

THE

State of Application Acceleration & WAN Optimization



Speed: The Killer App

CMP Research

Despite advances in network infrastructure, most enterprise WAN, web and application architectures can't support the speed their users and customers expect from the applications that run their business processes. Companies still struggle to get the right information to the right people at the right time—often complicated by highly distributed environments or heavy web traffic. Without scrapping their existing networks, they are finding the answers in Layer 7 content switches, application front ends and advances in WAN optimization technology. Introducing the first quantitative research analysis, IT professionals weigh in on the speed of their business demands and how they plan to cope with them.

Contributors:

- | | | | |
|-----------------|---------------------|------------------|----------------|
| Riverbed | Akamai | Juniper | Radware |
| F5 | Coyote Point | NetScaler | |
| Foundry | Array | Packeteer | |

Executive Summary

Speed: The Killer App

Application Acceleration and WAN optimization technologies are delivering the speed that today's enterprises need.

“Once needs for availability and security are met, higher needs – such as the need for optimizing the user's experience – will rise as priorities.”

— Peter Sevcik
President
NetForecast, Inc.

These days, globalization is all about speed. To compete successfully, most companies must provide their far-flung workforces and partner organizations with access to key applications and real-time business processes. Increasingly, they're using Internet protocols (HTML, XML, etc.) to do it.

This new economic *cum* technology model, however, is generating longer and longer wait times for Web browser-wielding end-users. The reasons can be attributed to:

- Ballooning amounts of bandwidth consumed by the delivery of application pages – much of it dynamic content that is typically more resource-intensive – especially over slower wide area networks (WANs);
- The inherent latency in slow-bandwidth connections;
- The additional overhead Secure Sockets Layer (SSL) imposes on servers.

The result is that too often, end users are waiting so long for pages that productivity is suffering. Enterprise IT groups have been forced to build additional data centers, deploy more server hardware, install applications locally at remote facilities, and pay for much more WAN bandwidth.

But these responses to changing business demands and technologies are not solutions. To better understand the technologies, products and tools that provide solutions, *CMP Research* conducted an e-mail survey of its IT-professional readership in late June. We asked these IT professionals about their take on the state of accelerated application delivery capabilities, how these capabilities can serve the

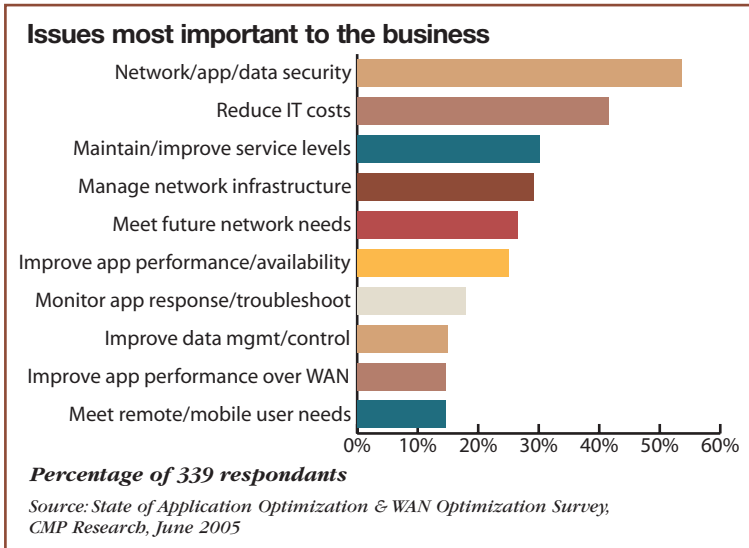
needs of their business, what kinds of devices they've deployed to improve the performance of their networked applications, and what sort of payback they've seen from these deployments. The results include the opinions and plans of 340 IT professionals from various enterprises.

Wanted: Security, availability, lower cost.

The call for accelerated application delivery has begun to emerge in an increasingly wider business environment driven by three overriding concerns, each reflected in the *CMP Research* survey results. Answering the query, “What are your business technology and application performance needs?” the majority of IT professionals cited the following:

- **Availability.** Ensuring high application availability and ensuring business continuity were selected as “very much” needed by most survey respondents — a full 69 percent.
- **Security.** Ensuring data center security was cited by 65 percent of respondents as something “very much” needed, while 60 percent regard secure access as most important in deploying solutions that help accelerate and optimize application performance. Keeping networks, applications and data secure is deemed “most important” to the business by 54 percent of respondents.
- **Cutting costs.** Reducing IT costs is seen as most important in deploying solutions that help accelerate/optimize application performance by 57 percent and as an important business issue by 42 percent of respondents.

“The clear message,” according to Arun Taneja,



founder of the Taneja Group technology analysts, “is that the [application acceleration] device has to be easy to install and manage, and ‘it must not mess with whatever security settings I have.’ High availability is assumed and expected. And businesses are distinctly expecting the solution to help in reducing costs.”

An intensifying struggle. The importance of other concerns indicate the intensifying struggle IT professionals have in using legacy network infrastructures

to meet the needs of end users’ applications and business processes, which are becoming more dependent on Internet Protocol-based (IP) communications and transactions.

Even so, survey results suggest that the move to the Web-enabled global enterprise is only the beginning. Fewer than 10 percent of respondents consider such tactical issues as adapting their network infrastructure to the demands of Web services or Web-based applications to be important to the business. Fewer still regard simplifying data center and/or branch office architectures, or acquiring new capacity or features on an as-needed basis, as important to the business.

“We’re dealing with the IT equivalent of Maslow’s hierarchy of needs,” asserts Peter Sevcik, president of consultancy NetForecast, Inc., in Charlottesville, VA., which focuses on the performance of networked applications. “Once needs for availability and security (which are the IT-need equivalents of food, water and shelter) are met, higher needs – such as the need for optimizing the user’s experience – will rise as priorities.”

Other higher needs for survival are already in evidence.

“It’s all about centralization,” says Martin Cox, technical services manager, planning and development, at BOC Edwards, a global value-added supplier of gases and equipment for the world’s most-advanced manufacturing industries. The firm’s performance solutions “have

IT’s hierarchy of needs

Meshing application performance needs with solutions

As NetForecast’s Peter Sevcik suggests, availability and security constitute basic IT requirements – the low end of an IT hierarchy of needs. So, after these needs are met, *then* what matters?

How our survey respondents ranked various other *business technology and application performance needs* offers a glimpse into what this hierarchy of priorities will soon become. After ensuring high application availability, business continuity and data center security, significant numbers of respondents cite another eight key needs (see list below).

The survey results provide still further insight via responses to the question: *Which capabilities are most important to you in deploying solutions that help accelerate/optimize application performance?* Aggregating the respondents’ answers creates a ranking of the next most important solution capabilities, after secure access, ease of maintenance and reducing IT costs.

When we combine these responses by placing the most important *solutions* under the appropriate need category, as shown below, a hierarchy of application performance acceleration needs begins to become clearer:

The Need: Deploy tools that simplify monitoring and reporting application performance (48 percent)

The Solutions:

- Scalability (50 percent)
- Management interface simplicity (33 percent)
- Centralized management of multiple vendor products/tools (32 percent)
- Transparent deployment with existing infrastructure/applications (32 percent)
- Granular, policy-based feature control (19 percent)
- Multiple functionality in a single device (18 percent)
- Ability to merge WAFS and WAN acceleration support (9 percent)

The Need: Reduce the cost of operating servers (47 percent)

The Solution:

- No client or server changes required (30 percent)

The Need: Improve remote data backup and replication (38 percent)

The Solutions:

- Scalability (50 percent)
- Management interface simplicity (33 percent)
- Centralized management of multiple vendor products/tools (32 percent)
- Transparent deployment with existing infrastructure/applications (32 percent)

The Need: Better understand the different options

and tools available for accelerating and optimizing application delivery (37 percent)

The Solution:

- Following the market as it evolves

The Need: Optimize Web performance (36 percent)

The Solution:

- Increased user productivity [via faster response times] (46 percent)

The Need: Make better use of existing high bandwidth links [>45 Mbps] (35 percent)

The Solutions:

- Speedier application performance (41 percent)
- Performance improvements across a wide range of applications (35 percent)

The Need: Centralize app and file servers (33 percent)

The Solutions:

- Centralize servers while maintaining LAN-like response times (32 percent)
- Successful consolidation of remote office servers (14 percent)

The Need: Modernize infrastructure (33 percent)

The Solutions:

- Ease of integrating into existing network infrastructure (44 percent)
- No required routing changes to current network (28 percent)

“Centralizing servers is one of the key tools available...to simplify management and reduce costs.”

—Eric Nichols
CIO, Solutia

already had a dramatic impact on e-mail performance over the WAN,” according to Cox, “and will allow us to continue our consolidation effort and realize our corporate objective of centralizing services to reduce costs and simplify administration.”

Several types of solutions have emerged – and continue to evolve – to address application performance problems. These include:

- Comprehensive WAN solutions (such as those from Peribit Networks (which was recently acquired by Juniper Networks) and Packeteer) that address branch office connectivity issues, including boosting available WAN bandwidth, speeding up applications in a latency-prone network environment and resolving application contention issues;
- Switching and load-balancing solutions (such as those from Foundry Networks and CoyotePoint), and HTML and related protocol optimization (such as those from Array Networks, F5 Networks, NetScaler and Radware), both of which are morphing into application front ends (or what Gartner has dubbed “application delivery controllers”), with additional application-aware capabilities such as traffic management, SSL acceleration and TCP optimization and compression;
- Solutions focused on application layer protocol

issues, notably for data center consolidation (such as those from Riverbed);

- Content delivery services (such as those from Akamai).

Liberating bandwidth. Three WAN optimization technologies are viewed by about half of respondents as most useful in dealing with application performance problems: 1) prioritization and bandwidth management; 2) increased available bandwidth; and 3) systemwide monitoring and reporting of WAN and application performance. Compression, caching and protocol acceleration are ranked most useful by less than 30 percent of those surveyed.

“I am not surprised with this finding,” says Taneja. “The purpose of WAN optimization is viewed as that of a bandwidth manager. When done well, WAN optimization technology will ‘release’ bandwidth for additional applications.”

After technology savings, then what? When asked about the content switch/application front end (AFEs) technologies they consider most useful in dealing with application performance problems, 60 percent of respondents cite load balancing/traffic management.

Prioritization, scaling up (i.e., adding servers) and caching (static or dynamic) are considered the most useful by about one-third of respondents. Even fewer –

Appliances Help Solutia Reap Rewards of Centralized Exchange Infrastructure

Eric Nichols, CIO of Solutia, a \$2.7 billion dollar manufacturer, knows that “centralizing servers is one of the key tools available to IT departments looking to simplify management and reduce costs.”

But because he was consolidating Microsoft Exchange servers from ten of Solutia’s remote sites, he was forced to add ten T1 lines to handle the added load. Unfortunately, the T1 lines were adding significant costs to his network, canceling out some of the expected savings.

Canceling T1s/Adding Flexibility
Determined to reap more of the rewards of his new centralized Exchange infrastructure, Nichols

decided to install Riverbed Technology’s Steelhead appliances, hoping to improve WAN performance enough to eliminate some, or even all, of the company’s incremental T1 lines.

According to Nichols, installing the Steelhead appliances produced “an immediate drop in Exchange WAN traffic.” After deciding to purchase a few more appliances, Nichols contacted his carrier and “canceled the ten incremental T1 lines added as part of our Exchange deployment.

“We’ve reduced the number of T1s connecting the Riverbed-enabled sites with improvement in WAN performance,” says Nichols. “And we have flexibility to source

applications and host servers at any data center with a Riverbed appliance without concern for performance.”

“The ROI on our deployment was compelling,” reports Nichols, “payback was well under one year, based solely on the bandwidth cost savings.”

Maintaining its original WAN architecture, Solutia now benefits from a simpler, centralized Exchange architecture. Solutia plans to explore other ways to leverage Steelhead appliances.



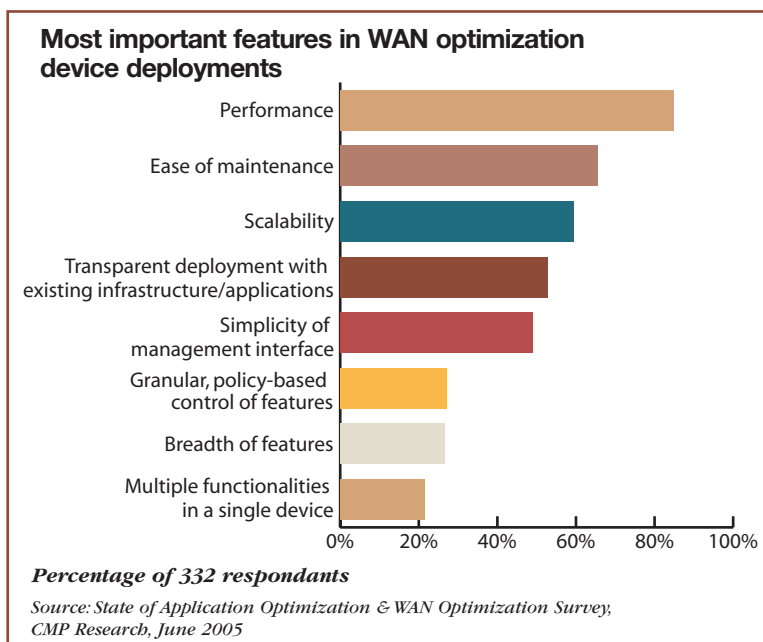
“Optimization technologies are only useful if you can target them accurately.”

— Chris Sherwood
Network Operations Manager
Rapattoni Corp.

25 percent or less – think TCP optimization, application protocol optimization, compression, scaling out (i.e., adding bandwidth) or offloading resources services or TCP is a “most useful” technology.

“The lion’s share of attention is currently focused on ensuring server and bandwidth efficiency rather than ensuring peak application perform for

end-users,” NetForecast’s Sevcik explains. “Although load balancers and traffic managers improve the user experience some, their primary role is to save on server and bandwidth costs.” So, for now, cost savings is a key driver, although Sevcik predicts that over time, interest will shift to technologies that dramatically improve application performance from the end user’s perspective.



Unwilling to wait

An IT hierarchy of needs also is apparent when it comes to the features IT professionals seek in WAN optimization and content switches/application front ends. Top-of-list is performance, because it addresses a basic need – more speed.

WAN optimization. Close to 85 percent of the *CMP Research* survey respondents rate performance as one of the most important WAN optimization features. Still, more than half see several other features – ease of maintenance, scalability

Beyond the Simple ‘Light Switch’: Why North America’s Leading MLS Provider Chose F5 Over the Competition

As one of the largest Internet-based MLS (Multiple Listing Service) providers in North America, Rapattoni Corp. required fast, consistent client access to their applications and data – from any locale, using any system.

Rapattoni also cited the need for more granular control over traffic compression. The company’s previous solution wasn’t able to apply and adjust compression based on the client, connection type, and performance. Compression that lacks intelligence and granular control (i.e., when to compress and when not to) can actually hurt end-user performance, especially for those accessing an application via low-

latency broadband connections.

“Optimization technologies are only useful if you can target them accurately,” says Chris Sherwood, network operations manager for Rapattoni. “With our previous [traffic management] solution, we couldn’t keep the compression functionality from hurting the performance of our high-speed user base.”

Rapattoni replaced their previous system with F5’s BIG-IP Application Traffic Manager, a powerful, intelligent, and adaptive system that delivers: Granular, intelligent control over compression to reduce bandwidth consumption and improve

performance for all users, lower TCO than the previous traffic management solution due to an intuitive user interface, and lower support costs and higher-quality product support.

“The technical support you receive when you call F5 is absolutely second to none. I think it’s amazing,” Sherwood adds.

A better product at a better price with better support. Translation? Perhaps the best business value available in the market today.



“Users are reading more pages and more frequently, generating abundant traffic. The site must perform consistently and reliably.”
 — Michael Smith
 General Manager of Operations
 Forbes.com

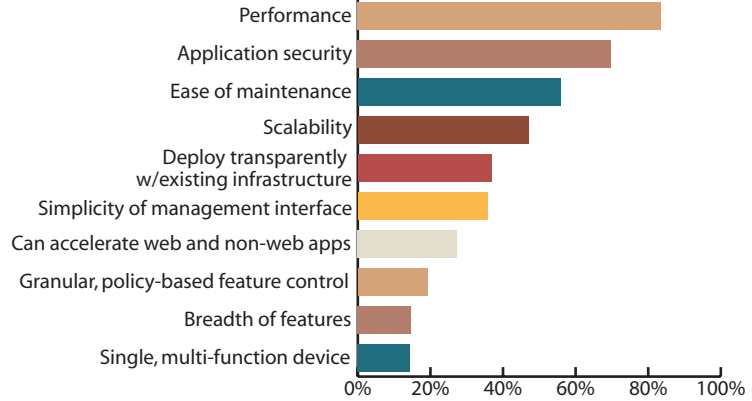
and transparent deployment with existing infrastructure/applications – as key. Close behind on the “most important” list is simplicity of management interface, possibly because this feature contributes significantly to relieving maintenance and management burdens.

“The main reason for WAN optimization is to improve end-user response time (i.e., throughput or performance).” Taneja notes. “The device needs to be

transparent and essentially maintenance-free – and it must scale as needs grow. Everything else is secondary.”

Taneja’s point is true, at least for now. But the three other features that a minority of respondents point to – granular, policy-based control of features, breadth of features, and multiple functionalities in a single device – may indicate what many more will be looking for as their fundamental performance and management requirements are addressed.

Most important features in content/switch application front end deployments



Percentage of 330 respondents
 Source: State of Application & WAN Optimization Survey, CMP Research, June 2005

Content switch/application front ends. Performance is also front and center for those using and considering content switches/application front ends. In addition, more than two-thirds of those surveyed regard application security as a most important feature, and better than 55 percent rate ease of maintenance as most important.

“These devices are predominantly deployed to help in performance,” observes Taneja. “They’d better not compromise whatever security has been

World’s #1 business site – Forbes.com – meets uptime and performance requirements with Foundry solution

Forbes.com is the #1 online destination for business leaders, with approximately 10 million visits each month. To keep readers coming back, Forbes.com must maintain 24x7 uptime and fast user response time. “Our site functionality is constantly evolving,” says Michael Smith, general manager of operations at Forbes.com. “Users are reading more pages and more frequently, generating abundant traffic. The site must perform consistently and reliably.”

When Forbes.com decided to upgrade the site’s network infrastructure, Smith chose Foundry’s ServerIron application switching solution to meet current and growing business needs. To balance traffic

in a large server farm, Smith added ServerIron® 850 application switches. With the high-performance architecture, the ServerIron systems don’t even flinch when hit with heavy traffic surges. Using real-time server monitoring, the switches direct readers to available servers with fastest response time. These systems are scalable to 10 Gigabit speeds to meet the site’s traffic demands for years.

The Foundry ServerIron switches worked extremely well for Forbes.com, especially during dramatic traffic spikes, says Smith. “We can anticipate some spikes, like the popular Forbes.com lists; others are completely unexpected,” says Smith. “Thus it is imperative that the site be adaptable to traffic

changes, and the ServerIron responds well to this challenge.”

“The Foundry products are is scalable and engineered for high performance sites. The switches’ modular design and 10GbE support make them a good fit for our growing environment.” Smith credits Foundry’s human touch with being as important as the technology in building a lasting business partnership. “We received extraordinary support from the Foundry team, which we value as much as the machinery.”



“After choosing Akamai to be its content delivery service provider... bookings are up 100 percent compared to earlier in 2004.”

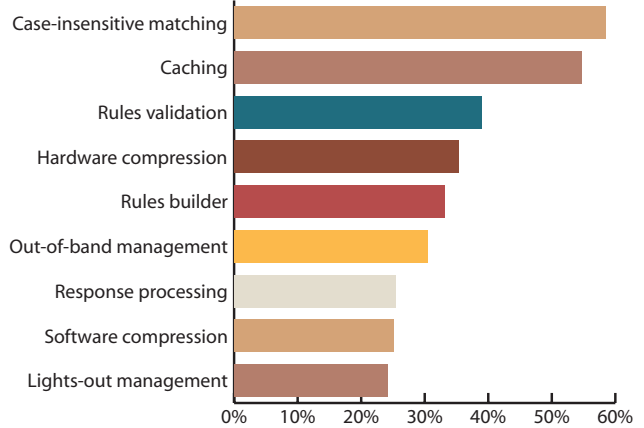
— Scott Ohman
 Manager, E-Business Commercial
 Cathay Pacific Airways

What's key in Layer 7 switching?

By providing content-based traffic distribution, Layer 7 switching enables administrators to deploy application-specific resources (such as image servers, XML servers, HTML servers) tuned to individual content.

More than half of respondents rate two Layer 7 switch features — case-insensitive matching and caching — as “most important.” For many, several other features also are seen as critical. SSL and bandwidth management are judged key by fewer than 10 percent of respondents.

Most important features for deploying Layer 7 content switches



Percentage of 311 respondents

Source: State of Application & WAN Optimization Survey, CMP Research, June 2005

implemented. The device is not expected to add to the security installed — just not to reduce it.”

A sizeable number of respondents see other features as “most important” in their application front-end deployments, however. Some of these — simplicity of management interface and granular, policy-based control of features — suggest that IT professionals will be looking for AFEs that deliver

stronger management capabilities that are easier to use. Others — scalability, transparent deployment with existing infrastructure/applications, ability to accelerate both Web and non-Web applications, and breadth of features — may indicate an emerging demand for AFEs that are more customizable to each enterprise’s particular needs.

Delivering content without adding infrastructure

Hong Kong-based Cathay Pacific Airways developed its consumer, agent, and cargo Web sites to offer customers and partners a convenient and low-cost way of communicating and to provide a critical and secure communications channel with nearly 35,000 travel agents.

Like most airlines, Cathay Pacific realizes savings of anywhere from 10-to-30 percent by serving its customers online, so increasing site usage is key. “But outside of Hong Kong, [Web site] performance degraded quite quickly,” explains Scott Ohman, Manager, E-Business Commercial for Cathay Pacific.

Knowing that slow site performance would hinder future

business growth, but “building out our infrastructure to address site performance would be astronomically expensive,” explains Ohman. “Besides that, it ultimately wouldn’t help us overcome our global performance issues.”

After choosing Akamai to be its content delivery service provider, booking and flight availability pages displayed in half the time, and overall page download times improved by up to 65 percent. Bookings are up 100 percent compared to earlier in 2004.

It all adds up to expected annual savings of \$1.5 million, thanks to more online bookings and proportionally fewer calls to the airline’s call center. As

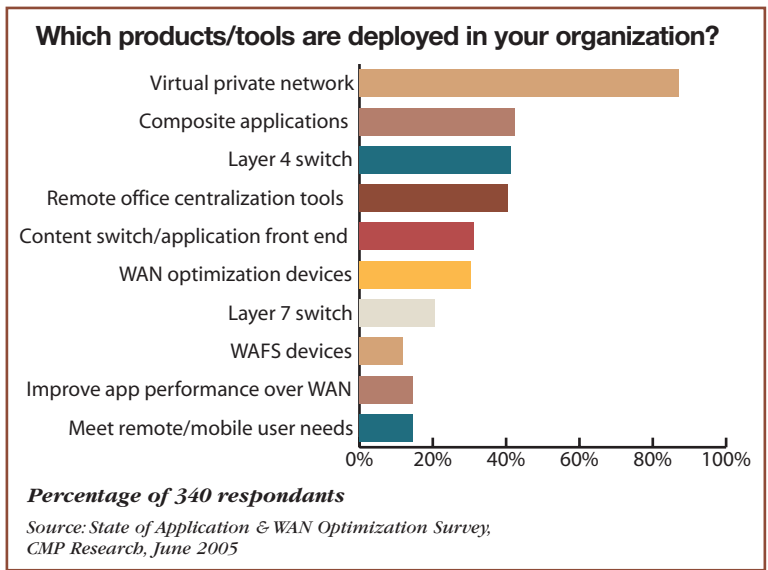
more passengers use online check-in, fewer employees are required to handle airport check-in, and those who do are more productive.

And because Akamai supports traffic spikes, the airline’s infrastructure is insulated even in the face of huge traffic increases, whether for a new product or marketing offer, or to ensure site uptime during a crisis, such as an accident.



“We had prior experience with load balancers, so we knew what we wanted in a product.”

— Dave Burnett
 Director of Corporate Applications & Information Technology
 PGP Corp.



What's in your network?

A full 87 percent of those responding to the CMP Research survey about the state of accelerated application delivery use virtual private networks. Fewer than half of that number have deployed composite applications – that is, apps that span multiple tiers, platforms and networks, and/or draw information and logic from multiple sources – which are fast becoming a competitive necessity.

The deployment of WAN optimization and application delivery tools needed to enable these apps to perform efficiently can be expected to increase as application environments continue to evolve and disperse.

Why? “Application performance will suffer unless network latency problems are addressed,” writes Gartner’s Mark Fabbi. “Greater reliance on new, inefficient protocols, combined with increasing global requirements, will result in applications that will not meet even minimum user expectations, resulting in lost

user productivity.” Gartner estimates that WAN latency accounts for 50-90 percent of total application delay (depending on the type of network).*

* Latency: The Silent Killer of Application Performance, September 14, 2004, by Mark Fabbi, note #G00123455

The benefits abound

Respondents to the CMP Research survey report impressive benefits from both WAN optimization

PGP Corporation Streamlines and Accelerates its Website and Internet Services

PGP Corporation’s integrated data security suite sets the global customer standard for encryption and digital-signature solutions. Moreover, its innovative, standards-based technology has earned PGP a worldwide reputation for trusted solutions. Not surprisingly, the company expects nothing less from its datacenter equipment providers. That’s why PGP turned to Coyote Point’s Equalizer Series web-performance management system to streamline and accelerate its Website and Internet services.

PGP’s online operations consist of its corporate website as well as e-commerce systems for ordering, electronic fulfillment and tracking,

and key management services for its products as well as its corporate website. Prior to adding Coyote Point’s Equalizer Series system, PGP relied on round-robin DNS to optimize the availability of its Web infrastructure.

Advanced Feature Set

“We chose the Coyote Point Equalizer based on its advanced feature set and because we were confident that the Coyote Point interface would be easy for anyone familiar with F5’s Big-IP traffic management systems,” says Dave Burnett, Director of Corporate Applications and Information Technology (CAIT). “We had prior experience with load balancers, so

we knew what we wanted in a product. The Coyote Point system was significantly less expensive than competitive solutions and offered all the features we needed.”

PGP Corporation uses the Coyote Point Equalizer system primarily as a Layer 3 load balancer to spread the load between clustered Web servers. Key benefits include:

- Better end-user experience, because users see fewer errors
- Minimal amount of customer-visible down time needed for maintenance
- Scalability on demand if and when necessary.



We saved tens of thousands of dollars over alternative solutions and see significant savings in operating our network.

— Bryan Rood
IT Manager
Quantros, Inc.

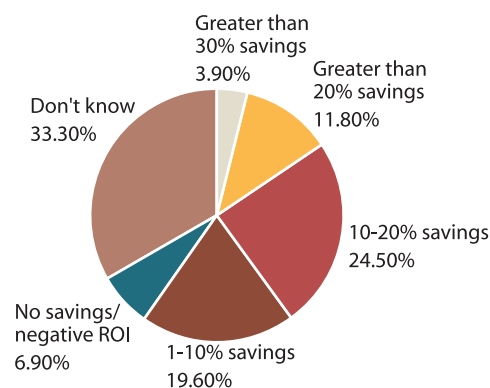
devices and content switches/application front ends.

What WAN optimization delivers. Even though a third of the 102 respondents who have deployed WAN optimization devices don't yet know what cost savings have been gained from them, plenty of others do. Nearly 25 percent point to monthly cost savings of 10 percent to 20 percent, while another 12 percent

indicate they're saving more than 20 per percent a month. Another 20 percent report monthly savings of 1 percent to 10 percent.

So where do the savings come from? The chart below lays out the answers, beginning with faster end-user response time, higher customer satisfaction and improved branch-office application performance.

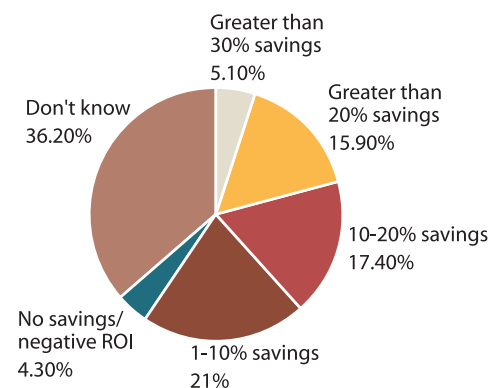
Monthly cost savings gained from WAN optimization devices?



Percentage of 102 respondents

Source: State of Application Optimization & WAN Optimization Survey; CMP Research, June 2005

What kind of monthly cost savings gained from product/tools that centralize remote office infrastructure?



Percentage of 138 respondents

Source: State of Application Optimization & WAN Optimization Survey; CMP Research, June 2005

Quantros Inc. Holistic Solution for Application Performance, Availability and Security

Quantros, Inc.'s hosted applications allow healthcare organizations to improve safety, isolate and resolve problems, report incidents for regulatory compliance, and utilize reports for certification, rating, and accreditation purposes.

Not surprisingly, Quantros' highest priorities are enhancing availability and reducing the burden of data entry – tasks demanding a network infrastructure that supports a secure, always-on, low-latency end-user experience.

Traditional load balancers and server software offer some help by providing a degree of availability, but they do not offer a holistic solution addressing application performance and security requirements.

So a new class of products, Array

Application Front Ends (AFE), was introduced in front of the Quantros Regulatory Reporting Management (RRM) application.

Performance and Savings

The result? Server load balancing and SSL acceleration were enabled for the immediate need of providing high availability, security, and an accelerated end-user application experience. And intelligent load balancing, with customizable L7 rules, had the RRM application up and running, meeting all requirements in no time flat.

With integrated SSL acceleration supporting thousands of transactions per second, the Array AFE secured sensitive patient information, enabled faultless, low-latency

transactions, and reduced CPU utilization on all of Quantros' servers.

For customers using Quantros RRM applications pre and post Array, the impact has been significant and positive. Response times are dramatically reduced and instances of timed out entries and aborted transactions have all but been eliminated.

"Deploying the Array solution, allowed us to meet all our objectives. We saved tens of thousands of dollars over alternative solutions and see significant savings in operating our network," says Bryan Rood, IT Manager, Quantros.

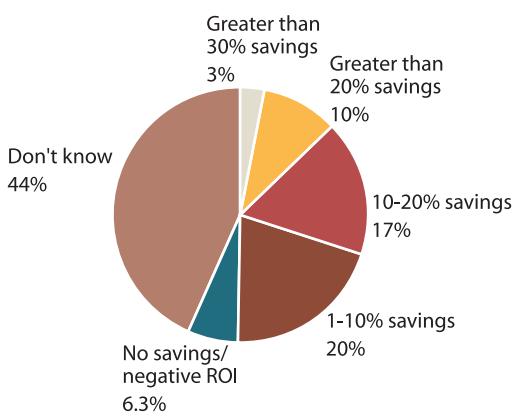
“It's all about centralization. The Juniper solutions...will allow us to continue our consolidation effort...”

— Martin Cox
 Technical Services Manager
 Planning & Development
 BOC Edwards

Content switches/application front ends – first it's about throughput. More than 55 percent of the 175 survey respondents who have deployed application front ends report improved throughput. Some 42 percent also claim faster end-user response time. And the list goes on, as the chart below shows.

Approximately 43 percent of the respondents

Monthly cost savings gained from content switch/application front end?



Percentage of 192 respondents

Source: State of Application Optimization & WAN Optimization Survey; CMP Research, June 2005

who have deployed AFEs don't know what savings these products have delivered. However, 3 percent cite monthly cost savings greater than 30 percent, 10 percent say they've saved more than 20 percent in monthly costs, 17 percent indicate savings of 10-20 percent, and 20 percent report saving 1 percent to 10 percent in monthly costs.

Centralizing remote infrastructure. Simplifying the infrastructure of remote offices and locations is tough. Centralizing or consolidating their distributed file servers can force remote end-users onto a WAN to access the data and apps they need, which is where the WAN's performance quickly degrades.

Products that are successful at centralizing remote sites offer notable payback. Some 16 percent of the 138 respondents who have deployed this type of product report monthly cost savings of more than 20 percent, while 5 percent point to monthly savings of more than 30 percent, indicating that these devices save companies more money than other product types asked about in the survey.

Matching problems with solutions

So what will it take to improve application delivery in your enterprise? The set of tools and techniques that best meet your needs depends, of course, on the appli-

BOC Edwards Centralizes Servers AND Boosts Application Performance

BOC Edwards has a culture of efficiency that spreads throughout the organization. When the micro-electronics manufacturer needed to replace aging Microsoft Exchange servers deployed in remote offices, it jumped at the opportunity to consolidate the new equipment in a central location to simplify maintenance, facilitate regulatory compliance, and reduce costs.

Unfortunately, Exchange is a notoriously poor performer over the WAN, and the BOC Edwards centralization effort produced predictable results. When the company pulled the plug on the first local Exchange server at its engineering facility in Tonawanda, N.Y., users of the centralized server immediately began complaining

about poor performance. Rather than abandon consolidation plans, BOC Edwards installed a Juniper Networks WX application acceleration platform (formerly the Peribit Networks Sequence Reducer) with Application Flow Acceleration technology in the data center and branch-office location.

The results were immediate and dramatic. A typical 1 MB file, which previously took more than a minute to send as an e-mail attachment, took less than 15 seconds with the WX platform and AppFlow technology. Overall, the Juniper solution has reduced Exchange traffic levels more than 45 percent, and user complaints have ceased. The initial deployment was such a success, BOC Edwards is rolling out the Juniper solution to four

more sites in the United States and evaluating AppFlow acceleration for Microsoft file services.

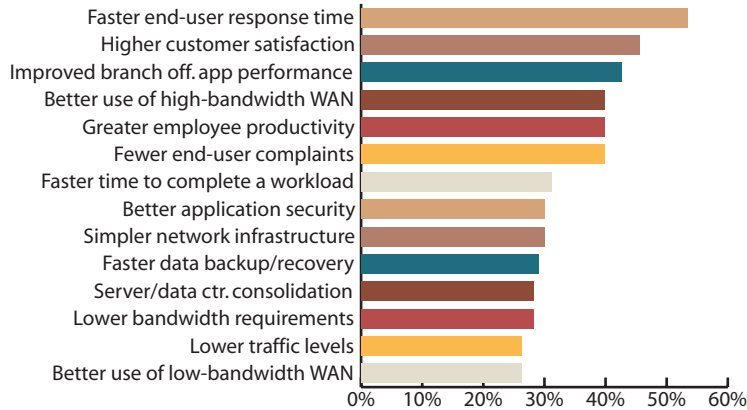
“It's all about centralization,” says Martin Cox, Technical Services Manager, Planning and Development at BOC Edwards. “The Juniper solutions, which have already had a dramatic impact on e-mail performance over the WAN, will allow us to continue our consolidation effort and realize our corporate objective of centralizing services to reduce costs and simplify administration.”



In a business like ours, highly responsive applications and global application availability are mission critical."

— William Bailey
Network Architect
ProHealth Care, Inc.

What benefits has your organization gained from from WAN optimization devices?



Percentage of 103 respondents

Source: State of Application & WAN Optimization Survey, CMP Research, June 2005

cations your enterprise uses and the reasons your applications are underperforming. Many application performance problems are a product of one or more of three main problems:

Struggling servers – it's about the protocols.

The overhead inherent in HTML- and XML-based user transactions is substantial compared to the client/server environments for which most networks were

designed, and it's even worse when these Web-enabled apps are secured with SSL. Server performance can get a boost from distributed, static and dynamic caching, as well as protocol optimization and offloading services.

Latency. WAN optimization technologies that change the behavior of TCP can overcome latency problems and accelerate application performance. Latency and related throughput issues can be ameliorated with distributed and static caching, as well as with protocol optimization.

Techniques include changing the window size of older clients, purging an RTT (round-trip time) from a TCP session startup and swapping TCP for another more-efficient but still reliable-transport.

Limited bandwidth – using compression with care. Although WAN speeds have actually increased during the last 20 years, they still lag well behind LAN speeds, often by as much as 100- to 200-fold.

For ProHealth Care, Highly Responsive Applications are Mission-Critical

Leading Midwestern health care provider ProHealth Care, Inc. (PHCI) is building an ambitious new intranet that will be used by nearly 6,000 physicians and employees. The network provides access to a wide range of applications running on UNIX and Windows operating systems.

So choosing the right vendor – one able to help PHCI sustain high application availability and performance – was vital.

"When a surgeon is waiting for information while in the operating room, you can't say, 'Stand by please. The application is a bit slow right now,'" says PHCI network architect William Bailey.

"In a business like ours, highly

responsive applications and global application availability are mission-critical."

PHCI chose NetScaler systems because they easily outperformed the other candidates in PHCI's core application acceleration and load balancing requirements.

"The NetScaler systems clearly performed better than the other candidates in all areas – globally across all four data centers, at the individual server level, and at the application level."

Payoffs already evident

With the NetScaler systems installed, PHCI is already reaping the benefits of its decision.

Bailey estimates that NetScaler

has already helped PHCI avoid the cost of additional servers to handle important activities now performed by the NetScaler system. Additionally, NetScaler's advanced acceleration technology has greatly improved overall network performance.

"We are reaping a significant performance boost on overall transaction throughput due to compression the NetScaler application delivery system provides."

"NetScaler will definitely have a role in our future growth," says Bailey.



“Three weeks after installing the PacketShaper at one of its stores, Build-A-Bear saw a perceived speed increase of 239 percent...”

— Dave Finnegan
Managing Director of Information Technology
Build-A-Bear Workshops

Techniques and technologies to consider

What can help:	Struggling servers	Latency woes	Limited bandwidth
Traffic management (including traffic flow control, content inspection, route optimization)			X
Caching (creates an ability to place content close to the end-user and reuse it without adding to server burdens, thus speeding response times and easing server loads)	X		
<i>Static caching</i> (to determine which documents to keep in a cache; the request log file from a previous period is analyzed to understand and exploit document access patterns)	X	X	X
<i>Dynamic caching</i> (caching dynamic content)	X		
<i>Distributed caching</i> (caching Internet objects in an array or chain of servers, providing load balancing and fault tolerance)	X	X	X
Compression (various ways to reduce the amount of application data transmitted over the Internet; one-sided compression cuts HTML traffic by some 70 percent) addresses poor web application performance			X
TCP optimization (a TCP proxy function that offloads TCP handshake sequences when setting up client connections from the server, lessens or distills traffic sent across WANs, thus reducing TCP overhead on a WAN) addresses poor server scalability	X		
Load balancing (distributes processing and communications activity evenly across servers so that no single device underperforms) addresses poor web application performance	X	X	
SSL acceleration (offloading processor-intensive SSL transaction algorithms to a hardware accelerator, generally a separate PCI card with a coprocessor that handles the bulk of SSL processing) addresses poor SSL application performance	X	X	X

Build-A-Bear Workshop’s Cost-Effective, Simple Bandwidth Solution

Build-A-Bear Workshops have a unique product. But the build-your-own toy store’s Wide Area Network (WAN) problems are all too common for today’s retailers.

According to Dave Finnegan, Build-A-Bear’s managing director of information technology, the company’s frame relay and digital subscriber line (DSL)-based system was designed to provide core communication functions. However, as the company added new stores and increased communication services, it was getting increasingly difficult to apportion bandwidth and ensure optimum efficiency.

Searching for a low-cost solution that would help manage its increased WAN traffic more effec-

tively, Build-A-Bear decided to give Packeteer’s PacketShaper 1200 a try.

Three weeks after installing the PacketShaper at one of its stores, Build-A-Bear saw a perceived-speed increase of 239 percent and an average bandwidth savings of 58 percent, reports Finnegan.

Compression Capabilities Speed Response Times

The PacketShaper also proved up to resolving an issue the retailer was having whenever one of its mobile stores tried to use satellite and cellular technology for web and file-transfer applications with corporate. The trouble, says Finnegan, was slow response times causing the

connections to drop off. The solution came from the 1200’s compression capabilities, and Finnegan’s happy to report web and file transfers are no longer a problem.

Installation of the low-profile appliance to Build-A-Bear’s WAN took just 2 simple steps, notes Finnegan. 1: Move the Ethernet connection from a router to the 1200; 2: Connect them together with the Ethernet cable provided.

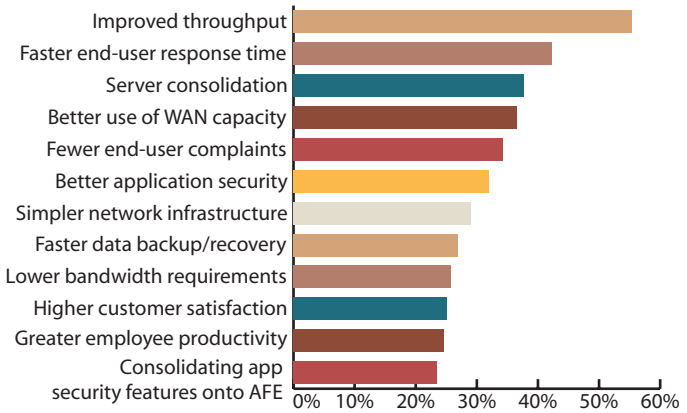
Thanks to Packeteer’s PacketShaper, Build-A-Bear easily optimized its WAN for performance and cost.



“Downtime and poor application performance would result in lost productivity, lost business and damaged relationships.”

— Bob Rose
Corporate Network Manager
Ace Hardware Corp.

What benefits has your organization gained from content/application front ends?



Percentage of 175 respondents
Source: State of Application & WAN Optimization Survey, CMP Research, June 2005

As businesses increase the volume of applications they run over WANs – and as the bandwidth requirements of applications expand – they’ve had to boost the size of their WAN links. But WAN bandwidth is costly, so network managers have turned to compression techniques to squeeze more through smaller WAN pipes. Traditional compression techniques, however, can introduce still more latency. The challenge: matching next-generation

compression techniques to your enterprise’s requirements, and understanding the kinds of data patterns that will benefit from compression. Certainly, each enterprise requires a unique mix of tools and techniques to accelerate application performance. The first step is to truly understand why your applications are not performing adequately. Only then will you be able to choose the right solutions. When you do, be sure to consider future, as well as current requirements – so the solutions you choose will meet your basic needs, as well as those higher on the IT hierarchy.

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Radware Delivers Complete Application Uptime for Ace Hardware

“With over 4,800 stores in 50 states and 70 countries, Ace Hardware requires reliable, high performing and secure uptime for our retailers as well as employees. Downtime and poor application performance would result in lost productivity, lost business and damaged relationships,” says Bob Rose, Corporate Network Manager, Ace Hardware Corporation.

Ace Hardware Corp. is the largest retailer-owned cooperative in the industry. To control and manage its end-to-end enterprise traffic, Ace Hardware Corp. implemented a comprehensive Radware solution for their server farm infrastructure. Deploying WSD Application Switches and CertainT 100 Application Accelerator, Ace ensures the reliability of its

globally distributed applications at all store locations.

Load Balancing and Transaction Acceleration Benefits

Radware’s WSD enables the high availability of Web, Application and Database server farms to eliminate downtime while ensuring fault tolerant transaction processing across Ace’s local and global networks.

Radware Application Aware services, including Health Monitoring, Traffic Redirection, Bandwidth Management, Intrusion Prevention and Denial of Service Protection, deliver a broad set of layer 4-7 application aware services for application performance, complete application and SSL transaction security, guaranteed service levels

and economical scaling.

Radware CertainT 100 Application Accelerator was deployed by Ace Hardware to boost application response times across all Ace Hardware locations. CertainT 100 eliminates latencies from processing cycles while dramatically cutting the cost of handling and scaling SSL transactions,

With Radware Application Switching solutions, Ace Hardware addresses the challenges of operating a global retail application infrastructure with complete application reliability and enhanced employee and customer experiences.

