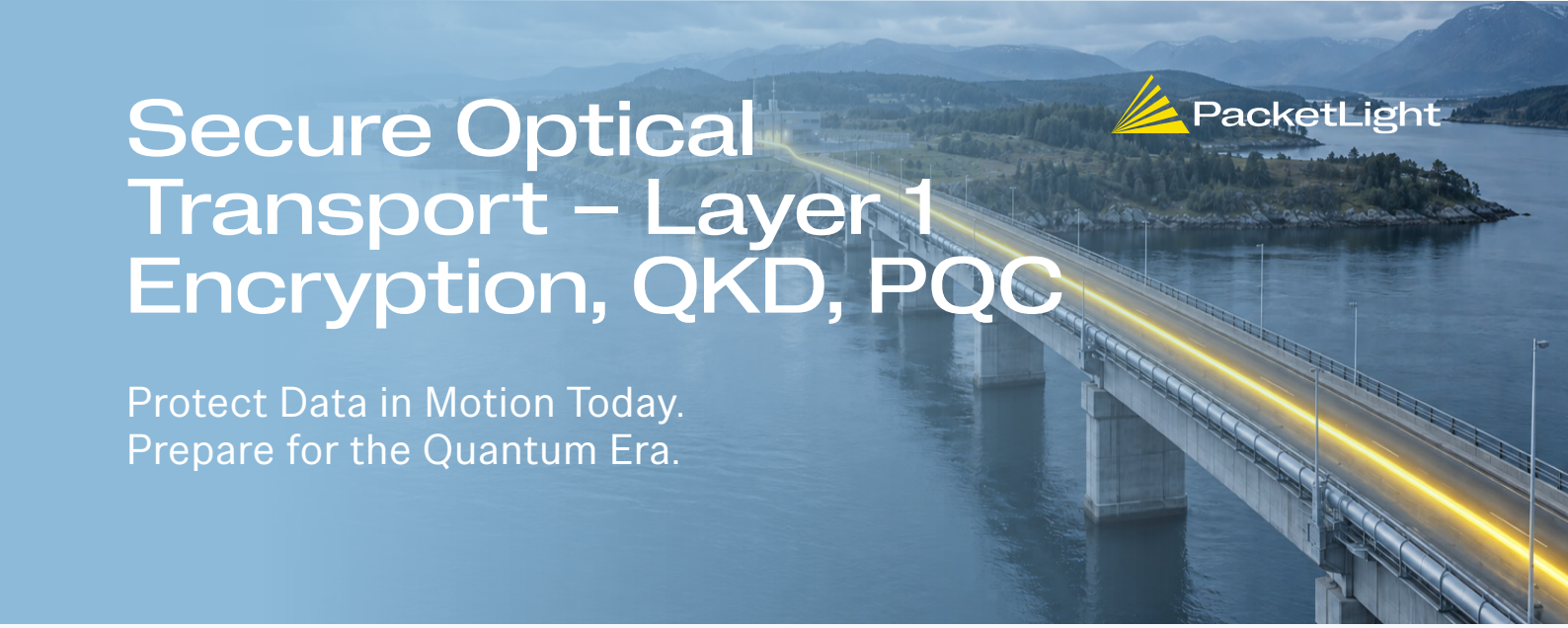

Secure Optical Transport – Layer 1 Encryption, QKD, PQC

Protect Data in Motion Today.
Prepare for the Quantum Era.

As sensitive data moves across data centers, cloud environments and critical infrastructure, protecting data in motion is essential. PacketLight combines embedded **Layer-1 AES-256 encryption** with **QKD** and **PQC** integration to secure optical traffic today while strengthening key exchange for the quantum era.

Quantum-Safe Key Exchange

Layer-1 encryption protects the data plane. QKD and PQC strengthen the exchange of the keys used to secure that data.

QKD Quantum Key Distribution uses quantum properties to securely establish shared encryption keys. Attempts to intercept or measure the quantum signal introduce detectable disturbances, allowing potentially compromised keys to be identified and rejected.

PacketLight integrates with external QKD systems and supports:

- Dedicated fiber for the quantum channel
- Same-fiber deployment using a dedicated quantum wavelength, where network
- Integration with multiple QKD technology providers
- Alarms and recovery from QKD fault conditions

Securing Data at Layer 1

PacketLight protects data directly at Layer 1, securing traffic across the optical transport path against threats such as fiber tapping, interception and unauthorized access to data in motion.

Ultra-low latency
Designed for latency-sensitive applications.

Multi-service support
Ethernet, Fibre Channel, OTN and legacy services.

Full throughput
Line-rate encryption with no reduction in bandwidth.

Flexible encryption
Per service or per uplink, depending on platform.

Open network integration
Fits into existing multi-vendor DWDM and OTN environments.

PQC Post-Quantum Cryptography uses quantum-resistant algorithms to secure key exchange over standard communication channels. PacketLight enables PQC through integration with specialized key-management solutions, providing a scalable approach to quantum-safe optical networking.

Security Foundation and Certifications

- GCM-AES-256 encryption
- ECC Diffie-Hellman key exchange
- SHA-384 authentication
- Quantum random number generation on platforms
- Frequent key exchange
- FIPS 140-3 Level 2 certified platforms available

PacketLight delivers secure optical transport with the performance, flexibility and control to protect data in motion and prepare networks for the quantum era.

Choose the Right Security Architecture

Layer-1 Encryption

Protect data in motion today.

Layer-1 + QKD

Add quantum-based key distribution.

Layer-1 + PQC

Add scalable quantum-resistant key exchange.

Hybrid Protection

Combine technologies according to security and network requirements.

Built for Critical Data

Data Centers & AI Infrastructure

Secure high-capacity data moving between compute, storage and cloud environments.

Financial Services

Secure latency-sensitive transactions, trading and data replication.

Government & Sovereign Networks

Secure sensitive and mission-critical data across private optical networks.

Utilities & Critical Infrastructure

Secure operational and business data across essential infrastructure.

Carriers & Service Providers

Secure connectivity and differentiated wavelength services.

Healthcare & Research

Secure sensitive data moving between hospitals, research facilities and data centers.

Your Network, Your Rules, Zero Vendor Lock-In

Talk to a Packetlight Expert Today: info@packetlight.com

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