



Achieving Improved Resiliency and Recovery through Modern Storage and Backup

Legacy Health is future-focused. One of the earliest [HIMSS Analytics Stage 7](#) adopters and the first to run production Epic EHR in the cloud, the nonprofit health system needed a way to support increasing demands for performance, availability and security. Its old, tape-based backup solution couldn't handle the new requirements. When Legacy Health transitioned to a new data center, it built a resilient infrastructure foundation that leverages the benefits of modern storage and backup solutions.

Setting new infrastructure goals

Legacy Health's heritage dates back more than 100 years. Serving the Portland, Oregon, region, with six hospitals and 70 clinics staffed with 3,000 clinicians and 14,000 employees, it was experiencing substantial data growth within its Epic EHR and clinical systems. With its new data center, the health system wanted to support the demands created by its growth while achieving lower costs and delivering better performance, along with reducing risks of sensitive data exposure and minimizing downtime. Any outage, whether due to disasters, accidents or ransomware, negatively impacts an organization's reputation and bottom line, which is why Legacy Health was in search of a secure and reliable data management solution.

There were other risks Legacy Health was also looking to reduce with its new infrastructure foundation. "We never had more than three people in the storage and backup engineering roles," explained Robert Luehrs, Storage and Backup Engineer at Legacy Health. "When we were managing that number of sites, that number of hospitals, 64 storage arrays and a dozen backup servers, we were stretched thin." The IT team was managing 40 operating systems, half an exabyte of storage and a network that included high-speed links as well as some that barely outpaced dial-up. Overburdened, the IT staff deferred to short-term patches and maintenance, which resulted in unstable and unprotected platforms. Reducing the load on staff, therefore, became a key goal.

Simplicity, capability and availability

Before seeking a technology solution, Legacy Health developed a list of priorities. Cost, however, wasn't at the top of the list. Instead, the health system focused on a different criterion. "We chose simplicity of the management of our storage and backup resources," he said. Complex products often fail due to small mistakes like typos, according to Luehrs. "Our current backup product has around 2,400 pages of documentation. And because I've been working with it for 18 years, I've pretty much memorized all of that," he pointed out. "Simplicity makes your environment



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Robert Luehrs | Storage and Backup Engineer | Legacy Health

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Personally, that meant I could take a deep breath and let a lot of those memorized pages go.”

Capability was also a critical priority. Capability, Luehrs noted, meant more than capacity; it included other features, including fail-safes and monitoring. Availability was the final criterion. Having a solution that had extremely high availability meant the near-elimination of downtime and its associated costs.

Selecting storage that met Legacy Health’s goals

The first element of Legacy Health’s solution was the storage platform itself. Pure Storage offered a block storage array, with a good reputation for performance, maintenance, administration and uptime, according to Luehrs. The Legacy team took hands-on training and verified those capabilities for itself.

Pure Storage directly supported Legacy’s goal of high availability, with 99.9999% uptime, and presented Legacy with real-time data derived from polling customers that demonstrated its real-world performance. In addition, there is no downtime associated with any upgrades, whether hardware, software or firmware; updates are transparent, with no impact on performance. Compression and de-duplication maximize available capacity as well as improving performance on both reads and writes. Pure Storage also offered strong security features. Encryption is always on, which is key for healthcare.

Keeping backups fast, efficient and secure

Legacy Health needed a backup solution to allow efficient, granular recovery of all data, regardless of its age, type or storage location. The IT staff keeps daily backups for a month, monthly backups for a year and yearly copies for two years. After testing several backup solutions in a lab, Legacy Health chose Rubrik, which seamlessly integrates with Pure Storage.

Administrative functions are pain free with Rubrik; when a new drive is added, SLAs and protection levels are inherited and backups are established automatically. But as Luehrs said, “That just makes it easy for me as a Rubrik server administrator, and nobody really cares if my job is easy. What everyone cares about are the end-users. And it’s the simplicity of the restores where Rubrik really gets the highest praise from our entire enterprise.”

Keeping restores simple is important

because unlike backups, which are performed daily, restores are infrequent. Luehrs emphasized the importance by invoking the adage, “Backups are done at leisure, and restores are done in a panic.” Restores from Rubrik are not only simple, they’re fast. The help desk can find the data and respond to support requests within seconds. Because virtual machines (VMs) can be accessed directly through the Rubrik platform, the wait time for tapes to be mounted or metadata to be reassembled is eliminated. The VM is started

in Rubrik and can be live migrated to production environments or restored to an alternate host. Restores can encompass the entire VM or a single file.

Rubrik also reduced the time and space it takes to complete backups. Rubrik only backs up changed blocks and leverages both compression and de-duplication not only to improve speed, but also to optimize storage requirements. Backups that used to take hours now take only a couple of minutes with Rubrik. For Legacy Health, Epic Caché backups used to take over 18 hours for 24 TB. With Rubrik, it takes less than 10 hours for them to backup a 43 TB database.

Pure Storage

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Furthermore, since Rubrik’s backups are immutable, they cannot be encrypted by ransomware. Once Rubrik’s backups are ingested, no external or internal operation can modify the data, and the data managed in Rubrik is never available in a read/write state to the client. With native immutability baked into its architecture, as well as with Rubrik’s ability to leverage metadata from backups in order to increase visibility into the scope of cyberattacks and quickly pinpoint affected files, Rubrik provides customers such as Legacy Health

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Robert Luehrs

with a multi-level defense against data loss or manipulation.

With Rubrik, Legacy Health also eliminated an entire administrative process. Before switching to Rubrik, Luehrs explained, “After backups were created, they were copied onto onsite tapes and offsite tapes and trucks had to come and pick up the tapes and take them to a secure offsite location. There was a lot of overhead. It took a lot of time, a lot of processing and a lot of administration.” With Rubrik, Legacy Health is able to automate both retention and archival through a single SLA-policy engine.

Better than ‘best practice’

Having the right tools – Pure Storage and Rubrik – was important, but to achieve its goals Legacy Health needed to use those tools to implement an effective backup strategy. Disaster recovery (DR) strategies are often based on the 3/2/1 rule:

- Have three copies of data.
- Keep them on two different media.
- Keep one copy offsite.

Legacy Health used Pure Storage and Rubrik to extend that rule and implement a 4/3/2 policy:

- Have four copies of data. Production data is on Pure Storage in its data center, replicated to the cloud, backed up on Rubrik and copied to a DR site.
- Keep them on three different media. Pure Storage, cloud and Rubrik storage are all distinct storage formats.
- Keep two copies offsite. Cloud and the DR site are both separate from production.

In addition, Legacy Health now has two protected data copies to support recovery from ransomware: the Pure immutable snapshots and the Rubrik immutable backups.

By following this strategy, Legacy Health has built a highly reliable environment. “In our five Pure Storage arrays that we

have had for three years, we haven’t had any downtime. That’s more than six nines,” Luehrs said.

With the fast, secure, scalable and reliable solution delivered by Pure Storage and Rubrik, the new infrastructure at Legacy

Rubrik – Multi-Cloud Data Control™ Company

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Health ensures that neither ransomware nor routine maintenance will keep healthcare providers from focusing on the health of their patients and protecting the privacy of their data.



About Rubrik

Rubrik, the Cloud Data Management Company, enables enterprises to maximize value from data that is increasingly fragmented across data centers and clouds. Rubrik delivers a single, policy-driven platform for data recovery, governance, compliance, and cloud mobility. For more information, visit www.rubrik.com and follow [@rubrikinc](https://twitter.com/rubrikinc) on Twitter. Rubrik is a registered trademark of Rubrik, Inc. Other marks may be trademarks of their respective owners.

About Pure Storage

Pure Storage gives technologists their time back. Pure delivers a modern data experience that empowers organizations to run their operations as a true, automated, storage as-a-service model seamlessly across multiple clouds. One of the fastest-growing enterprise IT companies in history, Pure helps customers put data to use while reducing the complexity and expense of managing the infrastructure behind it. And with a certified customer satisfaction score in the top one percent of B2B companies, Pure’s ever-expanding list of customers are among the happiest in the world.