July 20, 2007

The Forrester Wave™: WAN Optimization Appliances, Q3 2007

by Robert Whiteley
for IT Infrastructure & Operations Professionals

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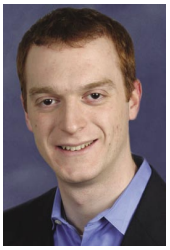

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Riverbed And Juniper Lead The Emerging Acceleration Landscape

by Robert Whiteley
with Simon Yates and Rachel Batiancila

EXECUTIVE SUMMARY

Forrester evaluated leading WAN optimization appliance vendors across 65 criteria and found that Riverbed and Juniper have established early leadership. They have demonstrated early innovation in the most critical optimization techniques like caching, data de-duplication, and advanced compression. Silver Peak leads WAN optimization appliance pure plays with the most scalable solution. Cisco and Blue Coat provide the full suite of capabilities but excel in offering technology that plugs into existing router and proxy products, respectively. Expand and Packeteer have well-established traffic management boxes with additional WAN optimization capabilities but need further integration to capture leadership positions. Citrix and F5 deliver good point products today but will offer much stronger devices when they integrate WAN optimization with their existing application delivery controllers. Ultimately, this is a tightly contested market, and we urge you to focus on optimization, scalability, security, and mobility criteria to determine the most appropriate solution.

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NOTES & RESOURCES

Forrester conducted product evaluations in March 2007 and interviewed nine vendor and user companies, including: Blue Coat Systems, Cisco Systems, Citrix Systems, Expand Networks, F5 Networks, Juniper Networks, Packeteer, Riverbed Technology, and Silver Peak Systems.

Related Research Documents

"WAN Optimization: What You Really Need To Know"
April 5, 2007

"WAN Optimization"
December 4, 2006

"The Evolving Branch Office: Intelligently Reducing Your Network Infrastructure Footprint"
October 4, 2006

TODAY'S ENTERPRISE IS PUTTING THE WAN AT ODDS

The wide-area network (WAN) is the connective fabric that holds a distributed organization together. It connects applications and data to employees in branch offices, home offices, or on the road — as well as partners and customers. Most companies understand that the WAN must be architected for high availability but still suffers from inadequate performance. Why? IT shops are struggling to balance a multitude of initiatives — all of which overload enterprise networks and create a WAN bottleneck — including:

- **Improving business continuity and disaster recovery (BC/DR) processes.** The ability to fail over seamlessly from one data center to another and the ability to back up data in all remote locations are critical to evolving BC/DR plans — a top IT priority for IT in 2007.[1] However, this requires moving massive, multigigabit chunks of data across a WAN in real time.

- **Consolidating data centers and server infrastructure.** IT consolidation is another perennial theme as firms try to centralize data centers on a global basis, removing server infrastructure from remote offices running their own file, print, and directory services. Data center and server consolidation both create dependencies between branch offices and newly consolidated assets, which in turn require an always-on, high-performance WAN link.

- **Building new content delivery networks (CDN).** Large organizations struggle to ensure that employees are armed with all the latest content, whether it's training collateral, compliance documentation, email, or even video. The economics of network hardware and software mean that most companies can leverage their private WANs for CDN functionality.

- **Rolling out new collaborative applications.** As Web 2.0 unfolds in the enterprise, companies are eagerly deploying wikis, blogs, and other collaboration portals.[2] However, these central collaboration points where users convene are often marred by poor performance, and opening a Microsoft Word document stored on a content portal 2,000 miles away can easily take 5 minutes.[3]

- **Maintaining mission-critical apps like ERP, CRM, and email.** There's still the need to "keep the lights on" for your most critical business applications. Many companies rely on distributed servers to overcome performance issues, but this runs contrary to server consolidation efforts. Moreover, enterprises often find the "Webified" versions of popular applications from SAP, Oracle, and others to be more flexible, but they often carry a performance hit as well.

WAN Optimization Applies Multiple Techniques To Improve Application Performance

WAN optimization — often referred to as WAN acceleration — has been a red-hot market lately. Why? WAN optimization takes many of today's critical IT initiatives and, put simply, makes them work better. Advanced WAN optimization solutions improve performance when deployed as symmetrical appliances that employ a series of techniques such as caching, protocol optimization, compression, traffic management/quality of service (QoS), and error correction. None one of these

techniques can solve your WAN headache by themselves, but combining all five simultaneously means that you can apply the right optimization to the right application. WAN optimization improves application performance by:

- **Increasing effective throughput.** WAN optimization appliances use advanced caching and compression techniques to overcome the limitations of low bandwidth links. By leveraging storage capacity on either end of the link for data indexing and de-duplications, only the absolute minimum of bits are transferred across the WAN — often providing a 10- to 100-times increase in effective throughput.[4] WAN optimization can also provide QoS and traffic management techniques to guarantee bandwidth allocation for mission-critical applications and prevent rogue applications from consuming precious throughput.

- **Mitigating high latency.** The larger issue facing WAN performance is not bandwidth but latency — the delay in transmitting data across the link as applications compete for constrained network resources. A good WAN may only have 80 milliseconds (ms) of latency, but many international networks suffer from more than 200 ms of latency, and satellites can be an unbearable 600 ms. WAN optimization helps by applying the techniques of: 1) caching, which eliminates unnecessary trips across the WAN by storing data locally; 2) protocol optimization and error corrections, which remove "chattiness" in inefficient protocols like CIFS, MAPI, and TCP; and 3) traffic management, which prioritizes high-value traffic and avoids queuing delays.

The WAN Optimization Market Is Driven By Data- And Application-Oriented Adoption

We've observed that more than a dozen vendors have entered (or rebranded themselves to be in) the WAN optimization market in just the past two years. However, we use a rather simple taxonomy to divide the market into two major vendor camps:

- **Data-oriented vendors with strong storage capabilities.** The WAN optimization vendors with the most momentum have a good storage heritage and grew out of the now defunct wide-area files services (WAFS) market. They pioneered techniques in byte- and object-level caching, as well as non-standard compression techniques for data de-duplication. Their solutions are typically deployed when the driving application centers on remote backup, data replication, or Windows (sometimes Unix) file sharing.

- **Application-oriented vendors with strong application delivery capabilities.** The second camp of vendors have a strong application delivery product — an adjacent market to WAN optimization — which is predominantly an asymmetric technology that leverages Layer 4 to Layer 7 information. These application-oriented WAN optimization vendors have strong backgrounds in load balancing and acceleration and have pioneered application-specific protocol optimizations and traffic management techniques. Vendors in this category are ideal for large packaged apps, Web-based apps, email, and real-time traffic.

It's important to note that we see these two markets as clearly merging, and the top-tier vendors offer functionality from both camps. Today, however, data-oriented solutions are the only ones effective at optimizing traffic in both data center-to-data center as well as data center-to-branch deployments, whereas application-oriented solutions are more effective for branch-office applications delivery only.

WAN OPTIMIZATION APPLIANCE EVALUATION OVERVIEW

To assess the state of the WAN optimization market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of the top nine WAN optimization appliance vendors.

Evaluation Criteria Focused On Overall Optimization Architecture, Strategy, And Presence

After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of evaluation criteria (see Figure 1). We evaluated vendors against approximately 65 criteria, which we grouped into three high-level buckets:

- **Current offering.** To assess product strength, we evaluated each offering against eight groups of criteria: product portfolio; architecture; optimization techniques; application-specific optimizations; manageability and usability; scalability; reliability; and monitoring and reporting.
- **Strategy.** We considered how well each vendor's plans for product and portfolio enhancements position it to meet future demands from companies and, furthermore, the financial resources the company has to support its strategy, both product and corporate. We looked at the company resources dedicated to WAN optimization and how the vendor prices its product to compete in this market.
- **Market presence.** To establish a product's market presence, we combined information about each vendor's installed base, revenues (overall and product), services, employee numbers, and partnerships.

Evaluated Vendors Offer A Full Suite Of Optimization Techniques

Forrester included nine vendors in the assessment: Blue Coat Systems, Cisco Systems, Citrix Systems, Expand Networks, F5 Networks, Juniper Networks, Packeteer, Riverbed Technology, and Silver Peak Systems. Each of these vendors has (see Figure 2):

- **Technology.** The vendors have generally available support of multiprotocol byte- and object-level caching; multiprotocol compression; traffic management/QoS; and protocol acceleration of three or more protocols (HTTP, TCP, MAPI, CIFS, NFS, XML, etc).[5]
- **Revenue.** The vendors all have a minimum of US$10 million in revenue.
- **Client interest.** We have received at least three client inquiries on each vendor in a six-month period.

Figure 1 Evaluation Criteria

CURRENT OFFERING	
Product portfolio	How many different products does the vendor currently offer?
Architecture	What is the overall architecture of the vendor's WAN optimization solution?
Optimization techniques	How many different optimization techniques does the appliance support?
Application-specific optimizations	How many application optimizations does the vendor support? How well does the vendor support application acceleration?
Manageability and usability	How easy is it to manage the vendor's appliance?
Scalability	How scalable is the appliance — including both scaling up and scaling out?
Reliability	What specific architectural options does the vendor offer for appliance reliability, including: embedded OS/software reliability, hardware redundancy, hot-swappable components, and stateful failover?
Monitoring and reporting	What monitoring and reporting capabilities does the vendor offer?
STRATEGY	
Product strategy	What's the vendor's overall product strategy and vision for WAN optimization?
Corporate strategy	What's the vendor's overall corporate commitment to the WAN optimization space?
Financial resources to support strategy	Is the vendor profitable, and what is the vendor's cash flow? Does the company have sufficient revenues, profits, and cash flow to support its strategies?
Cost	What is the cost of this product?
MARKET PRESENCE	
Installed base	How large is the vendor's installed base of customers for this product and for all products?
Revenue	What is the vendor's overall and WAN optimization revenue for FY 2006?
Revenue growth	What is the vendor's overall and WAN optimization year-over-year revenue growth during the past four quarters?
Services	How strong are the vendor's implementation and training services?
Employees	How many engineers does the vendor have dedicated to this product? How big is the vendor's sales presence?
Channel partners	How strongly do channel and go-to-market partners support this product?

Source: Forrester Research, Inc.

Figure 2 Evaluated Vendors: Product Information And Selection Criteria

Vendor	Product evaluated
Blue Coat Systems	SG Appliances
Cisco Systems	Wide Area Application Services (WAAS)
Citrix Systems	WANScaler
Expand Networks	Compass
F5 Networks	WANJet, WebAccelerator
Juniper Networks	WX/WXC
Packeteer	PacketShaper, iShared, SkyX, Mobiliti
Riverbed Technology	Steelhead appliances, Interceptor
Silver Peak Systems	NX series

Vendor qualification criteria
Technology. The vendors have generally available support of multiprotocol byte- and object-level caching; multiprotocol compression; traffic management/QoS; and protocol acceleration of three or more protocols (HTTP, TCP, MAPI, CIFS, NFS, XML, etc).
Revenue. The vendors all have a minimum of US$10 million in revenue.
Client interest. We have received at least three client inquiries on each vendor in a six-month period.

Source: Forrester Research, Inc.

THE WAN OPTIMIZATION MARKET IS CLOSELY CONTESTED, BUT RECENT INNOVATORS LEAD

Depending on how you define the market, WAN optimization is either quite mature or just emerging. If you simply define WAN optimization as compression and QoS, then vendors like Packeteer and Expand have been around for the better part of a decade. If you define it as we do, then you must have multiprotocol caching, advanced compression, traffic management including QoS, and protocol-specific optimization; this more integrated market just emerged in 2004. Why the dichotomy? The leading vendors are quickly innovating additional features to increase WAN optimization's appeal. The criteria that clearly differentiated the Leaders included:

- **Optimization architecture.** Functions like QoS and compression have been used in corporate WANs for more than a decade, but the more innovative technologies like multiprotocol caching and protocol-specific optimizers have only emerged in the past few years. It's important to focus

on these latter two features because they offer the more impressive performance gains.[6] As a result, we found that the leading vendors were those that focused early on caching and protocol-specific techniques.

- **Scalability.** WAN optimization solutions scale on two dimensions: 1) scale out, which is the number of devices that can be interlinked, and 2) scale up, which is the amount of optimized throughput each appliance can process. We found a large variance in both dimensions, but in particular, firms should focus on scaling up. You should select solutions that support the right throughput on the WAN connection with all optimization techniques turned on. Otherwise, you may end up with a solution that claims it can scale to OC-3 but only optimizes the first 50 Mbps of that link.

- **Security.** WAN optimization appliances are not security solutions, but they do play a critical role in accelerating sensitive apps and data. It's important to challenge the vendor on how it secures the overall solution. For example, does it encrypt data at rest in the disk used for caching? Can appliances encrypt both the accelerated traffic as well as the control plane used to coordinate appliances? And secondly, determine if it's essential for your WAN optimizer to accelerate SSL-encrypted traffic. If so, only three solutions currently support that capability.

- **Mobility.** WAN optimization is predominantly used for accelerating traffic between fixed locations like branches and data centers. However, we see a huge upswing in WAN optimization to accelerate traffic to remote or mobile users. This requires a software client to be installed on each remote computer. To avoid "yet another agent" on the desktop, ensure that your WAN optimization vendor has the right architecture for this client, including OS support, VPN integration, and user administrative rights. At the time of this evaluation, only two vendors supported client architectures, although most are promising the functionality by the end of the year.

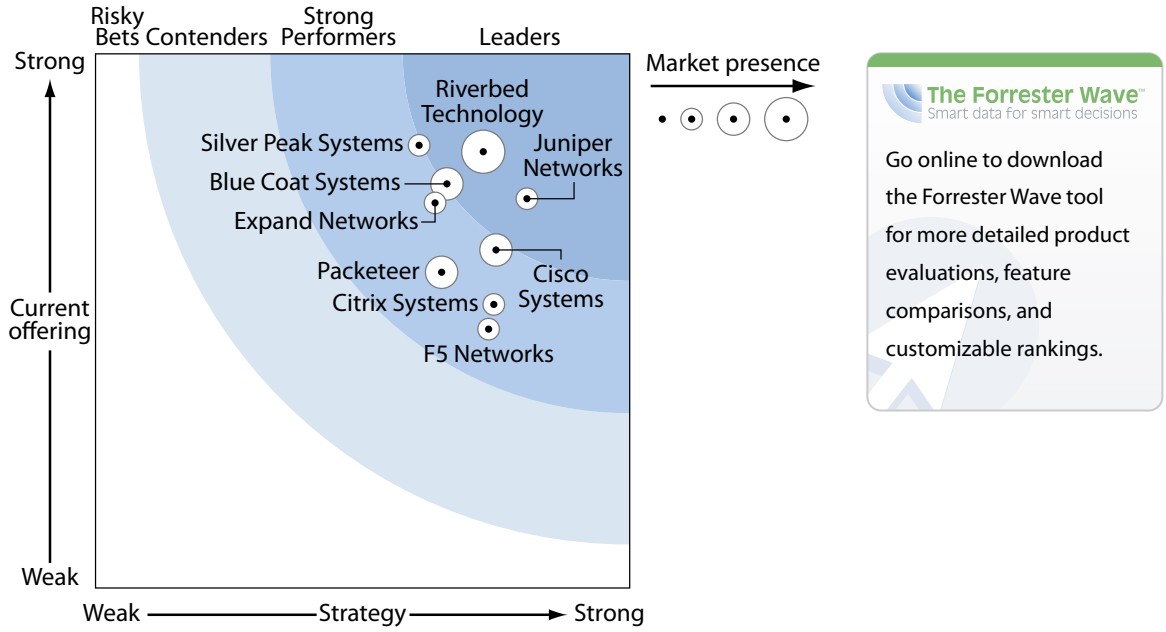
When we evaluated the vendors against all of the criteria, we found that younger, more innovative companies lead the pack, but incumbent vendors are quickly closing the gap. Specifically, the evaluation uncovered a market in which (see Figure 3):

- **Riverbed and Juniper lead the pack.** Riverbed and Juniper are the only two vendors cleanly in our Leaders category. Riverbed is an unbelievable upstart story that has taken the WAN optimization market by storm, catapulting Riverbed to a market-leading position. Our evaluation uncovered why. Riverbed has the strongest overall current offering, including the strongest score for optimization techniques. Riverbed is only marred by a strategy that reflects its single-product nature, although we are bullish that it will innovate in other data center products. Juniper's current offering is strong but not marketing-leading. Its strategy, however, leads all vendors. Juniper's ability to marry WAN optimization with SSL VPN, IPS, and application delivery infrastructure is impressive. Moreover, Juniper is adept at targeting managed services alternatives, which Forrester believes is critical to the mainstream adoption of WAN optimization.

- **Silver Peak, Blue Coat, and Cisco offer competitive options.** The remaining solutions are closely tied together in the Strong Performer category, but Silver Peak, Blue Coat, and Cisco all stand out. Why? Each vendor has a clear differentiator. Silver Peak has by far the most scalable solution, as well as a very solid current offering and is, in fact, the most technologically similar to Riverbed. Blue Coat capitalizes on its original heritage as CacheFlow, but it brings a unique security spin with its proxy-based architecture. Cisco brings a competitive product and good strategy, but its real strength is in offering WAN optimization as an option for its wildly successful Integrated Services Router (ISR) — the most popular product in Cisco's history.

- **Expand, Citrix, Packeteer, and F5 round out the evaluation.** The remaining vendors all offer solutions in the Strong Performer category, but lack either the breadth or depth of the other vendors we evaluated. Expand, Citrix, Packeteer, and F5 all share one thing in common: acquisitions.[7] Expand and Packeteer are actually some of the most well-established WAN optimization vendors, but both have added WAFS functionality to complement existing capabilities. Citrix and F5, although not the strongest vendors today, both offer an extremely compelling application delivery solution that combines multiple technologies (WAN optimization, SSL VPN, next-generation load balancing with acceleration, and application-level firewalls) into a single unified platform. As a result, we believe that Citrix and F5 will migrate to the Leaders category in 2008.

Figure 3 Forrester Wave™: WAN Optimization Appliances, Q3 '07



Source: Forrester Research, Inc.

Figure 3 Forrester Wave™: WAN Optimization Appliances, Q3 '07 (Cont.)

	Forrester's Weighting	Blue Coat Systems	Cisco Systems	Citrix Systems	Expand Networks	F5 Networks	Juniper Networks	Packeteer	Riverbed Technology	Silver Peak Systems
CURRENT OFFERING	50%	3.76	3.14	2.63	3.58	2.40	3.62	2.93	4.06	4.12
Product portfolio	5%	4.00	3.00	3.00	4.00	2.00	4.00	5.00	5.00	4.00
Architecture	25%	4.15	4.30	3.30	3.35	2.30	3.30	3.20	3.75	3.85
Optimization techniques	20%	4.15	3.00	2.85	4.20	3.10	3.95	3.70	4.35	4.20
Application-specific techniques	5%	3.00	2.40	1.60	2.50	1.40	3.40	1.20	3.20	3.10
Manageability and usability	10%	4.20	3.80	1.70	3.50	1.50	4.60	3.30	4.30	4.60
Scalability	15%	2.50	1.30	2.00	2.90	2.00	2.70	1.00	3.80	4.40
Reliability	10%	4.00	4.00	3.00	4.00	3.00	4.00	2.00	5.00	5.00
Monitoring and reporting	10%	3.50	2.20	2.30	3.90	2.80	3.70	4.00	3.40	3.40
STRATEGY	50%	3.29	3.75	3.73	3.18	3.68	4.04	3.24	3.63	3.03
Product strategy	50%	3.60	3.75	4.60	3.50	4.75	4.65	3.40	3.90	2.80
Corporate strategy	15%	2.75	2.00	1.75	4.25	1.25	1.50	4.50	4.25	4.25
Financial resources to support strategy	15%	3.00	5.00	4.00	2.00	4.00	5.00	3.00	4.00	2.00
Cost	20%	3.15	4.10	2.85	2.45	2.60	3.70	2.05	2.20	3.45
MARKET PRESENCE	0%	3.21	3.65	2.08	2.65	2.65	2.44	3.45	4.01	2.02
Installed base	15%	2.40	4.00	1.30	2.40	1.90	3.40	4.80	3.40	1.40
Revenue	30%	2.00	4.00	1.00	3.00	1.00	3.00	5.00	4.00	2.00
Revenue growth	30%	5.00	3.00	2.00	2.00	4.00	1.00	1.00	4.00	3.00
Services	10%	3.00	4.00	4.00	3.00	4.00	4.00	3.00	5.00	2.00
Employees	5%	3.00	5.00	4.00	1.00	3.30	3.00	2.50	2.00	1.00
Channel partners	10%	3.00	3.00	3.80	4.40	3.00	1.80	5.00	5.00	0.60

All scores are based on a scale of 0 (weak) to 5 (strong).

Source: Forrester Research, Inc.

This evaluation of the WAN optimization appliance market is intended to be a starting point only. Readers are encouraged to view detailed product evaluations and adapt the criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool.

VENDOR PROFILES

Leaders Offer The Most Integrated Architectures

- **Riverbed.** Riverbed and its Steelhead appliance is the clear Leader of the WAN optimization market. It has a top-notch product, and it will continue to expand on its strategy as the best standalone optimization vendor. In particular, Riverbed has innovatively combined data-oriented features like multiprotocol byte-level caching (often referred to as data de-duplication) and higher-performance storage architectures with application-oriented features like detailed protocol-specific optimizations. Riverbed has maintained its innovation by delivering additional capabilities like SSL decryption and one of the best central management consoles. The only area where Riverbed lags behind is in shipping a software client to optimize mobile users, but it addresses this shortcoming in its Q3 2007 road map, which will maintain its overall feature-function lead. In fact, Riverbed is only hampered by above-average pricing and a limited product portfolio. However, we feel that Riverbed will capitalize on its many partnerships — including several storage vendors that OEM its solution — and organic product development to remain a strong supplier of both branch office and data center infrastructure.[8]

- **Juniper.** Juniper came in as the second strongest vendor all around. Its WX and WXC WAN optimization appliances are some of the most sophisticated, with particularly high scores for deployment capabilities, compression, and its comprehensive management system. However, Juniper leads the pack with the strongest overall strategy. Juniper alone promises a compelling network-based strategy, as well as an application delivery strategy, which is more of an overlaid architecture. Moreover, Juniper exhibits a commitment to a best-of-breed technology that can be deployed as a standalone system, embedded within network infrastructure, or logically integrated with security infrastructure. And, despite the feature-function mix, Juniper turns out to be surprisingly cost-effective with the second-lowest solution cost. Given this strategy and the fact that it's one of the largest vendors in this space, we recommend Juniper for companies that want additional investment protection and to ensure that WAN optimization is not just inserted as a tactical near-term fix.[9]

Strong Performers Are Rounding Out Optimization Suites

- **Silver Peak.** Silver Peak Systems provided the most technologically superior solution. It scored the highest on current offering, and its solution provides a full suite of optimization techniques as well as a performance-oriented solution. Silver Peak specializes in scalability, with individual devices supporting the best single-box throughput, session processing, and overall storage capacity. Moreover, Silver Peak has paid special attention to encryption for both data transmitted among sites as well as data at rest on each device. Silver Peak's biggest drawback is its size. It's the smallest company in the evaluation and one of the only standalone vendors. However, we found Silver Peak's product and partnership strategy to focus on optimizing intra-data center links to be the right choice. This will position it well to leverage its storage

and data heritage where it can focus on replication, disaster recovery, and business continuity implementations. We recommend Silver Peak if you require high-end performance and can't wait for other companies to successfully scale solutions to 500 Mbps of optimized WAN traffic.[10]

- **Blue Coat.** Blue Coat Systems surprised us with its very strong offering and came in fourth in our evaluation, almost tied for third. In addition to one of the best optimization architectures, Blue Coat also provides a strong road map for broader application delivery infrastructure. Its strength and weakness lie in the underlying proxy architecture. On the upside, a proxy means ultimate control over your WAN traffic, providing the best visibility, management, and optimization of all apps. On the downside, a proxy requires that, for best results, you insert a trusted middleman between your users and servers and that you size the device properly because it terminates all traffic and you don't want a bottleneck. If you can accommodate a proxy-based device, then Blue Coat delivers one of the most sophisticated caching engines available, as well as top-notch security, management, auditing, and logging. Bottom line: If you're an existing Blue Coat customer, then look no further. WAN optimization is a simple software upgrade to the SG product line. If you think Blue Coat is just for security, then we recommend re-examining it for secure WAN acceleration to branch and mobile users.[11]

- **Cisco.** Cisco Systems' Wide Area Application Services (WAAS) technology is a Strong Performer and placed just outside the Leaders category in our evaluation. We found Cisco's WAAS architecture to provide the full suite of optimization techniques as well as the most advanced all-in-one branch office appliance available today. Moreover, it provides excellent transparency and management tools to painlessly integrate with your network and minimize deployment costs. Companies that have already standardized on Cisco's ISR for branch routing can easily add WAN optimization modules, and we recommend making this a staple of a full-service branch. However, its current technology does not scale as well as other devices, which limits its appeal for companies that run high-octane WANs. If you prioritize cost and interoperability over best-of-breed features, then look no further. More demanding customers should hold off until Cisco executes on a few key milestones — like additional application response-time monitoring and application-specific protocol optimizations — in the next round of WAAS enhancements due at the end of July.[12]

- **Expand.** Expand Networks turned in a solid product that ended up in the middle of the pack. It's one of the most well-established WAN optimization vendors, having entered the market in 1998, but it lacks some of the more innovative functionality such as multiprotocol byte-level caching. To address this need, Expand picked up DiskSites to add wide-area files services (WAFS). The result is a current offering that provides all of the necessary optimization techniques and especially strong compression. Expand also offers fully integrated technology for a one-box solution, but its more general-purpose appliance architecture left it less scalable than other solutions. Where Expand really sets itself apart is in its strategy to work closely with

the upcoming network phenomenon, Huawei-3Com. This provides a foundation for integrating WAN optimization directly into networking gear like routers, as well as running it on a blade in chassis-based systems more prevalent in large campuses and data centers. We feel that this will fuel Expand's mid- to long-term growth and help re-establish it as an innovative WAN optimization vendor.[13]

- **Citrix.** Citrix Systems currently offers one of the best WAN optimization strategies and positions WAN optimization as part of the larger application delivery infrastructure. Its WANScaler product offers very strong optimization architecture that deploys at Layer 2 — thus eliminating any Layer 3 complications to your WAN routing — as well as auto-detection of appropriate optimization techniques to minimize policy requirements for your network administrators. Citrix also provides one of the more apt solutions for accelerating the Citrix ICA protocol, but upcoming enhancements will cement WANScaler as the de facto optimization device for large Presentation Server deployments. Additionally, integration of WANScaler with the existing Citrix portfolio will also solve near-term issues around central management and provide more detailed monitoring, auditing, and logging. However, Citrix still needs to bolster core features like multiprotocol byte- and object-level caching as well as a more scalable device to address enterprises that are running large, meshed WANs.[14]

- **Packeteer.** Packeteer is at an interesting juncture. It was the original WAN optimization vendor, but its original product — PacketShaper — predominantly focused on traffic management and quality of service (QoS). It has since acquired Tacit Networks, which provides the iShared platform for caching and protocol optimization. During the evaluation, it was still a two-box solution and, as a result, scored poorly on current offering. Our evaluation focused on iShared, which specifically lacked scalability, an integrated central management console, and a full set of optimization techniques. However, since the evaluation, Packeteer has launched iShaper, which combines both solutions in a unified WAN optimization appliance based on Microsoft Server technology. This strategy will not only close product gaps uncovered in this evaluation, but it also positions Packeteer extremely well for capitalizing on mainstream WAN optimization customers that are looking to Microsoft-integrated solutions. We also recommend Packeteer if you run hundreds or even thousand of apps across a WAN and need the capability to report at a detailed level across all of your remote sites.[15]

- **F5.** F5 jumped out to an early mindshare lead in WAN optimization with its acquisition of Swan Labs back in 2005. Since then, it has been busy working on integrating its WANJet technology into its TMOS architecture, which forms the basis of its flagship BIG-IP product. However, this leaves F5's current product in limbo. To achieve the full WAN optimization suite, both WebAccelerator and WANJet products are needed. Our evaluation predominantly focused on WANJet, which has an architecture that uses tunneling among devices and does not currently support disk for caching and compression. The upcoming TMOS-enabled version of WANJet will solve these integration woes as well as immediately provide higher throughput,

session scalability, device clustering, central management, and more advanced monitoring and reporting. This sets up F5 for a strong product down the road and will allow you to deploy WAN optimization as part of a larger application delivery technology that bolsters application security, performance, and availability.[16]

SUPPLEMENTAL MATERIAL

Online Resource

The online version of Figure 3 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings.

Data Sources Used In This Forrester Wave

Forrester used a combination of two data sources to assess the strengths and weaknesses of each solution:

- **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria. Once we analyzed the completed vendor surveys, we conducted several rounds of vendor calls where necessary to gather details of vendor qualifications.

- **Customer reference calls.** To validate product and vendor qualifications, Forrester also conducted reference calls with a current customer from each vendor.

The Forrester Wave Methodology

We conduct primary research to develop a list of vendors that meet our criteria to be evaluated in this market. From that initial pool of vendors, we then narrow our final list. We choose these vendors based on: 1) product fit; 2) customer success; and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave document — and then score the vendors based on a clearly defined scale. These default weightings are intended only as a starting point, and readers are encouraged to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve.

ENDNOTES

[1] According to Forrester's Business Technographics® May 2006 North American And European Enterprise Infrastructure And Data Center Survey, 56% of 715 IT decision-makers at North American enterprises said purchasing or upgrading disaster recovery capabilities is either a critical or important priority during the next 12 months — making it the top overall priority in North America. See the October 11, 2006, "Enterprise IT Infrastructure 2006 Adoption" report.

[2] To examine how Web 2.0 technologies are adopted and perceived by corporations, Forrester recently conducted an online survey of 119 CIOs at firms with 500 or more employees. They report a strong desire to purchase Web 2.0 technologies — blogs, wikis, podcasts, RSS, social networking, and content tagging — as a suite, as well as an equally strong desire to purchase these technologies from large, incumbent software vendors. Overall, 61% of respondents indicated that they would prefer both a suite solution and a large, incumbent vendor. Furthermore, this desire is only magnified among firms already using these technologies.

[3] Transaction times will vary widely depending on your organization's WAN. The key factors include the round-trip latency and underlying protocol. In our example, we used a Word document across a 2,000-mile WAN. To calculate 5 minutes, we can assume that a Microsoft Word document was fetched using the CIFS protocol that required 1,500 round-trip exchanges and 200 milliseconds of latency. This math (1,500 x 0.2 / 60) derives a 5-minute transaction.

[4] It's important to note that WAN optimization obviously can't change the physical characteristics of your network — a 256 Kbps link is still a 256 Kbps link. However, using compression and data indexing, fewer bits are used to represent the same volume of data, hence why it improves "effective" throughput.

[5] For the purpose of this evaluation, we defined "generally available" as functionality that was commercially available (non-beta features) and shipping to customers for revenue before the end of our evaluation period on March 30, 2007.

[6] Traffic management and compression don't mitigate the effects of latency; they only alleviate bandwidth constraints. However, caching and protocol optimizations can directly reduce the effect of latency. This is how organizations achieve the impressive five- to 50-times improvement.

[7] Juniper is another vendor in this space that acquired a WAN optimization vendor. Juniper purchased Peribit in April 2005. See the July 13, 2005, "Acquisitions Transform App Acceleration Market" report.

[8] View the vendor summary for more detailed analysis on how Riverbed fared in this evaluation. See the July 20, 2007, "Riverbed Technology Leads The WAN Optimization Appliance Market" report.

[9] View the vendor summary for more detailed analysis on how Juniper fared in this evaluation. See the July 20, 2007, "Juniper Networks Has The Best WAN Optimization Strategy" report.

[10] View the vendor summary for more detailed analysis on how Silver Peak fared in this evaluation. See the July 20, 2007, "Silver Peak Systems Provides The Most Scalable WAN Optimization Appliance" report.

[11] View the vendor summary for more detailed analysis on how Blue Coat fared in this evaluation. See the July 20, 2007, "Blue Coat Systems Adds Security And Control To WAN Optimization Appliances" report.

[12] View the vendor summary for more detailed analysis on how Cisco fared in this evaluation. See the July 20, 2007, "Cisco Systems Integrates WAN Optimization Into Your Existing Network Infrastructure" report.

[13] View the vendor summary for more detailed analysis on how Expand fared in this evaluation. See the July 20, 2007, "Expand Networks Looks To Partner And Embed WAN Optimization In Network Infrastructure" report.

[14] View the vendor summary for more detailed analysis on how Citrix fared in this evaluation. See the July 20, 2007, "Citrix Systems Automates WAN Optimization Deployments" report.

[15] View the vendor summary for more detailed analysis on how Packeteer fared in this evaluation. See the July 20, 2007, "Packeteer Provides The Deepest Application Visibility For WAN Optimization" report.

[16] View the vendor summary for more detailed analysis on how F5 fared in this evaluation. See the July 20, 2007, "F5 Networks Is Busy Integrating WAN Optimization With Application Accelerators" report.

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Headquarters

Forrester Research, Inc.
400 Technology Square
Cambridge, MA 02139 USA
Tel: +1 617.613.6000
Fax: +1 617.613.5000
Email: forrester@forrester.com
Nasdaq symbol: FORR
www.forrester.com

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