Business challenge

To deliver life-changing care, UPMC must ensure clinical and research teams have fast, reliable access to data. How could the organization shorten storage response times and increase availability?

Transformation

By deploying latest-generation IBM FlashSystem® solutions managed with IBM Spectrum Storage™ tools, UPMC boosted uptime and cut response times for its clinical applications.

Kevin Muha
Director of Storage and Data Protection
University of Pittsburgh Medical Center

Business benefits:

2,400%
growth in storage under management, supported with zero increase in IT headcount

50%
TCO saving for primary storage and 5:1 data reduction ratios maximize efficiency

50%
shorter patient record seek times and 99.9% decrease in response times enhance care

University of Pittsburgh Medical Center (UPMC)

Enabling quality patient care and improving user experience by delivering rapid access to vital data

University of Pittsburgh Medical Center (UPMC) is a global healthcare provider and insurer based in Pennsylvania. Employing more than 80,000 people, the nonprofit enterprise operates over 35 hospitals and 600 clinical locations. In 2017, the organization's revenues totaled USD 16 billion.

"Efficiencies provided by FlashSystem translate into a 50 percent saving on storage costs, which is enabling the lowest cost per GB of storage we've ever seen."

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Driving continuous innovation

Every day, there are new breakthroughs in medicine. For healthcare providers, the goal is to translate these breakthroughs into commercially viable service delivery models that help optimize patient outcomes.

UPMC, a world-renowned healthcare provider and insurer based in Pittsburgh, Pennsylvania, is adept at handling this challenge. The organization updates its IT infrastructure continually to ensure that it can support new and enhanced treatment approaches and research activities.

Kevin Muha, Director of Storage and Data Protection at UPMC, begins: "The volume of data that we store and make available today is far beyond even the wildest dreams of a few years ago – and it's still growing. For example, we've got more sophisticated clinical imaging systems generating increasingly large files and patient records getting progressively more detailed. Unless the tens of thousands of employees across UPMC can lay their hands on the data as and when they need it, innovations won't have the hoped-for impact on patients."

UPMC had already set the bar high and it had no plans to slow down the pace. Kevin Muha elaborates: "Every year we aim to outdo the last. With new storage solutions emerging all the time, we decided to review what was out there, and see if it could help us deliver more improvements to the business."

Doubling down on data growth

UPMC teamed up with IBM to maximize utilization of resources and simplify management for its storage environment. The organization rolled out a software-defined storage (SDS) infrastructure based on IBM technology, becoming an IBM Spectrum Storage Suite user for unlimited access to a broad range of SDS solutions.

"IBM SAN Volume Controller was the first building block in a smarter approach to storage at UPMC – we've used it to secure data and streamline management for 12 years now," explains Kevin Muha. "Since then, we've introduced various IBM Spectrum Storage solutions, so it made sense to opt for the unlimited license, which gives us straightforward per-TB pricing and easy access to a wider product range."

For overall business resilience UPMC relies on IBM Spectrum Protect™, which enables it to manage backups for 32 PB of data.

Kevin Muha comments: "With Spectrum Protect, we can back up a large environment within nightly windows of 10 to 12 hours, minimizing the impact on our operations."

For its clinical imaging archive, where absolutely no data loss or service interruptions can be tolerated, UPMC deployed IBM Spectrum Scale™. It supports synchronous replication in a stretched cluster across two data centers, and provides a global namespace that enables multiple users to access data simultaneously. Kevin Muha adds: "With Spectrum Scale, we built a true business continuity solution for our clinical archive that protects against data loss in even extreme circumstances."

Continuing to impress, year after year

To support new and enhanced services over the last decade, UPMC has grown its primary storage environment from 600 TB to nearly 15 PB. With help from IBM solutions, the organization has managed this expansion without increasing the headcount of its storage team.

"When you look at how much more UPMC is doing as an organization now compared to a few years ago, it's amazing we've supported so much growth without adding more team members," remarks Kevin Muha. "A lot of this is down to the enhanced control and insight that IBM Spectrum Storage solutions provide."

The data reduction project proved an unmitigated success, with IBM FlashSystem solutions exceeding expectations for performance and efficiency. Kevin Muha sums up the results: "The first FlashSystem A9000R we deployed is now 90 percent utilized and still holding a data reduction ratio of 5:1, while the next model is provisioned to the tune of more than 2 PB and holding above 6:1 data reduction.

"The FlashSystem 900 enables us to highly compress our data, making it ideally suited to the huge image files in our clinical imaging archive. These efficiencies translate into a 50 percent saving on storage costs, which is enabling the lowest cost per GB of storage we've ever seen."

Alongside greater efficiency, UPMC is also seeing dramatic improvements in performance and exceptional levels of availability. The impact has been so significant that the organization's users have been in touch to ask about what has changed behind the scenes.

"Our primary motivator in deploying FlashSystem was more horsepower for our applications, and it's definitely delivered," comments Kevin Muha. "FlashSystem halved seek times for patient records and drove response times for other business-critical applications from 10 milliseconds to just 3 microseconds."

He concludes: "On the hospital floor, IBM Storage solutions are having a real impact: orders go in faster, test results are available sooner, and uptime is improved across all systems. All this adds up to better patient outcomes combined with greater operational efficiency, which is the key to UPMC delivering the healthcare services of the future."

Recently, UPMC embarked on a data reduction project with IBM, deploying the latest-generation IBM FlashSystem solutions to take advantage of deduplication and compression features. The organization began by implementing IBM FlashSystem A9000R, built with IBM Spectrum Accelerate™ software, as its primary storage platform, migrating more than 6,000 VMware virtual machines running business-critical applications including Cerner and Epic solutions. Since then, UPMC also deployed IBM FlashSystem 900 to support its clinical imaging cluster.

"UPMC has a long history of successes with IBM Storage – for example, we drove up storage efficiency by 90 percent with our first implementation of IBM SAN Volume Controller and achieved 80 percent storage cost savings with IBM XIV," recalls Kevin Muha. "For that reason, we were very excited when IBM FlashSystem came onto the scene. We heard about the data reduction capabilities of the latest models, and knew it would be a home run. We called our move to FlashSystem a 'lift, shift and forget' project, because it was so seamless."

Solution components

- IBM FlashSystem® 900

- IBM® FlashSystem A9000

- IBM FlashSystem A9000R

- IBM Spectrum Accelerate™

- IBM Spectrum Protect™

- IBM Spectrum Scale™

- IBM Spectrum™ Storage Suite

- IBM SAN Volume Controller

Take the next step

To learn more about IBM flash storage, please contact your IBM representative or IBM Business Partner, or visit the following website: ibm.com/storage/flash

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