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# Application Delivery over the WAN

Acceleration Alone is not Enough

May 2009

Bojan Simic

## Executive Summary

Aberdeen surveyed 308 organizations between April and May of 2009 to examine best practices for managing application performance over Wide Area Networks (WAN). The research has revealed that only 35% of organizations are conducting cost-benefit analysis of bandwidth upgrades. This report serves as a guide to organizations looking to improve the performance of business-critical applications that are being delivered over the WAN.

### Best-in-Class Performance

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Aberdeen used three key performance criteria to distinguish Best-in-Class companies: 1) average improvements in network throughput; 2) average improvements in application response times; 3) average application availability. Best-in-Class organizations reported:

- 38% average improvements in network throughput
- 87% average improvements in application response times
- 99.2% average application availability

### Competitive Maturity Assessment

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Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics. Best-in-Class companies are:

- Twice as likely as Laggards to have capabilities for centralized management of WAN optimization appliances
- Twice as likely as Laggards to have capabilities for monitoring and analyzing application performance for each transaction

### Required Actions

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In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Deploy multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device
- Develop capabilities for evaluating test results prior to the final purchasing decision
- Deploy a single platform for managing application performance visibility and QoS

### Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations.

"A WAN optimization solution has significantly improved the throughput on our WAN, enhancing the performance and functionality of our network, which translates into an enhanced overall service for our customers."

~ IT Manager,  
Logistics Company

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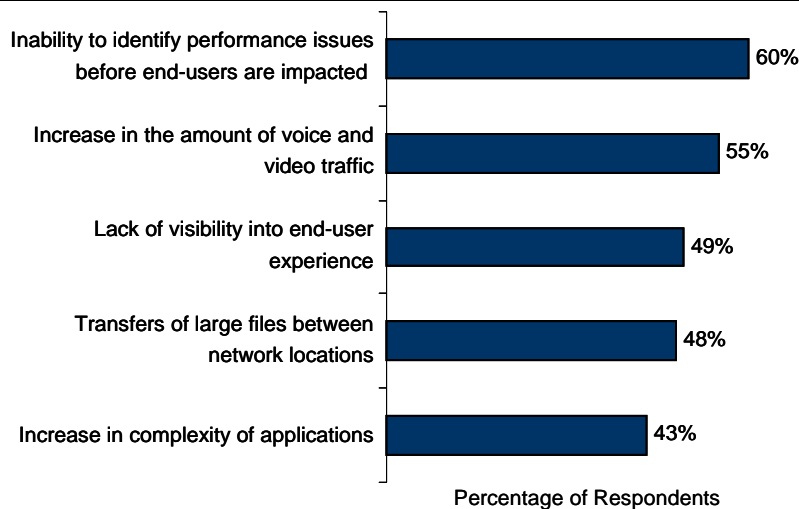
## Chapter One: Benchmarking the Best-in-Class

### Business Context

Aberdeen's October 2007 benchmark report, *Optimizing WAN for Application Acceleration*, revealed that 47% of all organizations that increased their bandwidth capacity over the last two years did not experience any improvement in application performance. Also, Aberdeen's August 2008 benchmark report, *Optimizing Application Delivery over the WAN*, showed that there is no significant difference in total (WAN optimization and application delivery solutions and data communication services) annual spend per user on improving application delivery to remote users between Best-in-Class and all other organizations. However, the research revealed that Best-in-Class organizations were able to improve application response times by more than 11-times – compared to a 13% average improvement for Laggard organizations.

Figure 1 shows that inability to prevent performance issues before end-users are impacted is the top challenge for managing application performance over the WAN.

**Figure 1: Top Challenges for Application Delivery over the WAN**



Source: Aberdeen Group, May 2009

This finding is consistent with Aberdeen's past research, as end-user organizations reported this problem to be top-of-mind in each of the four surveys that Aberdeen conducted in the network and application performance management space since September of 2008 (*Network and Application Visibility*, *The Performance of Web Applications*, *Managing Application Performance in Virtual Environments*, and *Application Performance Management*). In order to address this challenge, organizations need to deploy capabilities that go beyond traditional WAN optimization techniques such as network

### Fast Facts

- ✓ 60% of organizations reported that inability to prevent performance issues before end-users are impacted is the top challenge for managing application performance over the WAN.
- ✓ Organizations that participated in Aberdeen's survey reported that the amount of their WAN traffic increased by the average of 65% over the last 12 months.

“The key issue with network performance is how to get a good handle on what types of traffic you are experiencing when you are seeing higher throughput rates, and educating users on flow of traffic through the network.”

~ IT Director,  
Utilities Company

traffic compression, Transmission Control Protocol (TCP) acceleration, Quality-of-Service (QoS), caching, etc. Proactive management of application performance over the WAN requires these capabilities to be coupled with tools for monitoring and analyzing network and application performance.

## The Maturity Class Framework

Aberdeen used three key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard organizations. These Key Performance Indicators (KPIs) are:

- Average improvements in network throughput
- Average improvements in application response times
- Average application availability

**Table 1: Top Performers Earn Best-in-Class Status**

Definition of Maturity Class	Mean Class Performance
<b>Best-in-Class: Top 20%</b> of aggregate performance scorers	<ul style="list-style-type: none"> <li>▪ 38% average improvement in network throughput</li> <li>▪ 87% average improvement in application response times</li> <li>▪ 99.2% average application availability</li> </ul>
<b>Industry Average: Middle 50%</b> of aggregate performance scorers	<ul style="list-style-type: none"> <li>▪ 20% average improvement in network throughput</li> <li>▪ 40% average improvement in application response times</li> <li>▪ 98.8% average application availability</li> </ul>
<b>Laggard: Bottom 30%</b> of aggregate performance scorers	<ul style="list-style-type: none"> <li>▪ 2% average improvement in network throughput</li> <li>▪ 14% average improvement in application response times</li> <li>▪ 93.1% average application availability</li> </ul>

Source: Aberdeen Group, May 2009

## The Best-in-Class PACE Model

Using WAN optimization and application acceleration solutions to achieve corporate goals requires a combination of strategic actions, organizational capabilities, and enabling technologies that can be summarized as shown in Table 2:

**Table 2: The Best-in-Class PACE Framework**

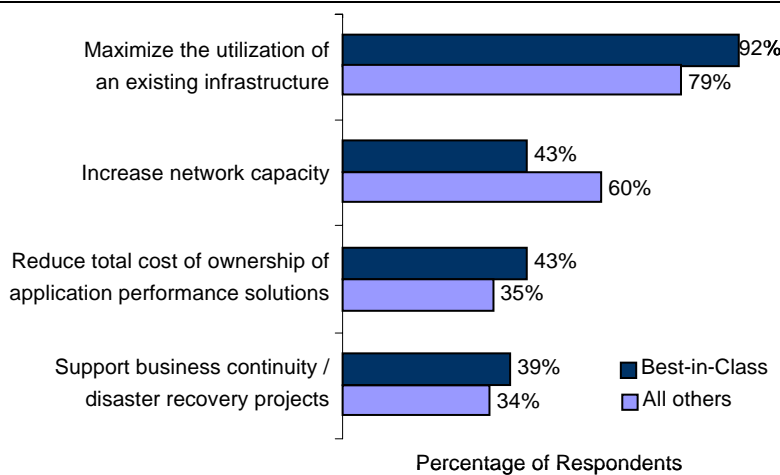
Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> <li>▪ The need to optimize cost of data communications</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maximize the utilization of an existing infrastructure</li> <li>▪ Increase network capacity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ability to analyze application performance for each transaction</li> <li>▪ Ability to conduct cost-benefit analysis of bandwidth upgrades</li> <li>▪ Centralized management of WAN optimization appliances</li> <li>▪ Ability to evaluate test results prior to the final purchasing decision</li> <li>▪ Purchasing decisions about networking equipment made at headquarters</li> <li>▪ Ability to measure response times for every business-critical transaction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device</li> <li>▪ Single platform for managing application performance visibility and QoS</li> <li>▪ Tools for network traffic compression</li> <li>▪ Tools for prioritization of business-critical applications</li> <li>▪ Tools for application specific optimization</li> <li>▪ Network routers with integrated WAN optimization capabilities</li> </ul>

Source: Aberdeen Group, May 2009

### Best-in-Class Strategies

Figure 2 shows that maximizing utilization of an existing enterprise infrastructure is the top strategic action that organizations are taking for managing application performance over the WAN. Additionally, the research shows that Industry Average and Laggard organizations are 40% more likely than Best-in-Class organizations to increase available network capacity. Organizations that participated in Aberdeen's survey reported that the amount of their WAN traffic increased by the average of 65% over the last 12 months.

**Figure 2: Top Strategic Actions Taken**



Source: Aberdeen Group, May 2009

Interestingly, even though 85% of Best-in-Class organizations reported that the amount of their WAN traffic increased over the last 12 months, only

43% of these organizations increased capacity of their networks. As opposed to conducting costly upgrades on bandwidth capacity to support increased amount of network traffic, these organizations decided to take a different approach and execute on their top strategic action for managing application performance over the WAN: maximize utilization of resources that they already had. As a result, not only were these organizations able to improve application response times at the rate that is 73% higher than that of Laggard organizations, but they were also twice as likely to reduce their cost of bandwidth services (as a percentage of total IT spend).

#### Aberdeen Insights — Strategy

Figure 2 shows that Best-in-Class, Industry Average, and Laggard organizations are looking to do more with less. The research shows that all of these organizations selected improving utilization of their existing infrastructure to be their top strategic action for managing application delivery over the WAN. However, for Industry Average and Laggard organizations improving utilization of enterprise infrastructure simply means improving network throughput. For Best-in-Class organizations, this means using existing infrastructure to improve quality of business services that are being delivered to remote employees. Organizations that are optimizing their WAN should be aware that end-users are expecting seamless delivery of business-critical data. Aberdeen's November 2008 report, [The Performance of Web Applications](#), revealed that the business performance starts to decline when applications reach a 5.1 second delay in response times. This makes a job of IT departments even more challenging as they are looking to support business services, mitigate revenue loss, and save on bandwidth cost while trying to get the most out of their current enterprise resources.

In the next chapter, we will see what the top performers are doing to achieve these gains.

## Chapter Two: Benchmarking Requirements for Success

The selection of WAN optimization and application acceleration solutions and integration with business intelligence and business process management systems plays a crucial role in the ability to turn these strategies into profit.

### Case Study — Targus

Targus is recognized as the world's best selling notebook carrying case brand, and the leading provider of accessory products for the mobile lifestyle. Headquartered in Anaheim, California, Targus is a truly global enterprise with 45 offices worldwide and direct distribution in over 145 countries.

Global growth for Targus has led to WAN communications challenges, particularly related to its Multiprotocol Label Switching (MPLS) network. As network traffic increased, so did WAN-related bandwidth and latency problems, as well as traffic prioritization issues. As this affected network, user and application performance, the WAN issues had to be overcome as quickly as possible.

Targus evaluated a variety of WAN Optimization solutions from industry vendors and selected a solution that was the best positioned to address these problems based on its integrated technology. In the core of this solution was the highly intelligent Layer 7 QoS platform that helped make queuing decisions automatically, thus optimizing traffic over the MPLS network.

After deploying this solution, Targus doubled the amount of available bandwidth to users, helping to stretch the IT budget and share this extra bandwidth with smaller remote offices. The company has also been able to address the challenge of accelerating an Enterprise Resource Planning (ERP) system running over Citrix and web applications from Targus' split data center, resulting in a superior end-user experience. "This solution not only addressed our bandwidth and latency difficulties, they have also made our network traffic much more efficient," said Jim Lasher, Operations Manager for Targus. "The ability of the solution to do traffic discovery was a major help for us in determining what type of traffic was flowing across our network. With this information we were able to configure the QoS parameters on our MPLS network to prioritize our most meaningful traffic."

### Fast Facts

- ✓ Best-in-Class organizations are twice as likely as Laggards to have capabilities for centralized management of WAN optimization appliances
- ✓ Best-in-Class organizations are five-times more likely than Laggards to experience improvements in preventing network and application performance issues before business users are impacted
- ✓ Best-in-Class organizations experienced an 87% average improvement in application response times over the last 12 months – compared to a 14% average improvement for Laggard organizations

### Competitive Assessment

Aberdeen analyzed the aggregated metrics of surveyed companies to determine whether their performance ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shared characteristics in five key categories: (1) **process** (centralized management of WAN optimization appliances; ability to analyze application performance for each transaction); (2) **organization**

(purchasing decisions about networking equipment made at headquarters); (3) **knowledge management** (ability to evaluate test results prior to the final purchasing decision; ability to conduct cost-benefit analysis of bandwidth upgrades); (4) **technology** (the selection of appropriate tools and effective deployment of those tools); and (5) **performance management** (the ability to measure response times for every business-critical transaction). These characteristics (identified in Table 3) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

**Table 3: The Competitive Framework**

	Best-in-Class	Average	Laggards
<b>Process</b>	Centralized management of WAN optimization appliances:		
	68%	50%	30%
	Ability to analyze application performance for each transaction:		
	55%	39%	26%
<b>Organization</b>	Purchasing decisions about networking equipment made at headquarters:		
	87%	74%	62%
<b>Knowledge</b>	Ability to conduct cost-benefit analysis of bandwidth upgrades:		
	56%	37%	18%
	Ability to evaluate test results prior to the final purchasing decision:		
	75%	52%	41%
<b>Technology</b>	Tools for prioritization of business-critical applications		
	76%	60%	33%
	Tools for network traffic compression		
	66%	52%	43%
	Tools for application specific optimization		
	63%	50%	29%
	Multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device		
	51%	38%	25%
	Single platform for managing application performance visibility and QoS		
51%	32%	22%	
<b>Performance</b>	Network routers with integrated WAN optimization capabilities		
	43%	34%	28%
<b>Performance</b>	Ability to measure response times for every business-critical transaction:		
	57%	31%	28%

Source: Aberdeen Group, May 2009

## Capabilities and Enablers

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Based on the findings of the Competitive Framework and interviews with end-users, Aberdeen identified 12 capabilities and technology enablers that are having the most significant impact on performance improvements among Best-in-Class organizations.

### Process

Table 3 shows that Best-in-Class organizations are twice as likely as Laggards to have capabilities for centralized management of WAN optimization appliances. This capability allows organizations to simplify management of their IT infrastructure and manage all WAN optimization devices through a single interface. Having this capability in place contributed to Best-in-Class organizations being five-times more likely than Laggards to reduce labor cost for managing network and application performance.

Table 3 also shows that Best-in-Class organizations are twice as likely as Laggards to have capabilities for monitoring and analyzing application performance for each transaction. This capability allows organizations to understand what infrastructure tiers are causing the delay in application response times and enables them to make educated decisions about parts of their infrastructure that need to be optimized to prevent performance issues. Having this capability in place resulted in Best-in-Class organizations being five-times more likely than Laggards to experience improvements in preventing network and application performance issues before business users are impacted.

### Knowledge Management

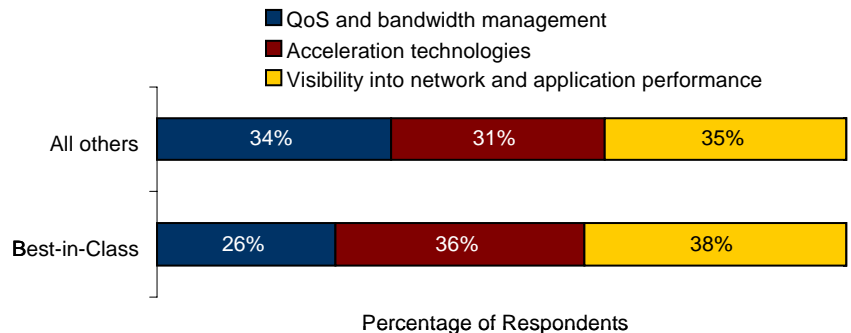
Aberdeen's research shows that Best-in-Class organizations are 83% more likely than Laggards to have the ability to accurately evaluate results from proof-of-concept testing. Additionally, these organizations are 50% more likely to be deploying tools for network emulation when selecting WAN optimization solutions. That shows that Best-in-Class organizations have capabilities that allow them to select WAN optimization solutions that are the best fit for their needs. Having these capabilities in place contributed to Best-in-Class organizations experiencing 87% average improvements in application response times over the last 12 months – compared to a 14% average improvement for Laggard organizations.

### Technology

Aberdeen's February 2008 benchmark report, [\*The Roadmap to the Next Generation Branch Office Networks\*](#), revealed that Best-in-Class organizations were 48% more likely than all other organizations to report that the tools for visibility into network and application performance have higher importance for their WAN optimization initiatives than tools for bandwidth management or application acceleration. However, Figure 3 shows that this trend changed over the last 15 months, as more Laggard organizations realized the importance of tools for monitoring and analyzing application

performance over the WAN. More importantly, the research reveals that there is no significant difference between number of organizations that ranked tools for application visibility, acceleration or prioritization as their top priority when optimizing delivery of business-critical data over the WAN.

**Figure 3: Technology Enablers – The Highest Importance**



Source: Aberdeen Group, May 2009

This shows that top-performing organizations are not able to achieve their goals for managing application performance over the WAN unless they have capabilities in place for monitoring, controlling, and accelerating WAN traffic. Table 3 shows that Best-in-Class organizations are twice as likely as Laggards to be deploying a single platform for monitoring application performance and assigning QoS policies. Additionally, the research reveals that top performing organizations are 53% more likely than Laggards to be deploying tools for network traffic compression and twice as likely as Laggards to be leveraging devices that include multiple application delivery functionalities.

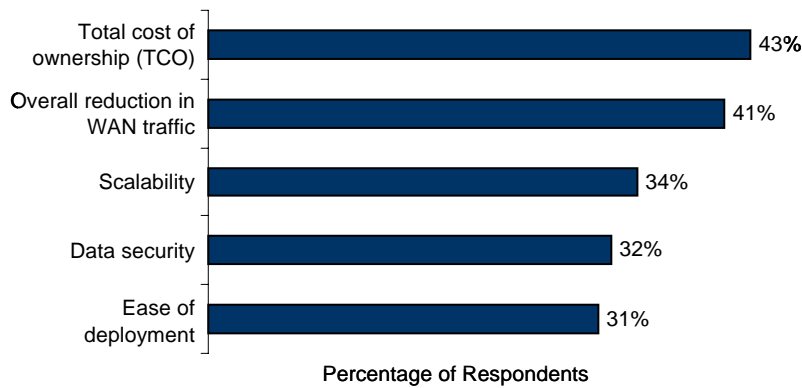
In order to effectively address the top challenge for delivering applications over the WAN, end-user organizations have to understand that accelerating network traffic will not be enough to satisfy changing needs of business users. With that said, the research shows that Best-in-Class organizations are not only more likely to be deploying tools for network traffic compression and application-specific acceleration, but also more likely to be deploying tools for network visibility and control.

Figure 4 shows that total cost of ownership of WAN optimization and application acceleration solutions is the top criteria when selecting technology solutions.

“By implementing tools for accelerating virtual desktop user traffic we wanted to improve our network throughput. With the deployment of these tools, we are able to support our business in a more efficient way. Rolling out a new remote entity with minimal setup makes us more responsive to market needs. We have already lowered costs by €24,000 per year by implementing the eight virtual desktop accelerators to optimize the network usage. Management and maintenance were improved significantly. Within days, users experienced seamless access to applications and a 400% increase in network performance speed with optimal network throughput and capacity.”

~ Bruno Marniquet, Global IT Infrastructure Manager, Ampacet Corporation

**Figure 4: Top Goals When Evaluating Technology Solutions**



Source: Aberdeen Group, May 2009

Fifty-one percent (51%) of organizations that participated in Aberdeen's research reported that their remote offices consist of 25 users or fewer. These organizations are struggling to create a business case for deploying a hardware solution for optimizing delivery of applications to remote users as they find it difficult to justify a total cost of ownership (TCO) of managing hardware solutions for small remote offices.

#### Aberdeen Insights — Technology

Figure 4 shows that organizations are looking to acquire WAN optimization and application acceleration solutions that would allow them to achieve several goals: optimize TCO and improve ease of use and deployment of technology solutions, reduce the amount of network traffic, improve security of data that is being sent over the WAN and make sure that these solutions can scale. Additionally, Aberdeen's December 2008 benchmark report, [Managing Application Performance in Virtual Environments](#), showed that reduced visibility into application performance and increased latency and bandwidth requirements are the top challenges for organizations that conducted virtualization projects.

It is apparent that organizations are looking to improve performance and security of their networks while looking to leverage solutions that are not costly to manage. More than 50% of organizations surveyed have small branch offices, and these organizations are increasingly challenged with creating a business case for deploying traditional hardware WAN optimization solutions that are costly to manage. The research shows that these organizations could save on average US \$236,000 annually in the total cost of ownership of WAN optimization solutions by deploying software products for small and medium size offices.

## Chapter Three: Required Actions

Whether a company is trying to move its performance in leveraging WAN optimization solutions from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

### Laggard Steps to Success

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- **Deploy multiple application delivery functionalities (caching, compression, SSL acceleration, etc.) on a single device.** Aberdeen's research shows that 75% of Laggard organizations are not deploying devices that have multiple application delivery functionalities. By deploying this capability, Laggard organizations would gain flexibility in managing end-user traffic and ensure that IT infrastructure is effectively supporting business processes.
- **Develop the ability to analyze application performance for each transaction.** Seventy-four percent (74%) of Laggard organizations do not have capabilities for analyzing application performance for each business-critical transaction. Figure 4 shows that improving visibility into network and application performance is one of the top initiatives for Best-in-Class organizations. Aberdeen's Benchmark report from September 2008, [Network and Application Visibility](#), revealed that even though 94% of Best-in-Class organizations reported that they have the ability to measure application response times for every business-critical application, only 46% of these organizations stated that they have the ability to measure the quality of end-user experience. This comes as a result of organizations focusing on performance of business-critical applications as opposed to business-critical transactions. The ability to measure application performance for each transaction allows organizations to prioritize their IT projects and to ensure that IT services are effectively supporting business goals.
- **Develop capabilities for conducting cost-benefit analysis of bandwidth upgrades.** Eighty-two percent (82%) of Laggard organizations do not have the ability to evaluate the business impact of upgrading their bandwidth capacity. Also, these organizations experienced an average increase of only 2% in network throughput. The ability to assess the business impact of increasing bandwidth capacity allows organizations to make educated decisions about changes they need to make to their enterprise infrastructure.

### Industry Average Steps to Success

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- **Develop capabilities for evaluating test results prior to the final purchasing decision.** Forty-eight percent (48%) of Industry

#### Fast Facts

- √ 74% of Laggard organizations do not have capabilities for analyzing application performance for each business-critical transaction.
- √ 82% of Laggard organizations do not have the ability to evaluate the business impact of upgrading their bandwidth capacity.

Average organizations do not have capabilities for evaluating results from a proof-of-concept testing of WAN optimization solutions. It is critical that organizations select WAN optimization solutions that are the best fit for their specific needs. As needs of end-user organizations for delivering applications over the WAN are changing and business users are expecting seamless delivery of business-critical information, organizations need to ensure that they have internal processes in place for evaluating WAN optimization solutions that are being tested.

- **Develop capabilities for centralized management of WAN optimization appliances.** Half (50%) of Industry Average organizations are not able to manage WAN optimization appliances from a central location. Centralized management of WAN optimization devices allows organizations to be able to manage more end-users with a fewer IT staff.

### Best-in-Class Steps to Success

- **Deploy network routers with integrated WAN optimization capabilities.** Fifty-seven percent (57%) of Best-in-Class organizations are not deploying network routers that have capabilities for optimizing and accelerating network traffic. This capability allows organizations to reduce total cost of ownership of WAN optimization solutions and enables them to manage and optimize network performance while reducing the number of network devices that need to be managed.
- **Deploy a single platform for managing application performance visibility and QoS.** Forty-nine percent (49%) of Best-in-Class organizations are not acquiring network and application visibility and QoS capabilities by using a single platform. This type of solution enables organizations to make more educated decision about network traffic that needs to be optimized and ensure that network capacity is being used to support applications that are business-critical.

#### Aberdeen Insights — Summary

All Laggard organizations surveyed have some WAN optimization and application acceleration solutions in place, but the research shows these organizations are experiencing only 2% average improvements in network throughput. The majority of these organizations are selecting solutions that are not the best fit for their needs while investing significant resources in acquiring these products. Best-in-Class organizations are taking a more systematic approach and building capabilities that allow them to effectively evaluate technology solutions that are available.

*continued*

### **Aberdeen Insights — Summary**

The success that these organizations are experiencing is predominately based on internal processes that these organizations had put in place for evaluating WAN optimization products that would perform the best in their specific environments.

## Appendix A: Research Methodology

Between April and May of 2009, Aberdeen examined the use, the experiences, and the intentions of more than 300 enterprises using WAN optimization and application acceleration solutions in a diverse set of enterprises.

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on WAN optimization strategies, experiences, and results.

Responding enterprises included the following:

- *Job function:* The research sample included respondents with the following job roles: IT management (72%); Marketing / Business Development / Sales (14%); Operations and Process Management (6%); other (8%).
- *Industry:* The research sample included respondents exclusively from retail industries. IT Consulting / Software / Hardware (21%); General Manufacturing (8%); Public Sector / Defense / Education (9%); Heavy Industry / Utilities (11%); Telecom (10%); Transportation / Logistics / Distribution (4%); Finance / Banking Accounting / Insurance (8%); Health / Medical / Pharmaceutical (7%); other (22%).
- *Geography:* Forty-five percent (45%) of respondents were from North America. Remaining respondents were from Europe (27%), the Asia-Pacific region (20%) and the rest of the world (8%).
- *Company size:* Twenty-nine percent (30%) of respondents were from large enterprises (annual revenues above US \$1 billion); 41% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 29% of respondents were from small businesses (annual revenues of \$50 million or less).
- *Headcount:* Forty-nine percent (49%) of respondents were from large enterprises (headcount greater than 1,000 employees); 32% were from midsize enterprises (headcount between 100 and 999 employees); and 19% of respondents were from small businesses (headcount between 1 and 99 employees).

### Study Focus

Responding executives completed an online survey that included questions designed to determine the following:

- √ The degree to which WAN optimization and application acceleration solutions are deployed in their operations and the financial implications of the technology
- √ The structure and effectiveness of existing WAN optimization and application acceleration implementations
- √ Current and planned use of WAN optimization and application acceleration to aid operational and promotional activities
- √ The benefits, if any, that have been derived from WAN optimization and application acceleration initiatives

The study aimed to identify emerging best practices for WAN optimization and application acceleration usage in, and to provide a framework by which readers could assess their own management capabilities.

**Table 4: The PACE Framework Key**

Overview
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p><b>Pressures</b> — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p><b>Actions</b> — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p><b>Capabilities</b> — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)</p> <p><b>Enablers</b> — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, May 2009

**Table 5: The Competitive Framework Key**

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p><b>Best-in-Class (20%)</b> — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p><b>Industry Average (50%)</b> — Practices that represent the average or norm, and result in average industry performance.</p> <p><b>Laggards (30%)</b> — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p><b>Process</b> — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p><b>Organization</b> — How is your company currently organized to manage and optimize this particular process?</p> <p><b>Knowledge</b> — What visibility do you have into key data and intelligence required to manage this process?</p> <p><b>Technology</b> — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p><b>Performance</b> — What do you measure? How frequently? What’s your actual performance?</p>

Source: Aberdeen Group, May 2009

**Table 6: The Relationship Between PACE and the Competitive Framework**

PACE and the Competitive Framework – How They Interact
<p>Aberdeen research indicates that companies that identify the most influential pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.</p>

Source: Aberdeen Group, May 2009

## Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report includes:

- [Application Performance Management: Getting IT on the C-Level's Agenda](#); March 2009
- [Virtual Vigilance: Managing Application Performance in Virtual Environments](#); December 2008
- [The Performance of Web Applications: Customers are Won or Lost in One Second](#); November 2008
- [The Value of Network and Application Visibility: Improving the Usability of Performance Data](#); September 2008
- [Optimizing Application Delivery over the WAN](#); August 2008

Information on these and any other Aberdeen publications can be found at [www.aberdeen.com](http://www.aberdeen.com).

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