County National Bank and the Soaps:
A Lesson in Network Engineering

Off-site data replication can be a critical part of a disaster recovery plan, but as County National Bank discovered, the IT department first needed to address the limitations of the underlying wide area network (WAN). Limited bandwidth, high rates of packet loss and out-of-order packets, and long distances often sabotage data replication performance.

In County National's case, 300 gigabytes (GB) of incremental data could not complete replication even after 24 hours and resulted in the bank missing its 4-hour recovery point objective (RPO). The initial 2 terabyte (TB) synchronization failed out-right. The performance of banking applications in the branch offices were also impacted and became sluggish, and VoIP calls were often unclear. Something had to be done, but bandwidth in rural Michigan was too expensive and WAN optimization proved unsatisfactory.

David Arnett, County National's IT manager, had looked at WAN optimization from Riverbed and others, but the deployments seemed too complex, application support was limited, and none of the demonstrations seemed to improve remote replication performance to acceptable levels. Then IT integrator AmeriNet stepped in and recommended a Silver Peak trial.

"I was extremely impressed," said Arnett. "No other optimization vendor could help us, but with Silver Peak, we reduced our Dell EqualLogic replication times by 80 percent. We now complete our incrementals in less than four hours"

PLENTY OF PROBLEMS

Headquartered in Hillsdale, Michigan, County National Bank is a regional bank with 12 branches spread across the state. The sites are connected to the data center through private lines. A 3 megabit-per-second (Mbps) line connected the data center, while individual T1 lines (1.544 Mbps) connected each branch office and a disaster recovery (DR) site to the data center.

Nearly a decade ago, the bank wanted to reduce IT costs so it embarked on a server consolidation project, centralizing resources in the Hillsdale data center. All of the company's banking applications, VoIP services, Microsoft Exchange, and even Internet access were delivered from the data center to the branch offices. Business continuity was provided by replicating between Dell EqualLogic SANs in the data center and the DR site in Jackson, Michigan.

As traffic increased on the WAN, so did the complaints. "Our bank managers were calling us, complaining about having to wait to pull up new accounts on their screens," added Arnett. "Our VoIP system was also unpredictable with some calls being pretty clear and others unintelligible. But the kicker was the replication performance."

Office of the Comptroller Currency (OCC) regulations are strict about banks being able to recover from disasters and there are stiff penalties if a financial

Customer: County National Bank

Business Objectives
- Implement disaster recovery plans and meet four-hour RPO.
- Improve performance of branch-office applications.
- Improve VoIP quality.

Technical Background
- Data replication exceeded 4-hour RPO
- Initial synchronization of SANs (2 terabytes) was impossible; Incremental synchronization (300 Gbytes) failed to complete within 24 hours.
- Crackled and unclear voice calls.
- Sluggish branch office, banking applications.
- Dropped e-mail connections.

Silver Peak Results
- Return on investment (ROI) achieved within five months.
- Dell EqualLogic + Silver Peak improved performance by 80 percent, meeting 4-hour RPO.
- Improved voice quality.
- Responsive branch office applications.

institution cannot adequately protect customer data. Replicating between the two Dell EqualLogic PS-6000s, which had worked so easily and effectively, started encountering problems from the existing WAN.

"We expected that the initial synchronization of the arrays might pose a problem. After all, we're talking about 2 terabytes of data over a pretty small link," added Arnett. "But even our incremental workloads started becoming impossible. They were about 300 gigabytes and even after 24 hours they still wouldn't complete." Arnett's RPO was four hours.

THE WAN CHALLENGE

Arnett learned what so many other IT managers have experienced - latency, congestion and bandwidth issues determine network throughput and WANs encounter problems in all three areas.

The long distances between branch offices and data centers introduce latency, particularly in TCP communications. Network congestion issues, such as packet loss and out-of-order packets, also

increase the delay crossing the WAN. And, of course, WAN generally have less bandwidth available than the LAN. The result: applications that perform well within the office often stumble on the WAN.

County National Bank was having a problem with network congestion and limited bandwidth. Purchasing larger and cleaner connections was impossible. Although bandwidth is often inexpensive within the US, there are many routes where that is not the case. Arnett found that in rural areas of Michigan, a 1 Mbps connection would cost more than $1,000 per month, far too much for his budget.

Arnett investigated WAN optimization, but was displeased with the results. The tested vendors, which included Riverbed and others, failed to improve Dell EqualLogic remote replication times over long distance error-prone links, so Arnett was reluctant to consider looking at WAN optimization again. But AmeriNet, his IT integrator, persisted and arranged a Silver Peak trial for County National. Arnett has never looked back.

No other WAN optimization vendor could help us, but with Silver Peak, we reduced our Dell EqualLogic remote replication times by 80 percent. We now complete our incrementals in less than four hours!
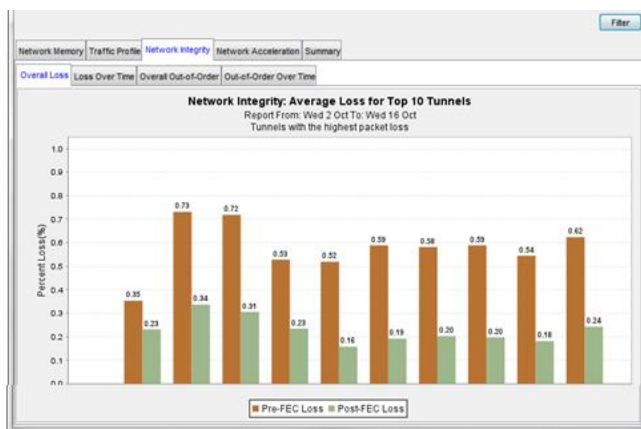
Correcting lost and out-of-order packets, improved County National's phone calls.

KEY TO DISASTER RECOVERY

Deployment was quick. "Silver Peak has been very easy to implement," he said. "We deployed it ourselves and I don't think I needed to contact customer support even once. It just works."

And the results were impressive. "The combined Dell EqualLogic and Silver Peak solution allowed us to increase our remote replication performance by 80 percent," he added. Replications times have decreased from over 24 hours to under four hours.

"Silver Peak was instrumental in being able to put our disaster recovery plan in place," he says.

Improving remote replication performance was not the only benefit of deploying Silver Peak software. Silver Peak's application-independent architecture optimizes <u>all</u> enterprise applications regardless if they run over TCP, UDP, a

proprietary protocol, or are encapsulated in a protocol, such as GRE.

Arnett found that congestion issues were contributing to the poor voice quality of County National phone calls. Silver Peak's quality of service (QoS) features, and ability to correct for lost and out-of-order packets in real-time helped improve VoIP quality and increase throughput.

Banking applications also performed better with screen refreshes in the branches taking less time. E-mail services became more effective as Outlook stopped dropping connections. Overall, Arnett realized a return on investment in under a year.

While County National's infrastructure has continued to evolve since that decision 10 years ago, some things haven't changed; Dell and Silver Peak remain critical to the IT plan.
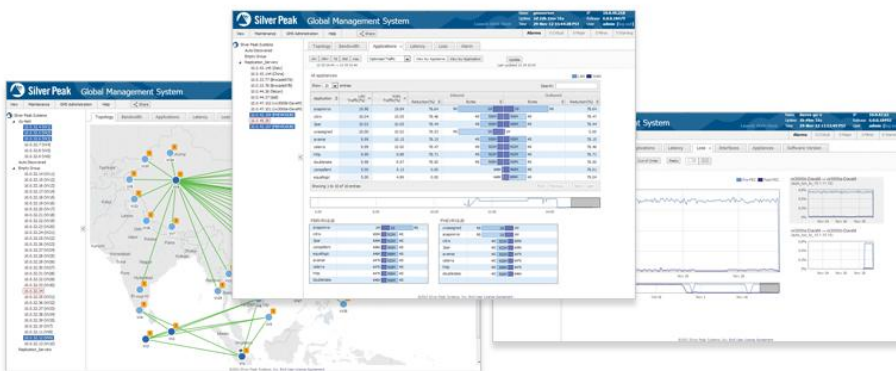
Silver Peak's GMS gave Arnett deeper visibility into the WAN., letting him conserve bandwidth by preventing users from watching soap operas on work computers.

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