Secure Optical Networking

As-A-Service

New Revenue-Generating Business Opportunity

Data propels the business applications and end-user services of your enterprise and business customers. As such, corporate data must flow smoothly among the business locations and data centers, with strong protection from eavesdropping, theft, and corruption. Your customers also need data replicated across multiple sites for business continuity and disaster recovery contingency plans.

As a service provider (SP), this presents you with a new business opportunity. You can enable your enterprise and business customers to fulfill their data networking needs with a secure, private optical network, offered as a service. Ribbon's Apollo optical networking system delivers a range of encrypted and non-encrypted optical connectivity services, from point-to-point links to full-mesh redundant networks. Apollo lets you fulfill your customers' immediate business needs, while assuring a future-proof platform for expansion.

New Service opportunity	**Unlimited** ultra-low-latency bandwidth	**Unbreakable** encryption against interception	**Economical** Deploy only as you sell

Ribbon lets you extend secure private optical networks to all varieties of enterprise and business customers with ease and confidence, providing a profitable new revenue generation opportunity

Finance	Healthcare	Manufacturing	Retail	Research & Education	Critical Infrastructure	Government

Advantages of an Optical Networking Service

Offering your customers an optical network as-a-service provides multiple benefits:

- **Unlimited bandwidth:** Optical links can handle all current and future corporate communications needs easily. It lets customers consolidate all their data, voice, and video networking services on a single network.

- **Ultra low-latency response time:** Optical links have the lowest latency of any network type. This is particularly important for productivity, when customers run applications, like Office 365, at remote data centers.

- **High reliability:** Redundancy is added, as needed, through use of multiple optical routes, or with backups, using switched services.

- **Full visibility with no management headache:** Customers can monitor the status of their optical network through a customer network management (CNM) portal, even though you (as an SP) assume full responsibility for managing the performance and availability of the network.

- **Deploy only as you sell:** Invest in new cards and/or pay for licenses only when you actually sell optical networking service to your customers.

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Optical Encryption is the Icing on the Cake

On top of these benefits, you can offer your customers optical encryption (as a standard or optional feature) to fully protect their data flowing over the optical links from fiber-tapping snoopers.

This is imperative, because even when customers use encryption above the optical layer, fiber tapping still exposes non-encrypted addressing information. This means that intercepted optical flows can reveal a customer's network architecture and communications patterns, as well as any data higher up in the OSI stack that is not protected by encryption .

Optical encryption is particularly attractive for businesses because it does not add any performance penalty. Compared to other encryption methods, it operates at line speed with no overhead. This is particularly important for latency-sensitive applications like synchronous data replication, when transactions are not committed until the data is mirrored in two locations.
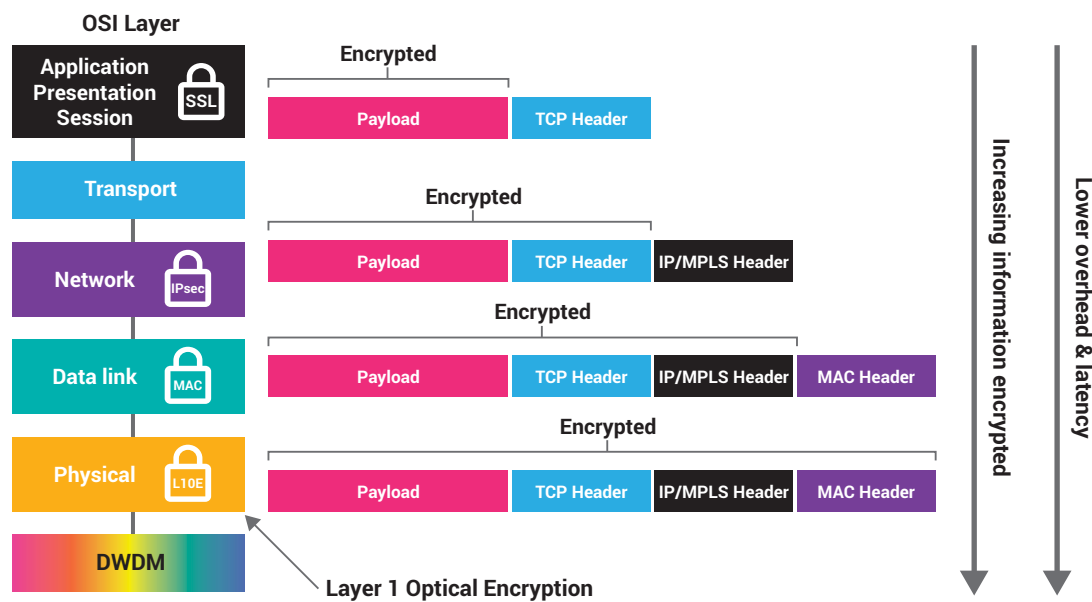

New Revenue Stream

A secure private optical networking service – for enterprise and business customers – lets you, as an SP, extend a unique and differentiated solution to this customer segment, while adding a new revenue stream. Best of all, it does not require any initial investment. Each customer opportunity can prove-in individually with its own ROI. Over time, as you build up a common optical infrastructure in your metro networks, it makes the business case for adding customers even more attractive.

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Secure Private Optical Networking Services

As an SP, you are in an ideal position to offer optical networking as a service. You already own or have access to extensive dark-fiber resources where your customers are located, within and between metropolitan areas. Ribbon's Apollo optical networking system makes it easy for you to build an optical networking infrastructure on top of those fibers, to extend secure private optical networking services to your enterprise and business customers.

Customer A
Customer B
Customer C
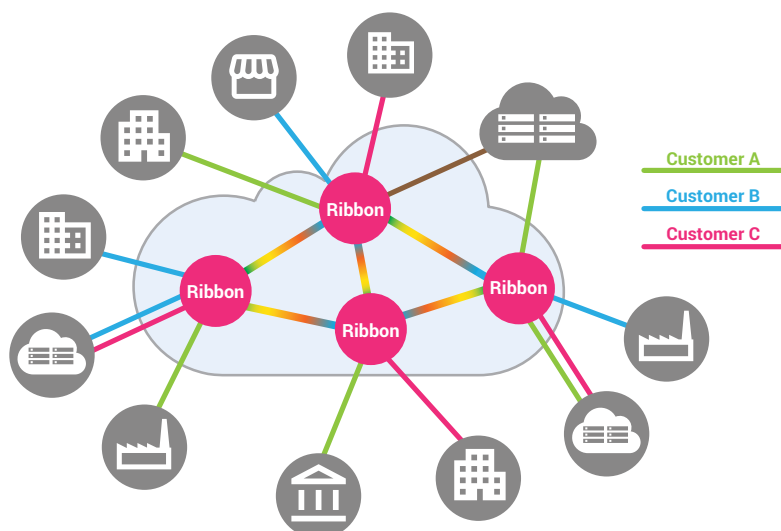
High-performance Optical Networking

Handles all corporate communications: Apollo can carry all enterprise communications over optical links by supporting the richest set of service interfaces for data, storage area networking (SAN), voice, and video, including:

- Ethernet – from 1GE to 100GE
- Fibre Channel – from FC1 to FC32
- SDH/SONET – from STM-1/OC-3 to STM-64/OC-192

Matches capacity to your needs: Apollo maps the service interfaces onto secure optical wavelengths for transport between locations, with a range of transmission speeds: 10 Gbps, 40 Gbps, 100 Gbps, and even 200 Gbps. It enables bundling your customers' corporate communications traffic in a manner that best suits their needs. Multiple services can be multiplexed into a single wavelength, and of course, a fiber can carry multiple wavelengths. You can be sure that you will never run out of capacity.

Instantaneous response time: Optical networking is already fast. Beyond that, Apollo supports a special ultra-low latency mode, removing all overhead and making it nearly instantaneous. A round trip from a corporate HQ to a data center 25 Km away is less than a millisecond. This means that an Apollo optical network does not add any time to your customer's staff interacting with remote data-center-based applications.

Customizable network management: Apollo lets you provision and maintain all your customers' private optical networks through a single, intuitive interface. This covers all aspects of adding, removing, and modifying service capabilities and underlying networking infrastructure.

With this same interface, Apollo also provides continuous end-to-end performance monitoring, to ensure SLA commitments and detect issues early-on, before they become service-affecting.

Moreover, Ribbon lets you provide a portal to your customers, through which they can monitor the performance of the optical services that you provide.

Efficient modular deployment: Apollo employs a family of shelf choices from 2RU to 15RU, featuring totally interchangeable line cards. This makes it easy to provision private optical networks, precisely meeting the needs of each location. These may range in size from compact units at individual customer premises to multi-tenant units in central offices, serving multiple customers.

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Flexible Unbreakable Optical Encryption

Apollo protects against fiber tapping by encrypting traffic at the optical transmission layer, with multiple advantages:

Selective encryption: Apollo encrypts all traffic on a given wavelength. If there are several multiplexed services, it can encrypt selectively, per service. This is a unique Apollo capability that gives customers freedom of choice. For example, they may choose to encrypt all data and SAN networking traffic, but not voice traffic.


Alien wavelength capable: Apollo can carry encrypted services or links as an alien wavelength on top of existing optical line systems. This lets you get started more quickly.

Unbreakable encryption: The highest level of AES-256 encoding is used, requiring hundreds of years of processing to decipher without the keys.

Fast and lightweight: Apollo optical encryption adds no overhead or delay to the optical transmission stream carrying the encrypted information.

Customer key administration: All security aspects are totally under your customers' control. This is particularly important for being able to guarantee data integrity for their end-customers and regulators.

FIPS 140-2 compliant: Provides evidence if anyone tries to tamper with the encryption and key management mechanisms.
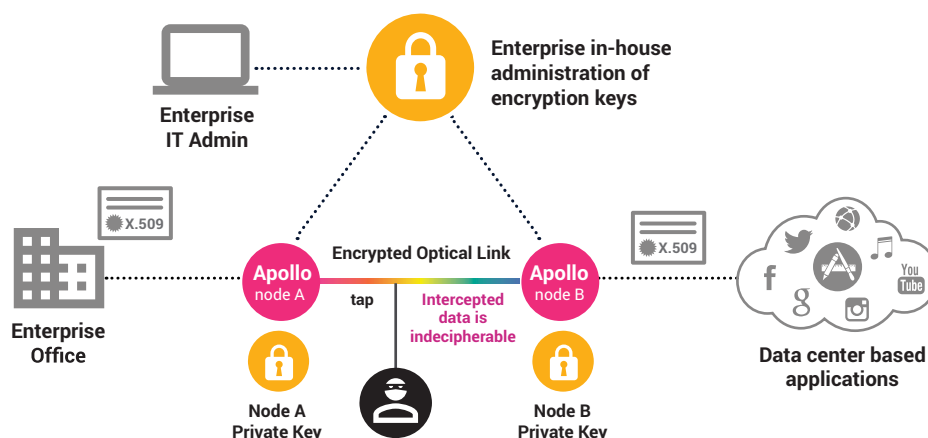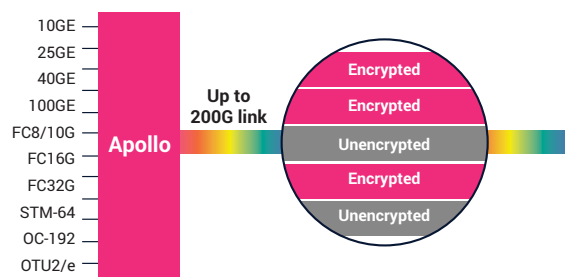
About Ribbon

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon visit rbbn.com.

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