

Real Customers, Real Results!

Using WAN optimization to Accelerate, Optimize, and Simplify Distributed Computing

In business today, even the smallest companies often have 2 or 3 offices. Sometimes they are in the same city or the same state, but they might be across the world. Larger companies might have 10, 500, or 5,000 branch offices to manage and monitor.

With business constantly reaching out to new locations, how do you enable your distributed employees to communicate, collaborate, and report back on what's going on? Of course, that's what your applications and your network infrastructure are for – but are they really meeting your performance needs?

If your organization is like most, everyone says that IT infrastructure is either too slow or costs too much to manage. Employees expect better response time, and executives are pressuring the IT team to cut costs at the same time by consolidating servers or reducing bandwidth costs. This seems like a no-win situation, doesn't it?

Well, it doesn't have to be. Companies of all sizes – from all over the world – have been using Riverbed WAN optimization solutions to dramatically accelerate the performance of applications across their wide-area networks. With this solution in place, applications can go up to 100x faster. That type of performance enables your organization to work as if everyone were in the same room. Take a look at these common results:

- **Any application** – including email, Web apps, large design files – can be shared across the world in seconds instead of minutes or hours
- **Consolidation becomes a reality** – without impacting the productivity of your branch users
- **Backup and replication can be completed in 1/10th of the previous time required** – ensuring your business can respond quickly and more reliably in the face of disaster.
- **Bandwidth upgrades are pushed out** – optimization of current bandwidth lets you push out upgrades, potentially for years.

WANT TO LEARN MORE?

Attached are 4 enlightening case studies about very different organizations that have used Riverbed® to optimize their applications and infrastructure in different ways. These case studies will show you how to do the same thing to your environment. Your executives will be impressed when you make the impossible, possible. Let Riverbed show you how.

LIZ CLAIBORNE INC

IN BRIEF

Industry

- » Retail (Consumer Goods)

Challenges

- » Accelerate application performance for a globally distributed workforce
- » Ease the transition to centrally-deployed applications
- » Make WAN-based backup more effective

Solution

- » 37 Steelhead® appliances deployed across North America and Asia
- » 60+ installations planned across Europe and South Asia

Benefits

- » 20x to 40x application performance increases
- » WAN backup windows cut from 16 to just 6 hours
- » Bandwidth use cut by over 80%

Riverbed Steelhead Appliances Deployed by a Global Retailer to Improve Employee Productivity, Centralize Applications, and Ease WAN-based Backup

Liz Claiborne Inc. designs and markets an extensive range of branded women's and men's apparel, accessories and fragrance products. The company has a diverse portfolio of quality brands that are available domestically and internationally via wholesale and retail channels. Popular globally-known brands in the Liz Claiborne portfolio include DKNY, Kenneth Cole NY, Kate Spade, Mexx, and Monet. The more than 40 brands in the Liz Claiborne Inc. portfolio are available at over 30,000 points of sale worldwide.

Liz Claiborne (www.lizclaiborneinc.com) has locations across the globe, including distribution centers, and management, sales, finance, and operations offices. Sites are located in North America, Eastern and Western Europe, the Middle East, India, China and Southeast Asia. The business is expanding in Europe, the Middle East, and Asia due to both acquisition and natural growth. To accommodate that growth and integrate worldwide business operations, the company sought to deploy both custom applications designed for the global retail business and improve response times of existing applications such as their ERP application, and Microsoft Office, Exchange 2003, CommVault backup and SharePoint, over the wide area network (WAN).

Challenge: Enabling Employees To Be Productive, Wherever They Are

Liz Claiborne is in a period of immense change. As recently noted to the financial community in its earnings announcements, Claiborne is "committed to strategic acquisitions as part of our growth

"It's critical that all our employees – no matter where they are – can access the key files and applications they need to get their jobs done."

strategy." Yet, an aggressive growth strategy presents challenges for maintaining a high level of worker productivity. "Our organization is very much a distributed organization. We have sales, finance, operations, and marketing professionals all over the world. With our successful growth strategy in place, it's critical that all our employees – no matter where they are – can access the key files and applications they need to get their jobs done," noted Gary Williams, Director of End User Computing. "We started to notice performance issues due to chattier applications and larger data, both domestically and internationally. It would take many, many minutes to simply access a 1 Megabyte or larger financial spreadsheet or other standard office document."

Rakesh Patel, Technical Architect, continued, "In addition, we were seeing potential performance issues crop up across many of our important applications, not just files. SharePoint document management, Exchange email, CommVault backup, ERP, and finance applications all were not performing up to our expectations over the WAN. And given that strategically we wanted to move to more centralized applications, we knew we needed to address these WAN application performance issues."

Liz Claiborne maintains a central data center in North Bergen, New Jersey, and regional hubs in New York City, Santa Fe Springs, California, Hong Kong and Amsterdam. Some applications, such as the company's ERP and finance

applications, are centralized, while others, including email and backup, are located in regional hubs. The Liz Claiborne network could see latency as high as 350 - 400 milliseconds from New York to Hong Kong, or just 3 - 5 milliseconds between New York City and nearby North Bergen, New Jersey, generally with T1 or less bandwidth capacity to branch offices. With this wide range of conditions, Liz Claiborne faced a big challenge in improving performance for all of their users.

"It used to take 10 or 20 minutes to download a large file in New York from our New Jersey datacenter. Now it just takes 30 seconds."

Solution: Steelhead Appliances Overcome Network Limitations

Williams and Patel, with their colleague Bob Czukkermann started testing WAN optimization products as a solution to these performance problems. Czukkermann, supervisor of server infrastructure, noted, "It was important to find a product that would provide great performance, and would integrate well into our global Cisco network."

"We did extensive evaluation of solutions from Riverbed, Cisco Systems and Tacit Networks (acquired by Packeteer)," continued Czukkermann. "We chose Riverbed over the competition. The Steelhead appliance was able to optimize all of our important applications and delivered the best performance over our global Cisco network. It was also the easiest to deploy and manage."

Steelhead appliances cut WAN-based backup windows from 16 hours to just 6 hours. "This enables us to do more frequent, more reliable backups."

Patel commented, "Cisco and Tacit offered solutions that were WAFS-only caching products. While accelerating file transfers is important, our needs were much broader than that. By using the Riverbed solution we can accelerate not only files, but also our ERP applications, finance applications, email, and even WAN backup tools."

Czukkermann added, "Riverbed was also easy to deploy. It now takes us less than 10 minutes to get a site up and running with a Steelhead appliances, including time for testing. The boxes are shipped pre-configured by Riverbed. Our technical staff and a user in the remote site manage the process in a single phone call. Riverbed has made deployment to sites across the global painless."

Benefits: Faster Applications, Easier WAN Back-up, and More Productive Users

Riverbed Steelhead appliances have enabled Liz Claiborne's employees to maintain a high level of productivity as the organization expands across the globe. Czukkermann noted, "It used to take 10 or 20 minutes to download a large file in New York from our New Jersey datacenter. Now it just takes 30 seconds."

In addition, the team noted that its CommVault WAN-based backup windows were cut from 16 hours to just 6 hours. Patel commented, "This enables us to do more frequent, more reliable backups. We also don't need to burden local staff to do tasks like swapping tapes. It's a win-win situation for the business, the end users and the IT team alike."

Patel also discussed the benefits that Steelhead appliances had on new application rollout and bandwidth utilization. "While saving bandwidth was not a primary goal of this project, it was a happy consequence. Overall, we've seen an 80% reduction in bandwidth utilization. For example, on one particular T1 connection, we're getting the throughput equivalent to 12 Mbps. That's an 8x capacity increase with no additional cost to us. That allows us to deploy our custom applications centrally and enable them to be reliably used worldwide."

Gary Williams added, "We have a transition going on where we are shifting to applications that are more suited to our global approach. But these applications are affected by both latency and bandwidth limitations. Without Riverbed, this transition would be painful, as centralized deployments couldn't meet the performance requirements of our users."

When you deploy the Steelhead appliance, our workers can do their jobs faster. You don't need a spreadsheet to see how good Riverbed's product is for the organization.

Return on Investment

Williams discussed return on investment and justifying the Riverbed Steelhead appliance purchase within Liz Claiborne. "There are many different benefits to this product. Faster applications, the ability to centralize applications, shorter backup windows, and even reductions in bandwidth utilization factor into the equation. Many organizations would take all that and create some kind of ROI quantification."

“But for us, the ROI justification was much easier than that. When you deploy the Steelhead appliance, our workers can do their jobs faster. If you turn the device off, the number of complaints goes up, user frustration goes back up, and productivity goes down. You don’t need a spreadsheet to see how good Riverbed’s product is for the organization.”

Future Plans

Liz Claiborne has already deployed 37 devices across North America and Asia. Given the success of this first phase of the project, the organization is now considering a rollout of 60+ additional devices across Europe and South Asia.

SUMMARY

Currently in a period of fast growth, Liz Claiborne wanted to make sure that its global workforce was as productive as possible. Application performance over the WAN was a limiting factor across the world.

After extensive testing, Liz Claiborne decided to deploy Riverbed Steelhead appliances across its global Cisco network. The organization saw application acceleration from 20x to 40x faster, and backup windows cut from 16 to just 6 hours.

In addition, Steelhead appliances enabled high performance globally from centralized ERP and finance applications.

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IN BRIEF

Industry

- » Manufacturing (Automotive)

Major Issues

- » Reducing the cost of operations
- » Improving data security
- » Making the level of service more uniform

Solution

- » Riverbed Steelhead Appliance

Results Obtained

- » TCO savings of 1,000,000 yen per month
- » Access performance comparable to that of a LAN, through a 90% reduction in WAN traffic
- » Improved data security through centralized management
- » Improved availability

3TB File Server Consolidation Project Completed With the Riverbed Steelhead Appliance

Realizing a cost savings of over 12,000,000 yen per year through WAN optimization, with improved data security and improved availability

Mitsubishi Motors Corporation, Ltd. ("Mitsubishi Motors") was aiming to further increase its competitive strength by consolidating its information systems at key locations within Japan. As part of this effort, in 2005 they consolidated a total of 50 Windows NT-based file servers (5000 users) at three locations whose hardware maintenance contracts had expired, replacing them with a single EMC Celerra NS series. By introducing the Riverbed Steelhead appliance, they were able to provide end users with performance comparable to that of LAN access and reduce WAN traffic by over 90%. They also strengthened data security, centralized management, enabled a large reduction in TCO, and improved availability.

Issue: Consolidation of Windows NT-Based File Servers Distributed At Three Locations Into One Location Without Loss of Performance

At Mitsubishi Motor's main locations within Japan, namely, the Mizushima factory, the Power Train factory, the passenger car engineering center, and headquarters, a total of about 1000 servers of various types are in operation. Most of them had been introduced and were operated by individual

The issue was company-wide consolidation, including TCO reduction, unification of management fundamentals and service levels.

departments, and therefore there was a lot of room for TCO savings. Their consolidation had become a company-wide issue, including items such as unification of management standards and service levels.

Just at that time, during 2005, in three locations in the Kansai region, there were about 50 Windows NT-based file servers

whose hardware maintenance contract periods had expired, and the Mitsubishi Motors IT planning department decided to consolidate the servers when they were replaced.

"In our company, the operations management of servers is outsourced, and the maintenance contract fee depends on the number of servers. So in order to lower the cost, it was necessary to reduce the number of servers by consolidating them. It was also an urgent matter to consolidate the servers in order to enable centralized management. Doing so, we could unify access rights management, which was handled differently in each department, as well as the backup management standards, and thereby strengthen data security," said IT planning department expert Yasuhiro Nishikawa.

Solution: The Riverbed Steelhead Appliance

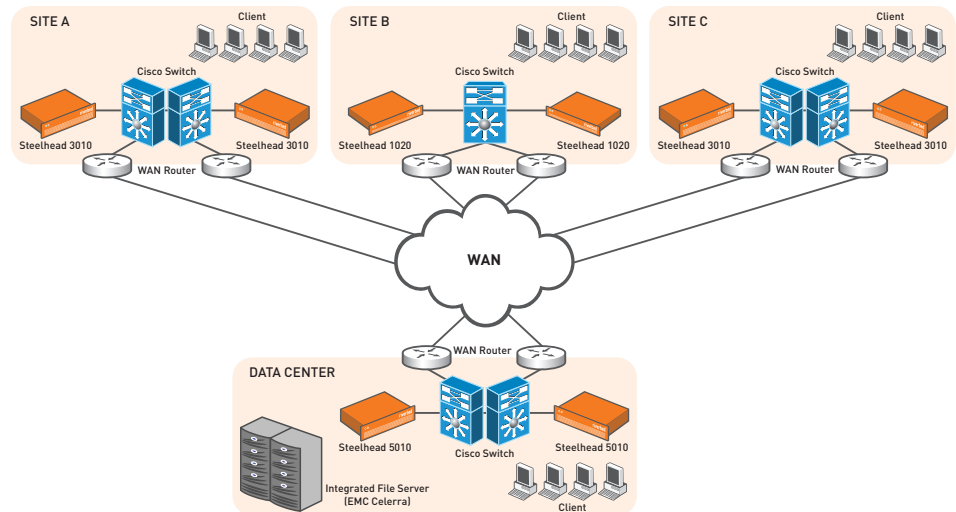
As it took steps towards server consolidation, the Mitsubishi Motors IT planning department initially worried that inter-regional consolidation using CIFS over a WAN would not provide satisfactory user performance, so they formulated a plan that included both consolidation between key locations, and separate consolidation at each location. However, after they saw the Riverbed Steelhead appliance at the 2005 Data Storage Expo, they decided to combine the servers at the three key locations in the Kansai region into one. Mr. Nishikawa of the IT planning department explains what happened at that time as follows: "At first we didn't have high hopes for the results that WAN optimization

We decided to use the Riverbed Steelhead appliance, which enabled consolidated servers with superb performance.

solution could produce. However, we borrowed a test machine to try out the Riverbed Steelhead appliance, and when we tried out applications under conditions similar to those of actual usage environments, the performance was superb, and we came away with a whole new perception of it. At that point we decided to unify the servers across key locations."

However, while consolidating servers across regions with WAN optimization solution, the Mitsubishi Motors IT planning department still had to provide a service level that met the stringent requirements of end users.

Mitsubishi Motors Deployment Architecture



Mr. Nishikawa speaks openly of the difficulties prior to introduction: "WAN-optimized equipment was an unknown technology in our company, so at informational meetings for users, the questions concentrated on the issue of whether performance could really be guaranteed." In order to answer such criticisms, the IT planning department performed repeated simulations addressing that issue, and what would happen if they performed consolidation using the Riverbed Steelhead appliance. They carefully verified that it would be possible to consolidate using the existing bandwidth. Again, when the actual layout of the Riverbed Steelhead appliance and the server design were decided, the IT planning department, before the fact, conducted a detailed investigation of the number of sessions and the amount of data to be transferred.

This task was given to Mr. Hideo Okada, the chief of the third engineering department in the technology headquarters of MCOR Co., Ltd, who recalls the difficulties of that time as follows: "We investigated the amounts of data on all the file servers at the time, the traffic, and the amount of data transmission, to decide on the specification. This study would decide whether to consolidate servers across locations, so we were very nervous."

Before using the Riverbed Steelhead appliance, Mitsubishi Motors also did comparisons against competing products. Along with performance, factors that led to the choice of Riverbed included the wealth of compatible protocols and applications, cost performance and a strong support structure. Junichi Tomita of the IT planning department, who was responsible for the planning, described an episode in which "a product competing with Riverbed was unable to open some application files that are essential to our company."

In this way, after various investigations, the final specification put together by Mitsubishi Motors was to consolidate about 50 Windows NT-based file servers (3.5 TB) at three key locations in the Kansai region into a single EMC Celerra NS series NAS, and use the existing wide-area network (10 to 60 Mbps) to establish a CIFS connection between the key locations via the Riverbed Steelhead appliance. Mitsubishi Motors uses two SH5010 machines, four SH3010 machines, and two SH1020 machines.

Transition work on file servers at each location began in May 2006, and by November 2006, all the data at said locations was stored in the EMC Celerra NS series.

Since that time, minor adjustments have been made, such as in the settings for administrative rights that are not suited to use the increased speed provided by the Steelhead appliance, individual processing of certain high volume files, and the transition to daily business operation has been implemented without problem.

Effect: Major Reduction in TCO, Enhanced Data Security, and Improved Availability

At Mitsubishi Motors, now using the Riverbed Steelhead appliance to consolidate servers across regions, they have been able to achieve their initial goals, namely, a great reduction in application cost, improved data security through centralized management, and a great improvement in availability.

"With the TCO conversion, we are saving over 1,000,000 yen per month, and in addition, centralized management has strengthened data security. Service levels, which previously varied at each location, have also improved," said Mr. Nishikawa.

With the TCO conversion, operating costs have reduced by 1,000,000 yen or more per month. Also, performance comparable to that of LAN access was achieved due to a 90% reduction in WAN traffic.

Also, by using an active standby redundant structure in which two Steelhead appliances are continuously in operation, reliability has greatly improved. Together with the next-generation consolidated storage environment, high availability has been realized.

"In the environment prior to consolidation, there were applications that, separately from the file servers, used CIFS, so WAN access had become heavy, and we were asked whether that situation could be improved. Now,

with consolidation that uses the Steelhead appliance, we've seen a dramatic increase in speed. We haven't researched each user individually, but it appears that user satisfaction in general is extremely high," noted Mr. Nishikawa.

Future Prospects: Further Server Consolidation Involving Overseas Locations and the Addition of Applications

With the successful completion of this consolidation project using the Riverbed Steelhead appliance, the Mitsubishi Motors IT planning department has great confidence in server consolidation across regions. Mr. Tomita, who worked on this project, gave a positive analysis: "There are several minor issues, but overall, the choice of server consolidation with the Riverbed Steelhead appliance was a good one. We plan to continue with this method in carrying out future server consolidation."

The Mitsubishi Motors IT planning department has introduced the Riverbed Steelhead appliance into the environment for server consolidation at headquarters, which had been started before the server consolidation across the three key locations in the Kansai region. In addition, it is now looking into using the same method for further consolidation, such as for CAD applications and mail servers that are currently running separately within each location, and file servers at key overseas locations.

The Riverbed Steelhead appliance is set to play an ever-increasing role in providing a more efficient IT strategy for Mitsubishi Motors.

ALSTOM

IN BRIEF

Industry

- » Energy & Transportation

Challenges

- » Improve application performance to remote sites
- » Enable consolidation and centralisation of IT infrastructure
- » Overcome bandwidth and latency limitations affecting some applications

Solution

- » 22 Steelhead appliances now deployed globally

Benefits

- » Bandwidth utilisation reduced by 8x
- » Application performance improved by 3x to 4x
- » Payback in 3 months
- » Improved quality of service to remote users
- » Centralisation of servers resulting in reduced cost and ease of management

Riverbed Steelhead Appliances Enable Global Power Organization to Consolidate IT Infrastructure

In the world of power generation, one in four light bulbs worldwide is powered by electricity generated through ALSTOM-made equipment, including turbines, alternators, boilers, and combined-cycle power plants.

ALSTOM (www.alstom.com) is the world leader in hydroelectric equipment (with references such as the Itaipu dam in Brazil and the Three Gorges in China), combined-cycle electric power plants, energy production services and environmental control systems. ALSTOM works with all energy forms and is a leader in environmental protection reduction of CO2 emissions, and of nitrogen oxide emissions.

ALSTOM is a major worldwide player in equipment and services for power generation and rail transport. They are present in 70 countries and have 90,000 employees. Almost 90% of the Group's turnover £14B is achieved outside of France.

Challenge: Reduce Operating Costs by Consolidating and Centralizing IT Infrastructure

ALSTOM needed to reduce operating costs by consolidating and centralizing their IT infrastructure whilst maintaining an appropriate level of service to the end customer.

Their goals included:

- Consolidate applications and servers (including Lotus Notes)
- Centralise backup
- Facilitate management and improve information security and control of services
- Reduce costs

With 50 major sites in the UK and numerous sites worldwide, the demands on the network were high in terms of capacity and bandwidth. An MPLS network had been implemented, but performance improvement was still limited at some remote sites.

“The appliances were very easy and took less than half an hour to install, with less than a minute downtime to end users.”

Some services, initially Lotus Notes, had been consolidated from remote offices to the UK Data Centre, but this reduced performance to end users. There were many end user complaints due to a decrease in performance, and initially there was no immediate remedy to solving the problem.

There were also limitations of available cost-effective bandwidth. The ratio of data that sits on a hard drive can seem disproportionate compared to WAN bandwidth availability.

Some of the remote offices resided in difficult physical locations where implementation of a high capacity infrastructure would have been very expensive and complex, and would have taken a long lead time to implement.

Network latency was affecting some applications as some of their applications were not designed for a WAN. They knew couldn't resolve this problem just by extending the network, as it wasn't just about adding bandwidth.

Solution: Steelhead Appliances Overcome Network Limitations

ALSTOM looked at various options to address their network issues and decided to investigate the technology from Riverbed and two other competitors for a WAN optimization solution.

The initial proof of concept (POC) was between their main data centre and another UK site. The trial of the three vendors' products was carried out over a 12 week period to ensure that a thorough analysis had taken place.

The products were tested with applications in use between the 2 sites, and performance improvements were visible statistically from the devices themselves and also from external measurements to confirm that they were achieving what they were showing. HTTP pages, Lotus Notes, SAP, etc. were all trialed and showed a significant improvement. In fact, the performance was so good on some systems being accessed across the WAN that they appeared as if they were on the LAN. Tests showed an immediate reduction in network traffic on day 1, and then the cache built up during the next few days to show a further reduction in network traffic. The end users at this stage of the test had seen a significant improvement in performance.

Chris Reynolds, Network Manager UK, ALSTOM, concluded from the trials, "Out of all 3 vendors tested, Riverbed was the clear leader in our environment. While this unit was on trial no network or data application errors associated with the Steelhead appliance were encountered. The other competitors didn't perform anywhere near as well as Riverbed in these rigorous tests that included measurements for stability, support, flexibility, TCO and more in the selection criteria.

"Steelhead appliances have improved application performance by 3x to 4x, and freed up bandwidth."

Reynolds added, "Riverbed Steelhead appliances have shown us that additional bandwidth is not always the answer to improve application performance. The Steelhead appliances have improved application performance by 3x to 4x, and freed up bandwidth.

Benefits: Improved Application Performance, More Available Bandwidth, and Centralised Servers

When installing the Steelhead appliances, Reynolds said, "It was very easy and took less than half an hour to install, with less than a minute downtime to end users. Riverbed's knowledge, flexibility and capability is excellent and inspired us with great confidence."

"When you have an IT department where resources are always highly in demand, it's so important to have an appliance that doesn't need a lot of maintenance – this was a big bonus. Also, when consolidating and centralizing, you don't want lots of additional complications. "The Steelhead

"The Steelhead appliances are 100% reliable. They have been a big success."

appliances are 100% reliable. They have been a big success", said Reynolds.

ALSTOM has so far installed 22 Steelhead appliances and plans to have a Steelhead in nearly every site. Where they have issues with cabling underground, they have been able to resort to satellite links. Traditionally satellite links produce poor application performance, but with a Steelhead appliance ALSTOM have seen a big improvement in application performance.

Within 10 minutes of enabling the Steelhead appliances, complaints of application performance dropped and emails of praise arrived. "The system is a lot better now. We used to have to wait ages when we accessed the shared drives but when I went onto the remote network drive, no word of a lie, it's the fastest I've ever known it," said a Customer Service Manager at a remote Alstom site.

"Riverbed Steelhead appliances have enabled us to avoid substantial expense on additional bandwidth and the improvement in application performance far outweighs the costs."

Reynolds concluded, "Riverbed Steelhead appliances are an important and essential piece of technology which has been proven in our environment – leading to both an improved quality of service and a cost reduction with a payback of 3 months. This will allow us to progress in our preferred direction of server consolidation/centralisation, and provides a technical solution to the issue of WAN acceleration in order to provide improved performance while minimizing performance degradation associated with network latency."

SUMMARY

ALSTOM wanted to reduce operating costs by consolidating and centralizing their IT infrastructure whilst maintaining an appropriate level of service to their remote users. However, they had a number of issues that were causing them concerns: application performance issues at remote sites, network latency affecting some major applications on the network, and limitations of available cost effective bandwidth.

ALSTOM reviewed a number of options to address these issues and decided to review a number of competitive products providing WAN acceleration. After in-depth testing Riverbed Steelhead appliances were the clear leader.

The Steelhead appliances enabled ALSTOM to progress with their IT consolidation by reducing bandwidth utilization, resolving high latency issues and improving application performance to remote sites.

MINDSPEED

BUILD IT FIRST®

IN BRIEF

Industry

- » Semiconductor

Challenges

- » Slow application performance over the WAN reduced productivity in remote offices
- » Remote office employees were not using applications hosted at headquarters, which limited their ability to collaborate
- » Existing WAN links for overseas offices were at capacity and in need of upgrades

Solution

- » 16 Steelhead appliances deployed in branch offices around the world

Benefits

- » Bandwidth capacity increase of 4.3x, and \$100,000 - \$200,000 a year in bandwidth savings
- » Payback period of less than 12 months
- » Faster response times for key enterprise applications (Oracle PLM, SAP NetWeaver)
- » Enhanced productivity and collaboration for employees in remote offices

Riverbed Steelhead Products Improve Productivity and Reduce Costs for Semiconductor Company

Mindspeed Technologies, Inc. (NASDAQ: MSPD) designs, develops and sells semiconductor networking solutions for communications applications such as VoIP and broadband optical transmission in enterprise, access, metropolitan and wide area networks. The company is headquartered in Newport Beach, CA, and has 500 employees and had about \$160 million in revenue in fiscal year 2008. Mindspeed has over 20 geographically diverse remote office locations, including offices in the Ukraine, India and China.

Mindspeed's three key product families include high-performance analog transmission and switching solutions, multiservice access products designed to support voice and data services across wireline and wireless networks and WAN communications solutions, including T/E carrier, network processing and traffic management devices.

Challenge: Slow Network Performance Limited Collaboration and Productivity

Mindspeed was becoming an increasingly global organization with more engineering resources overseas. "Newport Beach is our primary location, but we've recently opened design centers in the Ukraine, India and China," said the CIO of Mindspeed. At the same time, the company was running several enterprise applications that employees in these remote locations needed to access, including SAP NetWeaver, Oracle PLM, Lotus Notes and a custom application called the Code Verification Suite (CVS).

"Before we put in the Steelhead appliances, remote users felt like systems were slow and unworkable. After the Steelhead appliances were installed, they had the same experience that we have on the LAN at headquarters."

However, slow performance of these applications over the WAN was limiting employees' abilities to collaborate. "Essentially, employees in our remote locations didn't use the applications at headquarters because they were too slow," said Mindspeed's CIO. "It took 60 seconds for these remote users to open a

file from headquarters, so instead they would e-mail each other files, which would get out of sync." Because employees were keeping local copies of information, the company also needed to deploy local backup infrastructure, which was costly to manage.

Another challenge was bandwidth utilization and costs for Mindspeed's global offices. "The most problematic sites were those that were almost completely full on bandwidth," said the CIO of Mindspeed. "To solve this, we could either add bandwidth to those locations or we could find ways to reduce the traffic between the sites. For example, we were paying a per month fee for one of our 20 remote sites, a link to Shenzhen in China, which rapidly became completely full, leaving us with the option to pay an additional per month fee or find a way to reduce traffic over the WAN. The option of adding bandwidth quickly became very expensive."

"Riverbed has been fantastic for us. It's had a great ROI, generated a great user experience and increased the credibility of our IT department."

Solution: Steelhead Appliances Installed in 16 Locations

To address these issues, Mindspeed evaluated several WAN optimization solutions. The key criteria were that it needed to speed application performance, to reduce bandwidth utilization, and to be easy to deploy.

"We looked at a few technologies out there, but many seemed to be inflexible and not fully developed," said Mindspeed's CIO. "With Riverbed, we were able to do a trial with two sites very quickly. When the trial period was over, our engineering team was adamant that we make the solution permanent, so we agreed to keep it."

Mindspeed deployed 16 Steelhead appliances, including one 3010 model at headquarters, several 1020's at heavy engineering locations and a few 100's in smaller offices. The company also deployed the CMC 8000 Central Management Console.

The installation of the Steelhead appliances went smoothly. "It couldn't have been better," said the CIO of Mindspeed. "We set up the appliances in a couple of hours. It was very easy and painless."

Benefits: ROI in Fewer than 12 Months and Improved Employee Collaboration

Employees immediately noticed an improvement once the Steelhead appliances were installed. The Steelhead appliances reduced data travelling across the WAN by 76% overall, providing a bandwidth capacity increase of 4.3x. Specifically, Mindspeed achieved the following data

"We set up the appliances in a couple of hours. It was very easy and painless."

reductions: 79% for SQL, 75% for CIFS, 70% for Lotus Notes, 36% for HTTP and 85% for CVS. Key applications were significantly faster: the response time for the Oracle PLM system was up to nine times faster, while SAP Netweaver was approximately three times faster.

These results enabled Mindspeed to save an estimated \$100,000 - \$200,000 a year on bandwidth upgrades, generating a payback period of under 12 months on bandwidth savings alone. The improved performance also enabled Mindspeed to consolidate its IT infrastructure. "We're looking to remove Lotus Notes servers in the regions and bring them back to headquarters because the performance is consistent across the WAN now," said the CIO. "We're also planning to remove backup machines in remote locations and consolidate them in headquarters to do backup across the WAN."

Steelhead appliances also changed the way employees work at Mindspeed. Overseas employees began using the CVS, which they hadn't been using before because it was too slow. Engineering teams began to collaborate on files in real time, rather than working independently. "Essentially, employees began changing the way they work because of the increased capabilities of the WAN," said the CIO. Due to the improved performance of SAP NetWeaver, executives and remote employees also had easier access to key information contained in SAP Business Warehouse.

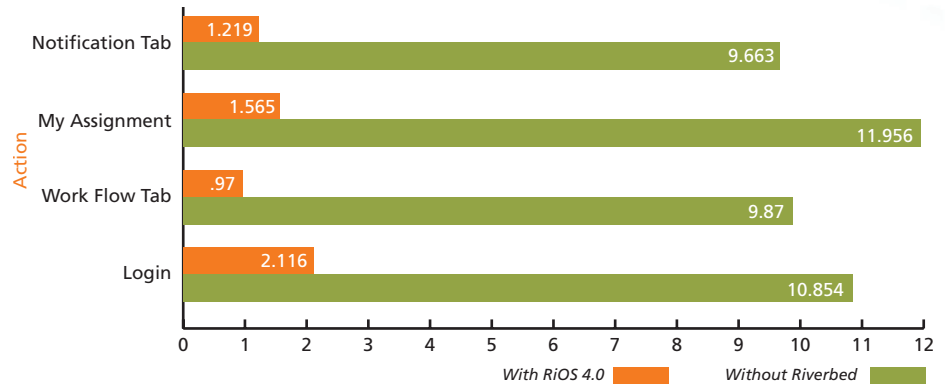
Employees in remote locations were also happier. "Before we put in the Steelhead appliances, remote users felt like systems were slow and unworkable," said Mindspeed's CIO. "After the Steelhead appliances were installed, they had the same experience that we have on the LAN at headquarters."

The reduction in bandwidth utilization also allowed Mindspeed to deploy new applications. Because sales, marketing and executive teams around the world could now work with the same data, the company was able to implement new SAP NetWeaver integrated forecasting and planning tools. "We were reluctant to implement the forecasting tools prior to installing the Steelhead appliances because we believed that the application would be too slow," said the CIO, "but once we had the appliances in place, we were no longer concerned with it."

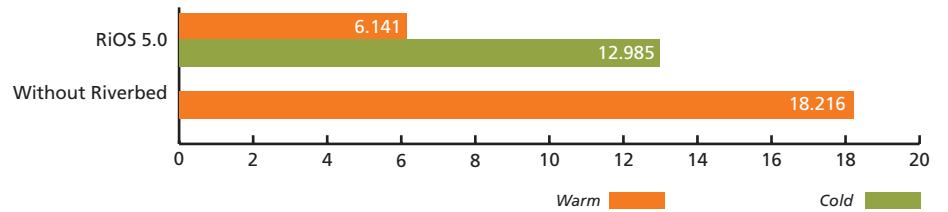
"Before we put in the Steelhead appliances, users felt like systems were slow and unworkable. After the Steelhead appliances were installed, they had the same experience that we have on the LAN at headquarters."

Mindspeed summed up its experience with Riverbed Steelhead appliances: "Riverbed has been fantastic for us. It's had a great ROI, generated a great user experience and increased the credibility of our IT department." In the future, Mindspeed plans implement more Steelhead appliances and Steelhead Mobile software.

Oracle PLM Test Results - Time to Complete (in seconds)



SAP Netweaver Responsiveness - Time to Complete (in seconds)



SUMMARY

The increasingly global workforce at Mindspeed Technologies, Inc. was having difficulty accessing key applications over the WAN, which was limiting productivity and collaboration.

After evaluating competing products, Mindspeed chose the Riverbed solution to improve application performance over the WAN and reduce bandwidth costs.

With Steelhead appliances, Mindspeed accelerated application performance over the WAN, while avoiding significant bandwidth upgrades and improving productivity and collaboration for remote employees.



Think fast.™

About Riverbed

Riverbed Technology is the IT infrastructure performance company. The Riverbed family of wide area network (WAN) optimization solutions liberates businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers. Thousands of companies with distributed operations use Riverbed to make their IT infrastructure faster, less expensive and more responsive. Additional information about Riverbed (NASDAQ: RVBD) is available at www.riverbed.com



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Riverbed Technology
199 Fremont Street
San Francisco, CA 94105
Tel: +1 415 247 8800
Fax: +1 415 247 8801
www.riverbed.com

Riverbed Technology Ltd.
Farley Hall, London Road
Binfield
Bracknell
Berks RG42 4EU
Tel: +44 (0) 1344 401900

Riverbed Technology Pte. Ltd.
391A Orchard Road #22-06/10
Ngee Ann City Tower A
Singapore 238873
Tel: +65 6508-7400

Riverbed Technology K.K.
Shiba-Koen Plaza Building 9F
3-6-9, Shiba, Minato-ku
Tokyo, Japan 105-0014
Tel: +81 3 5419 1990

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