

# Mercy Hospital in Miami heals storage ailments with medical-image grid



"We are providing higher quality patient care and we have reduced our operational expenses with the storage grid solution from HP and Bycast. Our doctors are delighted with the faster access speeds to archived images. We expect the storage grid to seamlessly scale to meet our requirements well into the future."

— Jorge Labrada, Radiology Information Systems Administrator, Mercy Hospital Miami

#### **Business need:**

Like many large healthcare facilities, Mercy Hospital in Miami has incrementally adopted digital imaging technology. Until recently, its digital imagery data resided on different storage infrastructures, which were slow, difficult to manage and painful to upgrade. Mercy Miami needed an enterprise fixed-content storage system that could store medical images quickly, dependably and cost-effectively while providing a solid, scalable platform – with enough resiliency to protect the storage infrastructure during the annual hurricane season.

#### **Solution overview:**

Mercy Hospital in Miami deployed an enterprise storage solution built on HP StorageWorks Modular Smart Array (MSA) systems, HP ProLiant servers, and Bycast StorageGRID software. This distributed storage platform seamlessly integrates with Mercy's existing medical-image acquisition and management systems (PACS and modalities) and unifies medical-image storage from multiple disciplines, including radiology and nuclear cardiology. Mercy Miami can now reliably store growing volumes of medical images and quickly retrieve current and archival diagnostic studies.

#### **Intensive care for the storage infrastructure**

Mercy Hospital produces more than 200,000 diagnostic studies annually including CRs, CTs, and MRIs. Until recently, different departments at Mercy had separate IT infrastructures for storing these images and related documents. Furthermore, Mercy used a tape library to store prior studies that were more than one month old. Accessing these archival images took up to 10 minutes. To cure this ailing information architecture, Mercy Miami created a grid-based, enterprise, medical-image storage and archiving solution. This distributed storage system consolidates Mercy's disparate information systems into a single, grid environment.

"We explored all the large storage companies, such as IBM, StorageTek, and EMC," says Jorge Labrada, Radiology Information Systems Administrator at Mercy





Hospital in Miami. "None of these other companies had an industry-specific answer like the HP+Bycast Solution for Healthcare. We already had a great relationship with HP, because we have used its technology for years throughout our enterprise. HP technology has proven to be extremely reliable and economical."

**HP-Bycast storage solutions make a critical difference**

The HP+Bycast system meets Mercy's needs for a unified, fixed-content storage platform that can support multiple disciplines including radiology and nuclear cardiology. It integrates with existing infrastructure including Canon and Philips Picture Archiving and Communication Systems (PACS), Siemens Tuxedo nuclear cardiology modality, and a web portal for referring physicians.

"HP and Bycast provided us with a medical-image archiving solution that was ready-made for the healthcare industry," Labrada says. "Other vendors simply offered raw storage and expected us to go from there. By contrast, this solution already had business rules in place that made it very easy for us to migrate our data and roll out new imaging solutions to our staff."

Labrada insisted on reliability and availability for this critical data. "We must store data in a pristine condition without loss or corruption," Labrada continues. "This implies a high availability system that is resilient enough to ensure business continuity, even in the presence of hardware errors and catastrophic events." Performance was also important: he wanted to reduce the time it took clinicians to retrieve archived images to less than one second.

**Managing data with surgical precision**

With the transition to a digital healthcare enterprise, Mercy's IT systems have become a critical element in delivering quality patient care. The new storage grid is a highly accessible online storage and archive solution, motivating Mercy to migrate its existing 9 TB image archive into the storage grid. Now, all images – current as well as priors – are immediately available to doctors.

"Formerly, we were using an AIT tape solution to back up our Nuclear Cardiology Studies," says Aristides Amat, Director of Nuclear Imaging, Mercy Hospital. "It took from 45 minutes to one hour to retrieve a case. With our new storage grid solution, we can perform the same operation in just five seconds."

Managing and maintaining a single storage system simplifies administrative tasks. System administrators can transparently add capacity without downtime or disruption of service. Labrada projects that their medical-image environment will grow at least 5 TB per year and exceed 30 TB within four years. He plans to add storage capacity annually to take advantage of declining hardware prices. "Using the centralized management system, we can generate reports that highlight storage capacity growth," he says. "The combination of a unified storage platform, grow-as-you-go scalability, and accurate capacity planning allows us to reduce storage costs for our entire enterprise. For the first time ever, we can accurately project how much we are going to spend on storage during the budgeting cycle."

### Reliable, self-healing storage

Miami's annual hurricane season mandates a robust business continuity and disaster-recovery plan. The HP+Bycast StorageGRID provides the assurance Mercy Miami needs. Information Lifecycle Management (ILM) business rules create two replicas of each study, which are automatically stored in two separate buildings. Each replica is stored on an HP StorageWorks MSA30 system configured with RAID Advanced Data Guarding (ADG).

"This system provides Mercy Hospital with complete business continuity. We can be confident that the system is online and that medical images are there when we need them. It is light years ahead of what we had before."

– Jorge Labrada, Radiology Information Systems Administrator, Mercy Hospital Miami

This technology provides the highest level of RAID data protection and insulates Mercy Hospital against the failure of any two drives in an array. The StorageGRID software uses digital signatures to ensure data integrity, and the self-healing architecture increases resiliency.

"The threats of four hurricanes in the autumn of 2004 tested our business continuity and disaster-recovery plans," Labrada maintains. "We rely on HP and Bycast to ensure our radiology department remains operational during these crises. We achieved this high-level of availability using industry standard HP ProLiant servers and StorageWorks MSA storage devices – without upgrading our network infrastructure."

### HP+Bycast: a stable foundation for the future

Once Mercy Miami has fully deployed the HP+Bycast StorageGRID, radiology, cardiology, oncology, nuclear cardiology, and their referring physicians will all share a single, unified storage platform. System administrators can continue to expand capacity simply by adding new storage nodes. Having just completed a six-month, 9 TB

data migration from tape, Mercy Miami is glad to know that it can add capacity without impacting operational systems – and without a time-consuming migration project.

"The new storage platform meets our current needs while supplying plenty of flexibility for the future," concludes Labrada. "In addition to continually refreshing our storage infrastructure, we may wish to introduce mass archive-grade media to the system. The grid architecture will seamlessly accommodate these new storage media. We have improved the quality of patient care while reducing our total cost of ownership. The project with HP and Bycast has been a complete success."

### About Mercy Hospital Miami

Mercy Hospital, nationally recognized for its commitment to clinical excellence and patient satisfaction, is Miami-Dade's only Catholic Hospital. Established in 1950, it is sponsored by the Sisters of St. Joseph and a part of Catholic Health East. A 483-bed acute care hospital, staffed by more than 900 physicians representing 28 medical specialties, its Centers of Excellence include: The Heart Center at Mercy Hospital, the Miami Cancer Center at Mercy Hospital, and the Orthopedic Institute at Mercy Hospital. Mercy Hospital is located at 3663 S. Miami Avenue, Miami, FL – and [www.mercymiami.com](http://www.mercymiami.com).



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## Challenges

- Speed delivery of current and archived images to doctors and hospital staff
- Ensure business continuity and improve disaster recovery across the Information Life Cycle
- Maintain compliance with industry regulations
- Improve capacity planning and provisioning of storage resources

## Solution

### Hardware

- HP StorageWorks Modular Smart Array 30 (MSA30) systems
- HP StorageWorks Modular Smart Array 20 (MSA20) systems
- HP ProLiant DL380 servers

### Software

- Bycast StorageGRID Solution for Healthcare

### HP Services

- Consulting and integration
- Implementation
- HP Care Pack services – 24x7, 4-hour response (Proactive-24)

## Results

- Streamlines IT processes by consolidating three disparate storage systems into a single networked architecture
- Helps ensure compliance with government and industry regulations concerning patient records
- Ensures faster access to medical images, improves patient care, and simplifies processes for doctors and other end-users
- Improves communication with referring physicians at multiple locations
- Simplifies budgeting strategies and lowers total cost of ownership

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