

Encrypted Wavelength



Secure Your Data In-Flight

With the proliferation of sensitive data traveling over multiple networks, companies can't be without modern data transport security.

FirstLight now provides ultra-low-latency encryption without sacrificing network performance.

No organization is immune to the threat of sensitive and private information being pilfered by hackers. Today's network requires much more than high-capacity bandwidth — it needs a security strategy to protect critical data in flight.

FirstLight's Encrypted Wavelength solution enables ultra-low-latency encryption to secure your in-flight data with ease and speed. Encrypted Wavelength offers high-capacity, cost-effective, and scalable wire-speed encryption for end-to-end data

protection. Furthermore, FirstLight's Encrypted Wavelength features protocol-agnostic encryption to support a variety of applications.

Using proven technology from a leading vendor, two distinct sets of encryption keys are used for authentication and data encryption, with an encryption key rotation of mere seconds. This provides an 'always-on' encryption strategy combining ease of operation with unmatched flexibility, performance, and dependability.

While the focus of many in-flight data encryption solutions

is on encrypting data at layer 2 or higher, Encrypted Wavelength encrypts data at the transport layer, protecting all in-flight data at layer 1 and all the time. Traditionally, layer 2 encryption is more expensive than layer 1, and requires

costly equipment and maintenance, with higher latency, higher overhead and a lower performance standard. Layer 1 encryption is more affordable, provides better performance, and has ultra-low latency, with less overhead costs.

Consider that approximately 29,000 records are exposed during every data breach, putting the cost of a single breach into the millions, in addition to the loss of customer trust.

The hardware and software components associated with FirstLight's Encrypted Wavelength solution are compliant with Federal Information Processing Standards (FIPS) 140-2, offering assurance that the encryption solution complies with stringent encryption algorithms, key exchange mechanisms, and best-practice user authentication standards.

With the 'always-on' protection of FirstLight's Encrypted Wavelength, your critical data is protected and secure — whether it's traveling across the street, across town, or across regions.

Key Applications

























- Enterprise Data Center Interconnect (DCI) to support transport of large data sets and highly sensitive information between Data Center locations.
- Government and financial institutions that require certified, secure, high-speed communications between different locations.
- Healthcare applications with high-quality, low-latency requirements for secure, efficient, and timely collaboration between healthcare stakeholders. With encryption rendered useless to hackers, fines and penalties associated with a breach under HIPAA may be waived.
- Latency-sensitive applications, such as high-definition video or high-speed trading, that require a secure, ultra-low-latency transport solution.
- Utilities that want to protect their critical communication infrastructures.

Encrypted Wavelength

Features:

- Protecting all in-flight data 24/7 across all infrastructure: 10G and 100G from metro to long-haul
- Ultra-low latency wire-speed encryption for highly secure end-to-end communications
- Scalable and flexible wire-speed encryption
- FIPS-compliant encryption standards
- Protocol agnostic for a variety of services
- Leverages enhanced security features, including two distinct sets of keys for authentication and data encryption functions
- Integrates seamlessly into existing enterprise Public Key Infrastructures (PKIs)
- Enables secure management of encryption capability by the end-user in carrier- or enterprise-managed infrastructures via an integrated management tool
- Leverages enhanced security features with fast and hitless key rotation every second
- Delivers a best-practice encryption solution widely deployed across the globe in finance, legal, healthcare, military, and government networks

L1-L7 Encryption Comparison: Performance Impact by Network Layer

		Complexity & Cost	Protocol Support	Capacity Lost to Encryption Overhead (OH)	Scalable Payload Size	Latency	Encryption Path
4-7	Application - Transport Various	 \$\$	 Limited	 ~2-10% after handshake	 Restricted	 100's msec	 end 2 end
3	Network IPSec	 \$\$\$	 IP only	 40-60% dependent on packet size	 Restricted	 100's msec	 end 2 end
2	Data Link MacSec	 \$\$	 Ethernet only	 20 - 40% OH capped @~40bytes / packet	 Restricted Standard MAC sizes	 µsecs	 hop by hop
1	Physical Layer 1	 \$	 multi-protocol	 0% loss OH in OTN wrapper	 Flexible 1.25G-100G ODUFlex	 µsecs @10G / nsecs @100/200G	 end 2 end