

Case Study**Communications Provider Prepares for Bandwidth Surge with DWDM Solution from MRV Communications**

Broadview Networks, a network-based business communications carrier, is known for its ability to deliver complete voice and data services to its nationwide small and medium business customers. Already servicing approximately 70,000 customers, the company was embarking on a brand new slate of Internet protocol (IP)-based data and voice services. Vice President of Technology, Sanjay Patel, knew that these new next-generation services would significantly increase its customer base and its user bandwidth demands. This led Patel and his network team to search for a solution that could meet the expanding bandwidth demands this kind of growth would place on Broadview's network backbone in key cities. Patel and his team chose to implement a wave division multiplexing (WDM) solution from MRV Communications to boost the bandwidth in its network core.

Background

Headquartered in Rye Brook, NY, Broadview Networks was founded in 1996 and provides advanced communications services to customers nationwide. Broadview's small and medium business customers operate in a variety of industries such as education, healthcare and government. The communications provider delivers the total solution for business communications including local and long distance voice communications; premises-based and patented hosted voice over Internet protocol (VoIP) systems; data services encompassing virtual private network (VPN) and Multiprotocol Label Switching (MPLS)-enabled applications; traditional telephone hardware; high-speed Internet services; a full suite of managed services; and a range of professional services. With a 24X7 network operations center, Broadview Networks takes pride in its around-the-clock surveillance, troubleshooting and maintenance.

Broadview Networks recently upgraded its network to support a host of new IP-based services that enhance its voice and data offerings. The recent upgrade includes additional features, new functionality and more phone options for businesses throughout the company's market footprint. With its award-winning and patented hosted IP telephony service called OfficeSuite™ and MPLS-based data services, calls are routed over private IP networks, allowing Broadview to manage calls from end to end, ensuring voice quality and allowing for advanced service level agreements (SLAs). The cloud-based OfficeSuite allows users access to various options for Internet access and private data networking, with only the actual phones located in the customers' offices. To make this possible, Broadview hosts the phone system within its own IP network and traffic is sent "into the cloud" where it is routed between office

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locations or on to its final destination. All system upgrades, administrative tools for routine maintenance, security and networking reside in Broadview's fully meshed, secure and redundant network.

With these services in place, the network team expected a wave of new customers while at the same time, they saw that existing customers were demanding greater amounts of bandwidth for traditional services. Patel and his team also saw a growing interest in cloud computing and knew that Broadview would need a robust network in place to provide access to those services. With Broadview's existing network based on SONET over T1/T3 circuits, Patel and his team determined network speeds needed to be increased, first from OC-48 (2.48 Gbps) to OC-192 (9.9 Gbps) and eventually integrating in 10 Gigabit Ethernet (10GE) backbone links. To meet these needs, the team searched for a coarse wavelength division multiplexing (DWDM) solution and chose the Fiber Driver from MRV Communications.

MRV Solution

The Fiber Driver optical multi-service platform is MRV's product family for cost-effective networking, and is often used in networks that start out with CWDM with the option to grow to dense wavelength division multiplexing (DWDM) as the network bandwidth grows. The Fiber Driver provides transport services with full support for industry protocols and data rates. The Fiber Driver chassis are available in one, two, three, four or 16 modular slot models.

The Fiber Driver provides managed optical transport solutions featuring services demarcation, media conversion, signal repeating and fiber optimization (single and dual strand), time division multiplexing (TDM) and WDM for practically any digital communication environment. Additionally, the Fiber Driver module designs feature universal pluggable receptacles supporting multiple

Fiber Driver

The Fiber Driver optical multi-service platform provides transport services with full support for industry protocols and data rates in a modular, managed, and economical package.

- **Standard platforms** — Chassis with 1, 2, 3, 4, or 16 modular slots host the wide range of Fiber Driver application modules
- **Innovative Features** — Converter based services demarcation with extended 802.3AH remote management and advanced SLA assurance tools, modular SFP-based digital video, single-mode and multi-mode optical extensions, and single fiber full-duplex transport
- **High Density Architecture** — Compact form-factors and state-of-the-art design
- **Versatility and flexibility** — Common platform and multifunction modules for reduced capital, operational expenses, and deployment simplicity
- **Economy** — Inexpensive start-up using with built in growth paths to advanced optical network solution designs; Inventory reduction
- **Broad media and protocol conversion** — Current networking standards support with easy migration into WDM based fiber optimization and emerging technologies

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functions with a simple change in SFP-based optics to enable easy application transformation. The Fiber Driver can allow network implementers to standardize on a common solution to support existing legacy networks or new Greenfield initiatives.

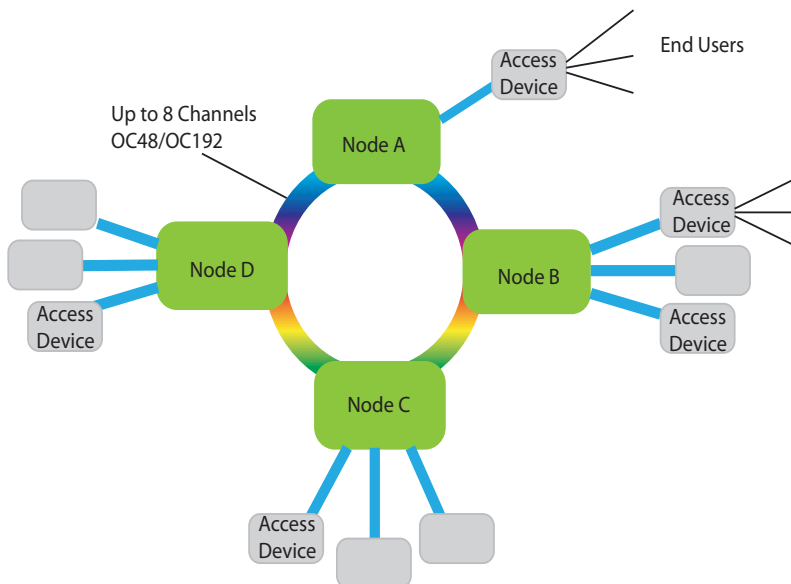
With its Megavision network management, the Fiber Driver offers a manageable tool for the high bandwidth standards and rapid delivery requirements of the most demanding customers.

Implementation

Broadview Networks has deployed the Fiber Driver on the regional networks it operates throughout the northeast, New England and mid-Atlantic regions. The company has multiple backbone rings located throughout Boston, New York and Philadelphia. Within these backbone rings the communications provider had an OC-48 network in place and needed a solution that could grow to OC-192 and later expand to 10GE. After reviewing products from multiple vendors, Patel chose the Fiber Driver because of MRV's extensive optical knowledge and its ability to focus on the specific needs of Broadview Networks. MRV assisted Broadview's network team throughout the installation of the Fiber Driver solution.

Broadview Networks already had a large installed base of SONET networking gear and wanted to find a solution that could leverage the existing equipment without having to replace everything. With the Fiber Driver in place, the SONET data streams can be multiplexed into the Fiber Driver backbone along with the 10GE data.

Patel and his team particularly liked the Fiber Driver solution because of its operational efficiencies such as the flexibility provided by the SFP optics, which allow the network team to change or deploy a new service just by inserting the appropriate SFP in the existing card. The network team also liked that the Fiber Driver provided higher bandwidth DWDM, and beyond that to implement the service rich, and higher bandwidth LambdaDriver product from MRV when the network required it. Additionally, the team found the Fiber Driver to be a very cost-effective solution and felt that the return on investment was within an acceptable timeframe.



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Patel and his team valued network uptime, which was an advantage for Broadview Networks. One way to maintain that was to have a clear demarcation between the IP/MPLS switching network, and the WDM backbone network so that in the event of a problem, Patel's team could quickly isolate the troubled network segment and apply their diagnostics there. Many vendors tried to sell a solution without this demarcation, but Patel liked the fact that the Fiber Driver provided this network separation yet had interfaces and that allowed it to be interoperable in a multi-vendor environment. The Fiber Driver allowed Broadview Networks to begin layering on well-defined services, with clean boundaries between packet switching and optical transport.

Success

At first, the company took a very deliberate upgrade approach, migrating through higher speed SONET networks on their way to adopting 10GE WDM networks. However, the smooth implementation and ease of upgrade of the company's first Fiber Driver installation encouraged Patel and his team to bypass this stair-step approach and migrate straight to WDM, resulting in increased efficiency and reduced downtime. In the future, Broadview Networks plans to expand another portion of its coverage area in Washington D.C.

"Broadview Networks is typically very conservative with network building, which is why we planned to go from OC-48 to OC-192 before moving to 10G Ethernet," Patel said. "We found that the performance of the MRV solution worked so well that we were able to skip straight to 10G Ethernet with future implementations."

By implementing the Fiber Driver, Broadview Networks was able to meet its current bandwidth requirements with a clear path to grow. The communications provider is now ready to begin preparing its network for other advanced customer offerings as business demand strengthens, such as additional cloud-based services.

MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at www.mrv.com. Please e-mail us a info@mrv.com or call us for assistance.

Headquarters
MRV Los Angeles
20415 Nordhoff Street
Chatsworth, CA, USA 91311
Tel: 800-338-5316
Fax: 818-773-0900

MRV Boston
300 Apollo Drive
Chelmsford, MA, USA 01824
Tel: 800-338-5316
Tel: 978-674-6800
Fax: 978-674-6799

MRV International
Business Park Moerfelden
Waldeckerstrasse 13
64546 Moerfelden-Walldorf
Germany
Tel: (972) 6105/2070
Fax: (972) 6105/207-100

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