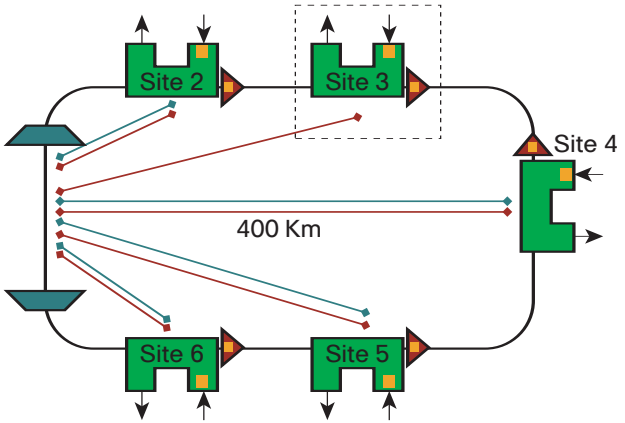
Reconfigurable Optical Networks At-A-Glance

Providing Flexible Bandwidth Services Between Locations for Service Provider and Enterprise Communication Applications

Why Should I Care About a Reconfigurable Optical Network?

Traditional WDM solutions are limited by the technology used to add and drop wavelengths at each site. Capacity planning poses a challenge to anyone attempting to build out an optical network by using fixed-channel filters (Figure 1) that can only add and drop specific channels or bands of wavelengths. Changes to traffic patterns must be engineered in advance, and in-service changes require inserting new filters into the network, disrupting service, and affecting users. A reconfigurable optical network offers the possibility to grow services between sites with no advanced engineering or planning, and without disrupting services.

Figure 1. Fixed-Filter Network



What Problems Need to be Solved?

In the past, reconfigurable optical networking technology was too expensive or delicate to be widely deployed. With newly mature silicon-based integrated Planar Lightwave Circuit components, reconfigurable optical add/drop multiplexers (ROADMs) are now being installed in many applications.

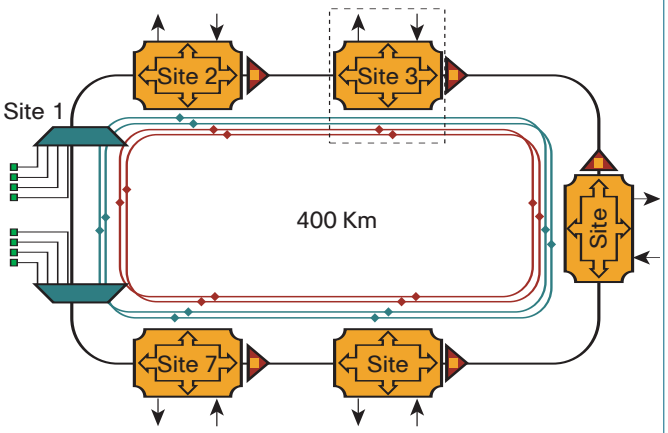
Reconfigurable Optical Networks

The Cisco® ONS 15454 Multiservice Transport Platform (MSTP) offers a comprehensive reconfigurable optical networking solution, including:

- 32 channel ROADMs available in C and L bands
- Multirate tunable transponders and muxponders that can support any service, including Ethernet, TDM, and storage
- Intelligent WDM software that can automatically manage and adjust optical power levels as new services are added or deleted
- Engineering tools to rapidly solve network design requirements and simplify network installation
- Optical components capable of supporting 40-Gbps signals for future growth
- Software that can offer end-to-end management of wavelengths, including signals that originate from devices such as routers and Ethernet switches

Compared with the fixed-filter design, the ROADM design shown in Figure 2 allows any wavelength to be dropped at any site without affecting any of the other services.

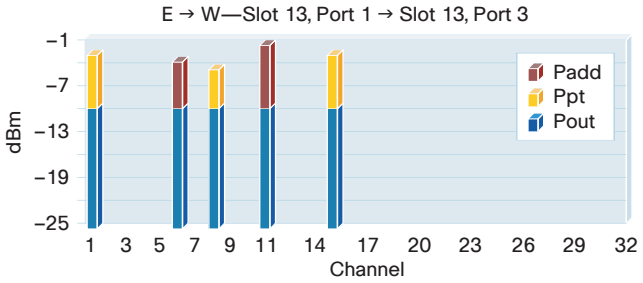
Figure 2. ROADM Design



What are the Benefits of a Reconfigurable Optical Network?

The use of reconfigurable optical networking technology provides both service providers and business users several benefits. These include:

- In-service growth from 1 to 32 protected wavelengths without affecting existing traffic
- Simplified network design and provisioning and lower operational expenses
- Faster service installation and provisioning
- Superior management visibility into the network for lower operational cost, including per-channel power levels as seen in the figure below



Why Cisco?

Cisco has achieved tremendous success with its optical multiservice platforms with over 50,000 ONS15454s deployed to date. Only Cisco can provide an end-end optical transport solution which combines MEF-certified Ethernet, TDM, and reconfigurable DWDM service delivery that can also meet the stringent IP service-level agreements needed for low-latency data services, such as IPTV. Furthermore, Cisco intelligent WDM solutions are backed by our outstanding customer service and technical support.

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