CASE STUDY: A LARGE GOVERNMENT CUSTOMER DEPLOYS LARGE-SCALE VIRTUALIZATION ENVIRONMENTS USING TRUENAS

THE STORAGE CHALLENGE

A sizable government department and one of the United States' largest employers needed to deploy a large scale virtualization environment at multiple office locations. With so many employees and so much data, their previous Hitachi SAN solutions were simply not up to the task anymore. The growth of data meant they needed hardware that could handle nearly 10 times the load of their old solutions while meeting performance expectations. They also needed hardware that was certified for VMware and offered 24/7 support.

As is the case in any virtualized environment, unplanned downtime caused by a power outage or system crash could mean a great deal of lost work. With employees working around the clock, system maintenance would typically require taking storage offline, making critical operations unavailable to thousands of workers. For these reasons the Department needed a way to minimize planned and unplanned downtime.

Due to the critical nature of their operations, working with sensitive and classified documents, the client needed a stable platform with safeguards against data corruption that is fully supported for hardware and software. They also wanted to reduce their acquisition costs due to the budget limitations of public funding. This meant that updating their previous SANs to accommodate their capacity requirements was not possible within their budget limitations.

"The client was utilizing Hitachi SAN solutions which simply weren't meeting the performance and data storage needs of the VMs used by their growing user base. They needed to run hundreds of virtual machines and TrueNAS made that possible."

- Josh Paetzel,
iXsystems Storage Architect

TRUENAS HA HOSTS HUNDREDS OF VIRTUAL MACHINES WITH VSPHERE AND VAAI

TrueNAS met all the Department's performance, capacity, and uptime requirements within their strict budget. With over 20 years of experience designing, deploying and supporting custom server builds, as well as having an in-house development team which works closely with their support team, the client felt confident in iXsystems' ability to design and support a TrueNAS solution that met their specific needs.

iXsystems set up multiple TrueNAS systems for the Department. Each is equipped with 400TB of usable storage, using 15,000RPM drives for greater pool speed, as well as 10 x 800GB high performance SSDs for 8TB of read cache, and 5 high performance flash based SLOG devices to improve write performance.

Each of the TrueNAS HA systems was configured with multiple levels of failover, from the head unit itself to drive and network setup, to keep their storage available to all their employees in the case of a system error or maintenance. TrueNAS also uses OpenZFS for its filesystem, which uses Copy on Write technology and data integrity measures across the filesystem, adding additional levels of protection for their critical data. Their networking is set up with a quad-port 10 Gb/s connection with MPIO over Cisco Nexus switches for 40 Gb/s of system throughput.

Each host has two main paths that connect to the TrueNAS system via iSCSI with each host supporting up to 130 VMs. Storage is offloaded from the vSphere server to TrueNAS using VAAI, maximizing the number of virtual machines that can be run on the server. As an additional safeguard against server downtime, TrueNAS integrates with vSphere snapshot capabilities, allowing a remote site to start up a new VM quickly from a recently saved snapshot. TrueNAS also features thin provisioning for VMs, allowing for much more efficient use of valuable storage space.

iX systems™

ON-SITE SUPPORT WITH TRUENAS

Due to strict security measures, these locations could not be accessed over the internet, so deployment and support had to be performed on site. The iXsystems support team worked closely with the Department's team, logging time on-site during pre- and post-deployment to ensure their new systems were performing at the level the customer required.

CONCLUSION

The Department needed a robust solution to safely store large amounts of sensitive strategic information and support critical operations. For them, data loss and downtime does not impact profit margins, but the lives and safety of its citizens. This reality means that their storage solutions need to have multiple safeguards to maintain data availability for critical operations at all times. TrueNAS with HA provides them with these safeguards as well as the performance, tools and support they need for maintaining their large scale virtualization environments. The added benefit of TrueNAS' self-healing file system, OpenZFS, gives them more reason to be confident their data is not corrupted. In addition, TrueNAS supports nearly 10 times the number of virtual machines for the Department than their previous Hitachi SAN solution while handling a much heavier traffic load and storing more data. All of these benefits come at a substantially reduced acquisition cost over other solutions, making TrueNAS a superior value for the Department.

ABOUT IXSYSTEMS

By leveraging decades of expertise in hardware design, its contributions to many Open Source software communities, and corporate stewardship of leading Open Source projects (FreeNAS and TrueOS), iXsystems has become an industry leader in building innovative storage solutions and superior enterprise servers for a global marketplace that relies on open technology.

Thousands of companies, universities, and government organizations have come to rely on iXsystems' storage, servers, and consultative approach to doing business. Headquartered in the heart of Silicon Valley since its founding in 1996, the dedication to white-glove customer service, industry-leading support, and transparent technological contributions has never wavered and continues to help lay the foundation for a new era powered by open technology.