



MPLS Networks for Small and Mid-Size Business

Performance-Enhancing IT Services with Reduced Costs

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Executive Summary

Grow Your Business - Not Your IT Department

Today's small and medium-sized businesses (SMBs) need to share information and applications securely and privately between locations. They must implement innovative, productivity enhancing IT services and applications with reduced costs, while simplifying the complexity of connecting multiple business locations and remote users.

Success for SMBs is correlated to how well they apply today's technologies to their business models. By taking advantage of the latest performance-enhancing technologies, they can provide a better customer experience and higher quality service to differentiate from competitors. For the minority of SMBs with legacy Frame Relay services, they are discovering the need for more robust, flexible and cheaper connections to remain competitive.

The SMB Opportunity from MPLS Networks

MPLS-based VPN technology is today's leading and fastest-growing SMB network solution by virtue of its performance, versatility and lower network total cost of ownership (TCO). MPLS has proven to deliver secure broadband access and managed network solutions that enable SMBs to connect their business locations to each other – as well as to the Internet, business partners, mobile users and teleworkers – while supporting today's demanding new applications.

The opportunities for SMBs from MPLS have blossomed over the past decade as enterprise-hardened MPLS solutions have scaled down to serve small and medium sized organizations with cost-effective, enterprise-class WAN services.

As well, a new generation of offerings from Managed Service Providers (MSPs) relieves SMBs of the burden of network management and security, to allow them to focus on their core business.

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The IT and Network Challenges Facing SMBs

SMB Network Challenges

SMBs have a need to implement productivity-enhancing IT services with reduced costs, and with that need, they face the complexity of securely connecting multiple sites. SMBs that have relied on legacy Frame Relay services are realizing the need for more robust and flexible networks to remain competitive. For the minority of SMBs with legacy Frame Relay services, they are discovering the need for more robust, flexible and cheaper connections to remain competitive.

Minimal Capital Expense

Capital expenditures and network equipment purchases must be minimized. From startups, to growing businesses, to local government entities, no organization is immune from the need to minimize capital expense outlays. It is the mode of the times.

Multiple Business Locations and the Need for Cost-effective Scalability

Managing multiple locations without the right tools is costly and complicated. As SMBs expand, they must be able to share real-time data and company applications across locations. Legacy services are costly and unreliable, while broadband services are difficult to deploy. The business impact includes high costs, security problems, downtime and the inability to effectively track business performance across locations.

Securely Connecting Mobile Users and Teleworkers

Today's business environment requires the ability for workers to do business from anywhere at anytime, whether teleworking from home or mobile and on the road; otherwise a business loses productivity, revenues and ultimately profits. Providing secure remote access internally can lead to high access costs, expensive IT support and security risks. SMBs face the challenge of finding a secure, reliable and affordable way to interconnect company resources and support remote users.

Constrained Internal IT Resources (and the Need for Managed Services)

SMBs need to focus their resources and time into growing their business, not an IT department. Today's best MSPs become an extension of an SMB's team with 24/7 help desk services, powerful and easy to use on-line self-service portals, and a selection of managed service options to meet all the networking needs of today's SMBs.



MPLS Networks

The Foundation for Today's Advanced IT Services

Over the past decade, Multi Protocol Label Switching (MPLS) technology – which enables voice and data to be transported together on wide area networks (WANs) with CoS and QoS – has matured to provide a platform for powerful new communications and cloud computing capabilities. This is especially important considering the growing network demands that affect SMBs across the globe. MPLS helps solve the service management problems brought on by fast-ramping demands of video and other bandwidth-intensive, jitter- and latency-sensitive applications.

MPLS assigns labels to data packets; a packet's forwarding is executed based solely on the contents of the label, rather than by the router examining the details of the entire packet. This dramatically speeds the routing of network traffic.

MPLS is the fastest-growing WAN technology on the market today by virtue of its performance and versatility. MPLS is called Multi-Protocol because it works with IP, ATM and Frame Relay protocols. Its packet label orientation allows end-to-end circuits to be created across any type of transfer medium, using any supported protocol, combining the performance of high-speed legacy WAN technologies with the flexibility and cost advantages of IP-based networks.

MPLS enables new routing functionality and capabilities that were not available with conventional IP routing, including:

- Virtual private networks (VPNs)
- Traffic engineering
- Layer 2 transport in the OSI network stack
- Most importantly – **guaranteed bandwidth services**

MPLS has steadily supplanted legacy WAN technologies and emerged as the best available technology for use in "future-proofing" networks because MPLS:

Enables data and voice to travel on the same network – A converged network supports powerful new applications and services – including Voice Over IP (VoIP) telephony, Unified Communications (UC), corporate video and cloud computing – as well as the ability to cost-effectively scale existing applications.

Provides four Classes of Service (CoS) – This capability allows service providers' to segregate voice, data and video traffic to be into different Classes of Service, or CoS, ensuring that performance-sensitive applications such as VoIP have a clear, uncontested path across the network. Most MPLS networks today segregate traffic on the core network with the following CoS priorities:

- **Real-time** – for voice and video
- **Critical** – for mission-critical activities like credit card transactions
- **Business** – for business-critical enterprise applications, database access and surveillance monitoring
- **Data** – for lower-priority traffic such as Internet and FTP

Allows for dynamic bandwidth allocation, QoS and traffic prioritization – CoS, combined with dynamic bandwidth allocation, allows MPLS service providers to ensure Quality of Service (QoS), including special priority for voice traffic or other top priority critical apps. QoS is essential for a modern network because it:

- Enables the prioritization of business-critical applications
- Gives companies control over how their bandwidth is used
- Ensures consistent, interruption-free network performance
- Prevents critical apps from failing due to network congestion

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SMB Benefits from MPLS Networks

Savings from Moving to VoIP

Because telecom expenses represent 1-2% of an organization's operating costs, it is not surprising that most companies are initially attracted to converged services by the savings made possible by VoIP. Indeed, Sage Research found that 83 percent of companies initially turn to IP communications for voice savings. As long-distance toll calls go away with VoIP, phone bills can be reduced by 20 to 30 percent, and sometimes even more; many companies fund their entire converged network via their voice savings.

Provides a cost-effective WAN solution – Linking headquarters and branch offices via a secure, scalable and highly redundant network infrastructure, MPLS networks are easily customizable and tailored to fit specific bandwidth, communication and redundancy requirements.

Only one network to manage – Instead of separate networks for voice and data, a single converged MPLS network translates into less maintenance, increased manageability and more flexibility.

Enables easy deployment of expansive intranets and extranets – Easy sharing of and access to company confidential data and enterprise critical applications.

Ease-of-use – Simplicity for end users.

Enhanced personal productivity for mobile users and teleworkers – Traffic traverses the network with minimal delay and packet loss.

New performance-enhancing applications – New communications, collaboration and customer-service applications that fundamentally improve the way companies and people function and work are rapidly being adopted.

Advantages of cloud computing – Cloud computing providers offer a wide range of hosted business applications – accessed by end users via any Internet connected Web browser – with the software and data stored on off-site (“in the cloud”) servers maintained by the provider. SMBs are increasingly using a wide range of computing resources economically delivered with quality, managed service through the cloud, including:

- **Hosted VoIP services** – The ideal telephone communication solution for businesses with multiple locations.
- **Bundled and Managed services** – Managed security offerings, for example, alleviate the need for SMBs to deploy, manage and maintain their own network security infrastructure.
- **Pay-for SaaS applications** – Salesforce.com’s customer relationship management (CRM) SaaS and other business SaaS applications give SMBs ready access to enterprise-class applications, yet require appropriate network support for consistent, reliable, quality performance.
- **Free applications** – SMBs can enjoy free enterprise-class services such as email and collaboration. For example, Google Gmail is an email platform utilized by many SMBs, while collaboration environments like Googlewave will also likely gain widespread adoption.



The MegaPath MPLS Network

A Catalyst for Convergence

MegaPath owns and operates a fiber optic core network that has run MPLS since 1999. The MegaPath network serves over 23,000 customers and 84,000 endpoints with an MPLS-based Tier 1, all-optical IP network. MegaPath operates approximately 30 network points-of-presence (POPs), all located in fault-tolerant, carrier-grade facilities. The POPs are interconnected to the network via multiple optical circuits (OCx) for complete redundancy.

MegaPath’s all-optical switching technology allows coast-to-coast “single hop” networking for on-net traffic, significantly reducing latency as traffic traverses the network. With a redundant path for every connection, traffic is instantaneously re-routed in the event of a network failure, ensuring uninterrupted high-quality service.

The end result is a powerful, business-class MPLS core network that provides secure multi-site and remote access connections to empower today's distributed enterprises with converged IP data, voice and video services.

With network connectivity from MegaPath available in a variety of access speeds –DSL, T1, business Ethernet – SMBs can select the right speed for the locations they are serving. MegaPath has an unrivaled national broadband network footprint that ensures customers always get the right connection at the best price.



The Advantages of the MegaPath MPLS Network

MegaPath: A Leader in Converged Networks

MegaPath is the leading provider of managed IP communications services in North America with a portfolio of network services that leverage data and voice convergence. MegaPath's MPLS network provides significant advantages with the broadest QoS-enabled network in the nation and the largest broadband reach of any provider. With resources on par with any national telecommunications service provider, MegaPath offers SMBs the flexibility to cost-effectively scale network services to meet changing needs.

High performance from the core to the edge

MegaPath's single hop for cross-country, on-net traffic ensures the highest possible QoS for voice and all other traffic. By not handing off voice traffic to the public Internet – as many providers do with their VoIP services – MegaPath delivers voice and video that are crystal clear with exceptional quality.

MegaPath also provides a range of high-performance add-on offerings that customers can use to tailor their converged environments, including:

- A PCI module for retail – secure, logged credit card transactions
- Excellent last-mile offerings – from DSL to DS3 – and wireless
- SSL and Web-based access for easy Web-based remote access

Reduced costs via VoIP communications

For many companies moving to VoIP, the savings in traditional telephony costs alone fund the entire converged WAN solution.

MegaPath Managed Security Service: Protection in the cloud

MegaPath complements its robust national network with a portfolio of business communication products and services designed specifically for the needs of SMBs. One of the most innovative is MegaPath's Managed Security Service, which delivers comprehensive Unified Threat Management through the network cloud.

Furthermore, the MegaPath network is protected at a global level from large-scale threats by Fortinet, a world leader in unified threat management.

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MegaPath MPLS Offerings for SMBs

Providing cost savings and performance benefits, MegaPath VPN offerings cover the spectrum of managed WAN services, including:

1. MPLS site-to-site Managed VPN – *Smart, superior performance for apps*

Consolidates all of your business applications onto a single private network with up to five Classes of Services, built-in security and a wide selection of access technologies for maximum performance and flexibility.

2. IPSec Site-to-Site VPN – *Secure connectivity for 5 or less sites*

Securely connects all your sites on the same network with IPSec, the standard Internet encryption technology, so multiple offices can safely share files, applications and resources. Delivers the highest level of security protection using DES and 3DES encryptions to assure data security. Offers the widest selection of access technologies.

3. Remote IPSec VPN – *Secure client-based remote access*

Offered in conjunction with MegaPath's Site-to-Site MPLS VPN service and capable of seamlessly integration with MegaPath Security Services, a Remote IPSec VPN uses a client on remote-users' laptops and PCs to establish an encrypted tunnel to MegaPath's security gateways, which securely maps the traffic into your MPLS VPN.

4. Managed SSL VPN – *Clientless, anywhere secure remote access*

A clientless, integrated SSL-based secure access solution that can be rolled out rapidly and managed with ease without the need to buy or manage a remote access system – and with no client software to install. A proven, cost-effective solution for secure mobile access.

5. Hybrid VPNs – *Combine MPLS, IPsec and SSL for customized solutions*

One can use a hybrid MPLS/IPsec VPN in which on-net sites are connected directly to the MPLS network and off-net sites are connected via the public Internet using IPsec encryption. The latter allows one to extend the reach of the MPLS VPN to any site on the public Internet. All of these approaches provide adequate security of the data and source/destination information and the tools to ensure proper authentication and access controls.

6. Managed Security Services (MSS) – *Protection in the cloud*

Intrusion prevention, anti-virus/anti-spyware and web filtering for reliable real-time protection against network and application attacks, worms and spyware.

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About MegaPath Inc.

MegaPath is the leading provider of managed IP communications services in North America. MegaPath leverages its wide selection of broadband connectivity, MPLS-based Virtual Private Networks (VPN), Voice over IP (VoIP) and security technologies to enable businesses to lower costs, increase security and enhance productivity. Organizations of all sizes can easily and securely communicate between their headquarters, branch offices, retail locations, mobile workers, and business partners.

Next Steps

To learn more about MegaPath MPLS network solutions, go to:
<http://www.megapath.com/vpn-security/mpls-site-to-site-vpn/>



1-877-MEGAPATH • www.megapath.com

555 Anton Boulevard, Suite 200 • Costa Mesa, CA 92626

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