



# It's Time for WAN Optimization to Evolve to Meet the Needs of File Collaboration

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### Introduction: Effective File Collaboration Is Imperative for Competitive Advantage

Most organizations have evolved into extended enterprises. They are globally networked organizations comprised of not only office-bound employees, but also remote workers, telecommuters, suppliers, partners, vendors and customers. The best of these dynamic, distributed organizations have a flexible composition that enables them to leverage information quickly in the face of global pressures. Highly structured, siloed organizations simply cannot respond fast enough to increasingly shorter windows of opportunity. Project teams in the extended enterprise often need to be quickly assembled from disparate parts of the organization in different locations. Competitive advantage for these extended enterprises is determined by how quickly and effectively they harness the collective knowledge of every constituent, which can occur only through collaboration.

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File collaboration is the process of enabling and managing the life cycle of business file sharing.

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These competitive dynamics have thrust collaboration to the top of almost every CIO's priority list. In particular, high-quality business file sharing and collaboration infrastructure is a must-have for any organization that wants to enable a more productive workforce.

However, most collaborative technologies, including business file sharing, tend to run poorly over a wide-area network (WAN), so many IT leaders have turned to WAN optimization as a panacea to network woes. Unfortunately, legacy WAN optimization technologies were not designed for file collaboration, and consequently, WAN optimization must now evolve to keep up with the changing business climate.

## Defining WAN Optimization

WAN optimization technologies have been considered mainstream for more than five years. The solutions manipulate application traffic to run better over a WAN, with the goal of providing workers in branch and remote offices a LAN-like experience. However, there is no one-size-fits-all WAN optimization technology. WAN optimization can be thought of as a collection of different techniques that can be utilized for specific applications, including:

### Acceleration and Compression

This technology has almost become synonymous with WAN optimization and can be used to optimize the performance of non-real-time applications such as e-mail, backup and recovery, Microsoft SharePoint and other business applications. The chatty natures of these applications can overburden WAN links and degrade the performance of other business-critical applications. Acceleration functions by reducing the amount of traffic sent over the network through techniques such as data reduction, TCP acceleration and application layer optimization. The primary acceleration solution providers are Riverbed, Cisco, Silver Peak and Blue Coat.

#### *Strengths*

Acceleration technology works by reducing the total amount of traffic sent over the network and is great for low-speed network links or where there is a high amount of congestion. The use of acceleration technology has helped many organizations avoid buying new WAN infrastructure or upgrading the bandwidth on the network. It is ideally suited for geographically dispersed organizations in which application servers are centrally located.

#### *Weaknesses*

While WAN optimization is ideally suited for mainstream application traffic, it is not ideal for sharing large files for business purposes, particularly ones that are continually being updated. While data reduction methods can reduce the overall traffic on the WAN – which does indeed speed up file access – the benefit gained is not enough to create the LAN-like performance that users desire. So, for file access, network managers may benefit from the reduced load on the network but the performance improvement to the user is minimal.

Additionally, acceleration appliances can range in cost from \$10,000 to \$20,000, depending on the size of the location at which they are deployed. Because of the high price tag, acceleration is rarely deployed in smaller offices.

### **Quality of Service (QoS) or Traffic Shaping**

This technology is used to improve the performance of real-time applications such as VoIP, video and virtual desktops. Real-time traffic is subject to poor performance because of latency, packet loss and jitter from other applications that overwhelm the WAN link. QoS works by prioritizing the real-time traffic over other traffic and reserves a specific amount of bandwidth for the real-time applications. The mainstream acceleration vendors have made QoS a standard part of their feature set.

#### *Strengths*

QoS creates many “lanes” inside a single WAN link for the various different types of applications to flow through. It can significantly improve the performance of IP-based communications traffic such as VoIP and video because it separates the real-time and non-real-time traffic. This makes QoS the best technology when the overall amount of available bandwidth is too small to accommodate the real-time and non-real-time traffic.

#### *Weaknesses*

While QoS does a great job of optimizing real-time traffic, it has no benefit to non-real-time traffic. Applications such as file collaboration and e-mail run poorly because of the chatty nature of the application or the inefficiencies in the application protocol, so adding more bandwidth has no real impact.

### **Enterprise Content Delivery Networks (ECDN) or Caching**

This is used to optimize the performance of Web traffic, streaming video or other highly repetitive data. Multiple workers accessing the same streaming video content simultaneously from the same branch location over the network can cripple the WAN connection. Content delivery creates a local replica of that content that can be accessed by anyone, removing the need to use the WAN for transport. Blue Coat is the only mainstream ECDN vendor today.

#### *Strengths*

ECDNs are ideally suited for large blocks of data that need to be accessed by numerous people in the same location. For example, if a CEO were to record a message to the organization, an ECDN could be used to push that recorded video to every location for local access rather than having every worker in the same location using the WAN to access the file.

#### *Weaknesses*

ECDNs function by having content pushed to the caching device in the branch on a periodic basis. So, while it's ideal for applications like streaming media, it is not well suited for dynamic content like business file sharing or e-mail.

### **File Replication**

This technology moves copies of files to distributed locations where local users may need access. File replication works by mirroring the files that are centrally located in the data center out to remote regions. This gives workers local access while maintaining the IT benefit of centralization. Microsoft DFS Replication is an example of file replication technology.

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Microsoft BranchCache is for ad hoc file sharing but NOT intended for File Collaboration.

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File replication is ideally suited for organizations with a small number of branches or where business file sharing is intermittent.

#### *Strengths*

The main benefit of file replication is that users have local access to data while the IT managers can back up, restore and manage the files centrally. Additionally, since the files actually reside in the branch, network traffic is cut significantly, improving the performance of other applications. The solutions tend to be very flexible and allow for the replication to occur outside of normal business hours, making the impact of the technology minimally disruptive.

#### *Weaknesses*

The majority of file replication solutions lack file checkout or remote locking capabilities. This means that multiple workers can be accessing the same file at the same time without the others being aware. The downside of this is that changes made by one or more people can be lost when the last copy overwrites the ones previously saved.

#### How Is Microsoft Approaching WAN Optimization?

Working in concert with Windows Server 2008 R2, Windows 7 has a new feature called BranchCache, which is intended to reduce bandwidth consumption on WAN links. BranchCache is a peer-to-peer background cache of frequently accessed content where the Windows 7 clients fetch content from within a branch office LAN environment instead of servers that are remotely deployed and connected via a WAN. These branch caches can be on dedicated servers or peer clients.

#### *Strengths*

Because BranchCache is built into Windows 7, the cost is free. This makes it one of the simplest, most cost-effective WAN Optimization technologies. The technology is also very flexible and can be run in hosted or distributed mode.

#### *Weaknesses*

While the concept seems sound, the process of business file sharing and collaboration requires the ability to support users in different locations connected by a WAN or VPN who need to share and update project files. BranchCache, which is limited to Windows 7 clients, is designed for local ad hoc file sharing and lacks the capabilities for file locking and version conflict management that file collaboration users require.

Each of the WAN optimization technologies (Exhibit 1) does a good job for a subset of applications. However, none of the technologies is ideally suited for file collaboration. WAN optimization must evolve to meet the needs of organizations that are heavily reliant on the ability of their employees to use business file sharing as the basis of collaboration.

### Exhibit 1: WAN Optimization Taxonomy

Type of WAN optimization	Applications Optimized	Primary Vendors
Acceleration and compression	Non-real-time applications – Exchange, SharePoint	Riverbed, Cisco, Blue Coat
Quality of service	Real-time applications – VDI, VoIP, video	Blue Coat, Cisco
Caching	Static applications – Web, streaming media	Blue Coat
File collaboration optimization	Business file sharing	Peer Software

File Collaboration requires distributed File Locking capabilities to avoid Version Conflicts.

### Introducing WAN Optimization for Business File Sharing and Collaboration

By definition, any technology that sits at a WAN edge is part of the overall WAN optimization taxonomy. So far, we have identified a weakness in available WAN optimization offerings in that file collaboration needs are not well supported. File collaboration optimization, a superset of file replication, fills this gap by delivering enterprise-class replication with version conflict prevention through file locking as well as centralized administration that simplifies support for multi-site environments.

File collaboration optimization addresses the following:

- Geographically dispersed teams sharing project files. The technology allows users in any part of the world to share project files with one another with the assurance that they are working with the most current version.
- Improved performance. Since the files being accessed are actually local to the branch, the users have the best possible performance.
- Reduction of file conflicts and corruption. File collaboration will lock files that are in use so multiple users cannot access the same file. This will reduce, if not eliminate, file corruption.
- Reduction in WAN traffic. File collaboration optimization uses byte-level replication and synchronization for the most efficient use of network traffic. Only the bytes that have changed are replicated, rather than the entire file.
- Protection against unstable WAN links. Since the files are locally stored, the solution works even in the event of a WAN failure. When the WAN connection is restored, replication resumes as per prior to the WAN outage.

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Peer Software's File Collaboration Solution offers the first File Replication Technology with integrated File Locking.

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Riverbed is not designed to optimize File Collaboration and File Services.

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File collaboration optimization can work in conjunction with other WAN optimization technologies. IT leaders should look to leverage file collaboration optimization in organizations where there is heavy dependence on business file sharing. Peer Software is a great example of a vendor that has a business file sharing and collaboration solution that can scale to even the largest of enterprises.

IT managers that want to start the process of implementing file collaboration optimization should look for a solution with the following characteristics:

- Real-time replication – The solution should continually replicate files as changes are made. This ensures that the latest version is always being used by all users.
- Easy to configure – A system that is fast to set up and easy to manage will allow organizations to start enjoying the benefits almost immediately.
- Byte-level replication – Replication traffic at the byte level versus the file level saves bandwidth and provides the best possible performance for the WAN.
- Data encryption and compression – For security reasons, it's important to encrypt the data as it traverses the WAN. Additionally, compressing the data can further improve performance.
- File locking – This is critical to ensuring that version conflicts do not occur. This will eliminate one of the biggest challenges with file collaboration today.
- Hub-and-spoke model – A hub-and-spoke deployment will allow for centralized management and configuration.
- Unicode-compliant – For the global business, the solution must allow organizations to synchronize files containing Western as well as Unicode (Mac) and Asian characters.
- SNMP support – Support for SNMP ensures that the solution can be monitored by most corporate network management solutions.
- E-mail alerts and reporting – IT managers can use e-mail notification to alert them of problems that might have occurred over the WAN.
- Cross domains – Almost all large organizations have multiple Active Directory domains. File collaboration solutions must span all of the domains for optimized performance.

## Conclusion and Recommendations

The competitive environment for businesses has changed significantly over the past five years. Competitive advantage is now dependent on enabling the best people in an organization to collaborate with one another no matter where they are located. This has put a premium on the ability for organizations to provide enterprise-grade business file sharing as the foundation for a larger collaboration strategy. However, a successful business file sharing solution is highly dependent on the performance of the WAN, making WAN optimization a must-have technology for any networked organization.

But not all WAN optimization is equal. While QoS and acceleration do a great job of optimizing a subset of business applications, these optimization techniques will not be sufficient for business file sharing. Optimizing business file sharing requires an enterprise-grade file collaboration optimization solution from an established provider such as Peer Software. To help organizations get started, ZK Research recommends the following:

- Create a life cycle around business file sharing and collaboration. Simply putting up shared servers and hoping everything works might suffice for small groups. But any midsize or large size organization will encounter significant challenges, such as file corruption, file version conflicts and poor performance, that will remove much of the ROI of the file sharing initiative.
- Use a solution that has been optimized for business file sharing and collaboration. There are numerous vendors that fall under the umbrella of “WAN optimization,” but their solutions were not designed for business file sharing and collaboration. It’s critical that IT leaders understand the different types of WAN optimization technologies and choose the right solution to deliver the best possible experience to their users.

### The Peer Software Solution

Since 1993, Peer Software, Inc. ([www.PeerSoftware.com](http://www.PeerSoftware.com)) has developed data management solutions addressing the unique challenges related to WAN environments. Featuring DFSR+ technology, Peer’s enterprise-class file sharing and collaboration solutions seamlessly power productivity for geographically dispersed users and project teams by delivering real-time file replication and version conflict prevention, eliminating reliance on less optimal file sharing methods such as e-mail, FTP, complex content management systems and WAN accelerators.