Facilities-Based Carrier Simplifies DWDM within National Network

Veroxity chooses optical platforms based on flexibility, rapid service delivery, and ease of service provisioning.

EXECUTIVE SUMMARY

VEROXITY TECHNOLOGY PARTNERS

- Telecommunications
- Bedford, MA

BUSINESS CHALLENGES

- Provide rapid response to customer service requests and change orders
- Minimize operating costs and enable aggressive service pricing model
- Support both SONET and DWDM services without adding complexity to operations

NETWORK SOLUTIONS

- Cisco ONS 15454 Multiservice Provisioning Platform (MSPP) for rapid provisioning of SONET services
- Cisco ONS 15454 Multiservice Transport Platform (MSTP) for introduction of wavelengths and high-bandwidth services
- Cisco ONS 15454 Multirate Optics Card with 12 SFP-based ports, each software configurable to OC-3, OC-12, or OC-48

BUSINESS RESULTS

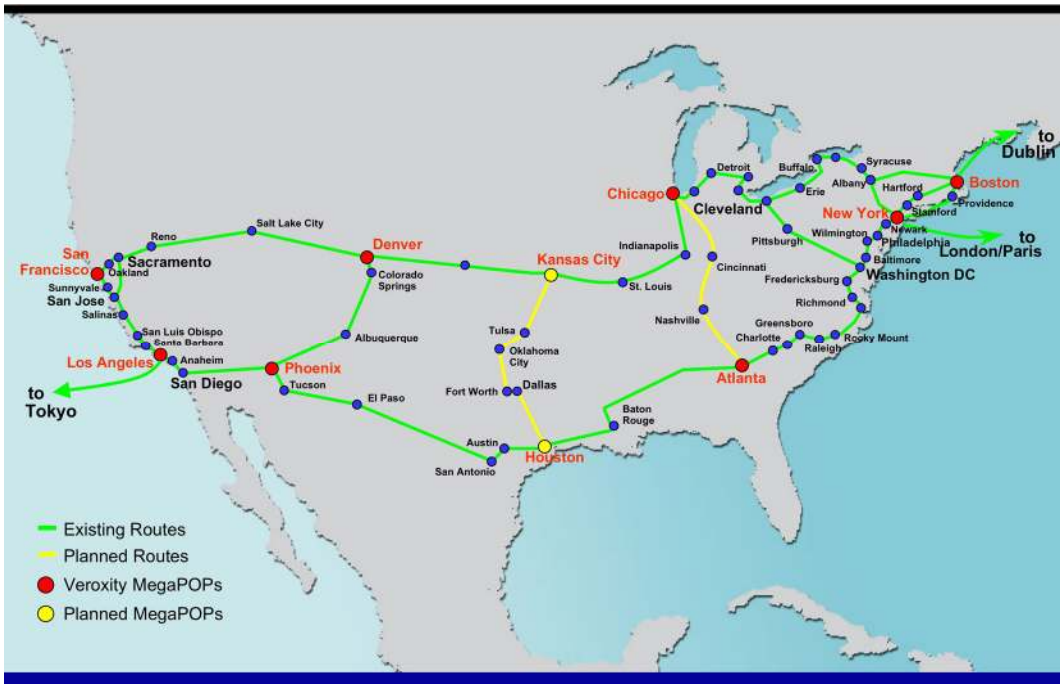
- Ability to keep up with high growth rate (100–150 percent AGR) without a costly core build-out
- Real-time response rate to customer requests for T3/FE/GigE/SONET/DWDM bandwidth allocation changes
- Low operating cost, enabling flat-rate SONET and DWDM ring architecture pricing for customers
- Ability to contribute to business agility for enterprise customers

Business Challenges

Veroxity Technology Partners builds and supports mission-critical optical networks for enterprise customers. The company operates as a facilities-based carrier, and currently owns and operates a global fiber optic backbone to serve major metropolitan markets across the United States and Europe. The company's optical data and IP services include Ethernet over fiber or SONET, Gigabit Ethernet, managed SONET and DWDM (dense wavelength-division multiplexing) services (protected and unprotected), storage area networks over SONET, central office and third-party feeds/handoffs, dedicated T1/T3/OCn lines, and high-availability Internet solutions.

Veroxity's customers include some of the world's largest financial, healthcare, and technology companies. Clients rely on Veroxity to build and operate highly redundant and geo-diverse WANs for data-centric operations. Service-level agreements (SLAs) often include 100-percent uptime. The company differentiates itself with its unique fiber footprint, dynamic bandwidth reprovisioning and rerouting services, and simplified pricing model – customers are billed a flat network charge. There are no additional charges for changes in bandwidth allocations. T1/T3 bandwidth can be increased or even changed to OCn or Gigabit Ethernet within four hours of a request.

Figure 1. Veroxity's U.S. Fiber Optic Network



Veroxity initially faced many challenges to deliver high availability and flexible provisioning services. After meeting those challenges and delivering a product that was well received in its markets, the fast-growing customer base presented new challenges. More customers began asking for more bandwidth. Instead of typical 2.5-Gbps connections, many enterprises required 20 or 30 Gbps of fault-tolerant bandwidth, with room for expansion. Demands for new services included 10-Gbps Ethernet LANs, 10-Gbps Fibre Channel, and some types of digital video services that could not be easily delivered over SONET.

Sebastien F. Tran, CEO and cofounder of Veroxity, says, "The need for efficiency drives innovation. As an emerging carrier, being sensitive to maintenance and operational expenses is critical to our success. However, we must also be able to offer the services that our customers demand in order to maintain our growth and remain competitive."

A higher-capacity SONET network could support some new services, but offering 10-Gbps services over SONET would inefficiently consume Veroxity's backbone capacity. The company faced the challenge of moving to DWDM without increasing operating costs and network complexity, or losing the flexibility that has become the company's hallmark and enabled its unique pricing model.

Network Solutions

For each metro market, Veroxity deploys network equipment in two separate "MegaPOP" facilities with redundant hardware components and dual points of building entry. Metro markets are connected via multiple wavelengths and dark fiber utilizing geo-diverse routes. Different conduits are used (telecom and power) along with dual points-of-entry into customer buildings. This helps ensure the highest level of service availability. Any single failure – whether an equipment problem, power loss to a building, or a fiber cut – will not affect customer traffic.

Provisioning Over SONET

Over this network, Veroxity offers a “virtual carrier network” service. For each enterprise customer, Veroxity installs protected OC-12, OC-48, or OC-192 rings between customer sites and Veroxity MegaPOPs. An array of DS1, DS3, Ethernet, storage, and optical connections can be deployed over these rings depending on customer application requirements. The initial truck roll takes care of all possible cabling that might be required in the future.

“The Cisco® ONS 15454 Multiservice Provisioning Platform [MSPP] gives us the ability to configure the customer’s connections remotely,” says Michael Papell, vice president of corporate development at Veroxity. “We can rapidly respond to customer change requests and have eliminated the expense of follow-on truck rolls. Our customers love the fact that they no longer endure weeks or months of waiting for turning up new services.”

The Cisco ONS 15454 MSPP supports all necessary service interfaces at each customer site. The comprehensive and simplified management and provisioning tools for the Cisco ONS 15454 platforms allow Veroxity to provide excellent customer support with reduced overhead.

Introducing DWDM

With the demands for increasing bandwidth and high-bandwidth services, Veroxity needed a way to offer new, high-bandwidth services yet retain its existing operational model and avoid increasing its support staff. The goal was to limit provisioning to a single truck roll with the ability to provision new services remotely as needed. What they really wanted was DWDM without changing its SONET-based processes.

After evaluating many vendors, Veroxity chose the Cisco ONS 15454 Multiservice Transport Platform (MSTP). “The Cisco ONS 15454 MSTP solution is another example of how well Cisco understands our business,” says Matthew Roth, chief network architect at Veroxity. “They were the first company to provide ROADM [reconfigurable optical add/drop multiplexers] capability that met all of our flexibility and redundancy requirements and fit into our existing business model.”

The Cisco ONS 15454 MSTP includes tunable lasers, multiservice transponders, and ROADMs, and accepts ITU-grid signals directly from Veroxity’s existing ONS 15454 MSPP systems. Several other features made the Cisco MSTP a perfect solution:

- Proven platform – The Cisco ONS 15454 MSPP was already widely deployed within Veroxity’s network.
- Low sparing costs – Built upon the same chassis and common equipment, both ONS 15454 MSPP and MSTP configurations could share common sparing components.
- Familiar management system – The ONS 15454 MSTP configuration utilized the same Element Management System (EMS) software that Veroxity was using on its existing ONS 15454 MSPP network.
- Integrated DWDM functionality – Compared to other DWDM solutions, the Cisco MSTP offered end-to-end wavelength path provisioning that was similar to SONET service provisioning on MSPP platforms, a graphical user interface, and automatic power control of the optical amplifiers.
- Sales tool – For the Veroxity sales team, Cisco provided Cisco Transport Planner, a tool that automatically determines configuration details including bill of materials, wiring diagrams, and node configuration settings for a customer network based on their service requirements, fiber topology, and distances between network elements. Cisco Transport

Planner also allowed sales teams to model multiple scenarios to compare the effects of alternative fiber paths or analyze the impact of growth.

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> **– Matthew Roth, Chief Network Architect, Veroxity Technology Partners**

Business Results

Veroxity has deployed DWDM between New York City and Boston, and also in the San Francisco to Los Angeles corridor. The new systems have been up and running for more than six months without any issues. Veroxity easily accomplished installation, with some technical assistance from Cisco, and now Cisco ONS 15454 MSTP solutions are deployed as needed in response to customer demand.

The Veroxity DWDM deployments have impressed the dark fiber activation teams that work on the Veroxity network. Using Cisco Transport Planner, Veroxity was able to accurately predict the performance characteristics and DWDM design requirements for fiber spans of up to 80 miles. The deployment has been a major success – the first new connections were turned up on the first try, under budget, and ahead of schedule. The ability for Veroxity to deploy long fiber spans between sites has added to its competitive advantage in the northeast. One ONS 15454 MSTP span in particular is the company's longest that has been deployed in the United States without a regeneration site, and by successfully lighting up the link, Veroxity has eliminated a previous point of failure. The network is also more reliable because of the elimination of multiple amplification sites.

As a result of the new network, Veroxity can now offer the high-bandwidth, wavelength-oriented applications that its customers have requested. Veroxity has expanded its service offerings and operation model to also include wavelength services. Unlike its competitors, Veroxity does not require a truck roll to reconfigure cabling every time a customer needs a new service or to scale an existing service.

Papell says, "The return on our investment has been immediate – our customers are thrilled with our ability to rapidly install and provision new lambdas. Turning on new wavelengths can be done in a few hours. The Cisco ONS 15454 has given us a platform for our network that allows us to give customers the services that they want, when they want them, while keeping our operating costs extremely low."

Next Steps

Veroxity continues to deploy the Cisco ONS 15454 MSTP to respond to customer demand for wavelengths and high-bandwidth services. Standardizing on the two ONS 15454 configurations – the MSPP and MSTP – allows the company to keep pace with evolving customer demand. Papell says, "Over the next 12 to 18 months, we see data center centralization and consolidation driving

further demand for high-density networks, and the Cisco ONS 15454 gives us the flexibility to transparently introduce new wavelengths and evolve our business as an ultrahigh-capacity carrier."

Technical Implementation

To deploy its OCn SONET services, Veroxity utilizes the Cisco ONS 15454 12-Port Multirate Optics Cards (MRC-12s). The MRC-12 supports up to 12 Small Form-Factor Pluggable (SFP) modules, allowing a single card to deliver any combination of OC-3, OC-12, and OC-48 line rates on a port-by-port basis. Since the SFP optics do not have to be installed until needed, the MRC-12 also provides Veroxity with a pay-as-you-grow business model.

"The MRC-12 brings great flexibility to our deployments," says Roth. "We can preconfigure the cards and then remotely change the line rate at any time. By using a single card, we do not have to worry about power draw or other environmental issues that would vary with multiple card deployments. This is huge in the data center world. Demand is increasing while the cost of power has tripled in recent years. Now, instead of adding bays and multiplexers – that draw 2000 watts or more each – we simply reprovision ports. Power, cooling, and space are premiums in our MegaPOPs – standardizing on one MRC-12 configuration and lowering power draw translate into huge cost savings."

PRODUCT LIST

Optical Networking

- Cisco ONS 15454 Multiservice Provisioning Platform
- Cisco ONS 15454 Multiservice Transport Platform
- Cisco ONS 15454 12-Port Multirate Optics Cards

Optical Network Management

- Cisco Transport Manager

For More Information

Cisco optical solutions have already helped businesses and service providers around the world reduce costs, streamline service provisioning, and support a wide range of new applications. To find out how Cisco can help your organization, contact your local account representative, or visit: http://www.cisco.com/go/optical.

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