



# Why You Need to Think of Your Wide Area Network as a Strategic Asset

Successful Cloud Migration Needs a  
Software-Defined Wide Area Network (SD-WAN)

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## Introduction

Moving your applications infrastructure from “implement in-house” to “implement in the Cloud” is a complicated process. To succeed, you have to do your research, select which applications you want to migrate to the Cloud, scope out your preferred Cloud option (private/public/hybrid), identify suppliers, propose a project plan, and commit to the implementation.

That is a lot to tackle, yet it still does not complete the job, because now your applications and data reside in a remote data center. You also need to include an assessment of your wide area network (WAN) requirements and determine the best WAN solution so that it, too, contributes to your successful Cloud migration.

This white paper focuses on the evolving WAN environment, and how a software-defined WAN (SD-WAN) solution is key to successfully migrating applications and data to Cloud environments.

## Cloud Adoption and Implications for the WAN

According to market research firm IHS Infonetics, there is a major shift occurring in the type of Cloud deployment models being adopted. Traditionally, either on-premises private Cloud or public Cloud deployments accessible via the Internet have been the most widely deployed Cloud models. Today, this is shifting to off-premises solutions delivered using either a private Cloud or a hybrid architecture of private and public Cloud. For some enterprises, the hybrid solution could be comprised of a mix of both on-premises and off-premises hosting.

Infonetics’ research indicates that the top three components driving this shift are enterprises looking for improved performance over in-house applications, quicker access to new technologies, and agile response to business needs.

Adoption of these new off-premises Cloud models means the enterprise needs to consider its WAN as a strategic asset, instead of the way it has traditionally been treated—as a cost item. When the WAN is viewed as a cost item, it is constantly under scrutiny when IT budgets are stagnant or slashed. That often means buying smaller increments of bandwidth, limiting use of guaranteed Quality of Service (QoS), or just having best-effort direct Internet access at a branch location and then having to put up with potential network delays or bandwidth issues.

As applications and corporate data continue to be migrated to off-premises Cloud solutions, the WAN must be viewed differently. In order to achieve network optimization, create a predictable cost structure, and ensure network performance, the WAN needs to be seen as a strategic asset.

The new strategic WAN needs to be:

- Capable of handling traffic growth and variable traffic loads with reasonable and predictable cost
- Dynamic and adaptable to changing network conditions, or changing business policies, on a per-application basis
- Secure and reliable enough to depend upon for business continuity and application performance
- Transparent, providing a level of visibility to traffic behavior that makes managing the WAN practical and useful

The next question becomes: How can you achieve these goals?

## Introducing the Software-Defined WAN (SD-WAN) Concept

Over the last 15 years, the standard WAN solution for enterprises has been Multi-Protocol Label Switching (MPLS) because it differentiates QoS based on packet prioritization. As new strategic WAN goals are being introduced, MPLS has many shortcomings. The most notable drawback of MPLS is its lack of dynamic capabilities for provisioning and configuration, often requiring up to 90 days for the implementation of new circuits.

To compensate for this inconvenience, enterprises often over-provision their MPLS WAN in order to handle bandwidth spikes. Unfortunately, this comes at a heavy price, as it means there is unused bandwidth sitting idle. Dependent upon the carrier, location, bandwidth, and Class of Service (CoS) requirements, an MPLS link could easily cost thousands of dollars per month. For example, a 10 Mbps with two CoS options is around \$1,500/month, but a 100 Mbps with three CoS options would be five times as much, totaling closer to \$7,500/month. For many enterprises, this is an expensive solution in which the traditional model for addressing network capacity needs does not provide a clear path towards cost containment.

As mentioned, an alternate solution is to use a Direct Internet Access (DIA) service delivered by cable, xDSL, or Long-Term Evolution (LTE). While the cost of this would be substantially less (around \$1,300/month for 100 Mbps), it too has drawbacks in its ability to be a strategic WAN. Most notably, this solution lacks guaranteed reliability because its performance can fluctuate greatly due to many factors, including choice of service provider, enterprise location, or even time of day.

So what is the answer? The answer is to use a software-defined WAN (SD-WAN). An SD-WAN can reap the benefits of MPLS and DIA, while also compensating for any shortcomings. An SD-WAN enables dynamic bandwidth allocation and packet prioritization without having to pre-reserve bandwidth or rely on over-provisioning capacity. It can also take advantage of lower-cost WAN options if/when specific application traffic is tolerant of packet loss or delay.

An SD-WAN solution should provide:

- **Automatic Provisioning.** Business policies are automatically translated into WAN configuration and orchestrated on network devices with simple, yet powerful, forwarding tables instead of complicated routing. This automation minimizes, and possibly eliminates, the need for any manual provisioning. Subsequently, any changes in network topology are automatically detected and an updated topology is maintained, so future orchestration is optimized.
- **Dynamic Allocation.** Bandwidth allocation to meet application requirements is managed on-demand. For example, if a Unified Communications (UC) user has initiated a voice session, then adds video, the allocation of WAN resources will be dynamically adjusted to the required bandwidth to ensure no decrease in QoS. This intelligence drives increased bandwidth utilization and efficiency, dramatically reducing WAN costs with this pay-as-you-go model.
- **Flexibility.** The implementation of WAN changes based on evolving business priorities, network topologies, or network behavior needs to be accomplished in milliseconds. Consider a fairly simple yet common event, where network congestion is degrading application performance. To resolve this bottleneck, network resources quickly need to be re-allocated in real time to ensure traffic flows around network congestion points. Using an SD-WAN solution, this can be completed such that the end user notices no impact on their application usage.
- **Security.** Identification of network devices is automated, and access to network devices is protected and limited. If a network device is unknown, no traffic is allowed to flow to or from it. If traffic originates from an unknown user or application, it is not allowed onto the network.
- **Visibility.** From the IT manager to the CIO, ensuring the expected WAN behavior matches actual WAN behavior is crucial, especially for business-critical applications. Having end-to-end monitoring and analytics of traffic flows and application statistics provides the visibility that is critical to both proactive and reactive decision making, and ultimately for ensuring the WAN is strategic yet managed within a cost budget.

## Sonus' SD-WAN Solution - Vellios®

Sonus' Vellios is a virtualized cloud exchange networking platform that transforms the current model for data center connectivity, enabling significant reduction in network costs and both capital and operational expenses.

Vellios dynamically delivers just-in-time WAN connectivity, optimizes WAN bandwidth utilization, securely and reliably ensures application performance, supports prioritized business-critical applications, and achieves business continuity if/when a disaster occurs.

Vellios provides automated network operation via a policy-driven architecture with centralized resource control, an important feature of the solution. Application traffic management is done with centralized visibility to real-time topology updates and dynamic path computation. Policy enforcement of flows is based on end-to-end path statistics, and dynamic management of flows is based on matching policy requirements to accommodate real-time network changes (e.g., congestion, loss of path, latency, etc.).

If required for compliance purposes, flow management includes accommodation for network path isolation such that all traffic associated with a specific application is isolated from other traffic, regardless of network behavior.

For interoperability, VelloS supports an Application Program Interface (API) layer which allows interworking with third-party applications. One example is an integration with Microsoft's Skype for Business SDN Interface. In this integration, per-session policies, such as required bandwidth and tolerance of latency and packet loss, are communicated to VelloS, which in turn orchestrates a specific path across the underlying transport layer to deliver expected QoE for that session.

VelloS is application-aware intelligence, providing real-time control of application traffic, based on business policies, between an enterprise and data centers across the WAN.

## Conclusion

The right WAN solution is one that contributes to your successful Cloud migration. Traditional MPLS or DIA solutions do not satisfy this need. The migration to Cloud requires the enterprise to use the WAN as a strategic asset.

By implementing an SD-WAN solution, based on software-defined networking principles, an enterprise will be able to maximize application performance at a fraction of the cost, while maintaining the security, reliability, and quality of experience that are expected by their employees and customers alike.

Adopting an SD-WAN solution, like Sonus' VelloS, is the only way to truly be successful in the migration of applications and data to the Cloud.

## About Sonus Networks

Sonus enables and secures real-time communications so the world's leading service providers and enterprises can embrace the next generation of SIP and 4G/LTE solutions including VoIP, video, instant messaging and online collaboration. With customers in more than 50 countries and nearly two decades of experience, Sonus offers a complete portfolio of hardware-based and virtualized Session Border Controllers (SBCs), Diameter Signaling Controllers (DSCs), Cloud Exchange Networking Platform, policy/routing servers, and media and signaling gateways. For more information, visit [www.sonus.net](http://www.sonus.net) or call 1-855-GO-SONUS. Sonus is a registered trademark of Sonus Networks, Inc. All other company and product names may be trademarks of the respective companies with which they are associated.

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