riverbed®
Think fast.™

CASE STUDY

Rockford Health

Riverbed® Steelhead® Products Speed Transfer of Medical Images at Rockford Health

IN BRIEF

Industry

» Healthcare

Challenges

» Limited bandwidth available due to location in the middle of three different local access and transport areas (LATAs)

» Medical images took up to 20 minutes to download over low-speed lines, causing difficulties for physicians

» Medical images and other applications led to saturated bandwidth

Solution

» Riverbed Steelhead appliances deployed at four remote locations

Benefits

» Payback period of four months

» WAN traffic reduced by 96 percent

» Image download times reduced from 20 minutes to one minute

» Fast access to medical images improved patient treatment

Rockford Health System (www.rhsnet.org) is the leading healthcare provider in Rockford, Illinois that serves northern Illinois and southern Wisconsin. The system consists of a 396-bed tertiary care hospital, outpatient clinics, a 40-bed inpatient rehabilitation hospital, and home healthcare services.

With 12 sites statewide and 3,000 employees, Rockford offers cutting-edge technology to its patients and is home to an outstanding Children's Medical Center, Pediatric Intensive Care Unit, Neonatal Intensive Care Unit, Heart and Vascular Center, Brain and Spine Center, and Emergency/Trauma Services Department.

Rockford Memorial Hospital ranks in the top five percent out of all national hospitals for patient safety and won the 2007 Distinguished Hospital Award for patient safety. In 2006, the hospital was rated best in the region for orthopedics and spinal surgeries, pulmonary services, critical care, and gastroenterology.

Challenge: Slow Network Impacts Physicians' Treatment of Patients

Rockford first encountered problems because the central hospital is located in the middle of three different local access and transport areas (LATAs). "Once you get beyond a LATA, it gets very difficult to get high-speed bandwidth connections," explained CTO, CSO, and Director of Information Technology Joseph Granneman.

> "That was really important to see what the effects were because you almost have to see it to believe it,"
>
> - Joseph Granneman, CTO, CSO, and Director of Information Technology, Rockford Health System

With eight different clinics and a low-speed network, Rockford's biggest problem was speeding the transfer of medical images to remote sites. Physicians complained that it was taking up to 20 minutes to download and show their patients medical imaging results, such as CT scans or MRIs. Access to medical images is critical for the 500 to 900 remote employees that use the network daily - and latency and bandwidth issues hindered their ability to download and view this information. "Other applications were starting to consume more bandwidth, but medical imaging tends to be our primary user of bandwidth," Granneman said.

To address these issues, Granneman's IT team considered upgrading their T1s to DS3s, but they were "ridiculously expensive per month, increasing costs by almost ten times," according to Granneman. In addition, bandwidth upgrades would not have addressed the issues of network and application latency, which would have limited the performance improvements. Granneman also decided against placing servers at the remote sites because of maintenance and logistical problems; both IT staff and IT infrastructure were centralized at Rockford's main hospital location, so remote servers would be a costly and complex approach. After reviewing all these challenges, Granneman and his team started to research WAN optimization solutions.

Solution: Riverbed Steelhead Appliances Deployed to Speed Transfer of Medical Images

Granneman and his team had only one month to test and select a solution. They considered the Cisco WAAS offering because they already had Cisco networking infrastructure, but decided against it. "When we started researching, it seemed like the Cisco WAAS products were not going to give us the performance that we needed," said Granneman. He then contacted his reseller, who recommended the Riverbed Steelhead appliance as the market leader.

Granneman installed temporary Steelhead appliances as a proof of concept at Rockford. "That was really important to see what the effects were because you almost have to see it to believe it," said Granneman. After the appliances were installed, Granneman worked with radiology technicians and physicians to see how the Steelhead appliances were affecting download times for medical images. Medical images that previously took

ROCKFORD HEALTH system

riverbed
Think fast.™

20 minutes to download only took a minute to download with the Steelhead appliances in place. "It was just so obvious, it was kind of a no-brainer," said Granneman.

> "It was just so obvious, it was kind of a no-brainer."

"What we really liked about the Riverbed Steelhead was the combination of compression and data-deduplication. We knew that if they captured the images at the remote clinic, and sent it through to the main McKesson PACS system, that they'd never have to reload that across the WAN again; it would always load from the local Steelhead appliance, which would give them the illusion of much, much faster connection speeds."

The deployment of the Steelhead appliances was "a breeze" and Granneman's team had the devices running in one day. "It's basically plug-and-play, so we've never had to call tech support," he said.

By viewing reports from the Steelhead appliance management console, Granneman was able to see how much WAN traffic was reduced, and the equivalent number of T1s that would be required to provide the same level of bandwidth. "We're up to 18 or 19 T1s that would be necessary to give us the same level of bandwidth that the Steelhead appliance provides," he said.

Benefits: WAN Traffic Reduced by 96 Percent and Payback in Four Months

Rockford was able to achieve a fast ROI with the Steelhead appliances. "It basically paid for itself in about four months compared to the cost of running a DS3, said Granneman."

Since Rockford installed the Steelhead appliances, they have experienced performance increases of almost 20x and the company has also reduced its WAN traffic by a dramatic 96 percent. Their remote sites are able to access crucial medical images at LAN speeds; it now takes only one or two minutes to download full studies, a major improvement from the 20 minutes it previously took. "There is definitely a benefit in being able to provide a solution that really makes [the physicians' and patients'] lives easier," said Granneman.

The Steelhead appliances have also helped make Rockford's IT department more efficient. With all applications already centralized, and the data center and IT staff located in the same place, Granneman doesn't need to send IT staff to remote sites unless there is a specific reason.

For future clinics, Rockford will install Riverbed Steelhead appliances upfront to avoid any application performance problems. "It's just become part of our standard rollout of any new clinic or any new facility," said Granneman. "If we can't get high-speed connections to that site, we install a Riverbed Steelhead appliance."

> "It's just become part of our standard rollout of any new clinic or any new facility. If we can't get high-speed connections to that site, we install a Riverbed Steelhead appliance."

SUMMARY

Rockford's use of medical imaging such as CT scans and MRIs saturated their limited bandwidth, while slow image downloads affected patient care.

After considering Cisco WAAS, Rockford chose the Riverbed solution to speed the transfer of medical images over the WAN, maintain a centralized IT infrastructure, and reduce bandwidth usage.

The Riverbed Steelhead appliances have reduced WAN traffic by 96 percent and increased performance by 20x. Rockford's return on investment was paid for within four months of purchase. Medical images that previously took up to 20 minutes to download now take only one or two minutes to download, improving physicians' patient care and their satisfaction with the network.

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

InfoWorld 2009 TECHNOLOGY OF THE YEAR AWARDS

2005, 2006, 2007, 2008, 2009

NETWORKWORLD BEST OF THE TESTS '08

2006 Network Computing WELL-CONNECTED AWARDS WINNER

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

CS-RHC042009