

# Daughters of Charity Health System Experiences the Physical and Virtual Benefits of Deduplication and EMC Data Domain Systems

The Daughters of Charity Health System's (DCHS) core mission to serve the sick and those living in poverty can present challenges when balancing technology purchases against other organizational needs. But DCHS's investment in EMC paid off in ways both physical and virtual as Data Domain systems solved its backup challenges, accelerated its virtualization strategy and improved the level of IT support that DCHS provided to its medical staff.

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## Company

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## Industry

Health Care

## Challenges

- Manual tape processes could not support virtualization objectives
- Tape libraries breaking on an almost weekly basis
- Ongoing data growth driven by existing and new applications
- WAN links used for replication were saturated
- IT staff spending ~25% of their week managing backups

## Solution

- Seven (7) EMC Data Domain DD600 Appliance Series systems
- EMC Data Domain Replicator software
- EMC NetWorker backup and recovery software

## Benefits

- Completely eliminated tape from backup operations
- Efficient replication eased WAN traffic
- IT staff reduced time managing backups by 90%
- Increased flexibility to migrate and restore VMs at other sites
- Reduced restore time up to 97% versus tape

***"DCHS has to be very careful and strategic about how it spends its technology dollars. Going to bat for the technology dollars to purchase Data Domain was clearly a good choice"***

—Michael Day,  
IT Director, Daughters of Charity Health System



## Overview

Confronted by continuing data growth, ongoing tape problems, saturated WAN links and an overworked IT staff, a change to the DCHS backup environment was needed. But as a non-profit with limited funds for new technology purchases, DCHS had no margin for error. Selecting Data Domain deduplication storage systems provided DCHS the improvements it needed plus the physical and virtual benefits that it hoped to see.

## Daughters of Charity Health System (DCHS) Profile

The Daughters of Charity Health System (DCHS) is a regional health system of six hospitals and medical centers spanning the California coast from the San Francisco Bay Area to Los Angeles. The health care ministry exists to support the mission of their sponsors, the Daughters of Charity, Province of the West by providing holistic, spiritually centered care to the sick and those living in poverty.

## DCHS Plays Nurse Maid to Backups

*"Wonderful organization, challenging business model"* is how IT Director Michael Day describes DCHS. The DCHS charter calls for it to provide health care services to anyone regardless of their income level. However, this creates exceptional challenges when funding new technology purchases.

A specific need confronting DCHS was updating its backup environment to protect its growing amount of data. In addition to backing up hundreds of physical servers across its six data centers, its data volumes were growing 15% year-over-year driven by new applications and servers and lengthening clinical data retention requirements.

The increasing amount of time spent nursing backup jobs was of particular concern. The IT staff conservatively spent ten hours a week managing backup processes then troubleshooting failed backups after they went home.

DCHS' six tape libraries were the main problem as they broke almost weekly. While DCHS first backed up most of its data to a conventional disk device before de-staging it to tape, the tape libraries needed to be functional to keep backup processes flowing smoothly.

Further, as backup data growth continued, the disk caches filled up more quickly. Day says, *"We were constantly challenged with tape libraries as they were not de-staging data fast enough for us, particularly at our larger sites."*

## The Criteria for Change

A factor working in DCHS' favor as it developed a strategy to change its backup environment was that it used Dell Services, a provider of IT solutions. So together DCHS and Dell began to search for a solution that would improve:

- Backup efficiencies and reliability
- Consolidation of both physical and growing virtual infrastructures
- The level of service provided to its internal customers
- The quality of life for its IT associates

They also wanted to centralize the management of DCHS backup data across its six data centers as well as continue to leverage the hardened Dell Services data center in Plano, TX.

DCHS was already backing up and replicating data to Dell Services' data center using EMC NetWorker with its existing backup systems. But the sheer volume of data being pushed over the WAN meant it had to stagger replication jobs and then carefully monitor them to ensure they were completed successfully.

## EMC Gets the Inside Track

To meet these objectives, it was evident early on that DCHS would need to expand its use of disk plus introduce deduplication. However they were unclear at the start if deduplication would benefit DCHS backup environment.

Being in close proximity to EMC's Backup & Recovery Systems division headquarters, this gave DCHS access

to EMC's executive briefing center and deduplication lab environment. Here they could get fully educated and test EMC solutions to experience first-hand how deduplication worked and what benefits the health-care provider could expect to see.

Deduplication plus the new integration between NetWorker and Data Domain via Data Domain Boost software gave DCHS confidence that EMC could meet its needs into the foreseeable future. This combination of features, disk-based backup performance, higher reliability and optimized replication all backed by EMC's service and support gave DCHS a high level of comfort with Data Domain and led to its decision to move forward with EMC.

### A Seamless Transition to Data Domain

The Data Domain system roll-out began in June 2010. DCHS deployed a DD630 (logical capacity of 420 TB) at each of its four remote sites. It then deployed a DD690 (logical capacity of up to 1.7 PB) at its two primary data centers in San Jose and Los Angeles, CA, as well as at the data center in Plano, TX.

To make the transition to Data Domain almost seamless, the DD630 and DD690 systems were all configured as virtual tape libraries (VTLs). Since DCHS was using NetWorker to first cache data to disk before de-staging it to tape, it only had to connect the Data Domain systems to its local Fibre Channel SAN and then configure NetWorker to use the native VTL services offered by the Data Domain solution. Once that was completed, NetWorker could begin to direct the flow of backup data to Data Domain.

Once in place, DCHS began to reap the benefits of its meticulous research as to how deduplication would benefit within its environment. The Data Domain systems implemented at the remote sites are achieving nearly 20:1 deduplication ratios across protected applications. Two of the remote sites could now store 96 TB of raw backup data on just 5.4 TB usable across the two Data Domain systems leaving them ample room for future growth.

Introducing deduplication also enabled DCHS to completely eliminate its tape problems as well as significantly reduce the replication overhead on its WAN links. Because Data Domain systems replicate only changed blocks of data as data is backed up, DCHS no longer has to stagger replication jobs. Deduplication has reduced the amount of data replicated over its WAN links from about 9 TBs each

week to less than 400 GB. Further, all backup data is now kept online on disk eliminating concerns about tape library failures.

### DCHS Sees the Physical and Virtual Benefits of Deduplication with EMC

Eliminating its reliance on tape, simplifying replication and reducing the overhead on its WAN links are tangible benefits that DCHS expected when it implemented Data Domain systems.

But just as importantly it is meeting all of the objectives it defined when seeking a new backup solution. Its prior solution backup had become a bottleneck in its virtualization adoption. The implementation of Data Domain systems did more than solve that problem; it accelerated its virtual strategy.

First, DCHS has become more efficient in leveraging backups as it gained new flexibility in backing up its growing virtual environment as well as moving virtual machines (VMs) from one site to another.

While DCHS could move VMs, it still had to worry about moving all of the data attached to each VM. Now, the team simply creates a backup of each VM and easily migrates its data from one site to another without saturating the WAN link which has enabled DCHS to accelerate its DR initiatives.

Second, DCHS has greatly improved the quality of service it offers to its internal customers. Since all data now remains on disk, restores take only minutes instead of hours and administrators can easily do these restores from home by recovering data from deduplicated disk.

Finally, DCHS improved the quality of life of its IT staff. Since implementing Data Domain systems and managing backups through NetWorker, they have moved out of "fire fighting mode" into a proactive mode with more freedom to tackle DR and security initiatives.

For these reasons DCHS saw it was time to get off the deduplication fence and act on what it saw. Day sums it up, "As a non-profit health system whose mission is to serve the poor, DCHS has to be very careful about how it spends its technology dollars. Going to bat for the technology dollars to purchase Data Domain was clearly the right thing to do for our associates, and ultimately, our patients." ■

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