![PacketLight™ NETWORKS]
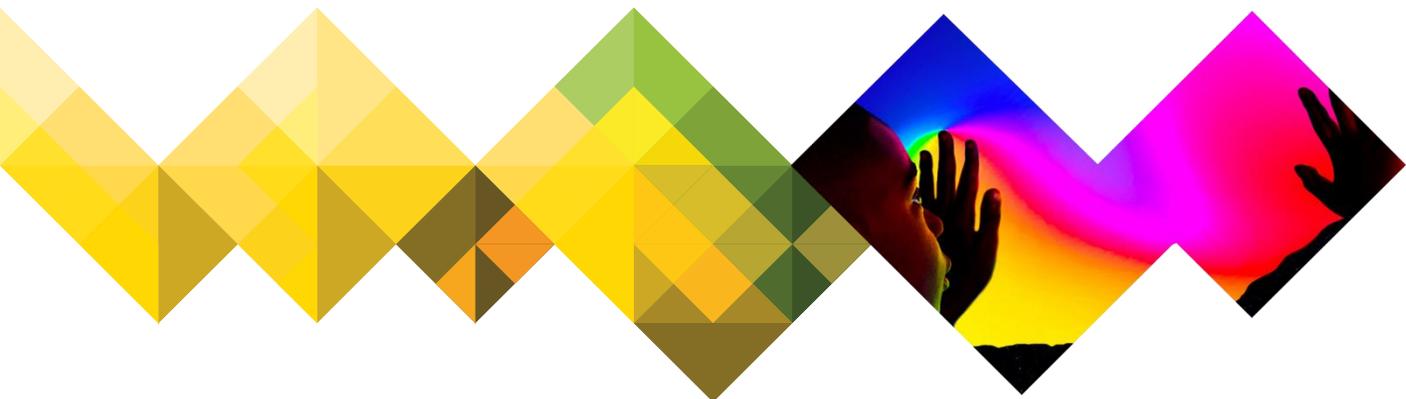
Alien Wavelengths – Easily Scaling Any Network

Introduction

Alien wavelengths enable to drive more capacity over existing OTN/DWDM network infrastructure. The solution enables network providers to increase existing network capacity and offer additional private wavelength services such as encryption, without replacing existing infrastructure. This eliminates the need for large investments in infrastructure, as the wavelength is added to the network as needed, with clear ROI.

The Challenge

The increasing use and development of technologies such as 5G and automation, and growing consumption of the Internet of Things (IoT), 4K and video content have all lead to high demand for bandwidth. This poses a major challenge for service providers with scaling existing WDM networks that do not have enough transport capacity. Although a sudden surge in requirement for bandwidth may be planned in advance, it also may occur without warning despite best efforts to accurately forecast demand, as different segments in the network may expand unpredictably.

The following can drive the need to add wavelengths to existing infrastructure:

1. Improve spectrum utilization due to wavelength exhaustion on existing multiplexers

2. Service load is greater than the incumbent equipment platform can support

3. A large enterprise that opened a new facility in the region

4. Unexpected growth at an existing customer, generating an immediate need for additional capacity

5. Support for new types and rates of services that are not supported by the existing system

6. Need for encrypted services or wavelengths

7. New business module of reselling wavelength services

In this type of dynamic challenging environment, any provider of high capacity wavelength services needs to have a plan for addressing all bandwidth requests. A highly functional solution is needed, that enables adding any amount of capacity to any span at any time. The solution also requires a strong level of manageability that keeps operational expenses low while delivering guaranteed performance over any distance. The global alien wavelength market size is expected to grow from USD 3.3 billion in 2018 to USD 4.9 billion by 2023[1].

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[1] https://www.researchandmarkets.com/publication/mzri8caur/4764924

Solution

Alien wavelength solution enables to connect high capacity 100G/200G wavelengths over existing third party vendor DWDM network. It can be an add-on, providing high capacity wavelength, utilized to release wavelengths and/or as an encryption add-on to an existing backbone. The solution has numerous variations, none of which require any changes to the network backbone infrastructure.

1. Muxponder solution - aggregating 10/40/100Gb Ethernet, and 8/16/32G Fibre Channel, and OTU2-4 interfaces, into 100G/200G DWDM wavelengths (see Figure 1), which both releases wavelengths and ads capacity to existing third party WDM/OTN backbone. The added wavelengths have optional embedded Layer-1 optical encryption.

2. Transponder solution - adding 100G/200G capacity to existing third party DWDM network and OTN backbone with optional embedded Layer-1 optical encryption.

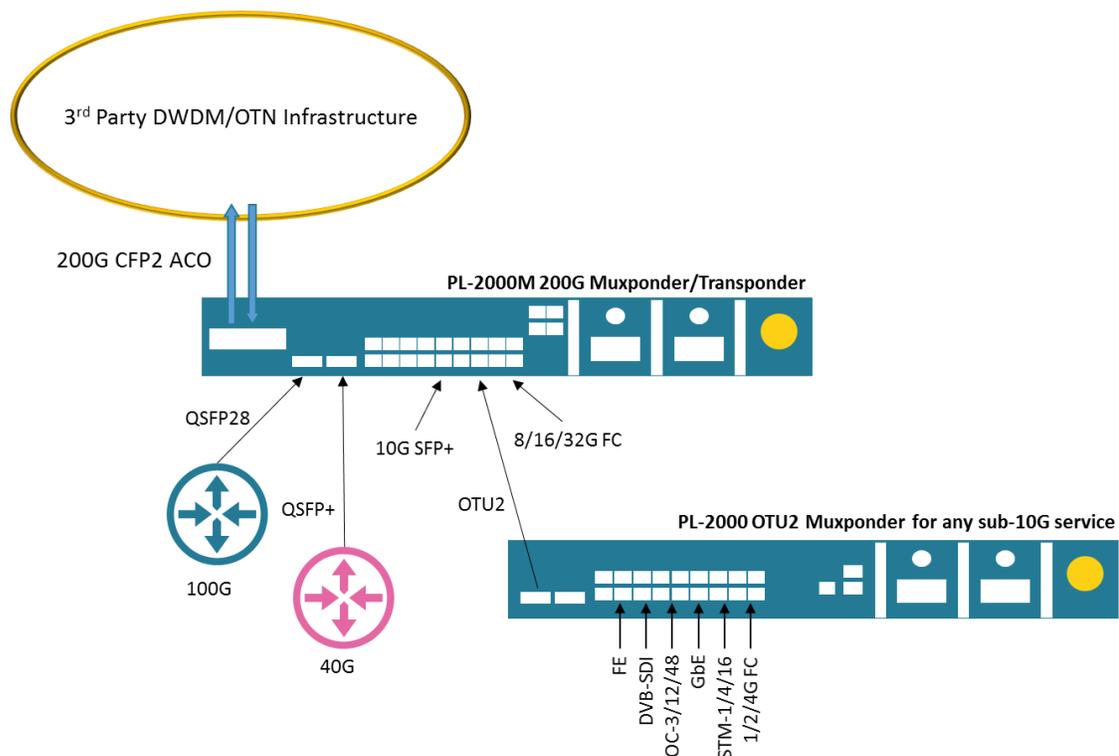3. Layer-1 optical encryption add-on to an existing WDM/OTN backbone.

Figure 1: Any Mix of Services Aggregated into a Single 100G/200G Wavelength

Plan and Deploy

Service providers have made it possible to purchase only managed services, and the carrier provides Layer-1 equipment at the customer end. As the equipment needs to be installed in the customers' data center racks, size and power consumption is crucial.

Devices must be compact, consume minimal power and provide full demarcation point for the carrier providing the managed service. The solution must be agnostic to third party Ethernet and Fibre Channel switches. In cases where encryption is required, the solution must support role-based management separation for the network administrator (carrier) and crypto officer (end user)

PacketLight alien wavelength solution supports 10G, 100G and 200G depending on the existing link optical parameters as discussed above.

Figure 2: Alien Wavelength on Third Party Backbone

Solution Advantages

- Cost-effective upgrade of existing network for larger capacity and better spectral efficiency, without replacing or changing infrastructure.

- Sensitive data is secured and protected on an existing wavelength or aggregated with others.

- Releases bottlenecks in the network by reducing the number of wavelengths or required fibers.

- Supports transparent wavelength services by enabling the provision of solutions such as video and storage or encrypted services and transport them as a pure wavelength over the existing infrastructure.

- Provides flexibility to use different vendor hardware seamlessly over the same infrastructure, forming disaggregated network architecture.

PacketLight Solution for Alien Wavelength

PacketLight products provide powerful 1U optical transport solutions. The following products support alien wavelength solution:

PL-2000M 200G Single Wavelength Muxponder - 200G multi-protocol multi-rate muxponder/transponder for building high capacity 200G encrypted optical transport networks. Click here for more information

PL-2000 20G OTN ADM Muxponder - provides an efficient and flexible aggregation layer and cross-connect of multi-protocol/multi-rate sub-10G services into dual 10G uplink trunks. Click here for more information

PL-2000AD 200G ADM for Long Haul - 200G multi-protocol multi-rate muxponder/transponder/ADM solution for building encrypted 100G high capacity optical transport networks. Click here for more information

PL-2000T 800G Optical Transport Platform - a highly integrated solution with four 200G pluggable optical modules, delivering up to 800G in a 1U chassis. Click here for more information.

About PacketLight

Established in 2000, PacketLight Networks™ offers a suite of leading 1U metro and long haul CWDM/DWDM and OTN solutions, as well as Layer-1 optical encryption for transport of data, storage, voice and video applications over dark fiber and WDM networks. PacketLight provides the entire optical layer transport solution within a highly integrated compact platform, designed for maximum flexibility, easy maintenance and operation, with real pay-as-you-grow architecture, while maintaining a high level of reliability and low cost. PacketLight works with an international network of resellers and partners to provide you with a complete set of network services, with installations worldwide.