

SFPUC Gains Performance and Better RPO and RTO, while Lowering its Storage TCO



SAN FRANCISCO PUBLIC UTILITIES COMMISSION CASE STUDY



Utility
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Challenge

The more the public utility virtualized, the more performance waned. SFPUC needed a storage upgrade but its two-year budget cycle didn't allow for a full hardware swap or the cost of most HCI solutions.

Results

- One platform for primary workloads and backup
- 6x performance improvement
- 80% less storage management time
- 200-300% lower desktop VM latency
- 20x improvement in RPO
- 10x to 20x improvement in RTO
- 50-60% lower TCO

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Brad Taylor
IT Manager, Technical Operations

Company Challenge I/O Contention with Growing Virtualization

San Francisco's Public Utilities Commission (SFPUC) provides water, power and wastewater services to 2.7 million customers across seven Bay Area counties. As a public utility, reliability of services delivered remains the top objective for the organization's IT team.

With data growth of about 25-30 percent annually, SFPUC is constantly maximizing its data stores for its business systems and three industrial control systems. The organization has virtualized about 85% of its server environment and about 300 desktops. But as it virtualized, I/O contention and bottlenecks increased with the existing NetApp storage.

“We have all the complexities of a typical corporate environment combined with all the complexities of a manufacturing entity,” said Brad Taylor, IT Manager, Technical Operations. “The more we consolidated to VMware and the more we virtualized, the more critical storage performance became, and we had very limited capabilities to tune and optimize that given that we were running traditional storage frames from NetApp.”

Results One Platform for Both Tier 1 Workloads and Backup/DR

SFPUC considered replacing NetApp with a hyperconverged solution, looking at Nutanix and HPE Simplivity. But vendor lock-in and the need to forklift the entire infrastructure steered them in another direction. Their budget allows for upgrading 25 percent of servers each year, so a full swap was not an option. Plus, all-flash array storage options didn't fit within SFPUC's budget.

Instead, Datrium's Automatrix platform answered a number of the utility's challenges. “Datrium solved about six different problems for us,” Taylor said. “In one VMware-optimized solution, we got snapshotting, replication, deduplication, compression and encryption, along with a huge performance boost. We also eliminated complexity and were able to leverage our existing assets. We would never have been able to upgrade otherwise.”

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Tight integration between Datrium and VMware also simplified management. Moreover, Datrium worked with the industrial control systems in a way that others could not. Traditional VMware-based snapshots previously caused SCADA systems to fail due to inherent latency or pauses. With Datrium, snapshotting is invisible to the control systems, so they don’t trigger failover processes and the water to millions of customers just keeps flowing.

6x Performance Improvement

SFPUC rolled out Datrium incrementally, first in its backend for customer care and billing systems, then for its industrial control systems, and finally for its VDI environment. Across all environments, SFPUC gained much higher data reduction ratios: at a minimum 2 to 1.

Performance improved noticeably across all three environments. In billing, batch processes that once took up to four hours dropped to about 40 minutes, a 6x performance improvement. For the industrial systems, both workloads and backup ran more smoothly. Likewise, latency decreased for desktop VMs by 200-300 percent.

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Backups: Nightly to Hourly, and 10x to 20x Faster RTO

The utility leverages Automatrix autonomous data services in its industrial control network, where it transitioned off file-based backup with a physical tape service and eliminated an image-based backup tool. This not only simplified the infrastructure and reduced a large monthly cost, but dramatically lowered both recovery point objectives (RPO) and recovery time objectives (RTO).

With Datrium, SFPUC increased backup frequency from nightly to hourly. For its SQL Server, the utility reduced transaction log dumps by 75 percent.

As for recovery, the team can now resurrect a mission-critical application from a snapshot backup within a couple of hours – instead of days. “In terms of recovery times with Datrium, there’s really no comparison,” Taylor said. “We run a critical service for the Bay Area. The more we can do to reduce those service interruption windows, the better. My SCADA manager is sleeping better at night knowing we can recover rapidly.”

In disaster recovery drills, SFPUC has proven those quicker recovery times. They recovered a master site within half an hour, compared to four to six hours before, for a 10x improvement in RTO.

No More ‘Workload Shuffling’ - Cutting Management Time by 80%

Previously, the IT team dedicated a chunk of time to balancing workloads to optimize storage. They would carve up LUNs and disk groups to reduce contention – or “reshuffle the deck” as Taylor called it. This happened during every maintenance window, every month, consuming valuable workday and weekend time.

Datrium consolidated all data into one data store, and eliminated any need to manage LUNs. Taylor estimates that reduces storage management time by 80 percent.

“After the move to Datrium, I have not seen a single maintenance window where they’re doing anything, where they’re optimizing storage,” he said. “That’s basically a ‘set it and forget it’ situation for them.”



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50-60% Lower TCO

For the publicly funded utility, the cost-savings associated with Datrium were the icing on top of performance and management gains. Before, SQL Server was proliferating instances across the enterprise, and paying per instance. In licensing alone, SFPUC saved upwards of \$1 million by consolidating all its SQL workload to a handful of virtualized hypervisors. That enabled the utility to move to licensing based per-socket. The company additionally eliminated its tape backup delivery service.

In total, Taylor estimates the total cost of ownership for Datrium at 50 to 60 percent lower than other options. “Budgets are defined in two-year intervals and we have to make do with what we have,” Taylor said. “Other storage solutions would have added to our cost considerably, whereas Datrium, in performing so many roles for us, reduced our TCO.”

Taylor also finds a committed partner in Datrium. An early adopter, SFPUC has provided regular product feedback that Taylor sees quickly implemented in future releases. “I’ve been really pleased with Datrium’s grassroots stance toward developing and evolving the product,” Taylor added.

About San Francisco Public Utilities Commission

San Francisco Public Utilities Commission provides retail drinking water and wastewater services to the City of San Francisco, whole water to three Bay Area counties, green hydroelectric and solar power to Hetch Hetchy electricity customers, and power to the residents and businesses of San Francisco through the CleanPowerSF program. SFPUC employs about 2,300 people in seven counties with an annual operating budget of \$1 billion.

Learn more about Datrium at www.datrium.com.

