PacketLight's single fiber solutions

F iber optic networking has traditionally required a fiber pair for transmitting and receiving signals simultaneously: one strand is reserved for transmitting, the other for receiving. Single fiber solutions emerged as the easiest path for reducing dark fiber solution cost and optimizing fiber. Rather than using two dedicated strands, one for receiving and the other for transmitting, single fiber strand can carry a bi-directional signal.

For enterprises leasing dark fiber from providers, the operational savings is extremely significant. The challenge is to maximize revenues while reducing their largest expenditure, the monthly cost of the fiber link. By using single fiber, the operational cost is reduced by 50 percent which make dark fiber an affordable solution.

PacketLight provides both active and passive solutions for single fiber transmission. The solutions range from 4 services up to 8 services using either CWDM or DWDM technology. For DWDM applications, up to 16 services with optional optical amplifier can be transported. The single fiber solution seamlessly interfaces with any standard client interface optics and supports 10G and sub 10G services in any mix.

Single Fiber Applications

- Point to Point, Ring or linear Add and Drop- where installing new fiber is difficult or expensive
- Enable segmentation of the enterprise traffic over 2 different fibers rather than using the same fiber for both segments
- Increase reliability to an existing dual fiber solution by using one fiber for working and one for protecting

CWDM/DWDM 8/16 wavelengths Single Fiber solution

The PacketLight Single Fiber solution is transparent to the client optical interface. All the conversion to a single fiber is done by the PacketLight attached equipment. The solution fits both 10G and sub 10G client interfaces with any mix. The solution incorporates a single MUX (either CWDM or DWDM) with 8 or 16 channels; half of the Mux is used for transmission and half for receiving (See Figure-1).
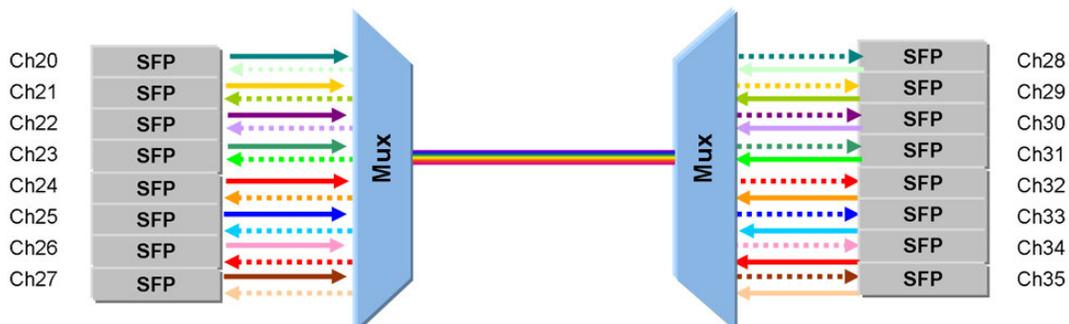

Figure 1

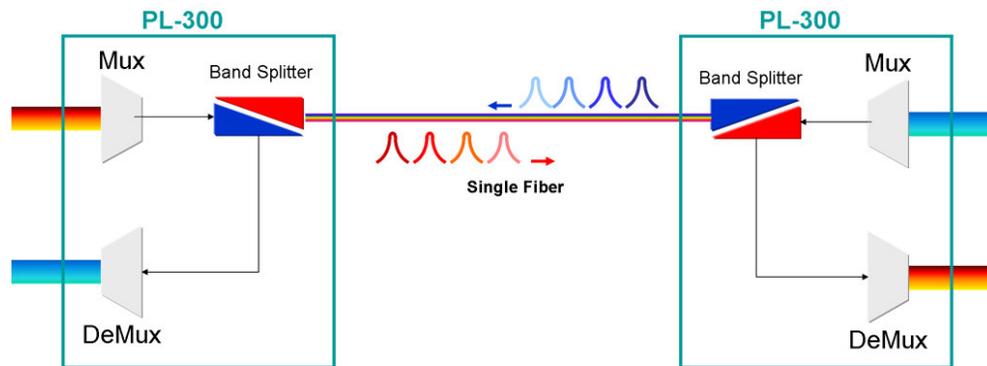www.packetlight.com

32 wavelengths DWDM Single Fiber solution

Figure 2

The 32 wavelengths Single Fiber solution allows extremely high utilizing of a single fiber strand to pass up to 16 client interfaces by mapping them into 32 different wavelengths traveling in the opposite direction of the fiber simultaneously.

The wavelengths traveling over the dark fiber are split into two spectral bands by using band pass splitter at both ends of the dark fiber. The Band pass splitter is connected to two optical Muxs each operated on a different spectral band. The Mux output is connected to PacketLight's PL-1000 and PL-400 which provide the 3R (Retiming Reshaping and Regeneration) functionality, performance monitoring, management and other optical layer diagnostic capabilities.

32 wavelengths DWDM Single Fiber solution with Optical Amplifier
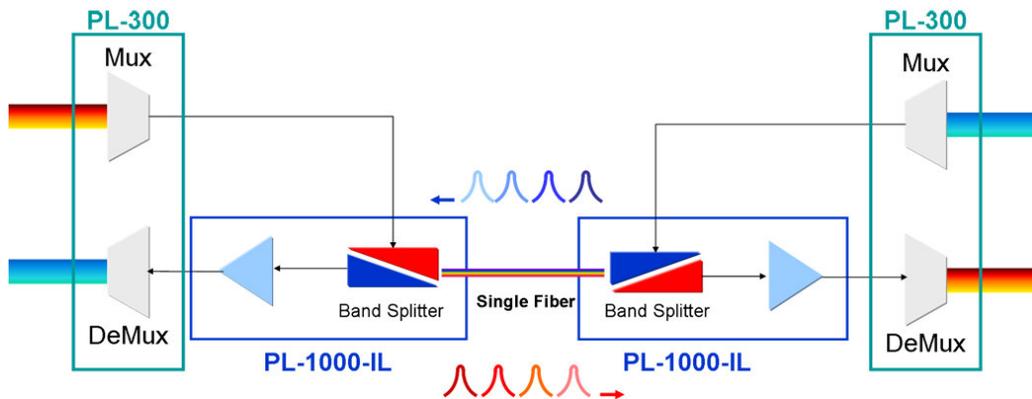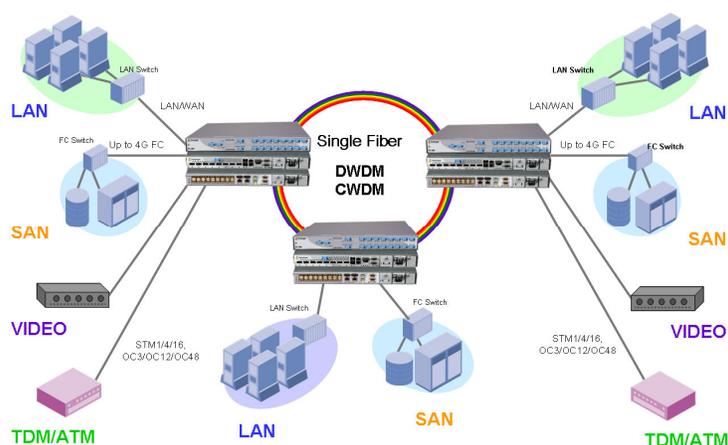
Figure 3

For long distance applications which require high optical budget, PacketLight provide single fiber optical amplifier (EDFA -Erbium Doped Fiber Amplifier) solution to overcome the needed link budget.

The amplifier is connected after the band pass splitter and amplifies at each end the appropriate spectrum.

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Summary

Traditional optical networking calls for a pair of fiber for data transport: one strand for transmitting the signal and the other strand for receiving the signal. However, dual fiber requires more optical and financial resources. With PacketLight's CWDM and DWDM solution, customers are able to utilize single fiber strand for both transmitting and receiving, thus significantly maximizing their investment and decreasing the monthly leasing costs.

About PacketLight Networks, Ltd.

PacketLight Networks offers a suite of Leading 1U Metro CWDM and DWDM solutions, for transport of data, voice and video applications, over dark fiber and WDM networks, featuring high quality, reliability and performance at affordable prices. Our products are distinguished with low power consumption ideal for CLE (Customer Located Equipment) allowing maximum flexibility as well as ease of maintenance and operation and providing real Pay-as-you-grow architecture. PacketLight customers are carriers, service providers, IT integrators and enterprises who are active in meeting the demands for metro Ethernet business continuity, Triple Play solutions and enterprise data sharing applications. For product and reseller information, Please contact info@packetlight.com

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