



# NETWORKS

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Optimizing Your Microsoft  
Application and Infrastructure  
Investments With SD  
Network Based  
Bonded Internet

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# OPTIMIZING YOUR MICROSOFT APPLICATION AND INFRASTRUCTURE INVESTMENTS WITH SD NETWORK BASED BONDED INTERNET

Businesses of All Types and Sizes Worldwide Rely on a Variety of Microsoft Solutions, From Key Productivity and Collaboration Applications, to Client and Server Infrastructure, Virtualization Platforms and Windows Azure Cloud Services. However, Just Like With Those of Its Competitors, These Solutions are Not Immune From the Performance Challenges of Operating Over Wide Area Networks (WANs) and Supporting Mobile/Remote Users With Low-Bandwidth, High-Latency Network Connections.

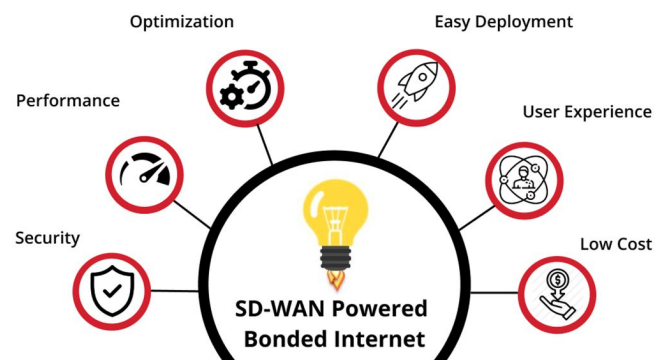
## Executive Summary

SD WAN powered Internet is a unified platform that delivers superior user experiences and lower TCO by accelerating applications, reducing bandwidth utilization and enabling sophisticated quality of service (QoS) management. As the only WAN optimization solution with integrated, secure and transparent cloud connectivity, Bonded Internet also allows enterprises to augment their data centers with the infinite capacity and elastic efficiency provided by public clouds .

This paper briefly explains how Bonded Internet powered by our SD WAN solution broadly applies to all types of computing environments. A detailed discussion is then provided of the many capabilities that make Bonded Internet an ideal fit for enterprises with a significant investment in Microsoft applications and infrastructure.

- The ability to securely and seamlessly connect to Windows Azure in support of your enterprise's cloud computing initiatives.
- Intelligent, protocol-specific optimizations for Windows file sharing and Microsoft Exchange traffic.
- Extension of the core application performance, bandwidth reduction and traffic management capabilities to individual/isolated Windows PC and laptop users – such as telecommuters and roaming employees.

- The ability to deploy SD Network powered Internet as a low-cost virtual appliance.
- The option to deploy Bonded Internet with an integral Linux Server, thereby enabling consolidation and simplification of branch office infrastructure.
- The ability to leverage existing, familiar tools to manage Bonded Internet virtual appliances.



The net result is an enterprise-class solution for application acceleration and infrastructure optimization that covers all aspects of your Microsoft environment, from mobile/remote users and branch offices to enterprise datacenter and cloud hosted applications and services .

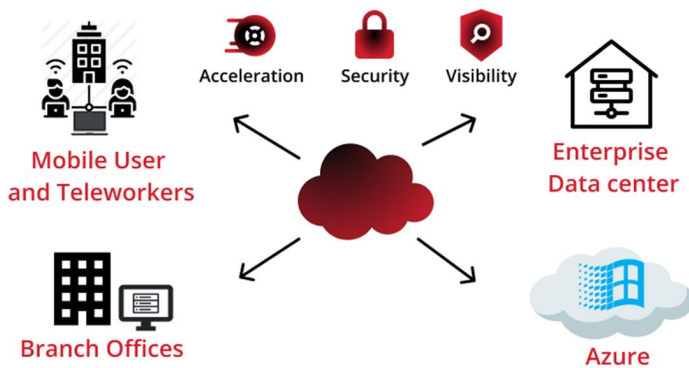
## Microsoft Environments Need Performance Help too :

From client, server and virtualization platforms to key business applications and cloud services, IT solutions from Microsoft have been deployed by

countless organizations worldwide. The popularity of Microsoft's offerings, however, in no way makes them immune to prevailing trends, including :

- The increasing geographic dispersion and mobilization of today's workforces;
- Ongoing initiatives to cut costs by centralizing and consolidating IT infrastructure; and,
- The resulting need to increasingly deliver key services not only over WANs, but also to individual users with relatively low-bandwidth Internet connections.

For applications and services that have not been designed to operate in this way – whether they are from Microsoft or not – this situation typically leads to sub-par user experiences and inefficient use of available bandwidth. The net result is another set of problems for IT departments to solve, at the same time they're working to streamline operations, reduce capital expenditures, better accommodate mobile users and navigate the transition to cloud computing



## SD-WAN Based Bonded Internet

The only solution available in the market that combines a comprehensive set of WAN optimization features with the ability to securely connect private and public cloud networks, SD WAN powered Internet helps organizations with Microsoft-laden computing environments address the performance and other related challenges discussed above in two distinct ways

The SD WAN appliance first provides multiple foundational capabilities that apply equally to both Microsoft and non-Microsoft applications and environments. These include:

- **Adaptive TCP Flow Control**

Designed to overcome networks characterized by high packet loss rates and high latency, this technology employs a collection of standards-based techniques to override conservative, default TCP flow control settings and more thoroughly utilize available bandwidth

- **Adaptive Compression**

Depending on the type of traffic being sent and the current network conditions, our Bonded Internet dynamically selects among multiple compression, caching and data de-duplication algorithms to dramatically reduce bandwidth consumption

- **Sophisticated Qos Management**

Our SD WAN enables IT administrators to monitor network congestion and delays, while also assessing network usage on a per user and application basis. Specific findings can then be used as the basis for configuring available traffic prioritization features to granularly control bandwidth consumption

- **Optimized Video Delivery**

To manage the demand placed on enterprise WANs by the growing consumption of video, our SD Network powered Internet provides enterprise IT with a suite of features to optimize video delivery for both internal enterprise and external video content to branch offices, including video classification, caching and de-duplication

- **Storage Replication Acceleration**

By optimizing and tightly controlling related traffic transiting the WAN, SD Network powered Internet enables storage replication to continuously run in parallel without adversely impacting critical application traffic

The second way our SD WAN solution helps is by providing several specialized capabilities focused specifically on accelerating Microsoft applications or otherwise optimizing and enhancing support for Microsoft infrastructure. These additional, Microsoft-centric features and benefits are covered in detail in the sections that follow

## Accelerating Key Microsoft Applications

In addition to the broadly applicable optimizations already discussed, the application provides three protocol-specific mechanisms for improving the network performance of Microsoft Exchange and Windows file sharing

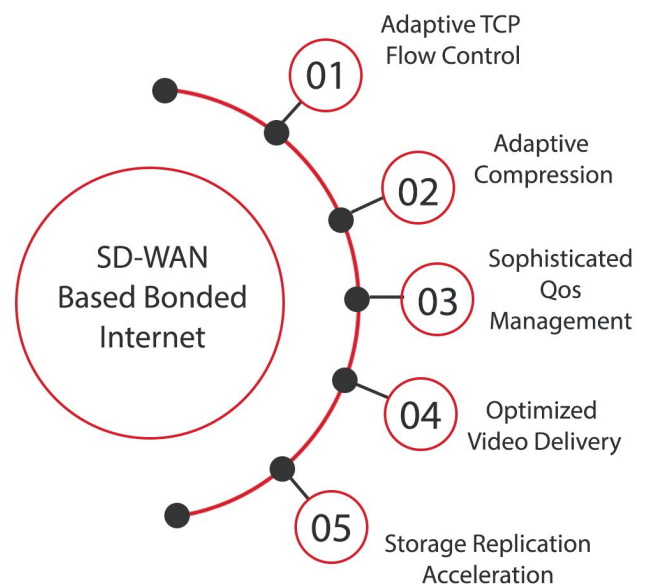
### ● Intelligent Protocol Acceleration.

Microsoft Exchange and Windows file sharing use the MAPI and CIFS protocols, respectively, for network communications .

These protocols are inherently “chatty” in that they require numerous round-trip transmissions to establish and maintain a session.

This characteristic can lead to intolerably slow response times, particularly for users accessing messages, calendars and data files over high latency connections .

Our SD WAN resolves this issue by incorporating intimate knowledge of the MAPI and CIFS protocols that allows it to confine chatty operations to low latency Local Area Networks (LANs) and complete data transfers with a minimum number of round-trip exchanges over the WAN.



The result is accelerated transfer speeds and a vastly improved user experience.

For CIFS, the ability to analyze request patterns and predict subsequent actions allows our SD WAN to also perform safe read-ahead and write-behind operations, yielding aggregate response time reductions of up to 97 percent.

(Note: Bonded Internet also provides intelligent acceleration for a wide range of other protocols, including HTTP, FTP, NFS, ICA and more)..

### Without Bonding Internet



### With Bonding Internet



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The secure peering configuration required to optimize this traffic is similar to the configuration done for encrypted MAPI and signed SMB protocol optimization.

Although encryption improves security for these applications, it is a significant obstacle to conventional WAN optimization solutions. Many products available in the market are almost useless in such cases, as they are unable to perform any meaningful degree of protocol acceleration or compression/de-duplication for encrypted traffic .

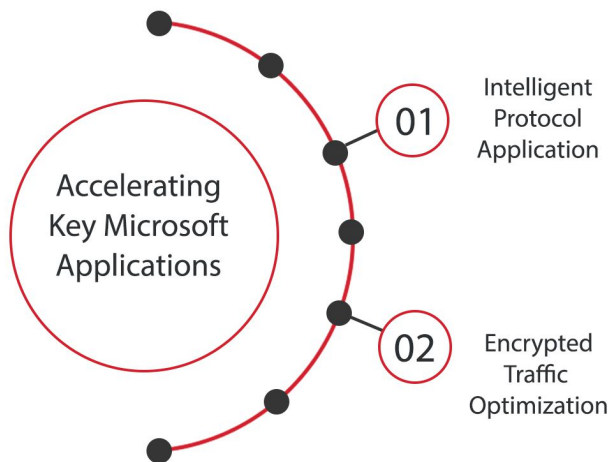
In comparison, Our SD WAN includes functionality that allows it to employ all of its traffic optimization mechanisms on both signed SMB and encrypted MAPI traffic.

As a result, IT no longer has to compromise by choosing between security and performance, and users continue to receive the enhanced, accelerated experience they have come to expect. Optimization for encrypted traffic spanning authentication domains.

In a variation of the previous capability, We can also access and accelerate encrypted Microsoft application traffic in cross-domain scenarios (assuming there two-way trust has been established between the domains).

These types of scenarios –where the client is a member of one Active Directory domain and the server is in a different domain – are commonly encountered during mergers and acquisitions.

Supporting them is critical to maintaining smooth business operations during the interim period between when merging entities first start to work together and when they finally have the opportunity to more fully integrate their computing environments .



### ● Encrypted Traffic Optimization.

Many versions of Windows file sharing and Microsoft's email applications use signing and encryption to ensure the confidentiality of network communications and prevent certain types of attacks.

For example, Windows Vista and Windows 7 use signed SMB for protected access to file and print shares over the network. Similarly, Microsoft Outlook 2007 and Microsoft Outlook 2010 use encrypted MAPI to communicate with Microsoft Exchange.

With the launch of Microsoft Exchange 2013, the default protocol for communication between Exchange server and Outlook clients changed to the RPC over HTTPS protocol. Our appliances now optimize this RPC over HTTPS traffic.