

## Application Acceleration Guide

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Network managers regularly have to suffer the sound of end users complaining that the network is too slow. However, what end users often do not understand is that it is generally the applications running over the network that are causing most of the delays.

There are solutions to this problem, whether the applications are running over the Internet or the WAN. Over the Internet, the answer is known as an Application Delivery Controller (ADC). These solutions sit in front of the server and tend to optimise Web-based applications for both employees of the business and its partners. And this is a growing market; for ADCs, Gartner research shows that the worldwide application acceleration market grew to \$1.2 billion in 2005, an increase of 36 per cent year on year.

The other option is a WAN optimisation controller. These are symmetrically deployed devices and as such, only work point to point for company employees. They turn the sluggish land of the WAN into a snappy world, similar in speed to the LAN. They work on a much wider range of applications, including online.

Both of these solutions can reduce the volume of data being sent across the network, the number of round trips being used by chatty protocols, congestion on the network, and the effects of packet loss and jitter on the traffic which result in retransmissions.

So all that is facing the network manager now is the decision on firstly, whether the company needs to optimise its WAN, its Internet connection, or both. And then, which company to choose?

### **Ratings:**

**1 Poor overall product range and vision – don't bother till things improve**

**2 Incomplete product range but with potential ability to pull it together - watch this space**

**3 Average product range, chugging along – worth considering**

**4 Very expansive product range, going places – add to the list**

**5 Top notch product and vision – buy me**

**Riverbed Rating: 4**

Riverbed is in the WAN arena only. This company, which announced it is set to IPO very soon, is probably one of the hottest companies in the WAN arena today. The only gap in its portfolio is QoS, but Neil Rickard, research vice president and enterprise networks analyst at Gartner, claims this functionality is on its roadmap.

This company claims it has been first to market with a lot of innovative technology. Its firsts include: first to market with a single product to solve bandwidth issues, transport protocol chattiness and application protocol inefficiencies, otherwise known as RiOS, the basis of Steelhead; first with chattiness reduction in the form of application streamlining; and first with TCP chattiness reduction, called transport streamlining.

With its Steelhead technology, Riverbed can optimise any application that runs over TCP, including applications like back up and replication. Other protocols the company covers include: CIFS; MAPI; HTTP; MS-SQL; NFS; and FTP.

Riverbed achieves this capability and functionality through: sending a reference of replicated data rather than sending the same data repetitively over the WAN, and when changes are made to the file, only the changes are optimised and sent while the remainder of the document is referenced as usual; using virtual windows expansion to reduce transport protocol chattiness; and to predict the conversations from chatty protocols, such as CIFS and MAPI, to reduce application protocol inefficiencies.

Through this optimisation, Riverbed says end users can expect up to a 95 per cent reduction in WAN utilisation and up to a 98 per cent reduction in WAN round trips.

Riverbed Steelheads start from £1,995.

Customers include Wildfowl and wetlands Trust, EA Games, Investor AB.

### **Cisco Rating: 2**

Cisco operates in both the WAN optimisation and application delivery controller arenas. The networking megalith has also formed an application networking services business unit, which is significant because it gives this industry some heavyweight credibility. For last year's Gartner Magic Quadrant for Application Delivery Products, 2005, Cisco moved into the bottom of the 'Challengers' section, bordering 'Niche Players' and not rising high due to a potential lack of ability to execute.

Cisco's Application Networking Services (ANS) product portfolio is built on data centre and wide area application services, plus Application Oriented Networking (AON), which it hails as the next generation of application acceleration.

AON puts intelligence in the network at a whole new level. This is not just about optimising applications to make the network operate faster; this is doing application-level translation, with XML and other message processing engines embedded within the network.

However, Gartner's Rickard noted two main problems with AON. The first is that to implement AON, enterprises need to make large architectural shifts as AON requires enterprises to look at how applications talk to each other today, and how they want them to talk in the future.

The second problem is that Cisco has not done well in today's technology. It is good on the application delivery controller side, through its acquisition of FineGround, with the Application Velocity System (AVS) part of ANS. Yet in the WAN space Cisco has bits of legacy products which are not integrated, and not a complete portfolio, Rickard says.

Yet Cisco's ANS portfolio works with any application an end user might need regularly, including: Microsoft; email; CRM and ERP; portals; software distribution; and rich media. It does this using a mixture of techniques, such as: latency reduction through intelligent proxy; compression; and caching.

Cisco claims that its application delivery services solutions typically see between 200 and 500 per cent performance gain, while there is also an 80 to 90 per cent utilisation of bandwidth.

A test bed installation of Cisco's products will cost from \$10,000 to \$20,000, while a production system is \$20,000 to ultra large enterprise; in other words, a lot more money.

Customers include PSA Peugeot-Citroen, Royal Mail UK.

### **Juniper Rating: 3**

Juniper is working with WAN optimisation (WX platforms) and application delivery controller (DX platforms) products. This company has acquired its way into both spaces, with Perebit on the WAN side and Redline on the other, and in Gartner's Magic Quadrant for Application Delivery Products, 2005, it found itself sitting in the 'Visionaries' quadrant, close to the 'Leaders' space.

Juniper's DX platforms accelerate and improve: web page download times; server capacity; availability of data centre resources; and simplify data centre architecture. The WX platforms (plus versions of the WXC platforms that are identical to the WX platforms, with the exception of onboard hard drives that allow them to record, retain and recognize longer data patterns over longer periods of time): reduce WAN bandwidth; improve response times; increase application control; and provide WAN and application visibility.

The WX application acceleration platforms help any TCP-based application, plus MAPI, CIFS and HTTP. Other types of delay sensitive, non-compressible applications such as VoIP and video can benefit from the WX platform's QoS feature. Any web-based application, such as web-enabled versions of traditional client-server applications including SAP, PeopleSoft and Lotus Domino will benefit from the DX application acceleration platform.

Rickard says the problem Juniper has is the lack of synergy between its recent and its previous acquisitions. As a result, Perebit has lost momentum in the marketplace and has a result been overtaken by the likes of Riverbed. Redline was originally aimed at smaller environments but Juniper's DX application delivery controller platforms are aimed at the larger business.

Juniper claims its WX and WXC platforms can increase WAN capacity by up to 50x and accelerate application performance up to 10x. It says the DX platforms double the performance of Web-based applications and increase server capacity by up to four times.

The price for DX platforms start from \$14,995 to \$49,995, and the WX Platforms range from \$1,995 to \$12,995.

Customers include: Cathay Pacific, London Underground, Fingleaves.com.

### **Expand Networks Rating: 5**

Expand Networks works in WAN optimisation only, and it excels in this area. It is known as one of the stronger players in this marketplace, with comprehensive functionality and is still relatively successful against the backdrop of newcomers to the market.

Its Compass hardware platform solution works across all typical transport networks, with additional benefits in MPLS and satellite networks. Expand's Compass platform is available in all the Expand hardware solutions, known as Accelerators. Although there are several

deployment options available, the Accelerators typically sit as close as possible to the LAN-WAN demarcation point. From this vantage point, all WAN traffic is visible and full optimization of the WAN is possible.

Expand will accelerate: TCP/IP-based applications; HTTP; HTTPS; FTP; DNS; Citrix and some other server-based applications; and voice. The company claims any and all products, including some non-IP traffic within some of its products, can be accelerated.

It achieves this through: acceleration on the protocol and specific application level; management and visibility; WAFS acceleration; CIFS acceleration; security; and WAN optimisation through QoS and compression.

Expand's clients report that on average, across all applications and traffic, they see an improvement on throughput of 400 per cent, with peak values often hitting above 1,200 per cent. On average, clients stated they have seen a 500% improvement on response time.

Expand's Small Office product line starts at \$1,995, the Regional product line starts at \$8,995, and the Datacenter product line starts at \$12,995.

Customers include: HSBC, Citigroup, BMW, Siemens, World Health Organisation.

### **Packeteer Rating: 3**

Packeteer was at the forefront of WAN optimisation a decade ago with traffic shaping, yet lost ground to competitors in recent years. It has been trying to make up for this, however, and now only lacks WAFS.

Packeteer's products are deployed as appliances. Its product range is based on the PacketShaper product line, for enterprise and WAN links and service providers. It also has the SkyX Accelerator for data centre-to-data centre, IPV6 environments, and for remote users such as VPN and Satellite.

Packeteer focuses on network congestion and QoS through prioritisation. However, it launched new software for its PacketShaper boxes for bandwidth optimisation in April. These products, the result of Packeteer's acquisition of Mentat in 2004, allow the company to fix latency issues raised by TCP/IP and HTTP as add-ons to version 8 of PacketShaper.

Packeteer's product range capabilities include the ability to reduce the following: traffic volume; chattiness; delay; and retransmissions.

Applications that Packeteer optimisation technologies work with include: web applications; XML and web services-based business applications; VoIP; file transfers; data centre consolidation and server replication; transaction-oriented client and server applications; thin client applications.

The techniques the company uses to do this include: caching; compressions; congestion elimination; latency reduction; local acknowledgement; rate control; active tunnelling; XTP & SCPS; adaptive response; and dynamic traffic flow provisioning.

Customers can expect speed gains on the network of up to 100x, Packeteer states.

The cost of Packeteer's PacketShaper starts at US\$2150 and runs up to the top line PacketShaper for gigabit data centres and Internet links, with prices there starting at \$36,000.

Customers include: Ernst & Young Australia, Logitech, J. Walter Thompson.

### **Allot Communications Rating: 2**

Allot is an old traffic shaping hand in this industry, working in the WAN optimisation area. Allot moved into the service provider and network optimisation marketplace in a big way. Rickard says Allot still concentrates its efforts in the service provider arena, although it does sell to the enterprise space.

Allot does not accelerate traffic specifically; it works on quality of service, based on traffic management devices. Allot designs solutions to manage IP flows, contention on the network, and competition between applications. On the latter, it protects and prioritises mission critical applications, controls and limits recreational applications, and detects and stops dangerous traffic.

Allot's products are: NetEnforcer, which is the traffic management appliance. It contains a deep packet inspection engine and a QoS, patented per flow queuing engine for traffic control; and NetXplorer, which is a centralised traffic policy and traffic reporting management platform that interacts with each of the NetEnforcers deployed in the network.

Its solutions are application-agnostic; the main focus is to prioritise key applications. Allot performs: per flow queuing; rate control; and TCP window size management to offer generic bandwidth allocation control for any content using IP.

As Allot does not specifically accelerate traffic, but instead optimises the bandwidth use, no speed increase or improvement statistics are available.

Price ranges from \$3,900 for an entry level solution to the other end of the portfolio, at \$98,400.

Customers include BT Unite, Starbuck Coffee USA, American Express USA, Dixons Retail.

### **F5 Networks Rating: 5**

F5 is storming ahead of the field in the application delivery controller space with its product, Web Accelerator, and its major traffic shaping product, BIG-IP. F5 is also in the WAN optimisation arena with its WANjet product, through its acquisition late last year of Swan Labs. F5 is now at the top of the 'Leaders' section of Gartner's Magic Quadrant for Application Delivery Products, 2005.

This company acquired Swan Labs to get it into the WAN space. However, the momentum with Swan has not been sustained since it joined F5, Rickard states. The two product ranges may begin to blur however, as the Swan Labs WAN optimisation controllers are integrated into BIG-IP, and WAN and application delivery controller functionalities are finally available in one box.

Web Accelerator, which can be deployed as a stand-alone product or as a module on BIG-IP, will benefit customers that use Oracle, Siebel, Sharepoint, Outlook Web Access, Plumtree, BEA Weblogic, IBM WebSphere, and other application servers. Applications that will benefit from Web Accelerator include: those that have many dynamic pages that are serving static objects which cannot be cached; those that serve many small objects over high latency lines; and those that are serving large PDFs.

F5's Web Accelerator achieves this by: browser behaviour control; content acceleration; HTTP protocol optimizations; TCP protocol optimizations; multiplexing of browser connections; making non-linear documents linear; compression of dynamic and static data; and caching of dynamic and static data.

On one F5's high end products there is a scripting language, so users can write their own scripts to optimise applications, and then can submit those scripts back to F5 for potential inclusion in the standard product.

Networks can improve using Web Accelerator by 100 to 500 per cent, the company claims.

Web Accelerator costs \$62,995 as a stand alone product; \$62,995 times the number of Web Accelerators deployed when in a cluster implementation; or under \$25,000 when deployed as a BIG-IP module.

Customers include British Land, Epson.com

### **Citrix Systems Rating: 5**

Citrix recently acquired NetScaler, which has a very nice application delivery controller product. This joining is interesting as Citrix was used as a way to optimise the WAN itself. The acquisition has moved Citrix into the 'Leaders' section of Gartner's Magic Quadrant for application Delivery Products, 2005.

Netscaler has really put Citrix on the map. With some seriously innovative work, such as the ability to integrate SSL VPN and application delivery solutions, Citrix can use optimisation technologies for all TCP/IP-based applications, as can F5.

Citrix is a high performer with broad capabilities in the data centre. Its NetScaler solutions combine the features and functions of traditional data centre point products, including: load balancing; caching; compression; SSL acceleration; attack defence; and SSL VPN.

The Citrix NetScaler Application Accelerator uses multiple TCP optimisations to enhance the performance of network and server infrastructure. The Application Accelerator includes the Citrix AppCompress technology, which delivers compression capabilities to improve end user performance, reduce bandwidth consumption, and offload servers.

Additional product options provide further application performance acceleration and server optimisation and offload. These include: AppCompress Extreme, which delivers differential compression for Web-based applications; and AppCache that speeds content delivery to users by providing fast, in-memory caching of both dynamic and static HTTP application content.

Citrix NetScaler Application Accelerator is a high-performance application delivery system that accelerates applications by an average of 15 times.

Costs range from \$15,000 to \$120,000.