optical transport layer supporting various client services including: 40G/100G LAN, 10G LAN/WAN, STM64/OC-192, OTU2/3/4 and 8G/10G FC over a single coherent 100G OTU4 wavelength.

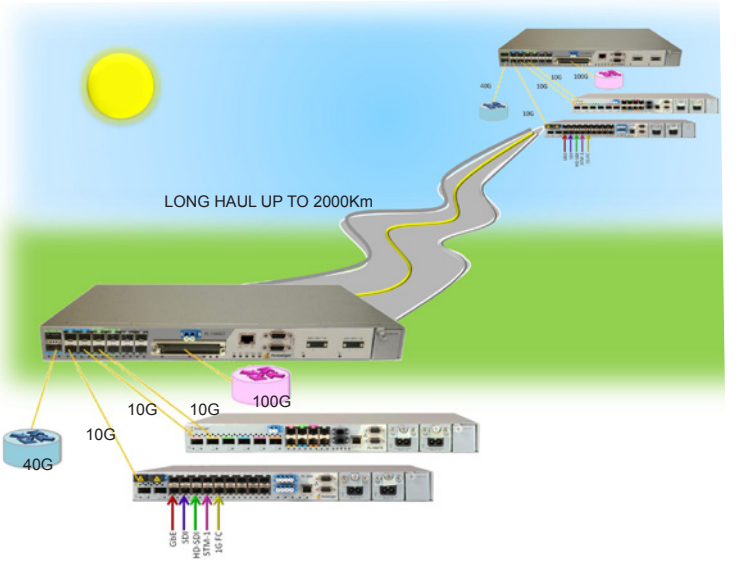
The PL-1000GT is designed to provide 100G transport solution in modular and cost effective way for building long distance networks. It uses pluggable optical modules on all the client optical interfaces, as well as standard based protocols on both client and line side. It is targeted for meeting the market demands for low power consumption, rack space savings and reduction in the overall solution CAPEX and OPEX by increasing the spectral efficiency of the optical transport solution by a factor of 10.

The PL-1000GT resolves the market dilemma of having to choose between 40G and 100G solutions by mapping up to two 40G clients into a 100G uplink. The platform thus allows migration from current to future service requirement (protocols and rates) seamlessly without infrastructure replacement.

The PL-1000GT integrates with PacketLight's PL-2000 and PL-1000TN to deliver carrier-grade, high-end OTN network solutions capable of serving multiple applications and protocols of Data, Storage, TDM, ATM and Video networks.

Highly suitable for applications such as:

- Building efficient Long-haul networks up to 2000Km spans
- Increasing the capacity and spectral efficiency of existing 10G/40G long-haul networks
- Implementing backbone for Utility, Oil and Gas and mining industry
- High bandwidth connectivity for data center and cloud computing



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

Product Configurations

10x10G Muxponder	Up to 10 Multiservice & rate 10G clients mapped each to ODU2 and aggregated to OTU4 100G uplink
1x40G and 6x10G Muxponder	Up to 6 Multiservice & rate 10G clients mapped each to ODU2 and 40G LAN mapped to ODU3 aggregated to OTU4 100G uplink
2x40G and 2x10G Muxponder	Up to 2 Multiservice & rate 10G clients mapped each to ODU2 and 2x 40G LAN mapped to ODU3 aggregated to OTU4 100G uplink
100G Transponder	100GbE LAN to OTU4 100G uplink
EDFA	Optional EDFA module

Uplink Interface

Bite Rate	127.157GHz (OTU4v with 20% SD FEC)
Optical Interface	DWDM OIF standard based coherent
Tune-ability range	ITU-T G.694.1 Channels 15-60,with 50GHz spacing
FEC Type Support	Standard ITU-T G.709 GFEC or enhanced HG-FEC
Optical Reach	2000Km, 40,000ps/nm
Optical Output Power	0dBm
Sensitivity	-18dBm, OSNR with SD FEC 14dB
OTN Overhead	OTU4/ODU4 OH monitoring

Client Interfaces

Service type	10GbE LAN/WAN, 40GbE LAN, 100GbE LAN, 8G/10G FC, STM-64/OC-192, OTU2, OTU2e, OTU2f,
Optical Interface	SFP+ : LR(1310nm), SR (850nm), ER (1550nm) , ZR (1550nm) CWDM/DWDM QSFP+ : LR-4 (1310nm), SR-4 (850nm) CFP: LR-4(1310nm), SR-10 (850nm), ER-4 (1310nm)

Amplifier

Applications	Booster, Pre-Amp
Output Power	Booster: +14dBm, +17dBm Preamp: +5 dBm
Input Power	Booster: -24 to +16 dBm Preamp: -36 to -15 dBm
Gain	Booster: +10 to +22 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Network Management

Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port • OTN GCC Inband channel
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, ALS Event Logger Alarms
Performance Monitoring	Layer 1 PM for all Services OTN PM for Uplink Optical Power RX levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier, system Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Power Supply

DC	-48VDC, 6A max, Dual feeding
Cooling Unit	Hot Swappable Fan Unit

Environmental

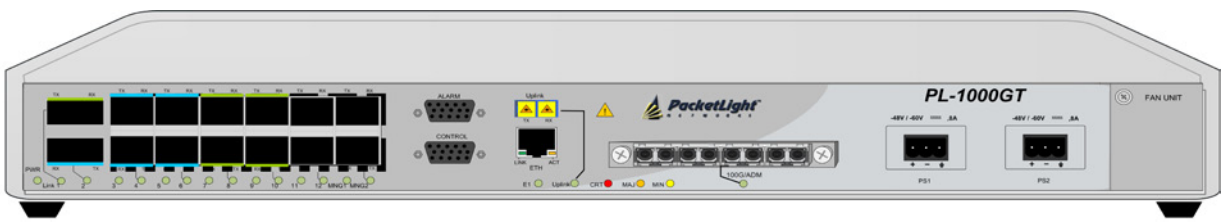
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Physical Dimensions

Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	8Kg / 17.64 lb (Max)
Mounting	19”, ETSI and 23”

Approvals & Standards

	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant



PL-1000GM

Multirate 10G/40G/100G Optical Transport Solution

The PL-1000GM is an advanced, Multiservice 8G/10G/40G/100G Muxponder/Transponder solution for Metro Applications

FEATURE OVERVIEW

Highest 100G density feature set in the market. Compact 1U platform with low power consumption ideal for CPE (Customer Premises Equipment)

Various Muxponder configurations for aggregation services into a 100G OTU4 DWDM Uplink:

- **10 x 10G**
- **1 x 40G + 6 x 10G**
- **2 x 40G + 2 x 10G**

100G Transponder mode

Supported clients:
10G LAN/WAN, 8G/10G Fibre Channel, STM64/OC192, OTU2, OTU2e, 40GBase-SR4/LR4, OTU3, OTU3e, 100GBase-SR10

Standards based ITU-T G.709 100G Forward Error Correction (FEC) GFEC

Supports pluggable line side, CFP: Coherent, 4x28Gbps DWDM. LR4, ER4

Comprehensive Line and Service performance Monitoring

Integrated EDFAs, Mux/Demux, DCM

Remote management with In-band or Out-band Optical Supervisory Channel

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports standard MSA pluggable SFP+ (8G/10G client), QSFP+ (40G client), CXP (100G client) and CFP (uplink)

Operates on both dual or single fiber

100G MULTIPROTOCOL MULTIRATE MUXPONDER/ TRANSPONDER FOR METRO AND DATA CENTER HIGH CAPACITY SOLUTIONS

The PL-1000GM is PacketLight's 100G Multiprotocol Multirate Muxponder/ Transponder for high capacity optical transport solutions.
It is highly integrated platform for providing a unified 100G optical transport layer- supporting various client services including protocols: 40G/100G LAN, 10G LAN/WAN, STM64/OC-192, OTU2/3 and 8G/10G FC.

The PL-1000GM is designed to provide 100G transport solution in modular and cost effective way for rolling out services. It uses standards based, pluggable optical modules on all the optical interfaces on both client and line side. It is targeted for meeting the market demands for low power consumption, rack space savings and reduction in the overall solution CAPEX and OPEX by increasing the capacity of enterprise and metro networks.

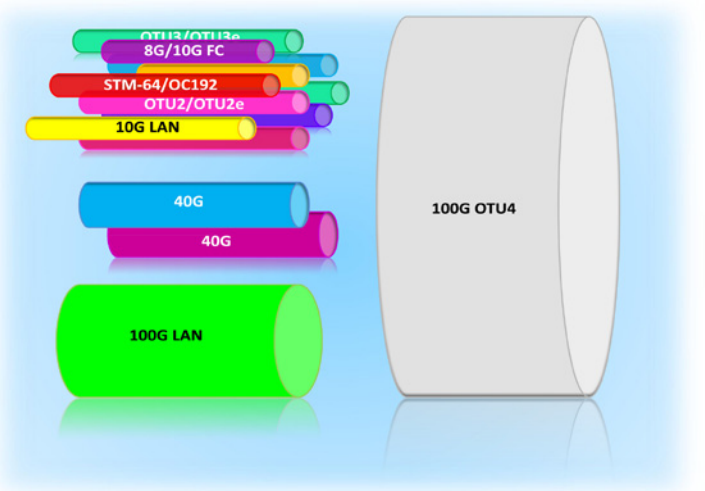
The PL-1000GM supports a flexible mix of 10G/40G client interfaces for current and future needs aggregating them into a 100G uplink. The platform thus allows migration from current to future service requirement (protocols and rates) without the need to replace the unit.

The PL-1000GM seamlessly integrates with PacketLight's PL-2000 and PL-1000TN to deliver-carrier, grade high-end 100G solutions capable of serving multiple applications and protocols for Enterprise/Data Center and Metro networks ranging from the Data, Storage, TDM, ATM and Video networks.

The PL-1000GM 1U device supports up to two integrated optical amplifiers, Mux/Demux and DCM providing the smallest, most integrated transport solution of its kind reaching up to 120Km without intermediate sites.

Ideal for Metro networks applications ranging up to 200km such as:

- High capacity enterprise and campus networks
- High bandwidth connectivity for data center and cloud computing
- Last mile access/aggregation CPE for 10/40/100G managed service
- Providing 100G links over existing infrastructure



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

Product Configurations	
10x10G Muxponder	Up to 10 Multiservice & rate 10G clients mapped each to ODU2 and aggregated to OTU4 100G uplink
1x40G and 6x10G Muxponder	Up to 6 Multiservice & rate 10G clients mapped each to ODU2 and 40G LAN mapped to ODU3 aggregated to OTU4 100G uplink
2x40G and 2x10G Muxponder	Up to 2 Multiservice & rate 10G clients mapped each to ODU2 and 2x 40G LAN mapped to ODU3 aggregated to OTU4 100G uplink
100G Transponder	100GbE LAN to 100G OTU4 uplink
Optical Amplifiers	Optional up to two EDFA modules
DCM	Optional tunable or fixed DCM
Mux/DeMux	Optional 4ch Mux/DeMux module

Uplink Characteristics	
Bite Rate	112Gb/s
Optical Interface	CFP LR-4 WDM 4 x 28Gb/s OTU4
Tune-ability range	DWDM ITU-T G.694.1 Channels 15-60,with 50GHz spacing
OTN Support	Standard ITU-T G.709 GFEC or enhanced HG-FEC
Optical Reach	25Km
Optical Output Power	0dBm-2dBm per lane
Sensitivity	-10dBm, 19dB OSNR
Optical Monitoring	Tx and Rx Power per lane

Client Interfaces Characteristics	
Service type	10GbE LAN/WAN, 40GbE LAN, 100GbE, 8G/10G FC, STM-64/OC-192 OTU2, OTU2e, OTU2f
Optical Interface	SFP+: LR(1310nm), SR (850nm), ER (1550nm) , ZR (1550nm) and C/DWDM QSFP+:LR-4 (1310nm), SR-4 (850nm) CXF:SR-10 (850nm)

Amplifier	
Applications	Booster, Pre-Amp
Output Power	Booster: +4 to +14 dBm Preamp: +5 dBm
Input Power	Booster: 0 to +10 dBm Pre-Amp: -25 to -9 dBm
Gain	Booster: +10 to +22 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)

Mux/DeMux	
Channels	4 DWDM channels
Spacing	100GHz
Insertion loss	<4dB end to end

Network Management	
Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port • OTN GCC Inband channel
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Logger, Alarms, ALS
Performance Monitoring	Layer 1 PM for all Services OTN PM for Uplink Optical Power RX levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

DCM	
DCM Type	Tunable DCM or Fixed DCM
Fiber Type	G.652
Fiber Span	20-100Km
Max insertion loss	<5dB
Standard	ITU G.671

Power Supply	
AC/DC	~100 to ~240 VAC, -36 to -72 VDC, 180W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	7.5Kg / 17.64 lb (Max)
Mounting	19”, ETSI and 23”

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

PL-1000T

100G Transponder Solution

PL-1000T is an advanced, 100G 1U, Demarcation Transponder Solution Providing Affordable 100G Connectivity over Dark Fiber or OTN

FEATURE OVERVIEW

Compact 1U demarcation platform with low power consumption ideal for CPE (Customer Premises Equipment) and Data Center Environment

100G Transponder mode supporting 100GBase-SR10/LR4/ER4 Client Interface

Standards based ITU-T G.709 100G Forward Error Correction (FEC) GFEC

Supports pluggable line side, CFP: Coherent, 4x28Gbps DWDM, LR4, ER4

Comprehensive Line and Service performance Monitoring

Integrated EDFAs, Mux/Demux, DCM

Remote management with In-band or Out-band Optical Supervisory Channel

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports standard MSA pluggable optics-
Uplink -CFP
Client - CFP & CFP2

Operates on both dual or single fiber

Support for 1+1 facility protection

1U, 100G TRANSPONDER PLATFORM FOR METRO AND DATA CENTER HIGH CAPACITY SOLUTIONS

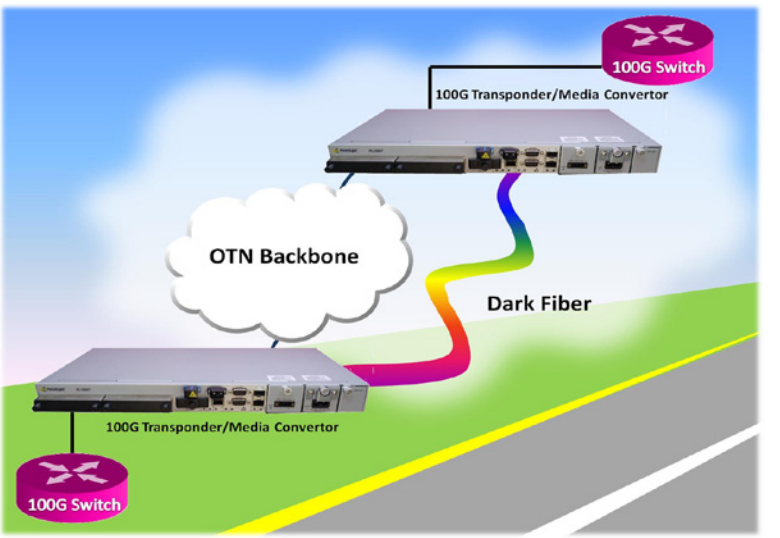
The PL-1000T is PacketLight's 100G Transponder for high capacity optical transport solutions.
It is highly integrated platform for providing a unified 100G optical transport layer- supporting various 100G client services including LR4/ER4 and SR10 and seamlessly interface with any third party equipment.

The PL-1000T provides 100G transport solution in modular and cost effective way for rolling out 100G services. It uses standards based, pluggable optical modules on all optical interfaces on both client and line side. It is designed for meeting the market demands for low power consumption and rack space savings thus reducing the overall solution CAPEX and OPEX and increasing the capacity of enterprise and metro networks.

The PL-1000T 1U device supports up to two integrated optical amplifiers, Mux/Demux and DCM providing the smallest, most integrated transport solution of its kind reaching up to 200Km/42dB without intermediate sites and 1200Km with Inline sites..

PL-1000T is ideal for the following applications:

- High capacity enterprise and campus networks ranging up to 1200km
- Acting as a media convertor between the different 100G optical interfaces
- High bandwidth connectivity for data center and cloud computing
- CPE for 100G managed services
- Providing 100G links over existing infrastructure



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

Product Configurations	
100G Transponder	100GbE LAN to 100G OTU4 uplink
100G Media convertor	Converting 100GE LAN optical modules
Optical Amplifiers	Optional up to two EDFA modules
DCM	Optional tunable or fixed DCM
Mux/DeMux	Optional 4ch Mux/DeMux module

Uplink Characteristics	
Bite Rate	112Gb/s
Optical Interface	CFP LR-4 WDM 4 x 28Gb/s OTU4
Tune-ability range	DWDM ITU-T G.694.1 Channels 15-60,with 50GHz spacing
OTN Support	Standard ITU-T G.709 GFEC or enhanced HG-FEC
Optical Reach	25Km
Optical Output Power	0dBm-2dBm per lane
Sensitivity	-10dBm, 19dB OSNR
Optical Monitoring	Tx and Rx Power per lane

Client Interfaces Characteristics	
Optical Interface	CFP: LR-4(1310nm), SR-10 (850nm), ER-4 (1310nm) CFP2: LR-4 (1310nm)

Amplifier	
Applications	Booster, Pre-Amp
Output Power	Booster: +4 to +14 dBm Preamp: +5 dBm
Input Power	Booster: 0 to +10 dBm Pre-Amp: -25 to -9 dBm
Gain	Booster: +10 to +22 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)

Mux/DeMux	
Channels	4 DWDM channels
Spacing	100GHz
Insertion loss	<4dB end to end

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

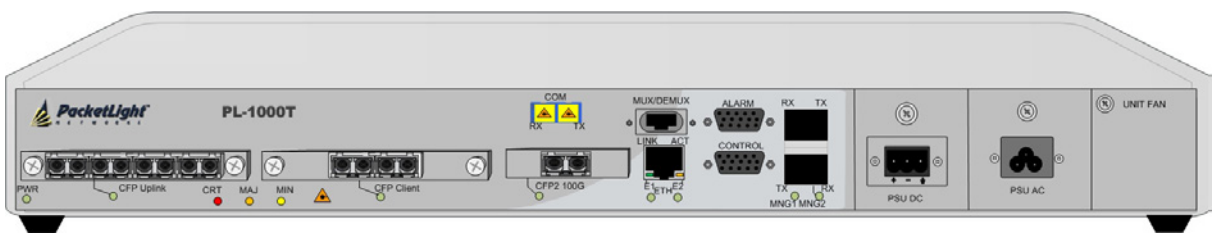
Network Management	
Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port • OTN GCC Inband channel
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or Telnet/SSH TL1 over RS-232 or Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Logger, Alarms, ALS
Performance Monitoring	Layer 1 PM for all Services OTN PM for Uplink Optical Power RX levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

DCM	
DCM Type	Tunable DCM or Fixed DCM
Fiber Type	G.652
Fiber Span	20-100Km
Max insertion loss	<5dB
Standard	ITU G.671

Power Supply	
AC/DC	~100 to ~240 VAC, -36 to -72 VDC, 160W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Physical Dimensions	
Size	1.77" (1 RU) (H) x 17.32"(W) x 9.05"(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	7.5Kg / 17.64 lb (Max)
Mounting	19", ETSI and 23"



PL-2000

Multiprotocol / Multirate Muxponder

The PL-2000 is an advanced Multiprotocol/Multirate Muxponder with flexible uplink aggregation capacity of up to 20G

FEATURE OVERVIEW

Increasing the spectral efficiency of CWDM/ DWDM networks with user configurable Single or Dual Low Latency 10G Muxponders

Up to 16 multiprotocol and multirate services aggregation over a single or dual independent 10G wavelengths

Service type supported are:
Fast Ethernet, GbE, 1/2/4G FC/FICON, STM-1/OC-3, STM-4/OC-12, STM-16/OC-48, DVB-ASI, SD-SDI, HD-SDI, and 3G HD-SDI

Dual standard based Optical Transport Network (OTN) OTU2 Uplinks

Supporting three Forward Error Correction (FEC) and EFEC types

1+1 Facility uplink protection

Supports both Line and Service performance monitoring

Optional integrated EDFA and/or MUX/DEMUX modules

Cost-effective, compact 1U platform with low power consumption ideal for CLE (Customer Located Equipment)

Remote management with In-band or Out-band Optical Supervisory Channel (OSC)

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports standard MSA SFPs (client) and XFPs (uplink) & C-Band Tunable XFPs

PRODUCT DESCRIPTION

The PL-2000, a member of PacketLight's Muxponder Family, is a perfect solution for simplifying the management and maintenance as well as reducing the overall cost of CWDM/DWDM solution. The PL-2000 significantly lowers the number of wavelengths needed for the CWDM/ DWDM network as well as the number of required filters thus reducing the size and cost of EDFA's and the management complexity of the network.

The PL-2000 provides an efficient and flexible aggregation layer of multiprotocol/multirate sub-10G services into 10G uplink trunk thus reducing the number of wavelengths needed for a sub-10G solution by a factor of 8 on average. Increasing fiber utilization and spectral efficiency of data transport further reduces the solution cost and operation complexity.

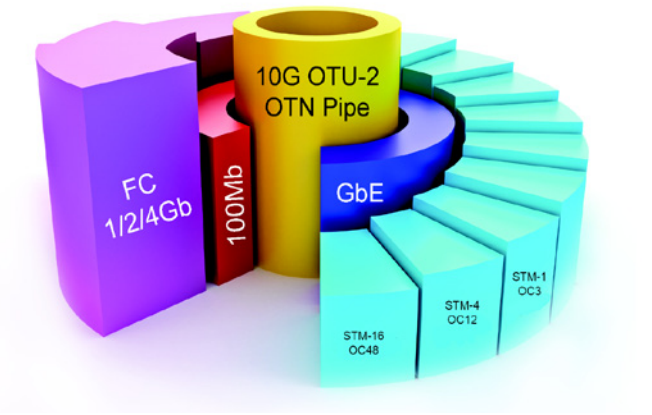
With its multiprotocol and multirate support, the 10G OTU2 uplink can aggregate simultaneously SDH/SONET, Eth, Fibre Channel and Video services, thus providing a perfect access platform for multiple clients' needs and allows merging of legacy and new services transparently.

PacketLight's PL-2000 transparently multiplexes up to 16 client services into a single or dual independent 10G wavelengths, in an elegant, transparent layer-1, ultra low latency mapping to 10G uplink pipe without packet loss and with Enhanced Forward Error Correction (EFEC) suitable for extremely long distance amplified DWDM network.

PL-2000 is fully integrated with PacketLight's WDM product family. The PL-2000 can be managed by HTTP/ HTTPS web browsers, CLI, PacketLight's EMS or by any 3rd party SNMP system.

This solution fits perfectly:

- Service providers multi service access platform
- Transporting multi-services over long distance optical network
- Upgrading legacy infrastructure with new services
- Building efficient and flexible CWDM/DWDM solutions for Enterprises
- Fast deployment of services over existing OTN Networks



PacketLight Networks

www.packetlight.com

TECHNICAL SPECIFICATIONS

System	
Topology	Point to point or Ring
Transport Network Medium	Access/Metro CWDM/DWDM or Dark Fiber
Protection	1+1 Facility

Product Configurations	
Dual 10G OTU2 Muxponder	Up to 16 Multiservice & rate clients mapped over two independent OTU2 uplinks
Single protected 10G OTU2 protected uplink	Up to 16 Multiservice & rate clients mapped over protected OTU2 uplink
EDFA	Optional EDFA module
Mux/Demux	Optional Mux/Demux module

Amplifier	
Output Power	14,17,20 or 23dBm
Input Power	-36 dBm up to 16 dBm
Gain	10 dB to 22 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Mux/Demux	
Channels	2/4/8 CWDM or DWDM Channels
Spacing	50/100GHz (for DWDM)

Muxponder Uplink	
Bit Rate	10.7092G (OTU-2)
Optical Interface	Pluggable XFP transceiver
OTN support	• ODU1 VCAT Mapping to OTU2 • Supported FEC types: - G.709 GFEC (RS) - G.975.1 I.4 - G.975.1 I.7
Muxponder Service	
Service Type	• Optical or Copper GbE • FC/FICON 1G, 2G or 4G • Optical or Copper Fast Ethernet • STM1,STM4, STM16 • OC3, OC12, OC48 • DVB-ASI, SD-SDI, HD-SDI and 3G HD-SDI
Bit Rate	100 Mbps to 4.25 Gbps
Optical/copper Interface	Pluggable SFP transceiver

Network Management	
Ports	CONTROL, LAN, OSC, External Alarms
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS
Management Applications	Web browser over HTTP/HTTPS, PacketLight EMS or 3rd party EMS over SNMP, CLI over RS-232 or Telnet/SSH
OAM	• Facility Loopback • Event Logger • Alarms • Automatic Laser Shutdown (ALS) • External Alarms
Performance Monitoring	• Intervals of Layer-1 errors, current and previous day errors • Optical power RX/TX levels
Inband Management	Embedded channel in the overhead of the Muxponder uplink signal
Visual Indicators	LED status indicators for optical ports, Critical,/Major/Minor alarms, Amplifier, power supply and system
Software Upgrade	Traffic Hitless-dual image

Management Ports and Physical Interfaces	
CONTROL	RS-232, BD-9
LAN	10/100MBase-T, RJ-45
OSC (MNG1 & MNG2)	100 Base-FX, SFP
Inband Channel	Based on GCC OTN overhead
External Alarms	1-Input and 1-Output, DB-9

Power Supply	
AC/DC	~100 to ~240 VAC, -36 to -72 VDC, 68W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Physical Dimensions	
Size	1.77”(1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm(H) x 440mm (W) x 230 mm (D)
Weight	5.5 Kg / 12.1lb (Max)
Mounting	19”, ETSI and 23”

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

PL-1000TN

High Capacity OTU2 Optical Transport Unit

The PL-1000TN is an advanced, highly integrated 8G/10G OTU2 OTN solution with transport capacity of 60G within compact 1U

FEATURE OVERVIEW

Cost-effective, compact 1U platform with low power consumption ideal for CLE (Customer Located Equipment)

6 independent standard based Multirate OTU2 OTN transponders

Providing full OTN managed layer

Supported clients:
10G LAN/WAN, 8G/10G Fibre Channel, STM64/OC192

Supports G.Sup43 standard mappings

Three Forward Error Correction (FEC) types: GFEC, EFEC and UFEC

Supports Full C-Band Tunable DWDM Line sides

1+1 Facility uplink protection

Comprehensive Line and Service performance monitoring

Optional integrated EDFAs , Mux/Demux and/or Optical Switch modules

Remote management with In-band or Out-band Optical Supervisory Channel (OSC)

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports standard MSA pluggable SFP+ (client) and XFPs (uplink)

Operates on both dual fiber or single fiber solutions

UP TO 6 MULTIPROTOCOL TRANSPONDERS FOR MAPPING 8G/10G SERVICES OVER OTU2 NETWORKS

The PL-1000TN is a member of PacketLight's Optical Transport Network family. It is highly integrated solution for unified transport of different protocols such as 10G LAN/WAN, STM64/OC-192 and 8G/10G FC over common optical transport layer.

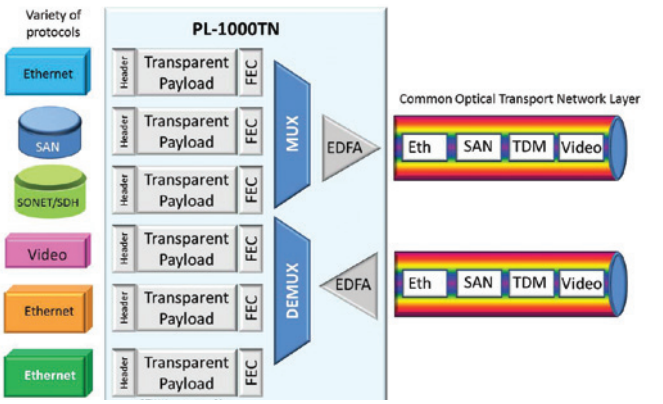
The PL-1000TN 1U device supports up to two integrated optical amplifiers and Mux/Demux providing the smallest integrated transport solution of its kind.

The PL-1000TN is designed to meet the market demands for low power consumption, rack space savings and reduction in the overall solution CAPEX and OPEX.

The OTN layer provides two additional key benefits:
1) Easy common management and maintenance of the optical layer infrastructure regardless of the service type.
2) Enhanced Forward Error Correction forming an effective ROADM based solutions.

This solution fits perfectly to the following applications:

- Transporting 8G/10G clients over long distance optical network
- Edge CPE device for end to end managed services over carrier OTN backbone Robust Packet optical network infrastructure
- ROADM based applications as Multirate OTN transponder
- Building efficient CWDM/DWDM solutions for Enterprises
- Reducing the cost of backbone solution by reducing the number of required regenerators



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

System

Topology	Point to point, Ring, Linear Add Drop over Dual or Single Fiber
Transport Network Medium	Access/Metro CWDM, DWDM or Dark Fiber/Long Distance Optical fiber networks/OTN OTU2 Backbone networks
Protection	1 + 1 Facility

Product Configurations

Multirate OTU2 Transponder	• Non APS: Up to 6 independent client signals mapped into corresponding OTU2 line protocols • APS 1+1: Up to 3 dual independent client signals mapped into corresponding 10G OTU2 line protocols
Multirate Transparent Transponder	• Non APS: Up to 6 transparent transponders • APS: Up to 3 Multirate transparent transponders
Multirate Regenerators	Up to 3 Multiservice clients Regenerators
EDFA	Up to two EDFA modules
Mux/Demux	Up to two Mux/Demux modules
Optical Switch	1+1 APS <50Ms Switch Time Optical Module

Optical Amplifier

Output Power	14,17,20 or 23dBm
Input Power	-36 dBm up to 16 dBm
Gain	10 dB to 22 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Mux/Demux

Channels	4/8/16 CWDM or DWDM Channels
Spacing	50/100GHz (for DWDM)

Line (Uplink)

Protocols	• OTU2 (10.709) • OTU1e (11.049) as per G.Sup43 • OTU2e (11.095) as per G.Sup43 • OTU1f (11.27) • OTU2f (11.317)
FEC Types	• G.709 GFEC (RS) • G.975.1 EFEC I.4 • G.975.1 UFEC I.7
Optical Interface	Up to 6 Pluggable XFP transceiver • DWDM , Tunable DWDM • CWDM

Client Service

Client Protocols	• 10GBE LAN/WAN (10.312/9.953) • 8G/10G FC (8.5G/10.518) • STM64/OC192 (9.953)
Optical Interface	Up to 6 Pluggable SFP+ transceiver • 850nm Multi Mode • 1310nm Single Mode

Network Management

Ports	CONTROL, LAN, OSC, External Alarms
Protocols	SNMP, FTP, HTTP/HTTPS, Telnet/SSH
Management Applications	Web browser over HTTP/HTTPS, PacketLight NMS/EMS or 3rd party EMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	• Facility Loopback • Event Logger • Alarms • Automatic Laser Shutdown (ALS) • External Alarms
Performance Monitoring	• Intervals of Layer-1 errors ,current and previous day errors. • Optical power RX/TX levels
Inband Management	Embedded channel in the overhead of the OTU2 uplink
Visual Indicators	LED status indicators for optical ports, Critical,/Major/Minor alarms, Amplifier, power supply and system
Software Upgrade	Traffic Hitless- dual image

Management Ports and Physical Interfaces

Control	RS-232, BD-9
LAN	10/100MBase-T, RJ-45
OSC (MNG1 & MNG2)	100 Base-FX, SFP
Inband Channel	Based on GCC OTN overhead
External Alarms	1-Input and 1-Output, DB-9

Power Supply

AC/DC	~90 to ~246 VAC, -36 to -72 VDC, 70W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Environmental

Operating Temperature	-5° C to 55° C (+23° F to+131° F) Operational
Humidity	5% to 85% RHI

Physical Dimensions

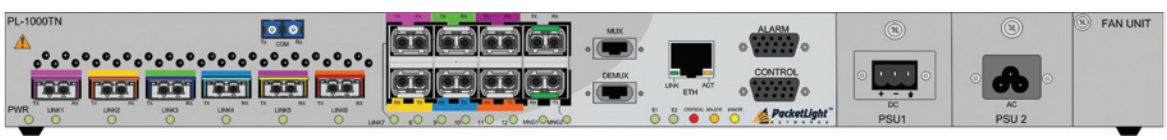
Size	1.77”(1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm(H) x 440mm (W) x 230 mm (D)
Weight	5.5 Kg / 12.1 lb (Max)
Mounting	19”, ETSI and 23”

Approvals & Standards

	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

Configuration

Licensed Based	2,4,6 Transponders



PL-1000TE

Up to 16G universal WDM Transponder

PL-1000TE is Low Latency Multirate and Multi-Protocol transponder providing high capacity optical transport solution for rates up to 16G in a single 1RU unit

FEATURE OVERVIEW

Multirate and Multi-Protocol 8 transponder configurable from 100Mbps up to 16Gbps in compact 1U chassis

Supports the following client service type-
- **Data: 1000Base-T/GbE/10G Ethernet**
- **Storage: 1G/2G/4G/8G/16G FC**
- **SONET/SDH: STM4/OC12, STM16/OC48, STM64/OC192**
- **CPRI: 614M to 9.8G rates**
- **Video: SD-SDI, HD-SDI**

Low latency connectivity, ideal for Data Center connectivity applications

Layer-1, GCM-AES-256 Encryption

Remote management and topology discovery of the optical network

Supports the innovative IEEE 802.3 FEC (Forward Correction Code) capability for rates up to 16G FC, increasing the link budget and improving BER performance

Pluggable SFP/SFP+ optics for both service and uplink side allowing maximum flexibility, as well as, ease of maintenance and operation

Supports full C-Band Tunable DWDM Line sides (SFP+)

Optional integrated EDFAs, Mux/Demux and Optical Switch modules

1+1 facility protection for ring and point to point topologies

Bidirectional performance monitoring for all services

Supports single and dual fiber connections

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

PacketLight NETWORKS

www.packetlight.com

PRODUCT DESCRIPTION

PL-1000TE is an advanced, all-in-one CWDM/DWDM optical transport product supporting up to 8 transponders with flexible mix of industry standard based protocols. It integrates a rich and cost effective feature set in a compact 1U chassis with low power consumption.

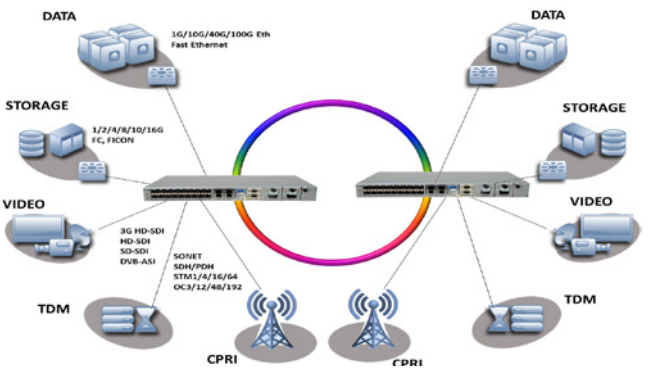
The PL-1000TE is designed for CWDM/DWDM solutions that require high throughput, transparent and low latency, data, storage, TDM and Common Public Radio connectivity. By combining a variety of multi-rate services, The PL-1000TE allows maximum flexibility and scalability for fiber optic connectivity. The availability of sub 10G, 10G and 16G flexible services mix in the same product, provides transparent migration capability from sub 10G to 10G services with zero downtime.

PL-1000TE allows easy upgrade or expansion of the required services by simply adding the needed pluggable optical modules (SFPs/SFP+) in the available slots or by stackable solution. This architecture provides true scalability at the minimum possible cost.

The PL-1000TE supports the full spectrum of FC protocol rates: 1Gbps, 2Gbps, 4Gbps, 8Gbps, and 16Gbps. and wide spectrum of Common Public Radio Interface (CPRI) protocol rates.
Together with its extremely low latency, low power consumption, small foot print (1U, ETSI) and affordability, The PL-1000TE is the best in class CWDM/DWDM solution for connecting two data centers or back up sites.

The PL-1000TE is designed to support point-to-point, Linear ADM, Ring and Regenerator topologies with facility protection. The PL-1000TE is a highly integrated device incorporating optional Mux/DeMux, EDFAs and an optical switch module, enabling a simple and cost effective upgrade of existing infrastructure with any type of service.

The PL-1000TE is highly suitable for applications such as:
- High capacity low latency, data center connectivity
- Efficient connectivity for campus, ISP and enterprise networks
- Delivery of high bandwidth managed services over dark fiber
- Upgrade of existing WDM networks to support 10GEth and 16G FC services
- CPRI communication between RE and REC
- High throughput Metro Ethernet connectivity
- Solving bottlenecks in fiber exhausted optical networks



TECHNICAL SPECIFICATIONS

System	
Topology	Point-to-point, Ring, Linear ADM Regenerator, Dual or Single Fiber
Transport Network Medium	Metro CWDM, DWDM & Dark Fiber
Protection	1+1 Facility

Product Options	
Transponder	850/1310nm to C/DWDM, 3R, 2x4/1x8 wavelengths Mux/Demux
Transponder + Amp	850/1310nm to DWDM, 3R, 2x4/1x8 wavelengths Mux Demux 1/2 EDFA (Booster, Pre-Amp)
Optical Switch	1+1 Facility Protection

CWDM Link	
Wavelength	ITU-T G.694.2 1270-1610nm 20nm spacing
OSC	1310nm, 1290nm
Optical Reach	120Km for 1.25Gbps, 80Km up to 4.25/8/10Gbps, 40Km for 16G FC
Optical Output Power	0dBm (min) to +5dBm (max)
Sensitivity	-28dBm APD, -18dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

DWDM Link	
Wavelength	ITU-T G.694.1 Channels 15-60, 100GHz spacing, optional tunable SFP+ with 50GHz spacing
OSC	1490nm, 1510nm
Optical Reach	400Km for 1.25Gbps, 200Km for 2.66Gbps, 80Km for 4.25/8.5/10Gbps, 40Km for 16G FC
Optical Output Power	Sub 10G: 0dBm (min) to +4dBm (max) 8/10G: -1dBm (min) to +2dBm (max)
Sensitivity	Up to 2.66Gbps: -28 dBm APD 4/8/10G: -24dBm APD, -14dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

Service Side	
Interface Rates	125Mbps up to 14.025Gbps
Optical Interface	850nm/1310nm/1550nm
Optical Services	1G/2G/4G/8G/16G FC, FICON, FE, GbE (LX, SX), STM-4/OC-12, STM-16/OC-48, 10G Eth LAN/WAN, 614.4/1228.8/ 2457.6/3072.0/4915.2/6144.0/ 9830.4M CPRI
Copper Services	100/1000MBase-T

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Amplifier	
Applications	Booster, Pre-Amp
Output Power	Booster: +14dBm, +17dBm, +20dBm, +23dBm Preamp: +5 dBm
Input Power	Booster: -24 to +16 dBm Preamp: -36dBm up to 16dBm-15 dBm
Gain	Booster: +10dB to +22 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Network Management	
Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Logger, Alarms, ALS
Performance Monitoring	Layer 1 PM for all Services, Optical Power Tx, Rx levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Optical Switch	
Topology	Protected point to point
Switching time	Less than 50ms
Signal WL	C and L band
Max input power	27dBm
Insertion loss	Transmit side 3.8dB Receiver side 1.2dB

Power Supply and Fans	
AC **DC**	90 to 240VAC, 50/60 Hz, 1.5 A max -48VDC, 3A max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	5.5Kg / 12.1 lb (Max)
Mounting	19”, ETSI and 23”

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

PL-1000

Simplicity and Innovation in 10G Connectivity Solutions

The PL-1000 is a carrier class leading 1U Metro DWDM platform, for transport of 10G Data, Voice and Storage Applications, over dark fiber and WDM networks

FEATURE OVERVIEW

Highly flexible metro DWDM platform for transport of data, storage, and voice applications over dark fiber and C/DWDM networks

Performs bidirectional 3R ensuring error free operation over distance Supports 10G Eth LAN/WAN, OC-192/STM-64, 10G FC in any mix

Cost-effective, compact 1U platform with low power consumption ideal CLE (Customer Located Equipment)

Remote management with dedicated optical supervisory channels Pluggable XFP interface for both service and WDM channels, allowing maximum flexibility as well as ease of maintenance and operation

Support for 10G Tunable XFP's

Pay-as-you-grow architecture

Supports facility protection

Bidirectional performance monitoring for 10G Eth LAN/WAN, 10G FC and OC-192/STM-64 services

Support for Single fiber and Dual fiber operation

PRODUCT DESCRIPTION

PL-1000 is designed primarily to address the growing needs for high data capacity applications such as IPTV, Triple play and NGN which needs to be transported over existing or new fiber infrastructures.
The PL-1000's capabilities, dimensions and competitive cost make it the ideal solution for evolving metro Ethernet networks, enterprise networks, campus environments and central office connectivity.

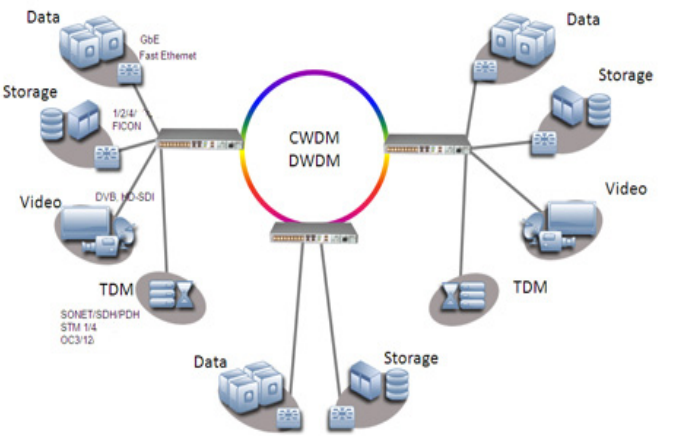
The PL-1000 supports up to 4 high-speed 10G services. Each Service is configured independently, using PacketLight's user-friendly Web-based management tool. The PL-1000 can be managed by any 3rd party SNMP system or with PacketLight's EMS.

The PL-1000 is designed to support point-to-point, Linear ADM and ring topologies with Facility protection. The PL-1000 is a highly integrated device, incorporating Mux/DeMux, EDFA and optical switch for both its transponder and regenerator modes, also enabling simple and cost effective upgrade of existing infrastructure to carry 10G services.

The PL-1000 seamlessly integrates with PacketLight's WDM product family thus enabling a mixture of 10G and sub 10G services over the same fiber and supporting stackable solution operation of up to 40 DWDM wavelengths. All optical transceivers, both on the service side and on the WDM-uplink side, are pluggable and replaceable allowing pay-as-you-grow budget planning and simplified maintenance.

The PL-1000 is highly suitable for applications such as:

- Interconnection of LAN, TDM and SAN over remote metro sites
- High bandwidth managed service over dark fiber
- Simple upgrade of existing CWDM or DWDM networks to support 10G services
- High throughput Metro Ethernet connectivity
- Effective infrastructure for triple play, NGN and DSLAM backhaul
- Efficient central office and local exchange connectivity



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

System	
Topology	Point-to-Point, Ring, Linear ADM
Transport Network Medium	Metro CWDM/DWDM / Dark Fiber
Software Upgrade	Traffic Hitless – dual image
Protection	1+1 Facility

Product Options	
Transponder	850/1310nm to DWDM, 3R, 2/4 wavelengths Mux & Demux
Transponder + Booster Amp	850/1310nm to DWDM, 3R, 2/4 wavelengths Mux Demux, 1/2 EDFA (Booster, Pre-Amp)
Regenerator	DWDM to DWDM 3R, 4 wavelengths 2 X Mux & 2 X Demux & 2 X EDFA

DWDM Link	
Wavelength	ITU-T G.694.1 Ch15 - 60, 50GHz/100GHz spacing
Optical Supervisory Channel	1490nm, 1510nm
Optical Reach	40, 80, 120, 200Km
Optical Power Output	-1dBm (min) to +2dBm (max)
Sensitivity	-24dBm APD, -14dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

Service Side	
Interface Rates	9.95328Gbps up to 10.709255Gbps
Optical Interface	850nm / 1310nm / DWDM
Services	10G Eth LAN/WAN, OC-192/STM-64, 10G FC, OTU2 in any mix

Optical Switch	
Topology	Protected point to point
Switching time	Less than 50ms
Signal WL	C and L band
Max input power	27dBm
Insertion loss	Transmit side 3.8dB Receiver side 1.2dB

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant

Amplifier	
Applications	Booster, Pre-Amp
Output Power	14dBm, 17dBm, 20dBm, 23dBm
Input Power	-36dBm up to 16dBm
Gain	10dB to 22dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Network Management	
Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Logger, Alarms, ALS
Performance Monitoring	Layer 1 PM for all Services, Optical Power Tx, Rx levels for all optical ports
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Power Supply	
AC/DC	90 to 246VAC, -36 to -72VDC, 78W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 44 mm (H) x 440mm (W) x 230 mm (D)
Weight	5.5Kg (Max)
Mounting	19”, ETSI and 23”

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

PL-400

Multi-Service CWDM or DWDM Transport Access Device

The most compact 1U Metro CWDM and DWDM platform, for transport of storage, data, voice and video applications, over dark fiber and WDM networks

FEATURE OVERVIEW

Supports up to 8 channels of CWDM or DWDM over dark fiber

Supports 1G/2G/4G FC & FICON, ESCON, Fast Ethernet, GbE, STM-1/OC-3, STM-4, OC-12, STM-16/OC-48, DVB-ASI, SD-SDI, HD-SDI, 3G SD-SDI and Teleprotection

Sub Microsecond ultra low latency performances

Performs bidirectional 3R ensuring error free operation over distance

Cost-effective, compact 1U platform with low power consumption ideal for CPE (Customer Premises Equipment)

Remote management with both optical supervisory channels and in-band management

Pluggable SFP interface for both service and WDM channels, allowing maximum flexibility as well as ease of maintenance and operation

Redundant pluggable PSUs & Fan Unit

Pay-as-you-grow architecture

Supports single and dual fiber connections

Support for 1+1 facility protection

Performance Monitoring for GbE, FC and SONET/SDH services

PRODUCT DESCRIPTION

PL-400 is designed primarily as an efficient C/DWDM transport device, and is typically deployed as a CPE (Customer Premises Equipment) in enterprise campus environments and in central offices.

The PL-400 supports up to 8 high-speed services up to 4.25Gbps. Each service is configured independently using PacketLight's user-friendly on board Web-based management tool. The PL-400 can be managed by any 3rd party SNMP system or with PacketLight LightWatch™ NMS.

The PL-400 is designed to support point-to-point, Linear ADM, and ring topologies with facility protection.

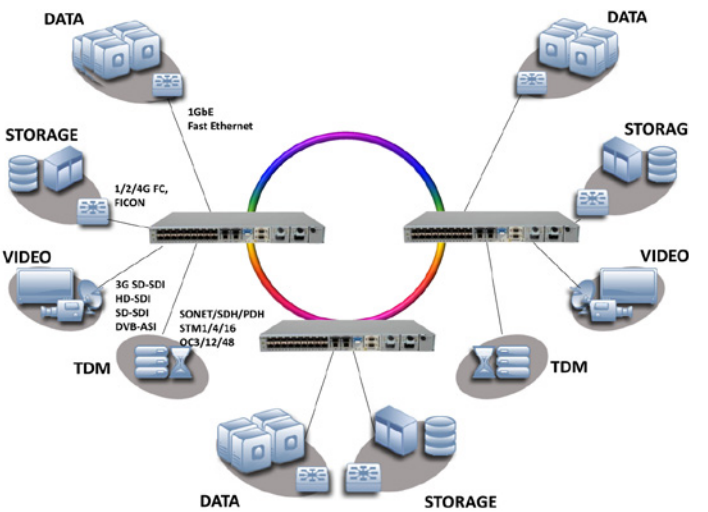
The PL-400 is a highly integrated device, incorporating Mux/DeMux and EDFA for both transponder, muxponder and regenerator modes.

The PL-400 seamlessly integrates with PacketLight's WDM product family thus enabling mixture of low and high bit services over the same fiber and supporting stackable solution operation of up to 40 DWDM, 16 CWDM wavelengths.

All optical transceivers, both on the service side and on the WDM-uplink side, are pluggable and replaceable allowing pay-as-you-grow budget planning and simplified maintenance and full optical performance monitoring of the optical layer.

The PL-400 is highly suitable for applications such as:

- Interconnection of SAN and LAN islands over remote data centers
- High bandwidth managed service over dark fiber
- Low Latency connectivity for trading applications
- Fiber relief for high-capacity multi-tenant buildings and campuses.
- Aggregation of DSLAM and Ethernet switch traffic on a single fiber from access to core
- Video transport over C/DWDM and Dark Fiber
- Teleprotection transport solution over DWDM for utilities



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

System	
Topology	Point-to-point, Ring, Linear ADM Dual or Single Fiber
Muxponder	2x 4GbE 850/1310nm
Transport Network Medium	Metro CWDM/DWDM / Dark Fiber
Software Upgrade	Traffic Hitless – dual image
Protection	1+1 Facility

Product Options	
Transponder	850/1310nm to C/DWDM, 3R, 4/8 wavelengths Mux & Demux
Transponder + Booster Amp	850/1310nm to DWDM, 3R, 4/8 wavelengths Mux Demux, 1/2 EDFA (Booster, Pre-Amp)
Regenerator	C/DWDM to C/DWDM 3R 8 wavelengths 2X Mux & 2X Demux & 2X EDFA

CWDM Link	
Wavelength	ITU-T G.694.2 1270-1610nm 20nm spacing
Optical Supervisory Channel	1310nm, 1290nm
Optical Reach	120Km for 1.25Gbps, 80Km up to 4.25Gbps
Optical Power Output	0dBm (min) to +5dBm (max)
Sensitivity	-28dBm APD, -18dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

DWDM Link	
Wavelength	ITU-T G.694.1 Channels 15-60, 100GHz spacing
Optical Supervisory Channel	1490nm, 1510nm
Optical Reach	400Km for 1.25Gbps, 200Km for 2.66Gbps, 80Km for 4.25Gbps
Optical Power Output	0dBm (min) to +4dBm (max)
Sensitivity	-28 dBm APD
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

Service Side	
Interface Rates	2Mbps up to 4.25Gbps
Optical Interface	850nm/1310nm C/DWDM
Optical Services	1G/2G/4G FC, FICON, ESCON, GbE (LX, SX), STM-1/OC-3, STM-4/ OC-12, STM-16/OC-48, 2.66G OTN, 100FX, & Teleprotection in any mix
Copper Services	10/100/1000MBase-T, E3/DS3, E1/T1, DVB-ASI, SD-SDI, HD-SDI, 3G SD-SDI

Amplifier	
Applications	Booster, Pre-Amp
Output Power	up to 23dBm
Input Power	-36dBm up to 16dBm
Gain	5dB to 22dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

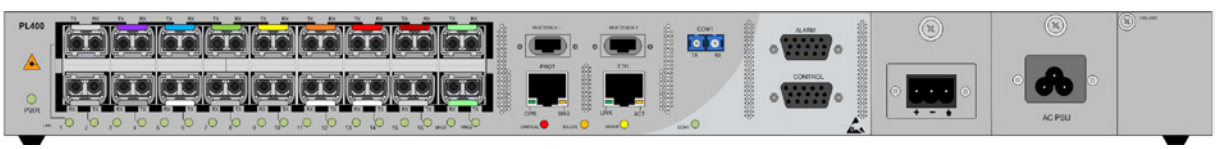
Network Management	
Management Ports	RJ45 10/100MBase-T 2x SFP 100Base-X RS-232 Serial Port DB9 Alarm Port
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS and SNTP
Management	Web browser over HTTP/HTTPS, PacketLight EMS or 3rd party EMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Loopbacks PRBS Event Logger Alarms ALS PM for GbE, FC (based on 8b/10b CV) and SONET/SDH (based on B1 CV)
Management Ch.	2x Optical Supervisory Channel (OSC) 2x In-Band Channels
Visual Indicators	LED status indicators for client ports, line interfaces, power and system
Software Upgrade	Traffic Hitless-dual image

Power Supply	
AC/DC	90 to 246VAC, -36 to -72VDC, 68W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	5.5Kg /12.1lb (Max)
Mounting	19”, ETSI and 23”

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 90% RHI

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant



PL-1000RO

Next Generation WSS ROADM

Advanced Integrated ROADM platform providing flexible Wavelength Add Drop, Automatic Power Balancing and Amplification for next generation DWDM Network Infrastructure

FEATURE OVERVIEW

Flexible wavelengths Add/Drop

Automatic Optical Power Equalization

Directionless, Colorless architecture

Supports up to 96 C-Band channels

Up to 8-degree ROADM

Supporting Mesh, Ring and Linear add/drop topologies

Flexible channel spacing 50GHz/100GHz

Optical Power Level Monitoring for all channels

Supports 8 channel internal DWDM Mux/Demux

Supports optional embedded EDFA Booster/Preamp

Ready for 40Gbps and 100Gbps transmission format

Embedded Optical Supervisory Channel for remote management

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

A-Z provisioning and service management using PacketLight's LightWatch (TM) NMS

PL-1000RO Reconfigurable Optical Add-Drop Multiplexer (ROADM)

ROADM based network architecture simplifies configuration and management of complex DWDM network infrastructure. It offers highly flexible wavelength routing capabilities suitable for mesh, ring, linear add/drop, core and edge DWDM network topologies.

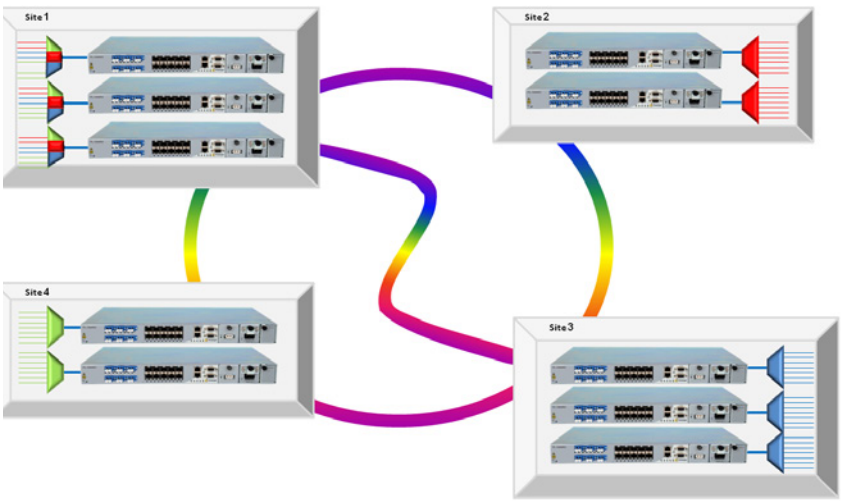
PacketLight's PL-1000RO offers the ROADM functionality based on the most advance next generation WSS (Wavelength Selective Switch) technology.

PacketLight colorless, directionless, contentionless and gridless ROADM architecture that provides high flexibility for mesh and ring networks.

The user configures the PL-1000RO dynamically to add/drop selected wavelengths at any node in the network and seamlessly change the network node capacity as needed. In addition, it automatically maintains the equalization and power balance of the added and bypass wavelengths. The PL-1000RO also integrates optional EDFA for amplifying the wavelengths thus delivering effective long distance DWDM solutions.

PL-1000RO simplifies network management and reduces operation costs (OPEX) by allowing deployment of new wavelengths remotely. PL-1000RO fully integrates with PacketLight's WDM product line.

The PL-1000RO can be managed by any third party NMS system or with PacketLight's EMS.



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

2 Degree ROADM Parameter	Min	Max	Units	Notes
Insertion Loss	10	11	dB	All Ports
Loss Uniformity		1.5	dB	All Ports
Channel Range	191.3	196.0	THz	Full C-band, 1529.55 to 1567.13 nm
Channel Count		48/96	Channels	50/100 GHz spacing ITU Grid (Ch13-CH60)
PMD	-0.2	0.2	ps/nm	In passband
Switch Speed	0.001	100	ms	
VOA Range	0	15	dB	

4 Degree ROADM Parameter	Min	Max	Units	Notes
Insertion Loss	13	14	dB	All Ports
Loss Uniformity		1.5	dB	All Ports
Channel Range	191.3	196.0	THz	Full C-band, 1529.55 to 1567.13 nm
Channel Count		48/96	Channels	50/100 GHz spacing ITU Grid (Ch13-CH60)
PMD	-0.2	0.2	ps/nm	In passband
Switch Speed	0.001	100	ms	
VOA Range	0	15	dB	

Full C-Band Amplifier	
Output Power	14dBm to 23dBm
Input Power	-36dBm up to +16dBm
Gain	5dB to 38dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	8Kg (Max)
Mounting	19”, ETSI and 23”

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to +122° F) Operational
Humidity	5% to 85% RHI

DCM	
DCM Type	Tunable DCM or Fixed DCM
Fiber Span	20-100Km
Max insertion loss	<5dB
Standard	ITU G.671

Network Management	
Management Ports	• 2 RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • 8x SFP MNG ports 100MBase-X • RS-232 Serial port • DB9 External Alarm port
Management Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
Performance Monitoring	Layer 1 PM for all Wavelengths, OCM for Input and Output directions
Visual Indicators	LED status indicators for: Management and LAN ports, Amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Power Supply	
AC/DC	90 to 246VAC, -36 to -72VDC, 60W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Approvals & Standards	
	CE, FCC, RoHS, REACH NEBS Compliant, ISO-9001

PL-1000IL

Versatile DWDM Amplification Solutions

PacketLight's optical amplifier unit PL-1000IL meets the demanding requirements of large distances and attenuations of today's DWDM networks.

FEATURE OVERVIEW

Cost effective, compact 1U platform with single, dual or quad DWDM amplifiers

Offers several EDFA types:

- **Booster**
- **Inline**
- **Pre-Amplifiers**
- **Midstage**
- **Raman**

Supports AGC (Automatic Gain Control) and APC (Automatic Power Control) operation modes

Monitoring on the input and output power and user configurable gain

Embedded Optical Supervisory Channel for remote management and topology detection

Dual AC or DC pluggable Power Supply and pluggable FAN Unit

Supports single and dual fiber operation

Built-In Eye Safety Mechanism

Optional Intergrated Modules:

- **Optical Switch Module**
- **Up to 2 optional DCMs**
- **Up to 16 channels MUX/DEMUX**

PRODUCT DESCRIPTION

The PL-1000IL is designed to extend the power link budget of DWDM solutions in a cost effective manner. The PL-1000IL provides amplification for a range of optical solutions starting from 4 wavelengths to up to the full C-Band and incorporates several types of low-noise EDFAs Booster, Inline, Pre-Amplifier and Midstage.

Depending on the customer requirements, the PL-1000IL can operate in APC or AGC modes. The AGC operation mode enables seamless wavelengths add/drop functionality without interference to the other active channels. In addition, the EDFA gain is controlled, adjusted and monitored by the user. The APC operating mode allows the maintenance of constant output power.

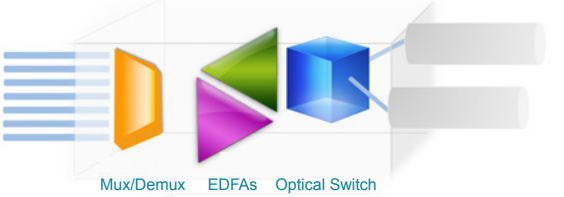
The EDFAs are gain flattened and have low Optical Signal to Noise Ratio (OSNR), thus enabling cascading of several EDFAs to form amplified link over long distance. PL-1000IL is fully integrated with PacketLight's WDM product family. In addition, PL-1000IL unit are fully managed, configured, and monitored via PacketLight's user-friendly Web-based management tool, PacketLight LightWatch™ NMS.

PL-1000IL is ideal of applications such as:

- Extending the optical link budget to meet distance and attenuation requirements of DWDM networks
- High throughput Metro Ethernet connectivity over large distances
- Upgrade the optical link budget to support 10G, 40G and 100G services
- Reducing number of regenerators and sites along fiber
- Overcome old fiber infrastructure high loss
- Facility protection for fiber redundancy solution

Amplifiers- Booster/Preamp/Midstage/Inline

Optical Switch + Mux/Demux+ Amplification



Tunable DCM

PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

System	
Topology	Point-to-point, Ring, Linear ADM
Transport Network Medium	Metro DWDM / Dark Fiber
Software Upgrade	Traffic Hitless – dual image

Booster	
Output Power	Up To 23dBm
Input Power	-10dBm up to 16dBm
Gain	5dB to 22dB

Inline	
Output Power	Up to 23dBm
Input Power	-24dBm up to 13dBm
Gain	5dB to 22dB

Pre-Amplifier	
Output Power	Up to 7dBm
Input Power	-36dBm up to 15dBm
Gain	20dB

Midstage	
Output Power	8dBm per Channel
Input Power	-36dBm up to 15dBm
Total Output Power	up to 23dBm
Gain	up to 40dBm

General	
Gain Flatness	+/- 1dB
Noise Figure	4-6 dB
PMD	0.3 ps
PDL	0.3 dB
Operating Modes	AGC (Automatic Gain Control) APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Optional Optical Switch	
Switching Time	< 50 ms
Max Input Power	27 dBm
Insertion Loss Transmit side	3.8 dB
Receive side	1.2 dB

Network Management	
Management Ports	RJ45 10/100MBase-T 2x SFP 100Base-X RS-232 Serial Port DB9 Alarm Port
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP
Management	Web browser over HTTP/HTTPS, PacketLight EMS or 3rd party EMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Input/Output Power Monitoring Event Logger Alarms
Management Ch.	2 xOptical Supervisory Channel (OSC)
Visual Indicators	LED status indicators for EDFA ports, power and system
Software Upgrade	Traffic Hitless-dual image

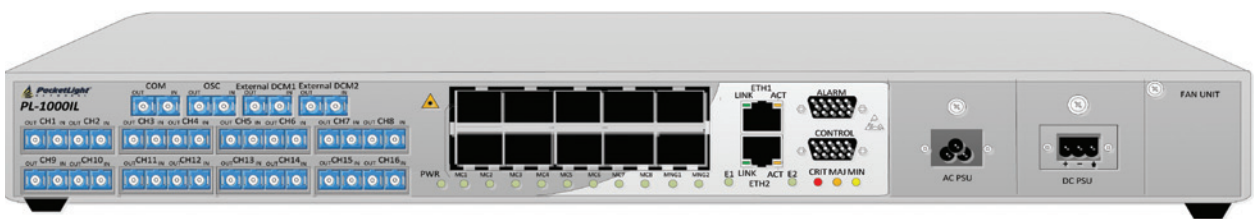
DCM	
DCM Type	Tunable DCM or Fixed DCM
Fiber Type	G.652
Fiber Span	20-100Km
Max insertion loss	<5dB
Standard	ITU G.671

Power Supply	
AC/DC	90 to 246VAC, -36 to -72VDC, 60W max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	5.5Kg /12.1lb (Max)
Mounting	19”, ETSI and 23”

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to +122° F) Operational
Humidity	5% to 90% RHI

Approvals & Standards	
	CE, FCC, RoHS, REACH NEBS Compliant ISO9001



PL-300

The PL-300 Family - PacketLight's Passive Optical Solution For Dual and Single Fiber

FEATURE OVERVIEW

Maximize fiber utilization & capacity with passive optical solution that is simple to install and maintain

Transparent optical Multiplexing of any DWDM or CWDM optical signal regardless of service type and rate

Support for Single and Dual fiber

Cost effective, compact solution for 4/8/16/40/44/88/96 wavelengths division multiplexing solution

Supports a variety of network topologies and addresses add and drop service needs

Provides extended optical reach with dispersion compensation module (DCM)

Seamless operation with all PacketLight's products to form up to 96 DWDM stackable solution for multiplexing optical services up to 100G each

Supports Full C-band and L-band

Supports 100GHz and 50GHz

PRODUCT DESCRIPTION

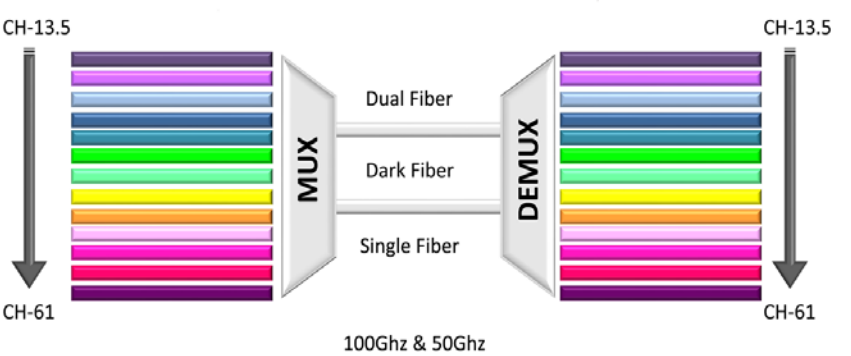
The PL-300 family of products extends PacketLight's optical network solution capabilities by providing a wide range of passive optical modules. The PL-300 provides the needed optical layer functions of 4/8/16/32/44/88/96 DWDM wavelength Multiplexing, 4/8/16 CWDM wavelength Multiplexing, Optical Dispersion Compensation Module (DCM), Optical Add and Drop (OADMs), splitter and combiners.

The PL-300 interconnects seamlessly with PacketLight's WDM product family and third party WDM products to form cost effective high capacity DWDM and CWDM solutions. The PL-300 provides low granularity wavelengths, add and drop capabilities and can be used to increase 4G and 10G solution reach.

The PL-300 is PacketLight's foundation for multi-chassis application architecture. With the PL-300, a customer can start with a low cost solution that meets urgent needs and grow step by step to form a full C-Band solution over a single or dual fiber as demand expands.

PL-300 is highly suitable for applications such as:

- Expansion of existing Fiber capacity with new services
- Building scalable high capacity pay as you grow optical networks
- Convergence of existing networks and new services over existing infrastructure
- Forming low cost fully passive optical solution, transparent to service rate & type
- Extending the optical reach with dispersion compensators
- Building cost effective add and drop networks



PacketLight NETWORKS

www.packetlight.com

PL-300 CWDM

Standards	ITU G.694.2, TU G.671					
Description	Order Code CWDM	# MUX WLs	COM Fiber	MUX 1 [nm]	MUX 2 [nm]	Insertion Loss
CWDM 4ch Mux/Dmux	CWDM-1M-4W-1C-2F	4	Dual Fiber	1471-1531		<4db
CWDM 8ch Mux/Dmux	CWDM-1M-8W-1C-2F	8	Dual Fiber	1471-1611		<4db
CWDM 16ch Mux/Dmux	CWDM-1M-16W-1C-2F	16	Dual Fiber	1311-1611		<6db
2 x CWDM 4ch Mux/Dmux	CWDM-2M-4W-2C-2F	4	Dual Fiber	1471-1531	1471-1531	<4db
2 x CWDM 8ch Mux/Dmux	CWDM-2M-8W-2C-2F	8	Dual Fiber	1471-1611	1471-1611	<4db
2 x CWDM 16ch Mux/Dmux	CWDM-2M-16W-2C-2F	16	Dual Fiber	1311-1611	1311-1611	<6db
Single Fiber CWDM 8ch Mux	CWDM-1M-8W-1C-1F	8	Single	1471-1611		<4db
Single Fiber CWDM 16ch Mux	CWDM-1M-16W-1C-1F	16	Single	1311-1611		<6db
2 x Single Fiber CWDM 8ch Mux	CWDM-2M-8W-2C-1F	8	Single	1471-1611	1471-1611	<6db
2 x Single Fiber CWDM 16ch Mux	CWDM-2M-16W-2C-1F	16	Single	1311-1611	1311-1611	<10db

PL-300 DWDM C-band

Standards	ITU G.694.2, TU G.671		**Spacing-** 100GHz		**Wavelengths Range-** C Band	
Description	Order Code DWDM	# MUX WLs	COM Fiber	MUX 1 [nm]	MUX 2 [nm]	Insertion Loss
DWDM 4ch Mux/Dmux	DWDM-1M-4W-1C-2F	4	Dual Fiber	CH28-CH31		<4db
DWDM 8ch Mux/Dmux	DWDM-1M-8W-1C-2F	8	Dual Fiber	CH28-CH35		<4db
DWDM 16ch Mux/Dmux	DWDM-1M-16W-1C-2F	16	Dual Fiber	CH20-CH35		<6db
DWDM 40ch Mux/Dmux	DWDM-1M-40W-1C-2F	40	Dual Fiber	CH20-CH59		<7db
DWDM 44ch Mux/Dmux	DWDM-2M-44W-1C-2F	44	Dual Fiber	CH17-CH60		<7db
DWDM 88ch Mux DWDM 88ch Dmux	DWDM-1M-88W-1C-2F DWDM-1D-88W-1C-2F	88 88	Dual Fiber Dual Fiber	CH17-CH59.5 CH17-CH59.5		<10db
DWDM 96ch Mux DWDM 96ch Dmux	DWDM-1M-96W-1C-2F DWDM-1D-96W-1C-2F	96 96	Dual Fiber Dual Fiber	CH13.5-CH61 CH13.5-CH61		<10db
2 x DWDM 4ch Mux/Dmux	DWDM-2M-4W-2C-2F	4	Dual Fiber	CH28-CH31	CH28-CH31	<4db
2 x DWDM 8ch Mux/Dmux	DWDM-2M-8W-2C-2F	8	Dual Fiber	CH28-CH35	CH28-CH35	<4db
2 x DWDM 16ch Mux/Dmux	DWDM-2M-16W-2C-2F	16	Dual Fiber	CH20-CH35	CH20-CH35	<6db
Single Fiber DWDM 8ch Mux	DWDM-1M-8W-1C-1F	8	Single	CH28-CH35		<5db
Single Fiber DWDM 16ch Mux	DWDM-1M-16W-1C-1F	16	Single	CH20-CH35		<6db
Single Fiber DWDM 40ch Mux	DWDM-1M-40W-1C-1F	40	Single	CH20-CH59		<7db
2 x Single Fiber DWDM 8ch Mux	DWDM-2M-8W-2C-1F	8	Single	CH28-CH35	CH28-CH35	<6db
2 x Single Fiber DWDM 16ch Mux	DWDM-2M-16W-2C-1F	16	Single	CH20-CH35	CH20-CH35	<6db
2 x Single Fiber DWDM 8ch Mux Red/Blue	DWDM-2M-16W-1C-1F	16	Single	CH21-CH36	CH45-CH60	<6db

Optical Add/Drop Multiplexter

Singe Channel DWDM OADM	
Insertion Loss	Express 0.8dB Add/Drop 1 dB
Dual Channel DWDM OADM	
Insertion Loss	Express 1.3dB Add/Drop 1.5 dB
Quad Channel DWDM OADM	
Insertion Loss	Express 2.5dB Add/Drop 2.7dB
Standards	ITU G.671

DCM

Fiber Type	G.652
Fiber Span	20Km - 200Km
Wavelengths Range	1527nm-1567nm
Residual Dispersion	< +/- 2%
Max Insertion Loss	3dB
PMD	<1.2ps
Standard	ITU G.671

Physical Dimensions

Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 220 mm (D)
Weight	3.5Kg (Max)

Environmental

Operating Temperature	-5°C to +65°C (+23°F to +149°F) Operational

Approvals & Standards

RoHS, REACH, ETSI
Meets Telecordia GR-12
NEBS Compliant, ISO9001

Splitters/Combiners

Insertion Loss - DWDM	1.5dBm
Insertion Loss - CWDM	0.8dBm
Insertion Loss - 1310nm	<1.5dBm
Standards	ITU G.671

For further configuration options please contact info@packetlight.com

PL-1000TE-Crypto

8 Multirate Transponders with Layer-1 Encryption

PL-1000TE-Crypto provides transparent low latency layer-1 encryption solution for both Ethernet and Fibre Channel protocols up to 80G in compact 1U chassis

FEATURE OVERVIEW

8 Encrypted Transponders in a compact 1U chassis

Supports the following client service types:
- **Data: GbE/10G/40G Ethernet**
- **Storage: 4G/8G/10G/16G FC**

Designed for several applications:
- **Encrypted fiber link solution**
- **Encrypted Wavelength solution**
- **Encryption solution feeding OTN networks**

Bit transparent without any reduction of throughput

High end Encryption core:
GCM- AES-256 Layer-1 data encryption
Periodical Diffie Hellman key exchange
Complies with NIST FIPS-140-2
Level 2 and NSA Suite B requirements

Low latency connectivity, ideal for Data Center & Financial applications

Remote management and topology discovery

Uses pluggable SFP/SFP+ optics for both service and uplinks

Supports full C-Band Tunable DWDM Line sides (SFP/SFP+)

Optional integrated EDFAs, Mux/Demux and Optical Switch modules

Bidirectional performance monitoring

Supports single and dual fiber

Dual AC/DC pluggable Power Supply and pluggable FAN Unit

PRODUCT DESCRIPTION

The PL-1000TE-Crypto is a multi-rate, multi-service Dense Wavelength Division Multiplexing transponder (DWDM) supporting innovative cryptographic capability for 1G/10G/40G Ethernet LAN and 4/8/10/16G FC storage services. With this capability, the PL-1000TE-Crypto provides added security benefit to any DWDM link by encrypting the data passing between the sites.

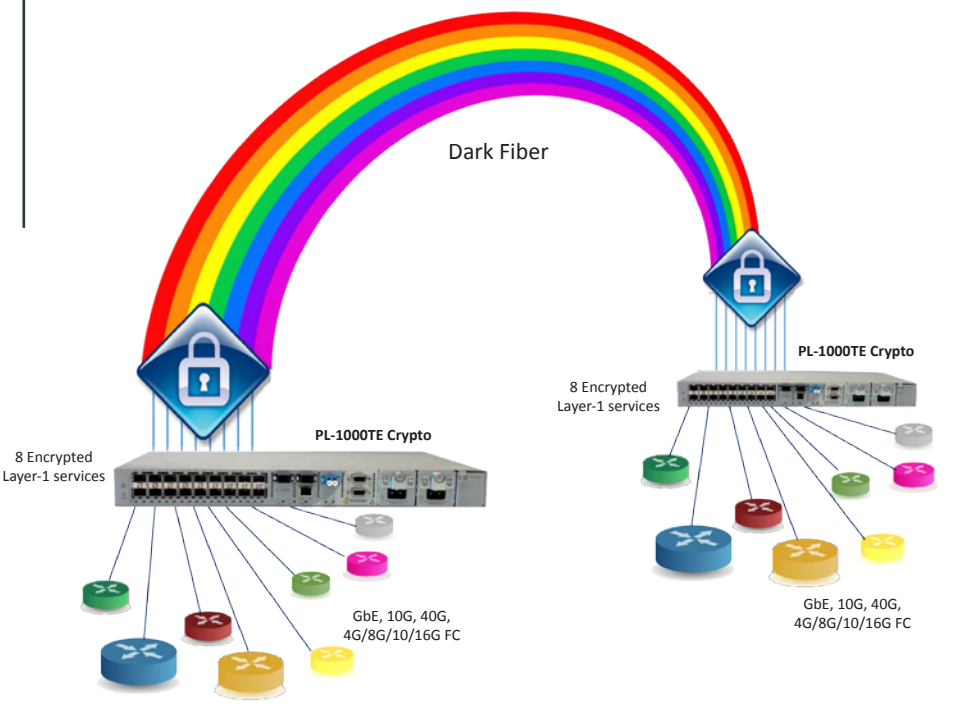
The PL-1000TE cryptography performs layer-1 AES-256 Encryption for each of the passing services at full bandwidth. The encryption provides end-to-end transparency of data and clock with low latency of less than 12usec for 10GbE.

PacketLight's comprehensive encryption solution ensures three major concerns of optical link security:

- Confidentiality- preventing disclosure of information to unauthorized parties
- Data integrity- ensuring that the message has not been altered
- Authentication- validating that both parties involved are indeed who they claim to be

On the management plane, the PL-1000TE-Crypto supports the secured management protocols HTTPS, SSH, SNMPv3 and RADIUS, roll based user password and firewall. The PL-1000TE-Crypto also detects degradation in the fiber link performance for automatic detection of tapping attempt.

The PL-1000TE-Crypto fits to the following applications:
- Secured remote data center connectivity for government and financial institutions
- Cloud network providers and ISP secured fiber network infrastructure
- Feeder of encrypted services to Optical Transport Networks (OTN)
- Managed encrypted wavelength services offered by service providers
- Internal data center secured connectivity



PacketLight NETWORKS

www.packetlight.com

TECHNICAL SPECIFICATIONS

System	
Topology	Point-to-point, Ring, Linear ADM, Dual or Single Fiber
Transport Network Medium	Metro CWDM, DWDM & Dark Fiber

Cryptography	
Crypto Algorithm	GCM AES 256
Key Management	ECC CDH (Diffie–Hellman)
Message Authentication	SHA 256

Product Options	
Transponder	850/1310nm to C/DWDM, 3R
Mux/Demux	2x4/1x8 wavelengths
Amplifier	1/2 EDFA (Preamp/Booster)
DCM	Up to 200 km
Optical Switch	1+1 Facility Protection

CWDM Link	
Wavelength	ITU-T G.694.2 1270-1610nm 20nm spacing
OSC	1310nm, 1290nm
Optical Reach	120Km for 1.25Gbps, 80Km up to 4.25/8/10Gbps
Optical Output Power	0dBm (min) to +5dBm (max)
Sensitivity	-28dBm APD, -18dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

DWDM Link	
Wavelength	ITU-T G.694.1 Channels 15-60, 100GHz spacing, optional tunable SFP+ with 50GHz spacing
OSC	1490nm, 1510nm
Optical Reach	400Km for 1.25Gbps, 200Km for 2.66Gbps, 80Km for 4.25/8.5/10Gbps
Optical Output Power	Sub 10G: 0dBm (min) to +4dBm (max) 8/10G: -1dBm (min) to +2dBm (max)
Sensitivity	Up to 2.66Gbps: -28 dBm APD 4/8/10G: -24dBm APD, -14dBm PIN
Optical Monitoring	Tx & Rx power
Link Attenuation	<4dB (Mux + DeMux)

Service Side	
Interface Rates	1.25G to 10.51875G
Optical Interface	850nm/1310nm/1550nm
Optical Services	4G/8G/10G/16G FC 1G/10G/40G Ethernet LAN
Copper Services	1000MBase-T

Environmental	
Operating Temperature	-5° C to 50° C (+23° F to+122° F) Operational
Humidity	5% to 85% RHI

Amplifier	
Applications	Booster, Pre-Amp
Output Power	Booster: +17dBm, +20dBm, 23dBm Preamp: +5 dBm
Input Power	Booster: -24 to +16 dBm Preamp: -36dBm up to 16dBm-15 dBm
Gain	Booster: +10dB to +22 dB Preamp: +18 dB
Operating Modes	AGC (Automatic Gain Control), APC (Automatic Power Control)
Eye Safety	Automatic laser power reduction upon fiber cut or disconnection

Network Management	
Management Ports	• 1RJ-45 LAN port 10/100Mbase-T • 2x SFP MNG ports 100/1000MBase-X • RS-232 Serial port • DB9 External Alarm port
Protocols	SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, RSTP, TFTP and FTP
Management	Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party EMS NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH
OAM	Facility Loopback (Client and Line Interfaces), PRBS, Event Logger, Alarms, ALS
Performance Monitoring	Layer 1 PM for all Services, Optical Power Tx, Rx levels for all optical ports layer-2 PM for the data services 1G and 10G
Visual Indicators	LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply
Software Upgrade	Traffic Hitless – dual image

Optical Switch	
Topology	Protected point to point
Switching time	Less than 50ms
Signal WL	C and L band
Max input power	27dBm
Insertion loss	Transmit side 3.8dB Receiver side 1.2dB

Power Supply and Fans	
AC **DC**	100 to 240VAC, 50/60 Hz, 1.5 A max -48VDC, 3A max
PSU Redundancy	Single/Dual feeding, Hot Swappable
Cooling Unit	Hot Swappable Fan Unit

Physical Dimensions	
Size	1.77” (1 RU) (H) x 17.32”(W) x 9.05”(D) 45 mm (H) x 440mm (W) x 230 mm (D)
Weight	7Kg / 15.4lb (Max)
Mounting	19”, 23” and ETSI rack mounting

Approvals & Standards	
	CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant
	FIPS-140-2 Level 2 Compliant

Our solutions for vertical markets- Finance, Utilities, Data Center Connectivity & Video

FINANCE BANKING

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

DATA CENTER CONNECTIVITY

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

CAMPUSES UNIVERSITIES HOSPITALS

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

NATIVE VIDEO

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

UTILITIES

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

DEFENSE

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Hierarchical topology view of the devices in the network
- Network Fault Management

PacketLight NETWORKS

www.packetlight.com

PacketLight LightWatchTM NMS/EMS

Network & Element Management Software for Telcos and Enterprise

PacketLight's LightWatch™ is a multi-platform Java-based network element management software. It provides full FCAPS functionality and is compliant with TMN standards. LightWatch™ uses the MySQL™ database

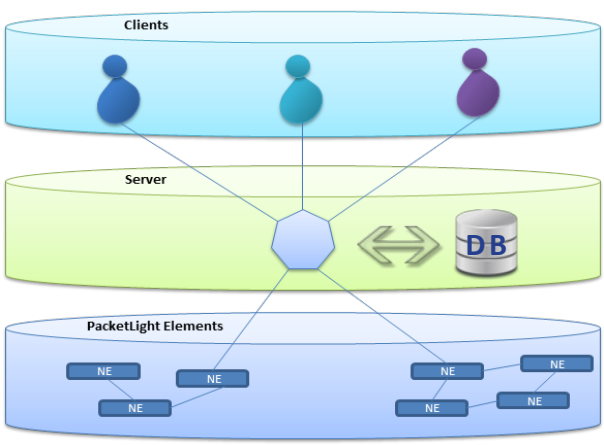
LightWatch™ is built with modular client-pay-as-you-grow offerings.

LightWatch™ is scalable to 500 network elements and 20 clients.

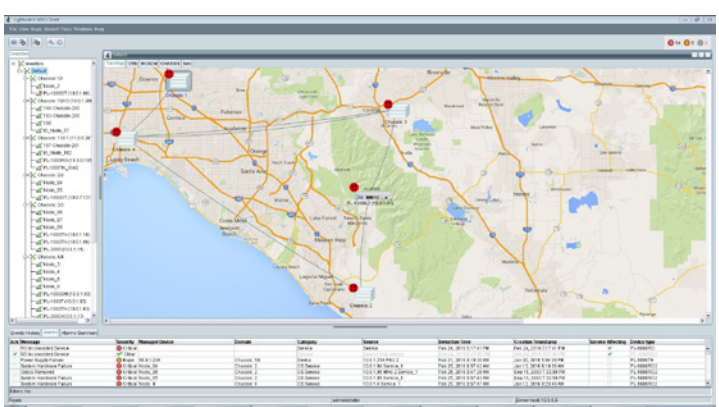
NMS Highlights

- Hierarchical topology view of the devices in the network
- Network Fault Management
- Display Network Inventory Management
- Service Management
- Event Forwarding of events to eMail server
- LightWatch Users Management
- Task scheduling for network operation such as SW Download and Configuration Files upload and download
- Collects, displays and stores Performance Management counters from all network elements
- Chassis Management

Client Server Architecture

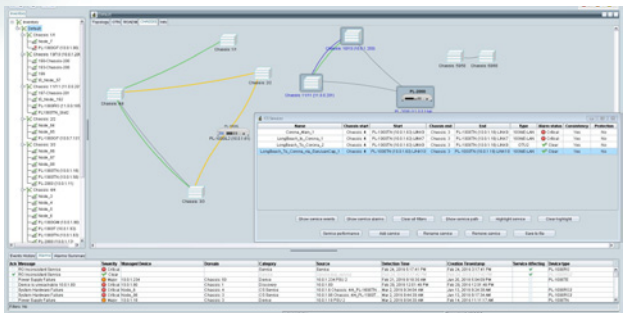


LightWatch Dashboard



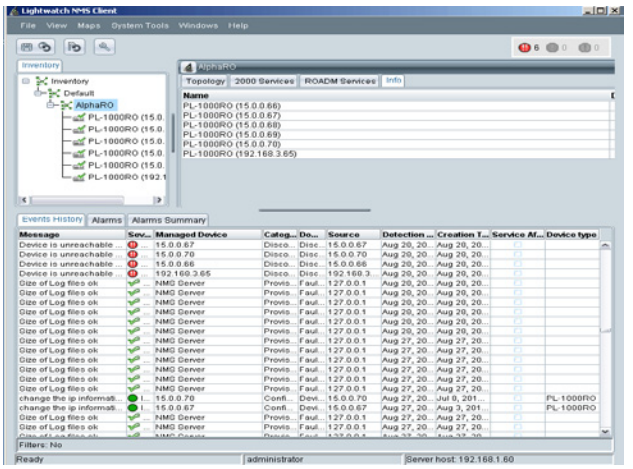
NMS Functionality

Topology



- Allows hierarchical domains
- Automatic network topology discovery
- Allows manual drawing of the connections between nodes
- Chassis management

Fault Management

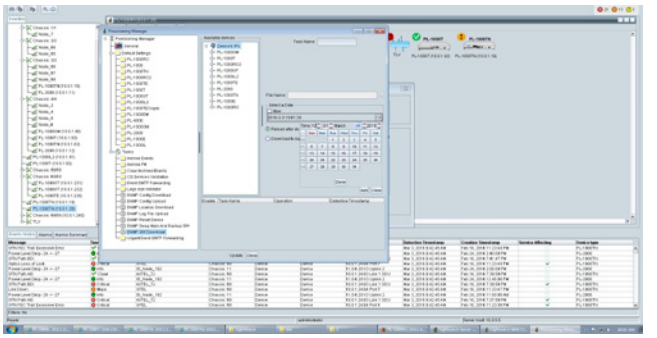


- Displays history of network Events
- Shows current Alarms
- Supports filtering of Events and Alarms
- Support archiving and browsing of old events
- Support Audible Alarm

User Management:

- Provides centralized management of user accounts
- Supports several Types of users with different access privileges:
  - Administrators
  - NetAdmins
  - Technicians
  - Users

Task Scheduling

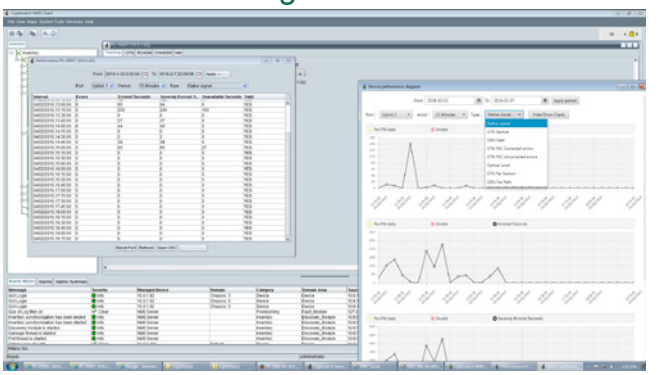


- Scheduling Download of new SW version into group of network elements
- Scheduling Upload of Configuration Files from group of network elements
- Scheduling Download of Configuration Files into group of nodes
- Download of license files to group of nodes
- Upload of log files from group of devices

Inventory

- Displays the Inventory of group of network elements
- Complies with standard ENTITY-MIB (RFC-4133)
- Allows filtering of the network elements according to chosen field values
- Support saving the inventory into CSV file

Performance Management

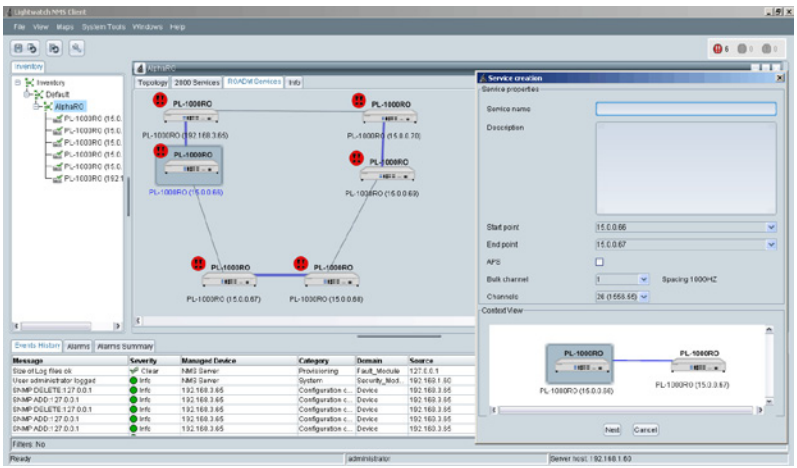


- Collects the PM from all devices in the network
- Displays the history of the 15 minutes and Day PM counters according to defined filter
- Supports configurable Graphical view of PM data
- Allows export of the PM information to file with CSV format

PacketLight NETWORKS

www.packetlight.com

PacketLight LightWatch™ NMS/EMS



Service Management

- Automatic discovery of PL-1000RO and PL-2000 provisioned services
- Supports A to Z Service Provisioning wizard for PL-1000RO and PL-2000 services
- Displays and highlights the path of a selected Service
- Supports display of service path, status and faults
- Supports full service awareness with the advanced chassis service management module (CSMM)
- Save and restore chassis configured services

Specifications

Hardware Requirements

Server:

- CPU Intel™ Core I7 3.0 GHz or higher
- Minimum 8 GB RAM
- Minimum 20GB free disk space

Client:

- CPU Intel™ Core I5 2.5 GHz or higher
- Minimum 4 GB RAM
- Free 1.5 GB disk space for installation
- Color monitor supporting 1024x768 resolution or higher

Supported Products

- PL-1000, PL-1000E, PL-400
- PL-1000TE, PL-1000TE Crypto
- PL-2000, PL-1000EM
- PL-1000TN
- PL-1000GM, PL-1000GT, PL-1000T
- PL-1000IL
- PL-1000RO

Software Requirements

- Windows 7/8/10
- Windows 2003/2008

- Optional: An access to SMTP eMail Server for Event Forwarding by LightWatch Server

Scalability

- Network Elements: Up to 500
- Clients: up to 20

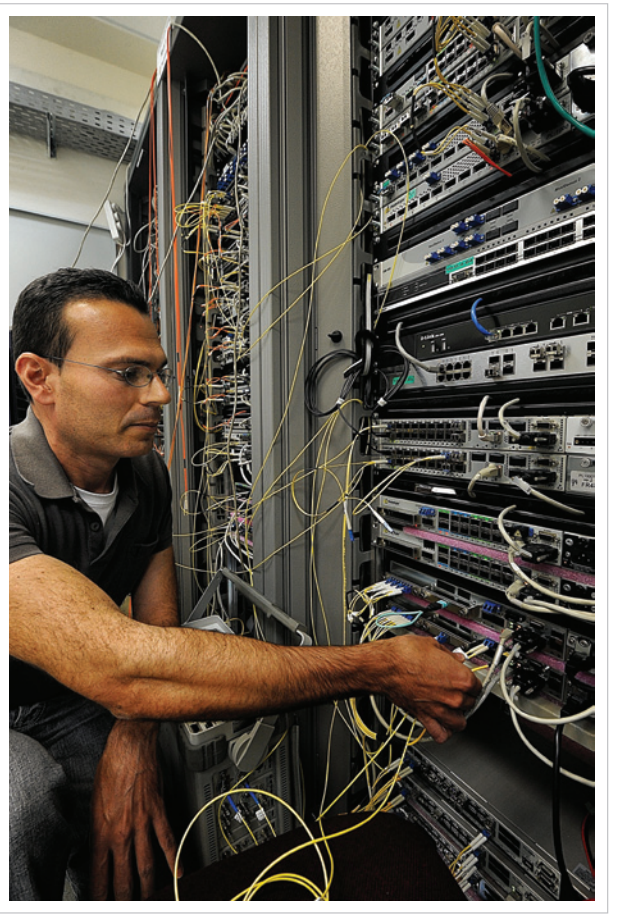
Management Protocols

- SNMPv2c: Between Server and NE
- TFTP: for file transfer between Server and NE
- HTTP/HTTPS: Web browser to NE
- Telnet/SSH: CLI to NE
- Syslog: for Syslog messages sent from the NE to the Server

PL-CARE Global Professional Services

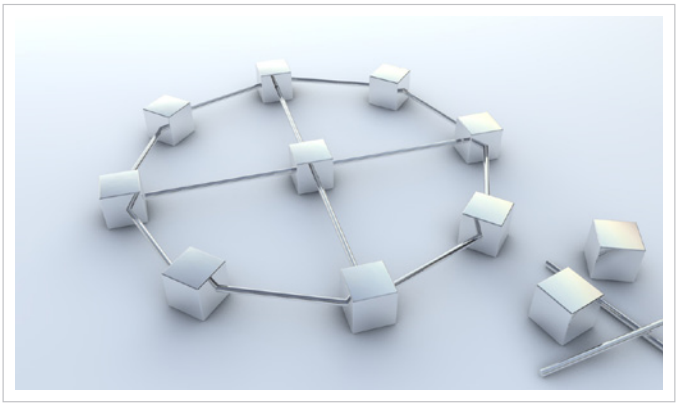
PacketLight's optical network solutions are designed and engineered for smooth installation and uninterrupted service for its life span

No business or organization can afford downtime in their communication network.
PacketLight's fiber optic professional team is your partner in design, planning, implementation and maintenance of your optical network. We are your consultants in optimization of optical networks in order to meet your business objectives and budgets. We are here to assist you in every step of the way in building reliable, scalable and cost effective optical solutions.



PacketLight Care Center (PLCC)

PLCC's goals are to deliver exceptional support and consulting services to our customers. PLCC is a state-of-the-art support and engineering team with superior technical capabilities and certified personnel that serves as a backbone for providing professional and quick resolution of problems to ensure success of customer's mission critical operations.
We provide our customers with expert consulting and troubleshooting assistance, online tools, and variety of training programs. In addition, customers can take advantage of PLCC's tools that monitor and simulate customer networks.
PLCC service team provides support on a 24x7x365 model to our customers around the world with the mission critical services when needed.



- Pre-Sales Consulting
- 24x7 Technical Support
- International Training
- Turnkey Project
- Onsite Installation

PacketLight NETWORKS

www.packetlight.com

PLCC Support Packages

PacketLight PLCC offers three levels of support services that can be suited for any organization and any need

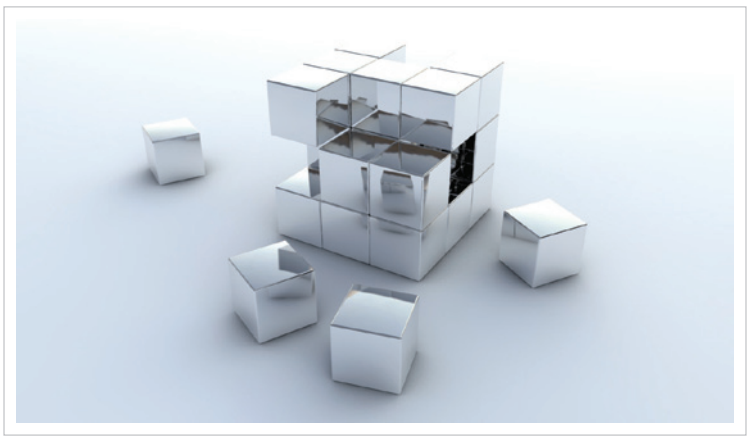
	Software Upgrades	Extended Warranty	8 x 5 Phone Support	24 x 7 Phone Support	Spares- NBD Delivery
PL-CARE1	Yes	Yes	Yes		
PL-CARE2	Yes	Yes	Yes	Yes	
PL-CARE3	Yes	Yes	Yes	Yes	Yes

PL-CARE1 covers initial warranties for hardware and software for a fixed time period after shipment. The initial hardware warranty applies to repair of faulty PacketLight equipment while the initial software warranty includes new software versions and access to most updated maintenance versions for all PacketLight equipment.

PL-CARE1 covers equipment repairs for a limited period in accordance with the warranty agreement and per PLCC's RMA guidelines.

PL-CARE2 package includes all PL-CARE1 features as well as:
Dedicated call center
regarding nonfunctioning or faulty PacketLight products 24x7

PL-CARE3 package includes all PL-CARE1 and PL-CARE2 and the following features:
Including spares that are dispatched from local offices or PacketLight headquarters, within the next business day (NBD).



INDUSTRY LEADING OPTICAL NETWORK MANUFACTURER

Established in 2000, PacketLight Networks offers a suite of leading CWDM and DWDM solutions for transport of data, storage, voice and video applications over dark fiber and WDM networks. Our products feature high quality and reliability along with performance and functionality at affordable prices. Our solutions are distinguished with low power consumption that is ideal for Customer Located Equipment (CLE) allowing maximum flexibility, as well as, ease of maintenance and operations and providing true Pay-as-you-grow architecture.

PacketLight products are represented by partners and resellers all over the world.
Our products are deployed by all who are active in meeting the demands for metro ethernet, business continuity, triple play solutions and enterprise data sharing applications including:

- Carriers, service providers, and dark fiber providers
- Insurance and financial institutions
- Defense and other strategic government organizations
- Universities and campuses
- Enterprises and manufacturers
- IT integrators and data center providers
- Utility companies such as railway and power companies

PACKETLIGHT PARTNERS AND MANAGED SERVICES

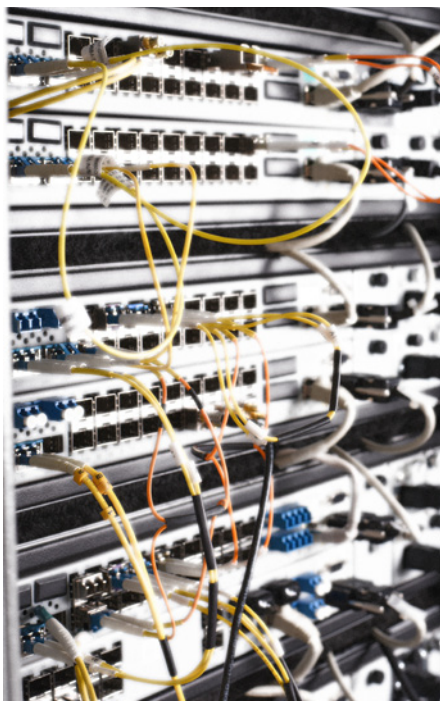
PacketLight offers a worldwide network of resellers who provide you with a complete

set of network services such as:

- Consultancy and network design
- Deployment services
- Managed services

Our partners bring a wealth of experience within the optical networking market and have
successfully deployed hundreds of PacketLight solutions throughout the world.
These partners offer our clients the benefit of their optical networking expertise by providing consultancy services that enable enterprise businesses to understand how to best implement a fiber based network for their organization.

They also offer deployment services for PacketLight equipment as well as network monitoring services fully managed from their state of the art NOCs. Many partners hold close relationships with local fiber providers and have ability to source out dark fiber for the clients, thus providing a fully end-to-end optical solutions to our customers.



27 Habarzel St.
Ramat Hahayal
Tel Aviv 69710
Israel
Phone: +972 3 768 7888
Fax: +972 3 674 5500

Call Free: 1-866-888-6798
Fax: 877 216 3230

Info@packetlight.com
www.packetlight.com

PacketLight™ NETWORKS