Holistic Storage Architecture
Integrating Tiered Storage Solutions

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Agenda

• Open discussion around:
  > Tiered Storage Architectures
  > Data Migration
  > Storage Architecture example
What's the problem

• Both business and technological issues
  > Customers are facing business growth and expansion characterized by:
    – Increase user demand
    – Eco concerns around space, power, and cooling
    – Cost effective, lower TCO
    – Need to provide service in many more creative ways
  > Technological pressures included:
    – Outdated technology, lack of expansion ability
    – Demand to meet or exceed business initiatives quickly
    – Infrastructure used beyond ability to provided service
    – Limited skilled staff able to manage environment
Reference Architecture
Tiered Storage Infrastructure
Solution

Midrange HPC Storage
ST6540
Tier 1 Storage Array

- CSM200 Expansion tray with 146 GB 15K rpm FC disks
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ST6540 Controllers with 16GB cache and 8, 4Gb/sec FC ports

SAM-FS Virtualization Enterprise Management Server

ST6140 Dual Controller array with 500GB 7.2K rpm SATA disks

ST6140 Expansion tray with 500GB 7.2K rpm SATA disks

ST6140 Expansion tray with 500GB 7.2K rpm SATA disks

Capacity Summary: 22.5TB Raw, 21TB Usable

ST5800 Full Cell
- 16 node
- cell switches
- service processor
- 32TB raw storage capacity

Honeycomb Object Based Storage
ST5800
Digital Archive Tier 3

ST5800 Half Cell
- 8 node
- cell switches
- service processor
- 16TB raw storage capacity

Honeycomb Object Based Storage
ST55000
Digital Archive Tier 3

SAM Management Server including support for:
- Operations Manager / Provisioning Manager Application
- Common Array Manager (CAM) array management software
- ACSLS Tape Library management software

Brocade 4000 SAN Switch

Brocade 4900 SAN Switch

Enterprise Tape Library
L500 Library
with 6, LTO4 tape drives and 100 cartridge slots
Tier 4
Tier 1 Storage Layer

- Composed of Sun ST6540 Array including:
  - ST6540 Controller with dual RAID controllers, 8, 4Gbps host ports, and 16GB of cache memory
  - 11TB of raw capacity
  - Populated with 146GB 15K rpm Fibre Channel disk drives
  - Array software includes:
    - Common Array Manager
    - Snapshot
    - Volume Copy
    - Remote Replication

- Redundant SAN
  - Dual fabric SAN provides redundant data path from storage arrays to all application hosts
Tier 2 Storage Layer

- Composed of Sun ST6140 Array including:
  > ST6140 Controller with dual RAID controllers, 4, 4Gbps host ports, and 4GB of cache memory
  > 23TB of raw capacity
  > Populated with 500GB 7.2K rpm SATA disk drives
  > Array software includes:
    - Common Array Manager
    - Snapshot
    - Volume Copy
    - Remote Replication
Tier 3 Storage Layer

- Composed of Sun ST5800 Storage Solution including:
  - One ST5800 (Honeycomb) Storage Solution
  - 32TB of raw capacity
  - Populated with 16 servers each with 500GB 7.2K rpm SATA disk drives providing both storage and compute resources
  - Array software includes:
    - ST5800 Management GUI
    - ST5800 SDK (Software Development Kit)
    - Converting from Dspace to Fedora Archiving application
Tier 4 Storage Layer

- Composed of Sun SL500 Tape Library including:
  - Six, LTO4 tape drives
  - Capacity for 100 tape slots
  - Array software includes:
    - ACSLS management software
    - Integrated with both SAM and CommVault backup application
Architecture Management Software

• Operations Manager SAN Management Application
  > Simplify Infrastructure management
  > Provides overview management of entire SAN infrastructure
  > Allows for provisioning of all SAN attached devices from storage array to host servers
  > Single “pane of glass” for all reporting and provisioning of SAN components

• Storage Archive Manager - SAM
  > Provides data movement of files throughout the entire storage infrastructure
  > Uses advanced metadata characteristics and customer defined policy to trigger data movement
  > Includes SAM Migrator clients for integrating multiple file types from multiple Operating systems platforms
  > Allows for alternate archiving methods
Start the discussion

• Is it time to review / redefine the meaning of Tiered Storage?
• Where does Tiered Storage management best fit?
  > Application layer
  > Network layer
  > Storage components
  > Combination of all

• Considerations for migrating data from legacy systems to a Tiered Storage Model?
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