



The Benefits of Optimized WAN

It's what you need now to support and grow your mobile workforce.

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Overview

About 60% of the work done in most organizations today is performed in a location other than the data center--- typically in a remote branch, the employee's home, in a client's office, or on the road. Because of this, organizations are increasingly migrating to distributed infrastructures---with management and applications operations still clustered in a single data center. This means that a number of critical functions, such as data capacity, application availability, and organizational continuity all depend on the efficient exchange of applications and data between remote sites.

Traditional wide-area networks (WANs) have been plagued with extended data transfer completion times and low throughput obstacles including low bandwidth, latency, network conflicts, and packet issues. This makes efficient replication of essential applications, across the WAN impossible or at least difficult. Basically, WAN optimization allows more data to be moved more quickly over a lower bandwidth connection.

Most issues, such as extended and incremental backup time, lost productivity and expensive bandwidth use, can be addressed with WAN optimization devices. Using technologies such as compression, internet optimization, and smart traffic routing, WAN optimization can reduce bandwidth cost by 60% and improve some functions such as backup, data deduplication, and replication by as much as 95%. It also improves disaster recovery service and speeds backups. Given this, the cost benefit is apparent.

There are many WAN optimization products that take advantage of a wide variety of technologies. As far as quality goes, these products produce a range of results. Some products optimize bandwidth use, others are focused on reducing latency (the time delay between when something is sent and received), and others improve network integrity and application replication.

There are two basic categories of WAN optimization products---hardware and virtualized software. The type users choose will depend on their needs and the recommendations of their IT staff and/or technology provider.

General Benefits of Optimized WAN

Regardless of which type users choose, the benefits are many. Right away, they'll notice increased speed and improved ease-of-use for applications. Remote devices will function as if they're next to the data center. The behind-the-scenes functions that make all of this possible include:

Data Reduction

A WAN optimization appliance equipped with data reduction (deduplication) technology will examine data before it sends it across the WAN. Then it will store the data locally. Whenever it detects duplicate information, it sends the information locally instead of resending it. This can eliminate over 90% of WAN traffic.

Compression

Compression reduces bandwidth consumed by WAN traffic. The gains realized vary depending on the mix of traffic. Zip files may yield no gains, but text can be compressed dramatically.

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TCP Optimization

Many document, file, and email optimization systems use TCP (Transport Control Protocol). The problem with TCP is that its congestion control functions tend to slow data transmission. This is especially hard on applications. Some WAN optimization devices use a variety of TCP optimization techniques to fix this.

Forward Error Correction (FEC) & Packet Order Correction (POC)

FEC corrects bit errors at the level of the physical layer. But it's often configured to operate on packets at the level of the network layer to improve application performance across WANs. POC overcomes out-of-order packet delivery by re-sequencing packets on the WAN. This avoids retransmissions that can occur when packets are not in order.

Optimized Service Quality

In an effort to optimize their WAN, organizations tend to overburden their WAN links. When demand exceeds capacity, traffic is contending for the same limited resource without regard to data importance. This means that incidental traffic may trump critical applications. WAN optimization products address this by classifying and prioritizing traffic based on a number of parameters such as users and applications.

Hardware vs. Software

The most common route for WAN optimization is the addition of special purpose hardware-based appliances. The upside is that it provides more control than software. The downside is that hardware takes up physical space, consumes energy, and requires network and management accommodations. Basically:

- Hardware is a good option for companies that have a virtual environment in the data center, but not in remote locations, because all locations would need to have a virtual server environment to support the requirements of the software.
- Hardware is just as scalable and performs just as well as virtualized software.
- Hardware solutions contain all components needed and no other infrastructure needs to be configured.

Software-based virtual appliances function as virtual machines on existing physical servers. The upside is that they require no additional space or energy. The downside is that users will need to allocate resources from their virtual environment to meet the software requirements (this means a little more management). Basically:

- Virtualized software provides additional options for deploying WAN optimization into the Cloud. It can now be uploaded to virtual servers provisioned in a Public Cloud environment (IaaS).
- It's unaffected by harsh environments such as extreme temperatures, extreme altitudes, high humidity, and rough handling.
- But, virtualized software requires expenditure for increased processing capabilities and increased memory.

Virtualized WAN optimization software will not mitigate the shortcomings of existing WAN optimization hardware. A virtualized WAN optimization product developed by the same manufacturer will generally have the same strengths and weaknesses as the original hardware version. This means that a vendor's virtualized version will not solve the shortcomings of its hardware version.

Price-wise, the difference between hardware and software depends on the manufacturer. It also depends on the organization's situation. For example, if the organization has a high loss rate for laptops and other mobile devices, software will make more sense. In any regard, buyers will want to look beyond the initial outlay and figure the long-term, in-use cost.

Choosing a Provider

Not surprisingly, the trade-offs between software and hardware are hotly disputed among providers that offer only one or the other. While the benefits of WAN optimization can be considerable, users are wise to look for a vendor they can trust that represents an array of providers. The ideal vendor will have network of experts on staff and offer a best-practice combination of experience, product choice, technical support, and competitive pricing.

B2B Computer's Optimized WAN Products & Services

B2B Computer Products offers the finest, most trusted WAN optimization products and services from industry leaders like Certeon and Riverbed.

Certeon's Virtualized Software

Certeon's aCelera™ application acceleration can be delivered in software and deployed as a virtual appliance. aCelera provides a more scalable, flexible, cost-effective, and manageable solution for IT managers and their remote users than traditional proprietary application acceleration or WAN optimization approaches. Advantages include:

- Improved app performance to remote offices by 95%
- Reduced bandwidth & infrastructure costs by up to 60%
- Lowest cost; most scalable software
- Most flexible best alignment with virtualization
- Supports 50% more concurrent connections than its nearest competitor
- It is hypervisor, hardware, and user agnostic---it works with any user and any network
- It supports multiple approaches to management and monitoring
- Because it is software-only, it deploys in minutes or hours, rather than days or weeks

Riverbed's Steelhead® Hardware and Virtualized Software

The Riverbed Steelhead® family of products accelerates the performance of applications over the WAN. Steelhead appliances and Steelhead Mobile deliver one of the highest performing and most scalable WAN optimization solutions available. Advantages include:

- Acceleration of key enterprise applications---up to 100X
- IT infrastructure consolidation and virtualization reduces bandwidth requirements and response times
- Reduced bandwidth utilization---typically by 60% to 95%
- Enhanced data protection can reduce replication times from hours to minutes
- Secure application acceleration: Riverbed is the only company that can optimize SSL traffic without compromising the end-to-end trust model.
- Visibility and analytics to easily determine, analyze, and solve problems
- It enables the mobile workforce by delivering local performance to remote workers wherever they connect

In addition the Virtual Steelhead appliance for custom deployments provides dual-ended virtualization capability so that organizations can migrate their infrastructure to a public cloud without sacrificing application performance.

About B2B Computer Products LLC (www.B2BComp.com)

Award-winning B2B Computer Products LLC was identified by *Inc.* magazine as one of the fastest growing businesses of its type in the U.S. in 2009 and 2010, and by *Crain's* as one of the largest privately held companies in the Chicago metro area. B2B Computer is a single-source provider of products and manufacturer-certified services that include virtualization, VoIP systems, data deduplication, disaster recovery, SAN storage, server consolidation, energy-efficiency improvement, and testing environment implementation. B2B Computer's engineers can design, configure, install, and/or manage the products and systems they sell to their clients. As a national business-to-business reseller of computer hardware and software representing hundreds of manufacturers – B2B guarantees a best practice combination of competitively priced customized products and expert services. They provide both managed print and managed network services. In addition to its Addison, Illinois headquarters and multiple distribution points, B2B Computer's offices are in Chicago; New York; Davenport, Iowa; and San Francisco. B2B Computer Products offers a [6-Point Best Service, Best Solutions Guarantee](#). To contact B2B Computer, call 1-877-222-8857.

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