Blue Coat

White Paper

WAN Optimization for Today and Tomorrow >

WAN Optimization for Today and Tomorrow

The purpose of the corporate WAN is simple enough: fast, access to applications and information. But managing the WAN is anything but simple today. Social and technological changes are transforming the nature of traffic and are raising cost and performance issues for network managers. As traffic mushrooms, bandwidth costs escalate, application performance declines, and complaints multiply. IT initiatives are postponed.

The trends that cause these problems are many and varied. One is the consolidation of computing resources and applications, which are accessed over the WAN – and, on the other hand, the growing use of cloud applications. More and more corporate communication is based on live and on-demand video and rich media that contribute massively to bandwidth demand. Above all, recreational video sites and social applications are overwhelming the WAN. If your WAN optimizer doesn't control these video and Web applications, you're facing today's challenges with yesterday's technology.

Consolidation and centralization: How WAN Optimization became an urgent necessity

As virtualization began to take over the data center, and worries about data compliance and protection took hold, IT departments began consolidating servers, storage and data from branch offices into central data centers. The benefits of this strategy are clear:

- Reduced hardware, software and management costs
- Increased data compliance and control
- Simplified IT management

But centralization comes with a downside: significant bandwidth and performance issues. Legacy protocols like CIFS, which is used for accessing Microsoft file shares, and MAPI, which underlies Exchange, behave poorly when they operate over wide area networks. Even TCP, an Internet protocol, has significant inefficiencies when transferring large datasets. And now, because all files and all data are accessed via the WAN, traffic builds up, demanding costly bandwidth upgrades. Your branch office employees may experience degraded application performance that limits their flexibility and makes them less productive. WAN optimization becomes a priority. You need a WAN that performs like a LAN.

The early responses: Foundation acceleration technologies

The industry responded to the need for WAN optimization with basic acceleration technologies. They focused on speeding up existing protocols that were widely used on the LAN (such as Microsoft file access over CIFS and Exchange/Outlook over MAPI), optimizing them to work effectively over distributed WANs. Compression and byte caching (also known as second pass dictionary compression) reduce bandwidth significantly. QoS can throttle disruptive traffic and prioritize more important applications.

These foundation technologies accelerate remote and branch access to centralized files from Microsoft, EMC, EqualLogic, Brocade and NetApp; email from Notes, Microsoft Exchange and other mail programs; and backup systems from Commvault, Symantec and other vendors. They improve performance by managing latency issues with chatty file protocols, by caching attachments, by expanding bandwidth for high-volume transfers, and by drastically reducing the data that transits the WAN. The benefits of these foundational WAN optimization technologies deliver a significant ROI by:

- Accelerating user performance by two, five, or even three hundred times
- Reducing bandwidth for files, storage and email by 50 to 95 percent
- Making consolidation and centralization possible

Legacy protocols transition to Web

The nature of WAN traffic is changing dramatically. The use of video and rich-media applications is surging. Recreational and social sites consume massive amounts of bandwidth. In three years, we expect Web traffic to be 90 percent video. Consolidation of compute resources is putting more and more pressure on the WAN. Business applications are migrating to the Web, and the popularity of SaaS applications keeps growing. You need much more than basic acceleration technologies to deliver application performance today – and tomorrow. You need a solution that will keep your WAN running fast no matter how you use it.

Beyond the basics: WAN Optimization for Tomorrow's Applications

Blue Coat gives you a powerful, new generation of defenses against the trends that threaten to overwhelm the WAN and overpower your business applications. Let's review these challenges and how Blue Coat has responded to them.

Accelerate enterprise applications that transition to the Web

All enterprise applications have transitioned, or are currently transitioning, to Web technologies for delivery. For example: file sharing with the CIFS protocol is being replaced by Intranet document management systems that use HTTP and SSL, such as Microsoft SharePoint. Microsoft Exchange and Outlook are moving from MAPI to HTTP, not only for Outlook clients but especially for Outlook Web Access. There are numerous document management systems and Intranet technologies that transport over HTTP and SSL – from Jive to Documentum and Google Docs as well.

Blue Coat Web technologies that accelerate HTTP and SSL enable you to manage this traffic and reduce its effect on performance:

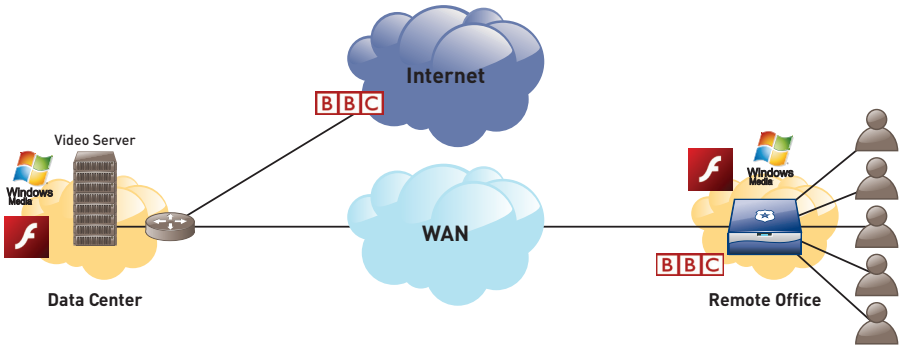
- Object caching puts content close to your users to eliminate latency, save bandwidth, and offload data center servers.
- Adaptive refresh technology keeps the cache fresh.
- Pipelining speeds HTTP/SSL connections.
- SSL decryption accelerates secure traffic.

Deliver high-quality video and rich media over existing networks

More and more corporate communication uses live or on-demand video and graphics-intensive displays to inform and instruct employees. Microsoft Windows Media Server and Adobe Flash servers are the two most prominent examples. It's effective but bandwidth-hungry, and can downgrade application performance.

Live Video Stream Splitting

Scale video by 2 - 10,000x
Reduce impact of Internet video



Live video stream: Internal or External

Blue Coat device in branch takes a single video stream and splits it into multiple streams to deliver to all users in the branch. Whether Adobe Flash or Microsoft Windows Media Server, from the Internet or from your internal video servers, Blue Coat scales live video delivery with no special network configurations, scheduling, setup or security risks. AND, it's only PART of an integrated WAN Optimization solution.

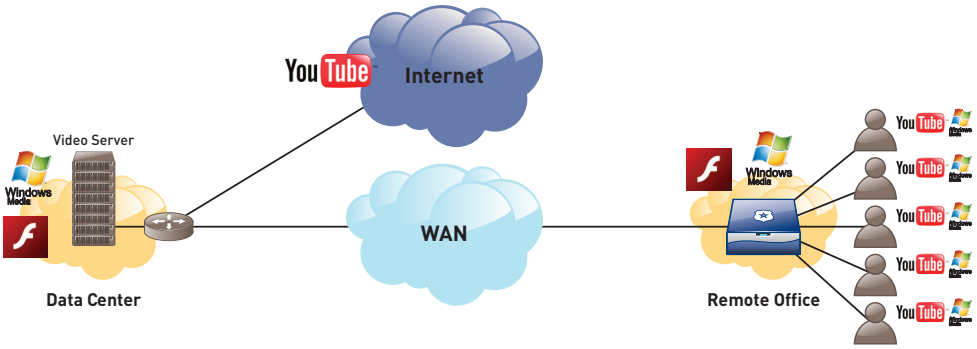
Delivering high-quality live streaming video requires massive amounts of bandwidth on specialized protocols. A single live stream can be 128Kbps or even 1.2Mbps. Large on-demand files can reach 25MB, 100MB and even 1GB. Bandwidth-hungry rich-media applications can dominate the entire network – and fail just the same for lack of resources. You can use Blue Coat WAN optimization technology to deliver this content with dramatically reduced bandwidth requirements:

-> Split-stream live video. Send a single stream to a branch office over the WAN, and multiple users can access it – an enormous bandwidth saving.

-> Store files locally with on-demand video caching. Local cache stores HTTP and SSL video, including Flash, QuickTime, Silverlight and Microsoft Windows Media, as well as files contained in native Windows Media Server protocol RTSP.

-> Distribute video to remote caches during low usage hours with Blue Coat CDN, which integrates with key content capture and management systems such as Accordent.

Video on Demand Caching with CDN
Serve video content instantly
Zero bandwidth impact



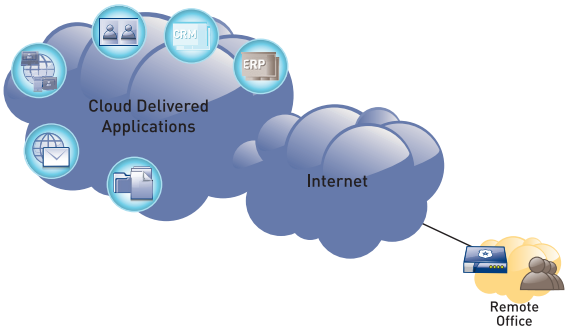
Video on Demand Caching: Internal or External
Once a video file has been seen by Blue Coat, we store it in a specialized cache that tracks expiration and freshness. The second, fourth, tenth and 100th time it is accessed, the video is served directly from the cache, meaning there is ZERO network impact for subsequent access. In addition to dramatically reducing WAN bandwidth, this offloads the internal media servers for your corporate video, and minimizes the strain on your Internet connection for externally sourced media. Our Content Distribution Networking (CDN) allows you to pre-populate edge caches with key content.
This video optimization requires NO CORE devices (completely asymmetric).

These technologies work just as effectively with external video from news sources or YouTube. This means that when 20 people at a branch office watch the same news clip – the death of a celebrity, a last-minute rally by the home team, or a category 4 hurricane making landfall – it won't crush your network.

Accelerate cloud computing and SaaS applications

SaaS applications such as Salesforce.com, SharePoint BPOS or SaaS-hosted SAP and Oracle applications present unique management challenges. Because SaaS offerings are located outside your network they are beyond your control. Furthermore, they are encrypted with SSL and use certificates and keys controlled by the SaaS provider and the Web browser. Traditional WAN optimization technologies would require a box on the SaaS provider's network, an obvious impossibility.

Cloud Applications Emerge



Applications that use traditional LAN protocols are transitioning to Web protocols. Now HTTP and SSL expertise has become increasingly critical

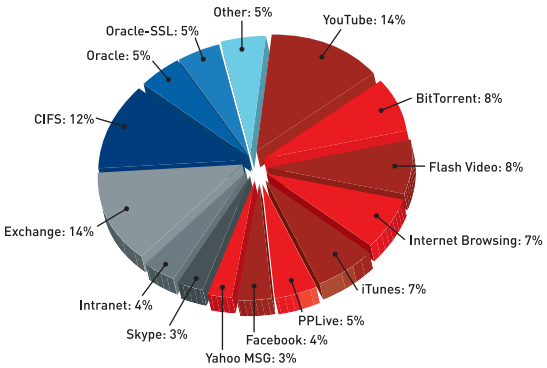
Because SaaS applications rely on HTTP and SSL delivery, you need optimization technologies that can asymmetrically accelerate HTTP and SSL and secure client-side certificate handling so you can decrypt and accelerate sessions. Blue coat fills this need. You can accelerate SaaS applications with a single Blue Coat appliance or software point within your network environment:

- Decrypt and optimize external cloud applications with Blue Coat's external SSL decryption.
- Apply asymmetric acceleration to SaaS applications with Blue Coat object caching and pipelining.
- Give bandwidth priority to business SaaS so recreational browsing can't degrade its performance.

Embrace, control, and secure the Internet

Today, all companies provide Internet access to their employees, who use it for legitimate business purposes as well as for social and recreational browsing. Most companies limit or concentrate Internet access in a few locations to reduce security risks. But this means that recreational traffic is backhauled over the wide area network.

In March 2010, 31 billion videos were delivered over global networks in the U.S. alone. Add to that daily music downloads, and it becomes clear that recreational traffic can easily dominate the network and seriously degrade application performance. This problem is aggravated when remote and branch office Internet access is limited to a few hubs. The result is a backhaul of recreational traffic across the WAN, where 30 to 60 percent of the bandwidth is consumed by applications like YouTube and iTunes.



Blue Coat technology lets you identify all applications on the WAN, applying intelligent policy to limit the bandwidth available to recreational applications, optimize backhauled recreational traffic, and give priority to critical business applications. This ability to differentiate and prioritize enables you to reduce bandwidth costs significantly while improving performance.

But in the future, all roads will lead to the Internet. It's already in wide use for remote access to corporate networks from desktops, mobile systems, and smart phones, and as a secondary connection for employees in branch offices. Enterprises that once relied on frame relay networks now use IP-enabled MPLS WANs that resemble the Internet. It's clear that ultimately all enterprise traffic will be moving over the Internet.

This raises downside issues. How can you protect your network against malware? How can you prevent phishing, data leakage, and the exposure of valuable information? How can you constrain recreational traffic from impacting application performance? In short, how can you participate in the future of the Internet without exposure to its hazards? Here's how Blue Coat's unique WAN optimization technology puts you in the driver's seat – today and tomorrow.

Secure, high-availability direct-to-net branch access

Blue Coat enables you to embrace architectures that allow remote offices to connect directly to the Internet. Industry-leading Secure Web Gateway technologies protect against malware, phishing, and data leakage. You can:

- Increase availability through dual homed connections
- Reduce networking costs by leveraging cheaper internet links
- Improve SaaS performance with optimization technologies
- Safely enable remote sites to access SaaS and the Internet directly, shifting bandwidth traffic from the WAN to the Internet.

More and more branch offices now have primary or secondary Internet connections. Fear of malware and Web exposure, however, often leads organizations to VPN-encrypt all traffic back to the data center. Blue Coat provides safe net access from the branch, offloads non-business traffic, and improves SaaS performance.

WAN Optimization for Today and Tomorrow

WAN Optimization has been driven by consolidation – initiatives that continue today and continue to influence WAN optimization technologies. But the world is changing. Web protocols are replacing legacy protocols. Video is becoming a dominant force, driven by consumer technologies and more widespread corporate use. Cloud-delivered applications are becoming mainstream, and the Internet will only grow as they develop into primary access technologies. As you deal with the issues you face today and plan for tomorrow, consider the ways in which Blue Coat can reduce costs and improve performance on the WAN:

Internet Protection & Offload	Direct to Cloud	Enable **Internet Connected** Enterprise Offload WAN of **100%** recreation Lower costs with integrated security
Cloud & Web Acceleration	Content Control	Speed HTTP/SSL apps **5 - 25x** Eliminate cloud VA's **w/Asymmetric optimization** **Accelerate cloud** applications
Video Optimization	Enable corporate video, control recreation	Scale video delivery: **1000x** b/w gains Reduce recreation **by 30 - 80%** **Protect critical apps** from "flood" of video
Foundation Acceleration	Consolidation and Centralization	Accelerate apps, files, email, backup **3 - 300x** Reduce bandwidth **50 - 99%**

And here are the ways Blue Coat can clear the way to the Web 2.0 world ahead with direct-to-net access from branch offices:

-> It enables secure, high-availability, direct-to-net access from your branches, shifting bandwidth costs from the WAN to Internet links.

-> It speeds cloud and SaaS access from the branches by eliminating backhaul latency and WAN contention.

-> It builds higher-availability networks with a second connection for branch offices.

To sum up: Blue Coat provides WAN Optimization for today and tomorrow, giving you dramatic gains in bandwidth and performance, optimizing the application and network architectures of today and tomorrow.

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