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How to Make Your WAN a Fast Lane: One Company's Story

– David Bennett, CIO

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As associate director at Linklaters, David Bennett is responsible for the WAN and reports into the CIO as the head of (ISS) Information Systems and Strategy development. He shared a case study of the firm's recent WAN revamp with CIO.com

Linklaters is one of the largest law firms in the world, operating in more than 30 locations in 23 countries, advising companies, financial institutions, and governments. The firm's 540 equity partners and 2,000 lawyers cover 18 core practice areas, including capital markets, competition and antitrust, tax, mergers and acquisitions, intellectual property and technology.

As a global company with global clients, Linklaters' IT department was tasked with an enormous objective: to ensure that information can be accessed by our employees anywhere in the world with consistent performance and reliability. For security, cost and management reasons, all of our information is housed in four data centers, housed in Atlanta, Hong Kong and two locations in the UK.

Linklaters determined that a thin-client desktop architecture was the best way to minimize expenditures while maximizing application performance to all of our offices. With virtualization, we can guarantee consistent global support while reducing overall desktop and maintenance costs. About a decade ago, we therefore embarked on a major rollout of [Citrix](#) (formerly presentation server, now XenAPP) to all Linklaters employees.

Citrix performance in offices is directly impacted by the performance of the WAN. As the size of each office grows, so has the cost involved in delivering consistent and reliable performance to users. This has been particularly difficult in those locations in Asia and Latin America where WAN links are the longest and the worst quality.

Over time, Linklaters has experienced enormous growth in the sheer volume and size of documents that were being created and shared. Our document management system currently stores around 9 million documents with 30 million versions. With the increase of about 10,000 documents or versions a day, it's extremely difficult to keep pace with the volume of data that must be stored and shared using a variety of core business applications, including EMC Documentum, SAP, and Microsoft Office.

Compounding our challenges was a shift in the type of data being sent across the WAN, with an increased emphasis on real-time traffic. Our lawyers began using video and multimedia increasingly, which placed added demands on our network infrastructure. We saw a constant

increase in Internet usage as our employees used more rich-media sites such as MSN, CNN and [Lexis-Nexis](#). The firm is also gradually migrating from a mixed PBX environment to one built around [Cisco's](#) IP telephony offering.

The above trends made it extremely difficult to implement a successful disaster recovery plan. With a thin-client architecture, we did not have to worry about backing up remote offices. But we wanted to ensure that all data centers were protected in near real-time, with failover capabilities between them. We had some of the most sophisticated tools in the industry to achieve this objective, such as [EMC's](#) SRDF application. These tools required dedicated and cost network lines to support the replication.

Taking A Long, Hard Look at the WAN

Linklaters took a long hard look at all of our applications to determine how best to overcome our scalability and performance challenges. We acknowledged that there was a need for more bandwidth, but the upgrade process had to be better controlled.

At the same time, we recognized that more bandwidth would not solve all of our problems and is extremely costly. Network quality, not bandwidth, was the main reason why our VoIP and Citrix traffic was not living up to our expectations. We quickly came to the conclusion that we needed WAN optimization.

The IT team decided to take a comprehensive look at what we determined were the leading WAN optimization vendors at the time, which initially led us to products from [Cisco](#), [Riverbed](#), [Silver Peak Systems](#), [Blue Coat](#), and [Citrix](#). Because we were using [Packeteer](#) for traffic shaping on our VoIP traffic, we decided to see if they too could meet our broader WAN optimization requirements (this was before Packeteer was acquired by Blue Coat.)

We were quickly able to pare down this list when we could not get Cisco and Citrix to work in our evaluation scenario. Bluecoat and Packeteer were also eliminated since both lacked performing disk-based deduplication for Citrix, which we thought was critical given the repetitive nature of our WAN traffic. Our employees send thousands of versions of the same documents back and forth, much of which is identical. We therefore quickly established that deduplication would have a significant reduction in our WAN bandwidth.

That left Riverbed and Silver Peak Systems, which we moved into live production tests over a several week period. We evaluated these products on a primary WAN connection between our Hong Kong and UK data centers. Then, they went to a live test in our Bangkok office, which has more than 30 attorneys.

While both Riverbed and Silver Peak Systems performed well on a variety of different applications, the real difference came down to the Citrix application. Silver Peak optimizes this traffic while Riverbed did not. Silver Peak has an enormous impact on Citrix's reliability across the WAN; in addition, once we turned off compression and encryption on our Citrix servers, Silver Peak was able to dedupe our Citrix traffic. Its performance with Citrix was a pleasant surprise to us as other WAN optimization vendors told us they could not dedupe Citrix traffic due to its low latency requirements. With Silver Peak, we are seeing 7GB Citrix sessions reduced to 3GB on the WAN, which is an average reduction of 56 percent.

Linklaters believes that Silver Peak's products and roadmap best align with our overall business strategy. Silver Peak's network layer approach to WAN optimization gives us a sense of confidence that we can optimize any applications we want, as evidenced by its ability to handle our Citrix, VoIP and EMC SRDF traffic. In thinking about the future, we did not want to worry about which applications would be supported across our WAN and which would not. Silver Peak's

solution combines WAN optimization with traffic shaping. In addition to deduplication and packet loss correction, they provide robust Quality of Service (QoS) capabilities that obviate the need for separate Packeteer products in the Linklaters network.

Rollout and ROI Results

We bought Silver Peak NX appliances through a trusted reseller partner, Response Data Communications. They partnered closely with us during the testing and subsequent implementation phases.

Deployment involved shipping the Silver Peak appliances to all of our sites around the world. Local engineers racked and stacked them, and we configured them locally using Silver Peak's Global Management System (GMS). It was a very quick rollout from our point of view—about two months—and it began to pay dividends immediately.

We are seeing the following benefits:

1. Faster and more reliable Citrix performance, even to remote offices in Latin America and Malaysia. This has enormous benefits across the entire organization, including better access to shared knowledge resources and faster printing
2. Sixty-five percent improvements in average WAN bandwidth utilization. This has helped us to delay (or in some cases avoid) bandwidth upgrades in several Linklaters offices.
3. More responsive Internet and Intranet browsing, including faster downloads of multimedia traffic.
4. Toll-quality voice calls using our VoIP infrastructure. This has helped Linklaters standardize on a single IP-based telephony platform for significant cost and management savings.

Today, WAN optimization is critical to our business. Our employees have grown accustomed to the performance they are receiving, and we have grown accustomed to having a WAN infrastructure that supports our key IT and business objectives.