



ABM Industries San Francisco, California

Giant industrial facilities contractor demonstrates how to ensure Citrix, JD Edwards, videoconferencing, and other business applications perform efficiently amid pivotal WAN consolidation, convergence projects by leveraging Packeteer's visibility, control, compression over a five-year period – and counting

For years, ABM Industries has been thinking ahead, preparing for the times when growing business needs inevitably outpace IT resources and place greater demand on the company's network. The San Francisco-based facilities services contractor's proactive approach has saved it money and time and allowed it to capitalize on opportunity costs, and because of that, the company has embodied what enterprise organizations around the world are striving to attain – unwavering alignment between IT and business priorities.

ABM Industries, which performs air conditioning, elevator, engineering, janitorial, lighting, parking, security, and other outsourced services for thousands of commercial, industrial, and institutional facilities throughout North America, enjoys a profitable business. With more than 57,000 employees, 245 sites, and annual revenues in excess of \$2.25 billion, ABM Industries' success hinges greatly on its ability to leverage IT as a critical asset. Although many factors play into the company's success, IT's strategic approach to managing information delivery across the WAN has earned the department a significant portion of the credit.

The story of how ABM Industries manages WAN traffic is an evolving one. It started with the notion of network consolidation and application convergence, was threatened by WAN congestion, and has since become a textbook case on overcoming performance challenges and enhancing business productivity. Information delivery, communication, cost containment, and ROI have all benefited from the company's approach.

That approach, called WAN application traffic management, involves a unique combination of application-layer visibility, bandwidth control, and compression. Using a comprehensive system from Packeteer®, Inc., the global leader in the space, ABM Industries ensures that business applications like Citrix, JD Edwards, and GlowPoint videoconferencing perform efficiently and reliably across the WAN. As ABM Industries has found, effective application performance translates to greater business performance.

"I didn't want users immobilized because their neighbor was doing downloads off the Web."

– Anthony Lackey
CIO

"ABM wanted to create a competitive advantage with a flexible, powerful, mobile IT system," said CIO Anthony Lackey. "Seriously, without Packeteer, unpredictable application performance and the cost for additional bandwidth would have made this project unaffordable."

This was the challenge ABM Industries faced five years ago – Eliminate unpredictable performance resulting from the convergence of voice, video, and data traffic over a multi-service WAN and justify the project through quick, consistent ROI. Simply put, make all WAN-related investments pay off. The entire enterprise – its operations, its customers, and its cost of ownership – depended on it.

THE PROBLEM: The Challenges of an Unmanaged WAN

In 1999, ABM Industries planned for the future. It wanted to position itself as a responsive business that had size, resources, and agility. To enhance communication, the company implemented a wide-area network and deployed critical business applications over a Citrix thin-client system. Windows terminals were stationed at remote offices, and all applications and servers were housed at the data center in San Francisco. Links ran the gamut from 56K at some remote sites to multiple T1s at others. The consolidation project was intended to streamline the company's communications platform and contain costs.

But the new WAN introduced serious challenges. Because applications suddenly found themselves pitted against each other in a tug-of-war for bandwidth, there was no guarantee that the most critical applications would receive their fair share. Network congestion and unpredictable application performance threatened to undermine the network consolidation project as a whole. Major investments in bandwidth and mission-critical applications like Citrix and videoconferencing were at risk.

For example, if Citrix suffered, business operations would suffer as well. Latency-sensitive videoconferencing sessions were at risk. Web browsing, file transfers, and large print jobs could disrupt LotusNotes or JD Edwards' OneWorld system. This was especially the case at bandwidth-constrained sites. For example, locations that relied on 56K or 128K connections were extremely vulnerable to service degradations and downtime.

The company realized the need to not only control traffic but to optimize its delivery. After all, the network's total cost of ownership is a key focal point for any cost-conscious enterprise. ABM Industries was intent on examining ways to minimize costs and extend the serviceability of its existing IT investments. Plans to roll out additional applications only heightened the urgency around cost containment.

Executive Overview

INDUSTRY

- Industrial/Facilities

CHALLENGE

- Protect and improve performance of applications running over Citrix, such as JD Edwards' OneWorld
- Create controlled, organized environment for GlowPoint video conferencing, LotusNotes, printing, FTP
- Control casual Web browsing and other recreational traffic
- Support VoIP, MPLS future rollouts
- Optimize throughput to avoid costly bandwidth upgrades

SOLUTION

- Deploy Packeteer's application traffic management system across the enterprise, particularly at bandwidth-constrained locations, to ensure efficient, reliable application performance

BENEFITS

- Justifies investments in OneWorld, Citrix by improving performance
- Gains visibility into what's really running on network
- Adds much-needed control on a per-application basis
- Compression results in bandwidth savings, and as a result, cost savings, extending serviceability of existing bandwidth

Without a solution in place – one that could ensure efficient, reliable information delivery – ABM Industries risked losing its crucial alignment between IT and WAN-dependent business needs. This, of course, was a major problem.

“We were losing control,” said Sean Finley, ABM Industries’ assistant vice president and deputy IT director.

THE SOLUTION: Visibility, Control, and Compression

It was at this time that ABM Industries’ emphasis on contingency planning paid off. Fortunately, the company had included Packeteer’s application traffic management system as a necessary component of the WAN implementation project. While the WAN infrastructure provided the necessary connectivity to link the company’s numerous sites, Packeteer’s appliance-based system served another vital purpose – QoS. With a unique combination of application-layer visibility, bandwidth control, and compression, Packeteer ensures that business applications perform efficiently and reliably across the WAN.

Since 1999, ABM Industries has deployed Packeteer at 85 of its most bandwidth-constrained WAN links. From these vantage points, Packeteer has empowered the company to enhance information delivery across the enterprise regardless of link sizes or changes in user demands and traffic loads.

Visibility

Packeteer’s application-layer visibility reveals what is running on ABM Industries’ network and validates whether bandwidth utilization parallels business priorities. In 1999, the company used Packeteer’s automatic traffic classification and discovered some surprises. Packeteer identified recreational applications, proving that bandwidth – which was purchased to support business needs – was not aligned in support of those priorities.

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Packeteer’s extensive reporting features analyze peak rate, link utilization, delays, and network efficiency to validate improved application performance. ▶



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Packeteer revealed that recreational applications inhibited Citrix, JD Edwards, and other business applications from performing effectively. In addition, business-related file transfers and print jobs caused sporadic disruptions as well. Since those initial findings, ABM Industries has leveraged Packeteer to analyze and report on a number of performance metrics – from application response times and top users to link utilization and network efficiency. The intelligence that Packeteer provides ABM Industries serves as the foundation for implementing appropriate changes on the company's network.

Control

Changes can be administered in a number of ways. Over the years, ABM Industries has used Packeteer to set a variety of control measures, such as rate, priority, and admissions policies. The system also creates partitions (i.e. advanced PVCs) that allocate appropriate bandwidth to each application based on its relative business importance. Partitions and policies ensure that critical traffic is not disrupted by other applications, whether they're business-related or recreational in nature. As a result, Packeteer's policy management protects Citrix, JD Edwards, and other mission-critical applications, while efficiently pacing less-urgent traffic like FTP and email. Meanwhile, recreational traffic is relegated to minimal portions of the WAN or denied completely depending on IT's discretion.

With Packeteer, ABM Industries can monitor and control application performance. In 1999, this represented a major distinction. While most solutions offered one function or the other, Packeteer offered both in one integrated solution, and with best-of-breed capabilities. From the first moment it leveraged Packeteer, ABM Industries was in solid position to not only find and fix performance problems, but prevent them as well. As time passed and the company's needs evolved, Packeteer helped IT enhance performance even more.

Compression

In the spring of 2004, ABM Industries administered Packeteer-enabled compression. The "application-intelligent" technology identifies business traffic that can benefit from compression, enabling ABM Industries to accelerate information delivery without wasting overhead or processing power on unnecessary traffic. Packeteer's advanced CNA algorithm generates significant compression results – whether it's for mission-critical Citrix traffic or cumbersome print jobs.

For instance, IBM 5250 traffic is compressed 72 percent while MSSQL transactions experience a 67 percent saving. Oracle experiences a 53 percent saving, LotusNotes 48 percent, and WebEx 43 percent. Printing, which has always been a trouble spot for the company, consistently experiences a 25 percent compression saving. (See table on page 5)

"Compression was an item we really wanted. We went in to it thinking we were going to reduce costs and improve performance, whereas bandwidth management is setting the standards and enabling us to manage what's going through your network. Having both in one instead of having two tools manage them is important."

"What was most impressive was the compression on outbound Citrix from our remote sites. My belief was that it was just key-strokes and mouse movements, and we weren't going to see much change in throughput. But we did experience quite a bit of savings. That was impressive."

– Tony Kloeppel
Data communications
manager

Compression Results for Various Protocols and Services

The table below lists data taken from a spreadsheet that imported Packeteer compression results over the span of one week in March 2004. The table identifies various protocols and services running across ABM Industries' WAN and lists the bytes saved and percentage of bandwidth savings for each application.

Protocol - Service	Bytes Saved	%
Dynamic-Partition/Citrix	12,834,588,614	15%
Printer and 9100	7,176,313,866	49%
TN5250	1,386,013,080	72%
HTTP	1,114,245,202	33%
DiscardedPorts/Port 139 open	612,081,207	39%
LotusNotes	297,470,688	48%
SNMP	219,412,502	35%
NetBIOS-IP	210,027,230	39%
Localhost	161,904,466	3%
WUG-Servers/ICMP	128,991,933	17%
Default	101,567,385	21%
FTP	99,970,590	33%
DiscoveredPorts/Default	98,632,686	70%
NFS	92,237,820	6%
WUG-Servers/HTTP	90,764,354	21%
DiscoveredPorts/TCP Port 5566	86,933,896	12%
Telnet	53,104,723	39%
TN5250p	39,621,710	67%
ICMP	36,724,347	27%
MSSQL	32,021,549	67%
Global/IP/TCP	28,687,713	7%
DNS	28,532,883	31%
DiscoveredPorts/TCP Port 2800	23,607,045	78%
pcANYWHERE	22,272,854	12%
PolicyCenter/LDAP	17,542,552	84%
RDP	13,698,056	7%
PolicyCenter/NetBIOS-IP	11,287,983	80%
SMTP	9,421,862	8%
WebEx	9,236,620	43%
Global/IP/ICMP	8,108,863	9%
DiscoveredPorts/TCP Port 2100	7,150,350	70%
DiscoveredPorts/UDP Port 5004	5,711,833	3%
DiscoveredPorts/TCP Port 2700	4,132,012	63%
UUCP	3,812,969	47%
DiscoveredPorts/ICMP	3,531,403	22%
LDAP	2,821,056	45%
DiscoveredPorts/UDP Port 2967	1,864,682	13%

Protocol - Service	Bytes Saved	%
Oracle	1,800,609	53%
DiscoveredPorts/UDP Port 389	1,667,927	20%
SunRPC	1,660,889	53%
Kontiki	1,420,580	70%
Microsoft-ds	1,309,064	59%
WUG-Server/NetBIOS-IP	1,120,665	40%
DCOM	745,540	46%
DiscoveredPorts/TCP Port	741,297	19%
PolictCenter/HTTP	686,489	54%
VoIP31	624,280	4%
Syslog	577,789	35%
DiscoveredPorts/TCP Port	289,183	38%
DiscoveredPorts/TCP Port 8476	245,086	22%
SLP	192,418	32%
PolicyCenter/Default	140,718	34%
Apple-iTunes	136,431	2%
DiscoveredPorts/RDP	32,793	15%
DiscoveredPorts/TCP Port 449	24,542	4%
DiscoveredPorts/NFS	5,449	62%
lockd	3,490	30%
SMS	2,422	24%
H.323	1,659	24%
rexec	1,642	27%
PolicyCenter/Telnet	1,316	23%
WUG-Services/DNS	1,303	27%
Streamworks	891	22%
SHARESUDP	785	36%
PolicyCenter/SNMP	480	43%
DiscoveredPorts/Oracle	465	46%
L2TP	379	28%
WUG-Servers/SNMP	219	43%
DiscoveredPorts/MSSQL	177	0%
PeerEnabler	117	57%
DiscoveredPorts/UDP Port 3561	111	6%
SSDP	94	0%
DiscoveredPorts/TCP Port 449	81	1%
WinampStream	35	6%

THE RESULTS: Past, Present, and Future – Application Traffic Management Pays Off

For five years, ABM Industries has benefited from application traffic management. As the company has evolved, so too has its IT organization. Looking back, Finley sees the proof points. Delivering QoS in the midst of the pivotal consolidation project in 1999. Improving Citrix and GlowPoint's performance over one network. Enhancing JD Edwards. Controlling non-business traffic and allocating bandwidth to support business needs.

All of these performance enhancements add up to a more effective business – from operational efficiency to customer service. According to Finley, Packeteer helps lower the WAN's total cost of ownership. It generates greater returns on application and bandwidth investments. Although Finley acknowledged that ABM Industries has not calculated an actual cost savings over the past five years, he said Packeteer has definitely paid for itself and enabled the company to avoid unnecessary bandwidth costs on a number of occasions.

"We don't have any real measurements, but I know we've saved a lot of money," Finley said. "The cost savings have been enormous."

There's no reason why that trend won't continue. According to Finley, Packeteer's visibility, control, and compression will maximize both ROI and application performance across the WAN for a number of upcoming convergence projects. In what Finley touts as "a huge undertaking," ABM Industries is preparing to deploy a Cisco-enabled VoIP service across an AT&T network managed by IBM. Once completed, VoIP, GlowPoint videoconferencing, and Citrix-enabled data applications will be converged across the company's WAN. ABM Industries is also seriously considering a conversion from frame relay to MPLS.

Packeteer will play a central role in managing application traffic over a converged MPLS network, if and when it comes to fruition. Regardless of what the company ultimately decides, Packeteer gives ABM Industries the peace of mind to initiate critical IT projects – from new applications to network enhancements – and the power to ensure that they pay off.

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