Bringing Business Value to Object Oriented Storage

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Abstract

Technology acceptance in the business market place can be elusive. This presentation identifies some of the technology challenges and barriers to the general business environment that object oriented storage must overcome before it can claim technology acceptance in the highly competitive commercial market place. Some suggestions on how some of the issues can be overcome will be presented.
Company Background

• Singular focus to help organizations better connect and manage their information
• Founded 1995, now 2400 employees with global presence
• Proven customer benefits across every major industry
• SAN Pioneer and Leader - >13m SAN ports, 40,000 directors
• Going Beyond SAN with FAN and Services Leadership
• Standards, Technology, and Product Innovation
• Broadest partner and solution ecosystem
• Strong financial performance and investment profile
The World’s Most Demanding Customers Rely on Brocade Solutions

- 90+% of Automobile and Parts Manufacturers, including the TOP 10
- 90+% of Commercial and Investment banks, Including the TOP 10
- 90+% of Chemical Companies, Including the TOP 10
- 90+% of Electronics and Electrical Manufacturers, Including the TOP 10

- 90+% of Health Care and Pharmaceutical Companies, including the TOP 10
- 90+% of Industrial and Farm Equipment Manufacturers, including the TOP 10
- 90+% of Energy, Petroleum, and Mining Firms, including the TOP 10
- 90+% of Telecom Providers and Suppliers, including the TOP 10

Source – percentages estimated based on Global 2000 companies
Our Focus is on helping customers cope with the following mega-trends regarding corporate data

Unprecedented amount and growth of Digital Information

Businesses now must hold onto data longer

Decentralized Data is Difficult to Manage

Cost, Compliance, Privacy, and Security Challenges

All TYPES of data must be considered (structured, unstructured, semi-structured)

Compliance and Corporate Governance is driving unprecedented accountability for this data
Evolution of the Data Center

Homogenous “SAN Islands”

Enhanced Storage Network

The Data Center Fabric

1995-2000 Early SANs - Isolated

2000-2005 SAN Consolidation

2005-2010 File & Block Merges

SAN 1  SAN 2  SAN 3  SAN 4

Enterprise Apps  Security  Extension with FCIP  Scalability  Routing  HA  Mgmt

Virtual Fabrics

Virtual SANs

Multi-tiered Applications

File Services  Virtual Servers  Data Mobility  Application Recovery  Storage tiers
Customers Want More out of their Storage Networking Infrastructure and Investment

- Further reduce the complexity/cost of managing and maintaining storage: 61%
- Reduce the cost and time required to provision or activate servers: 44%
- Implement distance replication or migrate data between data centers: 40%
- Re-architect existing SANs or design next-generation SANs: 39%
- Use the networked storage infrastructure to facilitate ILM: 32%

Source: 2006 Brocade End-user Customer Survey Results, June 2006; n=572
Business Challenge

Getting Business to Care

- Increased revenue vs. reduced total cost of ownership (TCO)
  - Measurable at the bottom line ($)
- “Business Critical Applications” are reluctant to change
  - “If it is not broke, don’t fix it.”
  - “Technology roll-out” can affect massive amounts of storage across global and culture distinct regions
- Must adapt into established business and regulatory processes
  - Different across industries and global regions


Additional Business Challenges

Overcoming the “chicken or egg”

- Until there are numerous Object File systems, there is little business value in creating Objective Storage Systems
- Until there are numerous Object Storage Systems there is little business value to creating ubiquitous Object File Systems
- Likewise for Object Storage Tools

Transitioning Applications to Object Oriented Storage

- New and ‘Leading edge” Applications need ease of use tools
- Existing or Legacy applications must adapt seamlessly
Acceptance in the Market Place -- It is not the Technology

For Business Applications

• Technology characteristics are necessary
  – Performance, Scalability, Reduced Cost, etc.
• It is the deployment characteristics that create the success
  – Application acceptance, Interoperability, Migration, etc.
  – End User Perception is everything

Let’s look at some examples:

• PC - Mac
• InfiniBand, iSCSI, FC, …
Clustered Systems with Object Storage based File Systems (w/ Object to Block Converter Appliances)

Note: There are Object Storage Controllers that Group this function.
Clustered File Systems with Object Storage w/ Object to Block Converter Director Blade

Object oriented value currently tends to center around shared file system value

Only a few business applications in this area
Non Sharing Individual Systems
(The Bulk of the Industry)

Individual Systems each with Single File System

Individual Systems using NON Shared File Systems

Most databases are shared nothing

Object-oriented file systems must provide value to this Individual System environment
Individual Systems with Object Storage

We need to bring Object Storage into the Individual Systems of the **business** environment

To accelerate acceptance – value must exist for Individual Systems

Note: If only Single System Object File Systems are used, a separate Meta-Data Server is Not Required
Both Clusters and individual System can use an Object File System

Individual Systems each with Single File Systems

There are so many Single Servers that the Big $ market is in this area

Must establish a partnership between shared and non-shared environments

Both Single and Cluster Systems can use Objects
The $ are in the Single Server Object File System
“Cool” is not Enough

Must address needs of non-shared file applications

• The goal is NOT
  – World wide scalability
  – Improved file system efficiency

• It is about providing
  – Value to the data storage process
  – Independence from the OS vendor
  – Independence from the storage controller vendor
  – Storage Management out-board of the various Host Systems
    • File Backup, Migration, Snapshot, Archive
    • Deduplication
    • Information Lifetime Management
Storage Objects are Great

However they:

• Need Hierarchy

• Need Methods

• Need to provide Value across the Business IT Fabric
Hierarchy

• Applications use File sets
  – Storage functions applied to one file -- should apply to all files in the set
  – Actions on Files (objects) need overarching coordination across the File set

• Many application have Files that they use that have origins in other applications and may also have Files that they create or use that are used by subsequent applications
  – Many times a complex file hierarchy exists

• Need to have the ability to apply selective Storage Management Policies
  – To some file sets different than others,
  – Yet have other Storage management that applies to the complete set of files
  – Example:
    • Some applications have Social Security # Files that are used by different applications and the SS# file will have one set of State or Federal Compliance requirements that are different from the other files in use by the various applications, yet still need to be coordinated with other Storage management actions that occur on all or some of the applications files with which it is related
Object Storage Methods

• Need to be able to define Object Storage “Methods” that can apply to any File Object
  • Example: Backup-Thyself, Replicate-Thyself, Encrypt-Thyself, etc.

• Need to be able to inherit “Methods” from other Objects in the Hierarchy

• Need a way to register an Object Storage “Method”

• Need a way to invoke an Object Storage “Method”
Value is a Must

Methods are very valuable if they:

Are provided across the Fabric in a consistent fashion

• Provide Fabric Wide Storage management and ILM (information Lifetime Management) gives great value to the IT organization
  – Especially if it does not take Cycles away from the applications
  – And Does not require application changes

Provide Operational/Management Simplicity across the Fabric

• File system independence from the OS vendor
• Independence from the Storage Controller Vendor
• Security considerations at the global management level
• Fabric wide Configuration management
  • Add/Delete/Re-configure
Vision

SAN Intelligence that can:

• Apply:
  – Objectness and Methods to current block devices
  – Hierarchy and Methods to current and future object devices

• Apply Hierarchy and Methods across the SAN

• Independent of whether the Files are Shared or Not
Overcome the “chicken or egg” dilemma

• Provide value to all “in the Fabric”
  – Focus on Hierarchy
  – Focus on Methods
  – Focus on “Single System Object File Systems”
Results

• Reduced IT operational expense (OpEx)
  – Centralized handling of business storage processes
    • Back Up, Replication, Snapshot, Archive
    • Deduplication
    • Life Cycle Management
    • …
  – Single approach to regulatory required processes
    • Retention
    • Privacy
Questions
Thank You