



Optimizing Enterprise Application Delivery

There is a crisis unfolding in IT that is limiting the ability to deliver applications across the enterprise. Top IT priorities - data center centralization, virtualization and collaboration - are cost-saving measures that are draining system performance, saturating bandwidth, and reducing capacity. Hidden inefficiencies and conflicting configurations compound the problem. This creates an expanding drag on application performance. IT must find a way to improve application delivery performance across the enterprise.

Optimizing Enterprise Application Delivery

“At the end of the day it’s about capital utilization, and most servers use only 5-15% of their maximum capacity.”

*Dr. Jonathan Koomey
Consulting Professor, Stanford University
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Executive Summary

A huge amount of IT capacity and performance is locked away, unavailable for one simple reason: infrastructure components are not configured to work together optimally.

A huge amount of IT capacity and performance is locked away, unavailable for one simple reason: infrastructure components – servers, networks, operating systems, desktops – are not configured to work together optimally. At the same time, organizations are delivering business-critical applications across the enterprise to an increasingly distributed workforce. Budget cuts and strategic initiatives are driving IT to centralize the data center. Virtualization, VoIP, collaboration and bloated applications are devouring bandwidth. Users are remote, data is centralized, bandwidth is jammed, and server demand is increasing exponentially. Infrastructure performance isn’t keeping up with demand.

Optimization has become a strategic necessity to support the enterprise.

While IT can’t erase the business need that created these challenges, it can maximize performance of the existing infrastructure. Best-in-class companies are attacking the problem with application delivery optimization solutions. Optimization delivers order-of-magnitude performance improvements with superior cost/benefit.¹ It has become a strategic necessity to support the enterprise.

This paper will discuss the challenges that cause performance issues, the optimization solution, its benefits, and what to look for in a solution.

¹ ROI is substantial. It is the subject of another white paper titled “Application Delivery Optimization ROI”.

The Challenge of Application Delivery

Enterprise infrastructure is under siege from many directions.

Widening Spread Between Users and Data

A recent study found the following:

- ❑ Over 50% of the workforce is located outside corporate headquarters. This number is trending upward.
- ❑ Over 60% of servers and applications are centralized, trending up sharply.

The discrepancy between where users and data are located is intensifying bandwidth demands. The study also found that 70% of companies that are consolidating data centers and 75% of organizations implementing virtualization have had unexpected application delivery performance consequences.²

Over 75% of organizations implementing virtualization are concerned about the performance impact of their business-critical applications.

Application Trends

Application data volume is soaring with the adoption of VoIP, corporate video, and Web 2.0 features such as collaboration. These data-intensive applications are causing bandwidth consumption and server demands to explode.

Native Inefficiency

Standard network configurations, desktops and applications are performance troublemakers by default. Chatty protocols, complex application and device configurations, and conflicting settings out of the box create zero-value network traffic, unnecessary processor churning and application performance bottlenecks.

Out-of-the-box configurations of devices and software create zero-value performance bottlenecks.

Symptoms of Underperformance

- ❑ Gigabit network performance is good, but not dramatically faster than its predecessor.
- ❑ Remote users take an inordinate amount of time to log in and open files.

² Source: Aberdeen Group, "Optimizing Application Delivery of the WAN", August 2008

- ❑ Realized throughput of high-speed WAN links is a fraction of rated bandwidth, and increasing bandwidth doesn't give the anticipated relief.
- ❑ You need to add a massive new application server to handle more users because your existing servers are maxed out.
- ❑ "I'm sorry this is taking so long. Our system is slow today." (Customer Service)
- ❑ "Just reboot." (IT Help Desk)

The traditional solution has been to hide the performance problem behind more equipment, upgrades and bandwidth, hoping the problem doesn't get worse.

These scenarios are not very palatable, but they are very real. The traditional solution has been to hide the problem behind more servers, upgrades and bandwidth, hoping performance doesn't get worse.

Budgeting for Inefficiency

Purchasing new hardware and upgrades gnaws at the IT budget, year after year. The costs don't stop with the equipment purchase though. For instance, a new server also needs an operating system, application licenses, rack space, power, and IT resources to implement it, reconfigure users, and maintain it. Unfortunately, all these budget line items simply mask the performance problem, and the underutilized infrastructure continues to bloat.

Causes of Performance Limitations

Complexity

Each component has to work in concert with all other pieces of the infrastructure. Achieving this is no simple matter. The complexity is staggering.

It is difficult to tune an enterprise network. There are so many configurable components in the infrastructure that it's hard to know where to begin to look to fix performance problems. Manufacturers provide user-adjustable configuration settings for servers, switches, routers, network cards, firewalls, IP stacks, desktop systems, operating systems, applications, and databases. Each has to work in concert for systems to work at their potential. Achieving this is no simple matter.

The complexity is staggering. For instance, there are over 350,000 permutations of configuration settings between Microsoft Exchange Server, Windows Server and Windows XP. This does not include the huge number of settings that can be modified on the supporting server or desktop hardware, browser, and networking devices.

Precision

To further complicate the issue, configuration settings might offset or even conflict with each other. The vast majority of settings are not documented, yet the effects are significant. Changes need to be deliberate and precise. Manual tuning of a complete infrastructure is not realistic.

Underperformance Is Bad Business

There are significant business consequences from underperforming systems.

- ❑ A one-second increase in real-time transaction processing may cost the company – or customer – hundreds of thousands in losses.
- ❑ Poor portal performance affects customer satisfaction and company image.
- ❑ Expansion opportunities may be limited if remote users experience slow response times.
- ❑ When customers have to wait because “the computer is slow today,” corporate image suffers.

The Optimization Solution

There are finally viable alternatives for the performance and capacity dilemma. Optimization is gaining acceptance quickly. Why? It tunes performance dynamically across the enterprise infrastructure, including:

- ❑ Servers
- ❑ Desktops and remote devices
- ❑ Applications
- ❑ Databases
- ❑ Operating systems
- ❑ Bandwidth utilization
- ❑ Networking devices (routers, firewalls, network interface cards)

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Optimization:

- ⇒ *Tunes network performance*
- ⇒ *Dynamically fixes problems*
- ⇒ *Works across the enterprise*

In effect, optimization acts as a central nervous system for the enterprise, monitoring and adjusting all network components dynamically. The result is maximum performance throughout the day.

Optimization Benefits

Optimization improves performance, delays or avoids upgrades, and improves application delivery.

Big claims? Experience shows that optimization delivers immediate and ongoing benefits.

IT Benefits

Optimization has returned 10-15x performance improvements.

- ❑ Delivers visible performance improvements throughout the infrastructure. Aberdeen reports a 10-15x performance improvement when multiple network layers are optimized.
- ❑ Unlocks more capacity per device with improved I/O, processor utilization, and RAM efficiency.
- ❑ Provides real-time performance monitoring, problem detection, and resolution on the fly.
- ❑ Identifies “creeping problems” before they occur, such as applications that don’t close a server connection on termination.
- ❑ Optimizes remote devices automatically. Users can connect via VPN, Internet, and Windows Mobile devices and still have efficient performance.
- ❑ Reduces the negative performance effects of IT operating silos that manage the infrastructure, applications, data, and desktops.

Business Benefits

There are huge business benefits from optimization. They include:

Optimization reduces costs, improves satisfaction and is a “green” solution.

- ❑ Cost avoidance. Hardware, software, rack space, training, and hiring additional IT support staff can be postponed or canceled.
- ❑ Immediate operating budget reductions. Turning down bandwidth and turning off servers has a surprising impact.
- ❑ Enhanced application delivery.
- ❑ Fewer business interruptions caused by downtime. Preemptive diagnostics can identify and resolve problems before they occur.

- ❑ Improved customer satisfaction from better portal performance.
- ❑ EPA Green initiative compliance. Shutting down servers reduces power consumption and the IT carbon footprint.

What to Look for

A number of criteria are important in an optimization solution.

- ❑ Optimizes across every tier – machine, network and software (OSI layers 2-7)
- ❑ Provides real-time detection of intra-day surges and automated correction
- ❑ Allows IT to control when corrections are made
- ❑ Adjusts manufacturer's configurable settings only and does not change the base systems or software
- ❑ Accommodates a wide range of operating systems, hardware, applications, and databases
- ❑ Offers a minimal learning curve
- ❑ Integrates with and enhances other performance solutions, such as Riverbed, Microsoft System Center Operations Manager, and VMware.

Most importantly, optimization should run across all tiers of the enterprise infrastructure.

Conclusion

Optimization lets IT deliver solutions that business needs. If you have immediate application performance issues, are considering major equipment purchases or upgrades, or are looking at a reduced IT budget, evaluate optimization. It will deliver surprising results.

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For More Information

Veloxum LLC has applied over 80 years of industry experience to develop an optimization solution for the IT performance and capacity problem. Veloxum's iPTE product is an automated, highly adaptive tuning application that allows IT departments to deliver economical performance. For more information please call +1.888.VELOXUM (888.835.6986), email info@veloxum.com, or visit www.veloxum.com.

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