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NOTICE:
New Product Names

The contents of this asset do not reflect our recent product name changes. Here are the new Riverbed® names:

Old Names	New Names
Steelhead	SteelHead™
RPM, OPNET, Cascade	SteelCentral™
Stingray	SteelApp™
Granite	SteelFusion™
Flyscript	SteelScript™
Whitewater	SteelStore™

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CASE STUDY

Square Enix Co., Ltd.

Time Needed to Transfer Large Volumes of Data Between International Locations Reduced by 90% with Deployment of Riverbed Steelhead® Appliances

The Square Enix Group, which includes the internationally renowned content creator Square Enix Co., Ltd., has constructed an international business promotion structure with major development locations established in Japan, North America, and Europe. Since these three locations perform localization to meet the needs of each market, development data (ROM) is transferred on a daily basis. However, in 2008 half a day was required for these transfers due to increases in data volume, and the company had begun to feel its limits. In response, Square Enix decided to adopt Steelhead appliances in order to streamline its international data transfers. By doing so, transfer times were reduced by more than 90% to approximately one hour. Due to these results, the company is now working to implement Steelhead appliances at its major locations in Japan as the second phase of the reform of its WAN environment. In the future, Square Enix intends to deploy Steelhead in China, which it sees as a major potential market, and at its other locations in Japan.

Challenge: Transfers of large volumes of data between international locations took too much time

Square Enix Co., Ltd. is a globally renowned content creator that has produced internationally renowned games including the DRAGON QUEST and FINAL FANTASY series. The company releases video games, online games, mobile content, published material, and other excellent entertainment content on a variety of devices and through a variety media.

In providing content to people across the world, the Square Enix Group has constructed an international business promotion structure with major development locations established in Japan, North America, and Europe. Translation and other localization work is a crucial part of the development of games that are sold in countries across the globe, and strong quality assurance (QA) is demanded in the localization process. When translating content, work is done to test whether or not each phrase is truly an appropriate translation (text QA). When translating, not every word matches across the languages, so localizers must give the translation the correct nuance by adding contextual and cultural dimensions inherent to the target language. In addition, there are a variety of tasks in the localization process including legal provisions, which occasionally necessitates the replacement or revision of images or scenes.

> "Creating a comfortable development environment with no lag time by deploying Steelhead appliances at overseas and domestic development locations."

"Since localization work is performed at each development location, we must transfer development data from Japan to North America and Europe. The increasing volume of this data had become a problem. We are connected with overseas locations through an Internet VPN with a bandwidth of 100Mbps, but it took about half a day to send the 4 to 5GB of data necessary. Since development work is performed concurrently overseas, we have to send the data every day. Because of this, we would send the data from Japan in the night, and work would begin at the overseas locations in the morning. We were going through a cycle of having the locations then return the data to Japan after finishing QA, but this was gradually starting to become a limitation for us," explained Tatsuya Mori, manager of the information systems division.

IN BRIEF

Industry

- Video Games

Challenges

- Transfers of large volumes of game ROM data between locations in Japan and overseas required an extremely large amount of time
- Due to the necessity for multiple users at Japanese locations to download the same large game
- ROM data, stress was created on the connection, which risked interfering with operations

Solution

- The SH5050 was implemented overseas where lag was severe and connection bandwidth was 100Mbps, and data transfer times were shortened through large-volume caches and technology that increased TCP speed
- For transfers of large amounts of media data at Japanese locations, where lag was close to zero and connection bandwidth was 1Gbps, SH7050s that used only SSDs were adopted, circumventing stress on the connection

Benefits

- Data transfers between international locations, which used to require half a day, were sped up and now take one-tenth of the time
- Data time lag was eliminated, and development was streamlined
- Efficient utilization of the WAN connection was implemented while also ensuring reliability

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The game ROMs are 4 to 5GB large (the capacity of a DVD), but the original data that is actually used in development can be seven to eight times larger, so the data in one file could easily account for dozens of gigabytes.

"For data used in development the differences alone would not be enough, so we have to constantly send all of the data back and forth. At the time, we were predicting that the volume of data would be hundreds of gigabytes once Blu-rays became mainstream, so we began seriously considering our options from around 2008," said Keisuke Takahashi, a member of the information systems division.

Solution: Data transfer times between international locations were reduced by 90% with Steelhead appliances

Square Enix was faced with a challenge. For international data transfers using the global WAN, lag would grow larger due to problems such as distance, transmission paths, and device buffering, which meant that even if the company made massive cash expenditures to increase the bandwidth of its WAN, it would not be able to increase speed as much as it wanted. So instead, Square Enix chose Steelhead as the appliance that would allow it to efficiently transfer data in an environment with low bandwidth and serious lag.

"Steelhead appliances were the only option we considered to address WAN optimization, but we did also consider content deliver network (CDN) services for purposes of comparison. However, after actually running the tests, we found that CDNs did not yield the performance we expected. Steelhead appliances, on the other hand, performed surprisingly well. The transfers had been taking half a day, so we were hoping for maybe half of that, but with Steelhead the time required was only around one hour. This was just one of the shocking benefits that the Steelhead appliance was capable of delivering," explained Mori.

Benefits: Data time lag was eliminated, and major contributions were made to improving operational efficiency

Takahashi gave the following appraisal of the changes: "Currently it is not uncommon for games titles to be released simultaneously across the world. So the half a day that it took to transfer data was a huge waste in our efforts to eliminate time lag in development between our international locations and proceed with work simultaneously. In the past we were forced to send data in the night in Japan, and due to the time difference, this created a one-day time lag in work and in the data versions. But now we are able to send data in the day as well, so we are able to use the same data and develop in an almost real-time environment. This has contributed greatly to the improvement of operational efficiency."

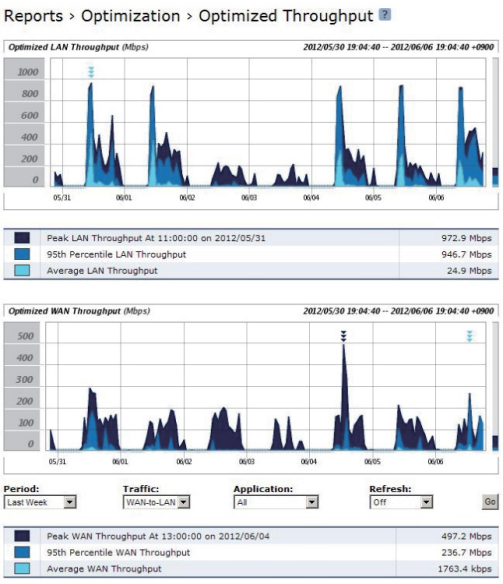
Steelhead expanded to locations in Japan due to the results overseas

Due to the results from Steelhead's implementation in the company's global WAN, Square Enix worked to deploy the product at Japanese locations in 2010.

The company's data centers, and a 1Gbps Ethernet leased line connects major Japanese locations, and an Internet VPN is used between smaller locations.

However, although it has secured a large amount of bandwidth at major locations, Square Enix was experiencing issues with bandwidth stress due to many members of the development team downloading large volumes of data at the same time. To resolve this problem, the company installed the SH7050 at locations with no lag problems, striving to optimize data transfers by avoiding equipment bottlenecks through the use of SSDs for all cache space.

"We at Square Enix have come to feel that Steelhead appliances are a necessity and a natural part of our system. In addition to Riverbed products, we also have high regard for its support system. The company has developed and offered us programs with functions exclusively for our company to aid with double-byte coding and other issues. In this way and many others, Riverbed has provided generous support from the user's standpoint, even though they are a foreign company," said Mori.



972.9 Mbps
Peak LAN throughput

946.7 Mbps
95th percentile LAN throughput
(5% of peak portion eliminated)

Maximum utilization of LAN bandwidth

497.2 Mbps
Peak LAN throughput

Use of only 50% at most of the 1Gbps WAN

236.7 Mbps
95th percentile LAN throughput
(5% of peak portion eliminated)

1/4 the connection usage rate compared to LAN

Looking ahead: Deployment in China, and further utilization of mobile functionality and management tools

In the future, Square Enix has stated that it hopes to deploy Steelhead appliances at its location in China. In September 2010, the company formed an alliance with the major Chinese game company Shanda Games in the area of online gaming. Square Enix is working to implement measures for the Chinese market, which is expected to grow dramatically. As one effort to improve the environment surrounding these measures, the Group is considering implementing Steelhead at its location in China in the future.

The company also says that one of its focuses is the utilization of mobile technology. Mori stated, "There are many freelancers working on the previously-mentioned text QA who work from their homes and other locations. People involved in this work ask that we provide them with an agreeable work environment, so we hope to move forward with the implementation of Steelhead Mobile software. In addition, as the company-wide deployment of Steelhead appliances continues, we are also considering the use of the management tool Cascade to accurately understand network performance and to use this information in implementing appropriate investment in IT infrastructure in the future."

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About Riverbed

Riverbed delivers performance for the globally connected enterprise. With Riverbed, enterprises can successfully and intelligently implement strategic initiatives such as virtualization, consolidation, cloud computing, and disaster recovery without fear of compromising performance. By giving enterprises the platform they need to understand, optimize and consolidate their IT, Riverbed helps enterprises to build a fast, fluid and dynamic IT architecture that aligns with the business needs of the organization. Additional information about Riverbed (NASDAQ: RVBD) is available at **www.riverbed.com**.

InfoWorld 2011 TECHNOLOGY OF THE YEAR AWARDS

2005, 2006, 2007, 2008, 2009, 2011

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