



### BUSINESS OVERVIEW:

- » Multibillion dollar healthcare provider in the southern United States with seven hospitals and more than twenty outpatient facilities
- » 13,500 employees and 2,000 physicians in virtually all specialties
- » Stringent Health Insurance Portability and Accountability Act (HIPAA) and self-imposed Sarbanes-Oxley (SOX) guidelines required offsite disaster recovery with real-time replication

### IT OVERVIEW:

- » Headquarters in Miami; Disaster Recovery (DR) site in Philadelphia (managed by SunGard)
- » Over 11 GB of traffic replicated daily
- » Limited throughput on OC-3 WAN to DR facility due to traffic volume and latency
- » Various EMC applications used to backup every piece of data, including SRDF/A, Data Domain, and Celerra Replicator

### SILVER PEAK / EMC RESULTS:

- » Cumulative replication throughput increased from 300 Mbps to almost 800 Mbps
- » Performance of SRDF/A, Data Domain and Celerra Replicator all enhanced over WAN, with 80% gains in some instances
- » Consistently meeting 5 minute RPO for mission critical data
- » No bandwidth upgrade required, saving the company almost \$500,000/year

## EMC and Silver Peak Mend Healthcare Company's Disaster Recovery Ailments

Healthcare providers know the importance of preserving and protecting their data. Not only are they liable by regulations, but the loss of medical records leads to privacy violations, and worse can lead to a loss of life.

So when The Healthcare Company, a Miami-based provider of medical services within Florida, needed to meet Health Insurance Portability and Accountability Act (HIPAA) its own self-imposed Sarbanes-Oxley (SOX) requirements, the IT department turned to EMC and Silver Peak Systems to help with their disaster recovery solution.

By combining Silver Peak's WAN optimization solution with various EMC replication products, including Symmetric Remote Data Facility/Asynchronous (SRDF/A), Celerra Replicator, and Data Domain, The Healthcare Company improved replication throughput without modifying their existing network or storage infrastructure. This enabled them to meet their stringent RPO requirements, while saving the company close to \$500,000 per year in telco costs. In addition, The Healthcare Company now has a robust disaster recovery plan that can grow with their evolving business needs.

### AN AILING DISASTER RECOVERY SCENARIO

As with many organizations, The Healthcare Company maintained a wide range of data types each with its own unique requirements. Of highest priority were roughly 60 applications that relied on EMC Symmetrix using SRDF/A. File, home directories and system images were kept on EMC Celerra. Medical archives were archived and replicated on EMC Centera and backup to disk was kept on EMC Data Domain. Along with data replication there were also additional application based replication capabilities for Exchange, Active Directory, and DNS.

Each of those applications had their own Recovery Point Objectives (RPOs) and Recovery Time Objectives (RTOs) All mission critical data on Symmetrix, for example, had under a five minute RPO and an RTO that was based on the Disaster Recovery (DR) provider being able to implement the system images on the consignment hosts-hours at worse.



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Some systems, such as the application based replication were built on the disaster recovery site and had a nearly 0 RTO and RPO. The rest of the applications had less aggressive RTOs often measured in days - largely because data restoration was also being facilitated by the restoration of the system images stored on the NAS (Celerra) and/or a bare metal restore of the system from Data Domain using Symantec NetBackup (Geocluster).

None of the applications were able to meet these RPOs when replicating across the OC-12 (622 Mbps) WAN that was in place between the company's main data center and DR site. Part of this was the sheer amount of traffic being sent. DR and replication projects in general send a huge amount of data. In the case of The Healthcare Company total data transfers exceed 11.4 Gbps per day.

The other part of the problem though was the effective bandwidth available to the transfer. DR and recovery projects often stumble because the interaction of latency, bandwidth, and loss constrain network performance. Even at OC-12 speeds, the WAN connection to Philadelphia was limited to under 25 Mbps per application due to the distance between the two locations. With even nominal packet loss, performance would frequently drop to just 2 Mbps.

The Healthcare Company began looking at purchasing another OC-12 line, an investment that could easily run \$40,000 per month. This route would solve bandwidth limitations, but not address throughput challenges brought forth by the latency and packet loss on the WAN. EMC therefore recommended that The Healthcare Company speak with its partner, Silver Peak, the experts in data center class WAN optimization.

### **WAN OPTIMIZATION: THE RIGHT MEDICINE**

Silver Peak uses a variety of real-time network optimization techniques to enhance the performance of all EMC replication products over the WAN. This includes the following core technologies:

**Network Acceleration** enables organization to place DR sites as close or as far from the site primary site as necessary without regard to constraints resulting from network latency by overcoming TCP's limitations in passing large data volumes. Network Acceleration uses techniques such as window scaling and selective acknowledgements to send more data or send data more efficiently than would otherwise be possible. Network Acceleration also corrects CIFS chattiness, which was an issue for some applications running on the OC-12. With Network Acceleration, The Healthcare Company minimized the impact of latency between Miami and Philadelphia.



*The Healthcare Company deployed four Silver Peak NX appliances – two in their Miami office and two in their Philadelphia disaster recovery site.*

**Network Integrity** enables organizations to reduce costs of their DR plans by selecting a less expensive network connection, such as an Internet connection or an MPLS service, which might have higher incidents of packet loss. This is possible because Network Integrity corrects real-time packet loss commonly found on those networks using Silver Peak's Forward Error Correction (FEC). Packet Order Correction (POC), the second part of Silver Peak's Network Integrity features, will reorder packets helping to reduce or even eliminate network packet retransmission, which reduces an application's maximum throughput. Advanced Quality of Service (QoS) techniques also prioritize traffic and guarantee network resources.

**Network Memory** enables organization to get more out of their DR connections. Network Memory is Silver Peak's patent-pending solution for deduplication over the WAN, which reduces the volume of data replicated over the WAN. With Network Memory, the Silver Peak appliances inspect all traffic sent between Miami and Philadelphia and store information as a local instance. Repetitive information is then delivered locally rather than being sent across the WAN, improving application performance and WAN utilization.

Network Memory is a perfect complement to data reduction techniques present within SRDF/A, Data Domain and other replication solutions. While those solutions minimize data stored on disk (and subsequently the amount of transferred between storage devices), Silver Peak's WAN optimization minimizes all the other traffic on the WAN. As disaster recovery traffic shares the WAN with other applications, like file, email, and web, having multiple layers of deduplication proved quite effective in The Healthcare Provider's environment.

### **A SUCCESSFUL OPERATION**

The Healthcare Company deployed four Silver Peak NX appliances – two in their Miami office and two in their Philadelphia disaster recovery site. The appliances were configured active/active for non-stop operation. In Miami, the NXs were deployed inline within the network while within the disaster recovery site they were installed out-of-path with traffic directed to the NX using policy based routing.

The implementation went off smoothly and The Healthcare Company was able to dramatically improve the performance of all of their applications traveling across the OC-12 WAN, including SRDF/A, Data Domain and Celerra, some of which seeing over an 80% throughput increase during peak periods. Cumulatively, throughput for all applications on the WAN more than doubled, rising from about 300 Mbps to 755 Mbps. This is well above the 622 Mbps that is typically available on an OC-12.



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“Silver Peak helped make the DR solution a reality,” says the senior technical consultant from EMC, “If not for their product, circuit costs and other configuration changes would have made it difficult if not impossible to achieve the desired RPO/RTO.”

Equally important, The Healthcare Company did not have to upgrade their networking and storage infrastructure to achieve their RPO/RTO. And, the organization has an affordable migration path for future DR plans.

“The Healthcare Company can continue to grow by adding storage capacity and WAN optimization in an affordable manner without sacrificing high availability,” says the EMC senior technical consultant.

As The Healthcare Company experienced, developing a DR site is critical for business continuity, but all too often WAN limitations undermine efforts to build and implement those sites. Even on high capacity WANs, latency, loss, and poor bandwidth utilization can undermine critical replication initiatives. Silver Peak partnered with EMC to overcome these challenges, resulting in the highest performing solution for affordable offsite data replication.