

## Next-Generation DWDM Helps Developers Attract Elite Corporations

### EXECUTIVE SUMMARY

**Saddleback Communications, a Division of the Salt River Pima-Maricopa Indian Community**

- Industry: Telecommunications Service Provider
- Location: Scottsdale, Arizona

### BUSINESS CHALLENGES

- Overcome infrastructure scalability limitations and fuel high-growth real-estate development
- Enable higher-capacity services that can attract elite corporate tenants
- Simplify network to eliminate high operating costs and capital expenses
- Shorten time for service delivery for faster market response

### NETWORK SOLUTIONS

- New optical infrastructure for flexible, scalable capacity
- IP/Ethernet over DWDM (XPonder) blades for high-speed Gigabit Ethernet business services
- New Metro switches for efficient service aggregation at the edge

### BUSINESS RESULTS

- Increased customer satisfaction due to high-speed service offerings
- Simplified network design for reduced operating expenses
- Point-and-click provisioning of Ethernet-based services for faster, easier service enablement

Saddleback Communications' XPonders enable world-class business services to fuel growth of high-tech corridor

### Business Challenges

For the last decade, Saddleback Communications has provided Internet and voice services for the Salt River Pima-Maricopa Indian Community. Since the reservation is home to only about 5000 residents, some might think that the carrier would resemble hundreds of other small rural operations. But this particular community includes a nine-mile stretch of prime commercial real estate bordering the fast-growing city of Phoenix. Named the Loop 101 Corridor because of how it is situated on the freeway between Tempe and Scottsdale, this extremely desirable location is undergoing rapid transformation. The community has teamed up with several major developers to build out millions of square feet of commercial property for business parks, hotels, and retail.

The developments can only succeed if they can continue to attract more premier corporate tenants. "We are the sole provider of telecommunication services for the Loop 101, but we can't help the community succeed if we treat our enterprise customers like a captive subscriber base," says Shane Gregory, director of operations at Saddleback Communications. "To meet the needs of our current customers and continue to attract premier corporations, we are committed to delivering world-class business communication services."

The Corridor's fast pace of development, however, was stressing the carrier's legacy network. They own 100 percent of the extensive fiber deployed in the community, but felt they had become "fiber rich and electronics poor," since the existing networking equipment was antiquated and therefore expensive to scale. Operating costs were escalating, and it became clear that the current network could not deliver the full range of Ethernet services required by global companies moving into the Loop 101 Corridor. Saddleback Communications set out to evaluate dense wavelength-division multiplexing (DWDM) solutions as a foundational infrastructure to support highly scalable delivery of telephony, Ethernet private line, virtual private line, and LAN services.

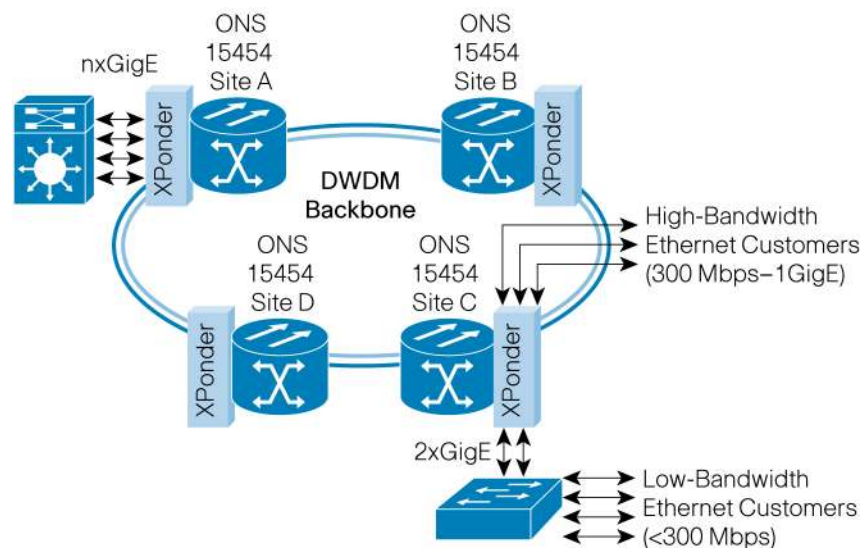
## Network Solutions

After evaluating their options, Saddleback Communications chose a solution based on the Cisco® ONS 15454 Multiservice Transport Platform (MSTP) equipped with XPonder technology (see Figure 1). The new optical network has been configured to initially provide the carrier with 40 Gigabits (G) of capacity and the ability to offer business customers true line-rate services. The capacity can be easily shared across multiple sites. Responding to customer demand for additional capacity becomes a simple configuration change instead of a costly installation of new fiber. In the future, the Cisco MSTP can be easily expanded as needed in increments of 10 G.

“We’ve met all of our technical requirements in terms of enabling full line-rate Ethernet services and gaining a scalable foundation,” said Gregory. “And the Cisco name is a definite advantage when it comes to convincing large global companies that we can deliver commercial-grade high-performance services. We’ve set ourselves apart as an innovator with true 100 Megabit and Gigabit Ethernet capabilities. Instead of forcing them to deal with a ‘small telco,’ we have become a technology driver and are able to attract major corporations that are considering this area.”

Cisco Catalyst® 3750 and 6509 Metro Ethernet Switches complement the new optical architecture perfectly by providing efficient aggregation of Ethernet services at high-density customer concentration points. As locations grow, these platforms enable affordable port aggregation capability that integrates transparently with the XPonder technology.

**Figure 1.** The New Saddleback Communications Network



## Business Results

Saddleback Communications is phasing in the new optical infrastructure and migrating customers starting with those that need the new high-speed Metro Ethernet services. “The new network is all about growth – we now have the flexibility to add in new nodes while keeping our overall operating costs low,” said Gregory. “With our portfolio of next-generation business services including support for GigE applications, we can now help developers attract businesses to the Loop 101 Corridor.”

Based on the commercial development projects under way in the Loop 101 Corridor, Saddleback Communications anticipates the addition of a new XPonder site every four to six months. The build-out can be cost-effectively tied to the sale of new services as new companies move into the

area and require high-speed private lines (100 Megabits and up). Catalyst switches can be subtended off the XPonder to provide high-density termination of 10/100 customers while freeing up XPonder ports for high-bandwidth customers. The Cisco solutions also create a flexible foundation that can accommodate redundancy and failover for commercial-grade resilience, and that offers built-in automation and simplified provisioning to lower operating costs and speed service enablement.

To date, the migration to the new network has gone very smoothly – both in-house and customer teams are very satisfied with the progress and the outlook for future advanced services. Saddleback Communications serves a prestigious group of corporate customers including Rural/Metro Corporation, Bear Stearns, Fender Musical Instruments, Medicis Pharmaceuticals, Cold Stone Creamery, and William Lyon Homes.

### Next Steps

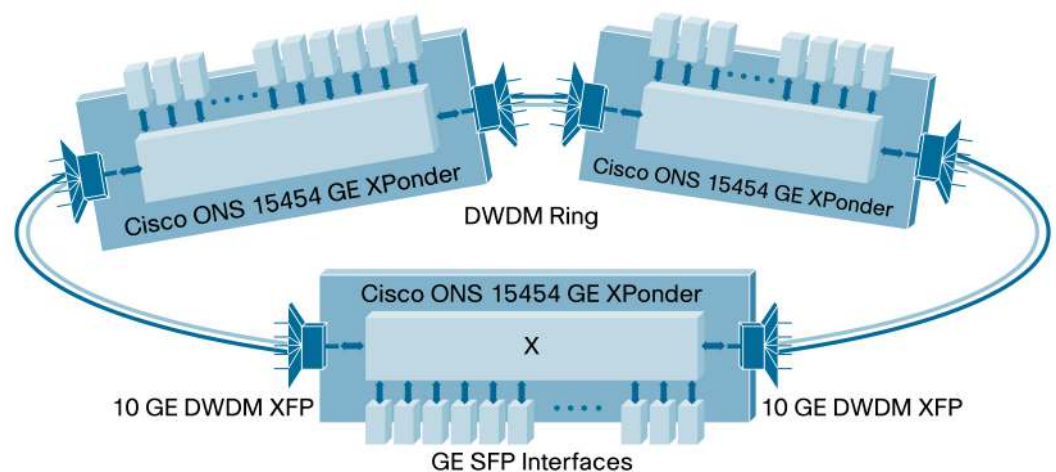
Saddleback Communications plans to expand its XPonder-based Cisco ONS 15454 footprint to keep pace with the growth on its optical backbone. The next-generation optical backbone can continue to expand, providing service flexibility, resiliency, and optimizing the use of Saddleback Communication's fiber infrastructure. As a result, the carrier is able to meet the business and technical requirements of commercial and residential customers in the Loop 101 Corridor.

In addition, Saddleback Communications is looking ahead for its residential customers, and is evaluating the deployment of fiber to the home. The new network can easily accommodate advanced services for its residential portfolio and brings the same efficiencies and cost savings to this part of the business.

### Technical Implementation

The initial deployment provides an efficient, simplified alternative to the previously employed method of stacking multiple SONET OC-48 rings. Each XPonder-enabled wavelength provides 10 G of capacity from day one, and each wavelength can be used to connect multiple XPonder-enabled sites. Saddleback Communication's initial four-wavelength DWDM deployment gives them 40 G of ring capacity (see Figure 1). This efficient Cisco implementation bundles multiple 10 G rings on the same fiber strands. As bandwidth requirements increase, the carrier can simply light another wavelength instead of having to install more SONET circuits or deploy more fiber.

**Figure 2.** Cisco ONS 15454 Gigabit Ethernet XPonder Card Layer 2 Logical Scheme



Cisco's technology lets Saddleback Communications share the capacity of each 10 G ring with multiple sites (see Figure 2). Using virtual LAN (VLAN) tagging, the full 10 G capacity can be distributed in Gigabit Ethernet (GigE) or sub-GigE increments to any of the 20 SFP-enabled XPonder ports. Multiple XPonders can be strung together at a single site to increase port count as needed. The 4 x 10 G port version of the XPonder is also ideal for head-end applications of XPonder rings. With the downstream 20-port XPonders aggregating multiple ports of Ethernet traffic to a single 10 GigE stream, the 4-port version provides efficient 10 G hand-off of the traffic to head-end routers or switches.

### PRODUCT LIST

#### Routing and Switching

- ONS 15454
- 20-port GigE XPonder Cards
- Catalyst 6509
- Catalyst 3750 ME

#### Voice and IP Communications

- IP Phones

The Cisco XPonder solution gives Saddleback Communications the ability to enable any-to-any traffic patterns for Ethernet services. As the needs of Saddleback's customers grow, they can deploy the XPonder as needed to deliver full line-rate (10/100/1000) services to new locations.

The pay-as-you-grow XPonder design allows each individual client port to be configured with Small Form-Factor Pluggable (SFP) transceiver modules as needed instead of having the expense of dedicated transponders for each client service. The XPonder cards offer simple point-and-click provisioning of services across the optical backbone, minimizing manual interventions for turning up new customers. Other automated functions for power management/monitoring and easy troubleshooting keep operating costs low even as the ring is scaled to keep pace with growth in the subscriber base.

### For More Information

To find out more about the Cisco ONS 15454 and XPonders, go to:

<http://www.cisco.com/en/US/products/hw/optical/ps2006/>.



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