iXsystems™

CASE STUDY

TRUENAS PRESERVES SCALABLE ARCHIVES FOR THE JOHN F. KENNEDY PRESIDENTIAL LIBRARY AND MUSEUM

Boston, Massachusetts
www.jfklibrary.org
Government & Public Service

Requirements

- Migrate and scale from 200 TB to over 4.5 PB of storage
- Protect over millions of files: 4K video, photos, documents, and over 20 thousand hours of audio/video
- Allow public internet access to data while keeping library systems secure

TrueNAS Benefits

- Ultra-scalable, with zero downtime when expanding pools
- TrueNAS OpenZFS file system with checksums, data scrubbing, compression, and unlimited snapshots
- Unmatched protocol support able to share to any medium required, including the cloud

INTRODUCTION

What is a memory worth and how important is history? Knowledge and advancement build upon events, discoveries, achievements, and lessons from the past. The acts that have shaped the world continue to define who we are today through these memories. We dare not forget that these memories are priceless.

The John F. Kennedy Library Foundation, working with the John F. Kennedy Presidential Library and Museum (JFK Library Foundation), required a scalable storage solution to ensure that the memories entrusted to its care would be preserved and available to future generations. The solution is part of a massive effort to digitize, store, and share millions of documents, recordings, films, videos, and photographs detailing the life and times of President John F. Kennedy, the life and literary career of Ernest Hemingway, and other priceless records of the National Archives in the United States. The solution was TrueNAS® by iXsystems.

THE STORAGE CHALLENGE

The JFK Library Foundation has a long term plan to digitize and store millions of documents and large amounts of videos, film, and audio recordings. Not only is the material vast, but it is also diverse, with files being copied to the storage system from a variety of sources in numerous file types and sizes. The library required a high-end NAS system capable of sharing with a variety of systems as the digitization process is completed.
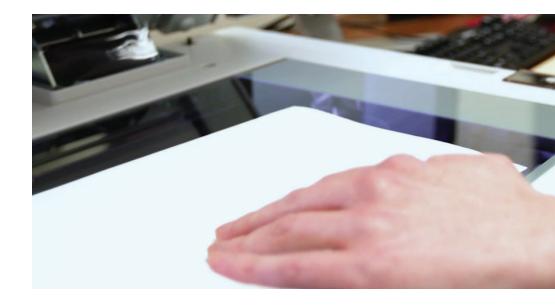
Performance aside, the platform had to be accessible to various third-party platforms, while maintaining data integrity. The storage had to be capable of being managed independently from any digital asset management software, so that the library's independent services could easily access the data. Admins, users, and staff all require varying levels of access to the storage infrastructure to ensure against data loss from theft or human error. Data

itself then needed to be incredibly secure, so that high resolution, uncompressed media can remain error-free from the time it is stored.

TRUENAS ADVANTAGES

The TrueNAS M50-HA ticked all the boxes for the JFK Library Foundation. Fast, scalable, and secure, the unified storage appliance supports NFS/ SMB/AFP/iSCSI/WebDAV/FTP/ SFTP protocols, and more. The system can also directly upload and store data to major cloud providers, such as Amazon AWS, Microsoft Azure, and Google Cloud, as needed. The robust protocol support ensures that TrueNAS will work with the library's workflows today and for years to come.

Leveraging OpenZFS, TrueNAS systems have practically limitless storage capacities in a single pool or volume. While most storage systems have capacity limits per share, the JFK Library Foundation can continue sharing

> "The migration of massive amounts of terabytes wouldn't have happened without the support of iXsystems."

- Steven M. Rothstein, JFK Library Foundation, Executive Director

to a single volume even when reaching capacities of 500, 1000, 4000 TB or more. This enables them to never have to change mount points to their clients throughout the entirety of the project if they wish. Additionally, capacity can be expanded at any time with zero impact to daily operation; newly installed drives can be added to existing, online storage pools.

TrueNAS offers outstanding performance and manageability in addition to scale. Storage volumes in TrueNAS utilize two-tier caching to intelligently store data in both memory and ultra-fast SSDs.

Frequently accessed data, or data shared online, can be cached for quick access, while archived data can remain in hard drives, replicated to another TrueNAS or to cloud storage. With the TrueCommand™ unified management interface, storage systems in multiple locations can be easily monitored, managed,

and controlled by admin-defined groups. Administrators and staff of the library can be grouped to select systems in their control, while alerts and changes to the systems are logged to keep a record for future examination, if necessary.

Keeping the digital assets available 24x7 and intact for years to come is of the utmost importance to the JFK Library Foundation. Therefore, the high- availability provided by redundant TrueNAS storage controllers and the data protection properties of TrueNAS were essential to the project. Content stored to the TrueNAS ZFS filesystem is always secure with inline checksums that prevent data corruption and bit-rot, while unlimited snapshots ensure that recovery from error – human or otherwise – is a worry-free process. The JFK Library's priceless collection is protected with room to grow on TrueNAS.

RESULTS

Since deployment in Spring of 2019, TrueNAS has migrated all data from the legacy storage system, and the ongoing digitization efforts. Workers across multiple Windows terminals are able to input document copies, sound recordings, and film archives to the storage system simultaneously, while other users can then access and stream the records on demand.

As the organization continues to digitize and update its millions of documents in a digital format, iXsystems will be supporting them the whole way. The TrueNAS deployed includes five-year, 24x7 Gold Support with a direct connection to iXsystems US-based engineering and support teams to ensure that any issue will not affect the priceless data and efforts of the JFK library.

ABOUT IXSYSTEMS

Through decades of expertise in system design and development of Open Source software (FreeNAS®, FreeBSD®, OpenZFS, and TrueOS®), iXsystems has become an innovative leader in a global marketplace that relies on Open Source solutions, high availability storage and servers, technology partnerships, and expert support.

Since its founding in 2002, thousands of companies, universities, and government organizations have come to rely on iXsystems for its enterprise servers, TrueNAS Unified Storage, and consultative approach to building IT infrastructure and private clouds with Open Source economics. Millions of tech-savvy users download and deploy our Open Source software each year. More information can be found at www.iXsystems.com.

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