Citizens Business Bank: Forget Riverbed, Give Us Virtual WAN Acceleration

Leading bank deploys Silver Peak software instead of costly Riverbed appliances, increases WAN throughput by 22x without spending a dime more on bandwidth.

When Citizens Business Bank needed to fulfill a disaster recovery initiative, virtual WAN optimization software was the logical choice. The company had already virtualized its data center and even after more than doubling the bandwidth from their data center to their disaster recovery (DR) location, data replication still took 8-times too long.

"We considered Riverbed appliances, but the price was so much higher than virtual software," says Steve Borba, IT administrator at Citizens Business Bank. "We had already seen how VMware virtual machines could compete with physical servers, so we wanted to see how virtual software stacked up against proprietary appliances."

Borba and his team trialed and ultimately deployed the Silver Peak VX-6000 software between the two locations. The results were so compelling that Citizens Business Bank began deploying the Silver Peak software in some of its 50 branch offices. "Not only did Silver Peak's software accelerate data replication, but it improved all of the applications sharing the line," added Borba. "We sped up our transactional data, improved file sharing and bulk TCP performance, secured traffic with

encrypted tunnels, and even improved the quality of our voice calls."

Replication Challenges

Banking regulations require that Citizens Business Bank see no more than 24 hours of downtime. Meeting that objective was easy until the year 2000 when Citizens Business Bank had just six servers and could adhere to banking regulations by restoring data from tape. But today, Citizens Business Bank covers nearly 50 locations throughout California with more than 400 virtual machines. "It proved impossible for us to restore from tape in 24 hours," says Borba.

The team turned to off-site replication using SAN-to-SAN replication with Dell Compellent. They started replicating 100 GBytes/day with a very limited data set across the 45 Mbps connection between the bank's data center in Ontario, California to its disaster recovery center in Visalia, California. At 500 GBytes/day, Borba says he overwhelmed the connection. Daily backup required up to 27 hours to complete with full replication taking about 95 percent of the week.

He and his team tried to address the problem by more than doubling the

Customer: Citizens Business Bank

Business Objectives

- Meet banking requirements for no more than 24 hours of downtime.
- Meet stricter Service LevelAgreements (SLAs) for transactional data.
- Reduce network troubleshooting and diagnostic time, verify WAN SLAs

Background

- Over 50 branch offices, main data center in Ontario, California, DR site in Visalia, California (359 kilometers away)
- 45 Mbps between data center and disaster recovery site ultimately increased to 100 Mbps
- Tape backup was gradually replaced with SAN-to-SAN replication using iSCSI on Dell/Compellent
- 100 GB replicated per day initially; 1 TB/day after bandwidth increase.
- Existing replication times exceeded 27 hours

Results

- Replication times decreased by nearly 90% to three hours.
- Replicating approximately 2 TB/day.
- Reduced iSCSI traffic by 90%, CIFS by 74%, Exchange by 59% and MS SQL by 66%
- Improved usable session bandwidth by more than 22x to 3.9 Mbps.
- Identified WAN latency, jitter and loss issues allowing the bank to ensure ISPs met their SLAs.

Top 10 Flows (Optimized Traffic - LAN Rx - Last 15min) »   Total Flows: 209

IP1	Port1	IP2	Port2	App	Protocol	LAN Rx Bytes	WAN Tx Bytes	Reduction (%)	Up Time
	3260		26184	iscsi	tcp [accel]	11,119,236,367	1,207,876,935	89.1	1h 28m 17s
	3260		26174	iscsi	tcp [accel]	10,631,848,434	1,105,913,391	89.6	1h 28m 17s
	3260		26175	iscsi	tcp [accel]	10,094,422,956	1,059,314,326	89.5	1h 28m 17s
1	14528		3777	unassigned	tcp [accel]	7,281,341,187	669,171,105	90.8	14h 36m 12s
	3260		386	iscsi	tcp [accel]	3,428,059,908	397,114,426	88.4	1h 28m 16s
	3260		385	iscsi	tcp [accel]	3,335,304,038	384,813,778	88.5	1h 28m 16s
	3260		395	iscsi	tcp [accel]	3,232,748,124	369,998,744	88.6	1h 28m 16s
	3260		394	iscsi	tcp [accel]	3,132,647,316	359,952,885	88.5	1h 28m 16s
	1461		445	cifs_smb	cifs [server]	13,089,364	6,096,514	53.4	8m 14s
	4209		2683	unassigned	tcp [accel]	5,188,856	2,949,154	43.2	11m 17s

Figure 1: Citizens dramatically improved replication performance all of the applications on the optimized WAN.

bandwidth to the disaster recovery site to 100 Mbps. The additional bandwidth improved replication performance to 1 TB/day, but that proved to be a temporary solution. After a month or two, replication still took more than a full business day. "There was only about a four hour window on Sunday for us to catch up," Borba noted.
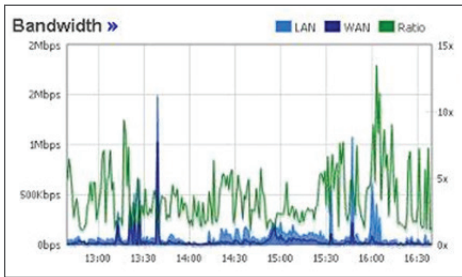

Figure 2: Silver Peak eliminated packet loss and compensated for latency increasing the effective bandwidth of the branch office connection by more than 22x.

Virtual is the Solution

The bank began evaluating WAN optimization solutions, in part, to shorten replication time, but also to improve other applications running across the network. Hardware appliances were considered, but were soon rejected for their cost. Proprietary appliances cannot leverage the economies of scale and the competitive forces that reduce off-the-shelf server prices. Organizations end up paying more for hardware and then find themselves locked into costly hardware refresh cycles.

Virtual software, on the other hand, allows organizations to use the over abundance of compute cycles already resident within today's organizations. Customers avoid a forced hardware upgrades and typically find deploying and moving software far easier than hardware. With Citizens Business Bank already familiar with the cost savings of server virtualization, virtual WAN

optimization was an obvious choice.

Borba soon discovered that there are big differences between implementations.

"Silver Peak said, 'just give us the IOPS, RAM and storage and we don't care what you run us on." They weren't trying to tell me that I had to do things in a certain way," he says. "If I need more horsepower, I can work within my existing physical servers. I don't have to worry about getting another WANop box for an application every four to five years.

Following the purchase of VX-6000 software for use between the data center and DR site, Citizens Business Bank deployed VX-1000 software to its branch offices. "The Silver Peak solution goes well beyond speed," Borba said. "One of the best things about the software is the ability to provide the right QoS to my traffic. I can provide a hierarchy of access to any application so my critical mainframe data can be given priority easily."

With Silver Peak, Borba has been able to accelerate and reduce SQL traffic by 85 percent, meeting SLAs for transactional data access. Replication performance jumped dramatically enabling them move about 2 TB/day. "Without Silver Peak, we would have been unable to cost effectively migrate away from tape-based DR," says Borba.

Overall, traffic between sites was reduced by 80 percent, leaving more bandwidth for other applications. The user experience of office applications, such as Microsoft Exchange, improved with e-mail traffic and file transfer times reduced by as much as 5 times. Overall, branch offices T1 connections normally limited to a theoretical maximum line rate of 1.54 Mbps

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were improved to as much as 7 Mbps of optimized throughput.

"With Silver Peak, we got the best of both worlds," says Borba – "the cost savings and agility of virtualization with performance, scalability and broad application support of a world class optimization engine."

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