California Department of Fish and Wildlife

SteelHead Appliances Enable Doubling of Network Traffic without Bandwidth Upgrades

California Department of Fish and Wildlife (CDFW) maintains the state's native fish, wildlife, plant species, and natural communities. The agency's work includes habitat protection as well as the management of fish and wildlife for recreational, commercial, scientific and educational purposes. Headquartered in Sacramento, the CDFW has 3,000 employees and operates 117 facilities around the state.

Challenge: Saturated links, complicated by a transition from Novell to Microsoft

While CDFW's Sacramento facilities are linked by 10-gigabit connections, 27 of the agency's other major offices are served by standard POTS, T1, and Ethernet circuits from AT&T. These offices, which house large research and sales operations, require strong network connectivity for intra-agency collaboration and communicating with the data center in Sacramento.

Previously, even under normal use conditions, the circuits serving these offices were operating at 90% saturation, making life difficult for the agency's end users.

"Some groups would work independently and then email documents to each other rather than work on shared file stores because of the level of saturation," explains Erik Davis, network projects consultant. "Also, at some sites with T1s, it took so long to pull stuff down off the wire that people complained they couldn't get any work done."

From IT's point of view, network saturation meant many phone callers asking why the network was so slow. Also, whenever patches and virus definitions were being downloaded, "the network came to a screeching halt," says Stephen Adams, the CDFW's information security officer. "People were used to working as locally as possible to maintain efficiency. Some of the offices had their own servers so people could continue operations no matter how unstable network connectivity became." Another drawback was the difficulty in centrally backing up that remote data.

CDFW was considering buying more bandwidth to address these issues. Another challenge, however, was going to temporarily double the traffic on the network, making a bandwidth upgrade a very expensive solution. Explains Adams, "We were a Novell Groupwise office and we were looking at transition to Microsoft Exchange. That meant we would be running parallel systems for a while and doubling the amount of data and user traffic as we rolled people from one system to another. We needed a way to reduce that impact."

In Brief

Challenges

- 90% network saturation slowed applications, frustrating end users and limiting inter-agency collaboration
- Transition from Novell to Microsoft temporarily doubled network traffic, slowing network performance
- Tape backup at the branch offices
- Reducing costs around software licensing

Solution

- SteelHead WAN optimization and Quality of Service (QoS)

Benefits

- Lower software licensing costs
- More productive users
- Transitioned to Microsoft without bandwidth upgrades

Solution: SteelHead WAN optimization

Realizing that WAN optimization would be the more affordable way to go, the agency contacted a number of vendors, including Cisco, Silver Peak, and Riverbed Technology. The Novell environment complicated the picture. "The others weren't confident about the Novell architecture," says Adams. "Only Riverbed was willing to step up and do a proof-of-concept."

In the pilot program, Riverbed® SteelHead® WAN optimization appliances were installed in four key CDFW offices to see how well they would accelerate traffic. "We were getting 2x or greater increases in our bandwidth capacity," recalls Adams.

The agency has since installed SteelHead appliances in 26 of the larger offices. Deploying the appliances is so simple that, "the running joke is that all people have to do is put the appliance in the rack, plug it in between the switch and the router, and call Erik," says Adams.

The SteelHead Virtual Services Platform (VSP) gives the CDFW the option of running file, print, and DNS services on the appliances instead of on local servers. Adams and his colleagues are currently exploring which option (a SteelHead EX appliance versus a small local server) will be more cost—effective for the different offices.

Also, because the CDFW's four newest appliances are SteelHead EXs, the agency has the option of deploying the Riverbed Granite™ storage delivery technology. This approach would let them keep large files such as GIS maps in the data center and serve them out as locally available resources to the remote offices. "The fact that we wouldn't have to worry about tape backup at the remote offices would be a beautiful thing," says Adams.

The agency is also exploring the use of SteelHead Mobile client software as a way to improve the productivity of field researchers and the agency's law enforcement personnel. "Making their laptops more responsive is one of our next directions," Adams says. "When they've got spotty connectivity, a lot of times those sessions get broken and they have to re-log in and re-enter their data. With the SteelHead Mobile client, we're hoping to make that unreliability go away."

Benefits: Users are more productive

Software licensing is another area where the SteelHead deployment is reducing costs. "With the poor network performance we had before, we had to purchase more single user licenses of strategic applications like ArcGIS mapping software. Since adding the SteelHead appliances, we've begun transitioning our users to a more shared license model, which reduces those costs," says Adams.

"And that's not talking about how much faster people work now that they've got the SteelHead appliances," adds Davis. "Or how much easier it is for people to collaborate, or how many fewer calls we get asking why the network is slow. The benefit to the overall user experience is immeasurable."

The SteelHead deployment eliminated the previous inability to work during downloads of patches and virus definitions. The appliances' ability to cache information is another efficiency boost. "We see this over and over again, where multiple users access the same files. When we're just pulling them down once, it increases our efficiency exponentially," Adams notes.

CDFW uses application visibility and QoS to prioritize certain traffic, such as internal service applications, while de-prioritizing other traffic, such as Web browsing. "We operate on a network that we don't directly control, so when we wanted to make an adjustment to a QoS setting in the past, we had to open a ticket and wait for a third party to schedule the change, and hope they did it as we asked," Adams explains. "With the ability to do QoS on the SteelHead appliances, which we manage, it's a lot quicker from idea to execution."

The state agency really saw the benefit of QoS during a VoIP proof-of-concept. "We had been using VoIP successfully in Sacramento where we have 10 gigs of bandwidth, but not in remote offices where the network was saturated," explains Adams. "We took the VoIP phone to one of the offices that had a SteelHead and the call was crystal clear." Riverbed is helping the CDFW as it evolves its IT environment to meet state mandates for centralization and standardization (for example, the email environment).

"Riverbed is facilitating the move to an environment where almost everything is centralized," says Adams. "It makes getting information back and forth between our field offices easier and faster; and with the State of California Email Service transition, this technology will help hide the 11 additional hops being added between Outlook client and Exchange server.

"The benefit to the overall user experience is immeasurable."

Erik Davis
Network Projects Consultant
California Department of Fish and Wildlife

Summary

With 27 of its larger offices served by standard POTS, T1, and Ethernet circuits that were 90-percent saturated under normal conditions, California Department of Fish and Wildlife (CDFW) had some frustrated end users. Staff complained about slow access to shared files and centrally stored data, and basically couldn't do anything over the network when patches and virus definitions were downloaded. Data backups were limited by infrastructure capacity as well. And that situation was only going to get worse during the agency's transition from Novell to Microsoft, which would temporarily double network traffic as both systems ran in parallel.

When buying more bandwidth was ruled out as too expensive, the agency contacted a number of WAN optimization vendors, although only Riverbed was willing to pursue the lead, given the complexities of the CDFW's Novell environment. A proof of concept with SteelHead appliances in four CDFW offices showed a doubling of bandwidth capacity. The agency has since installed SteelHead appliances in 26 larger offices. Since the SteelHead deployment, users are more productive, and the transition to Microsoft was handled without bandwidth upgrades.

About Riverbed

Riverbed, at more than $1 billion in annual revenue, is the leader in application performance infrastructure, delivering the most complete platform for the hybrid enterprise to ensure applications perform as expected, data is always available when needed, and performance issues can be proactively detected and resolved before impacting business performance. Riverbed enables hybrid enterprises to transform application performance into a competitive advantage by maximizing employee productivity and leveraging IT to create new forms of operational agility. Riverbed's 26,000+ customers include 97% of the *Fortune* 100 and 98% of the *Forbes* Global 100. Learn more at riverbed.com.

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