STORAGE TRENDS IN HEALTH CARE

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TOPICS

- Emerging Data Storage Requirements

- Unique Requirements for Health Care

- Storage Industry Trends

- Solutions Review: Classic Storage

- Solutions Review: Cloud Storage

- Solutions Review: Converged Hypervisor Storage

- Emerging Solution: Object Storage

- Emerging Solution: Erasure Coding

- Summary

- Questions/Comments

EMERGING DATA STORAGE REQUIREMENTS

- Modern imaging systems are generating even larger files (64 -> 256 slice, higher resolution)

- Records of minors must be kept for 18 years, adults at least 6 years, and many practitioners and systems keep data indefinitely to protect from/assist in litigation

- With new technologies (many around telemedicine and imaging) continually emerging

- The average health care customer we talk to has a 3 year projected growth rate that is 2-3x the average

- Internet of Things – emerging, not real concern for 2014/5

UNIQUE REQUIREMENTS FOR HEALTH CARE

- Reliability is paramount, as lives can literally be at stake

- This drives relatively expensive, classic gear with strong SLAs and track record

- Disaster recovery is also less theoretical than with many enterprises, as ceasing operation for 2-3 days is less tolerable

- Encryption at rest is frequently a requirement, which, for those requiring it, further limits vendor options or forces a more complex architecture

STORAGE INDUSTRY TRENDS

- The marketing has been around:
    - Storage virtualization
    - Converged storage on hypervisors (Tintri, vSAN)
    - Software-defined storage
    - (Still) Flash-based systems

- Of course, the holy grail for practitioners is still converged storage with:
    - File, block, object
    - Disk, flash, tiering, caching
    - Compression, dedupe
    - And storage function virtualization

- But this doesn't exist and progress towards it has been weak

SOLUTIONS REVIEW: CLASSIC STORAGE

- Not that many changes seen in vendors or offerings

- Newer-gen converged SAN and NAS offerings continue to be adopted but have lower MTBF than classic options from leading vendors

- Continue to see Netapp going strong for file or converged and EMC for block

- The sales cycle for new storage is long due to HA requirements

SOLUTIONS REVIEW: CLOUD STORAGE

- Have seen some entities experiment with Box, Google, Egnyte, or Symform

- Amazon "can be" HIPAA compliant, but won't do a BA

- Generally only for aggregate data or backups, not for production applications

- Continue to see private cloud do well in the health care space, sometimes with growth SLAs

- Connectivity issues also come into play for those looking to outsource, and costs vary widely based on the access architecture required

SOLUTIONS REVIEW: CONVERGED HYPERVISOR STORAGE

- Seeing reasonable interest and initial adoption for back-office IT in health care

- Not yet being considered as a scale-out SAN (due to immaturity and size limits)

- Or as authoritative storage for critical data/databases

EMERGING SOLUTION: OBJECT STORAGE

- Object storage is similar to file storage except the interface is often an API instead of mountable file system, and objects/files are usually 'immutable' once stored

- It is attractive due to cost (often sold as software licenses that can be used on any server model), and because it scales out and can grow to tens or hundreds of petabytes, or beyond

- Initial adoption often comes as a backup solution (data encrypted prior to entering object storage)

- And we have seen object storage used as either authoritative, or as near-line storage, for primary imaging data

- Many vendors support multi-site replication, which works well for availability and DR

EMERGING SOLUTION: ERASURE CODING

- Usually implemented only underneath object storage, one can think of erasure coding as a 'super RAID' with definable parity policies

- For example, 40 slices per file, any 30 of which can recover data, all slices on different disks

- Or 40 slices, any 10 of which are required, and have nodes across a metropolitan area WAN

- Or to ensure integrity against physical equipment theft from one site, 40 slices per file, any 30 of which can recover data, stored 20 slices per location

- Erasure coding is good for storage efficiency and vast data resilience

- But the trade-off is IOPS performance – many disks must be busied to access and store data

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