Overcoming the Challenges of Storage Scale and Cost

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“Web-Scale”

Large and growing storage
- 40-60% annual growth
- Petabytes to exabytes+

Legacy storage won’t work
- Architectures can’t scale
- Replication drives $$$$+

Web-scale requires new storage architecture
# Enterprise Storage Size Model

<table>
<thead>
<tr>
<th>Customer Size*</th>
<th>2004</th>
<th>2014</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 PB</td>
<td>55%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>1 PB</td>
<td>60</td>
<td>6,000</td>
<td>600,000</td>
</tr>
<tr>
<td>10 PB</td>
<td>6</td>
<td>600</td>
<td>60,000</td>
</tr>
<tr>
<td>100 PB</td>
<td>1</td>
<td>60</td>
<td>6,000</td>
</tr>
<tr>
<td>1 EB</td>
<td>0</td>
<td>6</td>
<td>600</td>
</tr>
<tr>
<td>10 EB</td>
<td>1</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>100 EB</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1 ZB</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total Market</strong></td>
<td><strong>400 PB</strong></td>
<td><strong>40 EB</strong></td>
<td><strong>4 ZB</strong></td>
</tr>
</tbody>
</table>

*Annual increase in disk storage deployment

More efficient

Web Scale Minimum

Traditional Maximum

Market at 100 PB + (by capacity)

<table>
<thead>
<tr>
<th></th>
<th>25%</th>
<th>55%</th>
<th>85%</th>
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</table>
Challenges Encountered At Multi-Petabyte to Exabyte Scale

- System Scalability
- Availability
- Manageability
- Security
- Efficiency (Value vs Cost)
- Flexibility
Approaches

Traditional NAS Clusters

- Scale
- Efficiency
- Manageability

Public Cloud

- Efficiency
- Flexibility
- Security

Challenges

- Scale
- Efficiency
- Availability
Better Approach: Private Cloud Built for Web Scale Data

- Integration
- TCO
- Deployment Options
- Simple
- Flexible
- 9999
- 9999
- 9999
- Reliability
- Software Defined
- Always ON
- Scale Out
- Security

Private Cloud
Key Technology Enablers

- **Object Storage**

- **Information Dispersal**
Object Storage Benefits

**File Storage**
- Hierarchical structure –
- Designed to mimic human data constructs.
- Protocols to access file storage are primarily NFS or SMB/CIFS.
- Too many files and directories in a single namespace will hurt performance.
- Designed for LAN.

**Object Storage**
- Flat namespace – unique object id.
- Designed to serve applications.
- Protocols to access object storage are HTTP REST based.
- Performance maintained for any number of objects.
- Designed for WAN.
Information Dispersal

DATA SOURCES

ACCESSER® LAYER

SLICESTOR® LAYER

IDA WIDTH = 12 = Total number of slices created
Information Dispersal

Total slices = WIDTH = 12
THRESHOLD = 7 = Data can be retrieved using ANY 7 slices
Total slices = WIDTH = 12
Private Cloud for Web-Scale Data

THRESHOLD = 7 = Data can be retrieved using ANY 7 slices
Total slices = WIDTH = 12

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Common Use Cases

- Active Archive
- Enterprise Collaboration
- Content Repository (Video, Images, Audio)
- Backup
- Storage-as-a-Service
Web-scale video archive, file share and content services

Services for UK-based media company, Europe’s media leader

- Scale – 5 petabytes and growing
- Security – zero touch security for all content
- Always-on availability – continuous availability for 2.5 years and new capacity in minutes
- Manageability – lowers overall data center cost with high service levels
- Economics – 80% savings over old (legacy storage) approach and 43% over Amazon Web Services S3
Web-scale video content archive for broadcasters

International broadcasting concern’s video storage for 200 countries, 30 languages and 100 branded TV channels, replacing tape

- **Scale** – 1.6 PB of feature, news and sports video
- **Security** – irreplaceable content is always protected
- **Flexibility** – adds capacity in a click and adds data centers in weeks
- **Manageability** – IT focuses on applications, not storage tasks
- **Economics** – 100% utilization on object approach, a 33% return
Web-scale content repository for publishers

Top 5 UK media publishing group’s content repository for 50 million online visitors and 24 million publications across 30 magazine properties

- Scale – ½ petabyte of video, mobile, graphics and digital content
- Security – always secure, available and easily accessible
- Always-on availability – no service disruption during upgrades
- Economics – lowered overall cost and improved reliability across three sites
Web-scale video library for Miami Marlins

The Marlins capture every pitch, swing, hit, error and home run to support player coaching and development

- Scale – captures HD player video throughout each season
- Security – cross-site access to data for entire team with increased security
- Manageability – freed small IT team to focus on applications and other tasks
- Off the field – maximizes value of coaching sessions to increase win %
- Economics – reduced storage overhead cost alone by 30%
What Web Scale Storage Offers

- Extreme efficiency – reliability without replication
  - Legacy storage (replication) – Required raw storage is 4-5 times original data size
  - Web Scale storage – Required raw storage is 1.8 times (or less) times original data size
  - Scales to exabytes and beyond

- Simple operations are 15+ times more efficient
  - Legacy storage – 300 terabytes per administrator
  - Web Scale storage – 5000 terabytes per administrator or more
  - Zero-downtime operations and upgrades
Cleversafe: conquering the web-scale challenge

Company founded in 2004, with over $100 million invested

Market share leader
• As ranked by IDC
• World’s largest storage customers

Innovation leader
• Over 250 patents
• Unique, software-based platform

Scale leader
• Multiple customers with over 100 petabytes
• Scales to exabytes +

Economics leader
• Zero replication and simple management
• Storage cost reduced 80%

Reliability leader
• Always-on
• 99.9999999% or better

Security leader
• Carrier-grade security built-in
QUESTIONS?