The Power of Convergence

Dave Donatelli
Executive Vice President and General Manager
HP Enterprise Group
New technology eras break legacy infrastructure

New access methods and information opportunities

• Change how technology is consumed & value it can bring
• Open up new business models
• Remove current inhibitors & unleash power of innovation

23,148 apps downloaded
every 60 seconds
2000 lyrics played on Tunewiki
1,500 pings sent on PingMe
34,597 people are using Zinio
208,333 minutes Angry Birds played
Storage industry today

**Storage has been ...**

- Overly complex
- Under utilized
- Hard to manage
- Too costly

Based on old architectures, designed for the past

**HP Converged Storage is...**

designed for the future
HP is transforming the storage industry
HP’s Converged Storage strategy

Transforming the Enterprise storage industry with two next generation products

ONE

Modern storage architecture

Data Protection architecture

Common technology from midrange to high-end so you can do far more... with much less!

Simple • Efficient • Agile
Storage built with the power of convergence
HP Storage

The Leader in Completeness of Vision

Gartner

Magic Quadrant for Midrange and High-End Modular Disk Arrays

Published: 17 November 2011
Analysts: Roger W. Cox, Pushan Rinnen, Stanley Zaffos, Jimmie Chang.

This Magic Quadrant graphic was published by Gartner, Inc. as part of a larger research note and should be evaluated in the context of the entire report. The Gartner report is available upon request from HP. Gartner does not endorse any vendor, product or service depicted in the Magic Quadrant, and does not advise technology users to select only those vendors with the highest ratings. Gartner research publications consist of the opinions of Gartner’s research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.
HP Converged Storage is winning

3PAR and StoreOnce combined over 100% avg. Y/Y growth for 6 quarters

3PAR is the fastest growing high-end platform in the market

3PAR is now HP’s largest array product line
Information protection is the next battleground

Legacy processes and technologies in need of reinvention

- Universal market need
- High growth segment
- Costly, complex and slow
- Fragmented technologies

$5B

Customer need by 2015*

Transforming storage with the power of convergence

**HP takes the deduplication innovation lead**

HP StoreOnce B6200 Backup system and StoreOnce Catalyst software

**HP delivers industry’s only meaning based protection**

HP Data Protector 7 with StoreOnce and Autonomy IDOL10

**HP introduces the industry’s first flat SAN architecture**

HP Virtual Connect for 3PAR with Flat SAN technology for virtual and cloud solutions
HP takes the deduplication innovation lead

David Scott
Senior Vice President and General Manager
HP Storage

© Copyright 2012 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice.
Early deduplication technology solved some problems but left major gaps

**Deduplication benefits**

- Shrinks physical storage requirements to lower costs
- Makes disk backup and faster restore economically feasible

**Failures in deduplication 1.0**

- Multiple deduplication silos (i.e. EMC Avamar, Data Domain, Networker)
  - Incompatible technologies
  - Multiple dedupe/rehydration cycles
  - Complex to manage
  - Limited performance and scale
  - Risk due to lack of high availability
HP has a multi-year advantage vs. the competition

50+ Innovations
- Adaptive micro-chunking
- Predictive acceleration
- Rapid restore
- Scale-out clustered design
- Autonomic restart

HP StoreOnce is Deduplication 2.0
One Federated Deduplication engine
- Deduplicate data anywhere
- Deduplicate once and never rehydrate
- Manage centrally
- Scale-out performance and capacity
- Built-in high availability

2010
- The Vision
- SMB Appliance

2011
- Enterprise Appliance
  Scale-Out w/ HA
- Software target

Today
Introducing the world’s fastest deduplication solution

HP StoreOnce B6200 and StoreOnce Catalyst software

Recover more in 1 day with HP StoreOnce than you can in 1 work week with EMC

- **3x faster backup** and **5x faster recovery** than EMC Data Domain
- **Federated Deduplication** for data mobility without rehydration
- Deduplication **processing at the server** for flexibility
- Manage **StoreOnce functions** directly from backup applications

---

<table>
<thead>
<tr>
<th>Backup Speed:</th>
<th>100TB/hr.</th>
<th>40TB/hr.</th>
<th>40TB/hr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B6200 with StoreOnce Catalyst</td>
<td>B6200 Native performance</td>
<td>B6200 Native performance</td>
<td>Restore Speed:</td>
</tr>
</tbody>
</table>
HP’s modern architecture advantage

**NEW EMC DD990 with Boost**

**vs.**

**HP StoreOnce B6200 with Catalyst**

*Introduced on May 21, 2012*

- **Autonomic Restart**
  - Yes
  - High Availability

- **100TB/HR Backup Speed**
  - 3x
  - Symantec or Data Protector

- **40TB/HR Restore Speed**
  - 5x
  - Native VTL w/o offload
  - Any Backup Application

- **Lower $ per TB/hour**
  - 75% Less

**Backup Speed**

- 31 TB/hr.
- 7.5 TB/hr.

**Restore Speed**

- Native VTL w/o offload
- Any Backup Application
**HP StoreOnce is a single technology from SMB to Enterprise**

**Application Source & Backup Server**

**ROBO Appliance**

**Mid Range Appliance**

**Large Enterprise/HSP**

<table>
<thead>
<tr>
<th></th>
<th>HP Data Protector</th>
<th>StoreOnce 2500</th>
<th>StoreOnce 41XX</th>
<th>StoreOnce 43XX</th>
<th>StoreOnce B6200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed (StoreOnce Catalyst)</td>
<td>Up to 1.8TB/hr</td>
<td>Coming later in 2012</td>
<td>Coming later in 2012</td>
<td>Coming later in 2012</td>
<td>Up to 100TB/hr</td>
</tr>
<tr>
<td>Speed (native)</td>
<td>Up to 1.8TB/hr</td>
<td>Up to 800GB/hr</td>
<td>Up to 1.3TB/hr</td>
<td>Up to 4TB/hr</td>
<td>Up to 40TB/hr</td>
</tr>
<tr>
<td>Speed (restore)</td>
<td>Up to 1.8TB/hr</td>
<td>Up to 640GB/hr</td>
<td>Up to 1TB/hr</td>
<td>Up to 3.2TB/hr</td>
<td>Up to 40TB/hr</td>
</tr>
<tr>
<td>Logical capacity*</td>
<td>Up to 400 TB</td>
<td>30TB &amp; 60TB</td>
<td>180 TB &amp; 360TB</td>
<td>720TB &amp; 1.4PB</td>
<td>Up to 10.2PB</td>
</tr>
<tr>
<td>Usable capacity</td>
<td>Up to 20TB</td>
<td>1.5TB &amp; 3TB</td>
<td>Upgrade from 4.5TB to 9TB &amp; 9TB to 18TB</td>
<td>Scale from 9TB to 36TB &amp; 18TB to 72TB</td>
<td>Scale from 32TB out to 512TB</td>
</tr>
</tbody>
</table>
**Legacy Storage**
EMC Avamar, CLARiiON, & Centera
- Running out of datacenter space/power
- Underutilized capacity
- 5 different data protection systems
- Needed a platform for future cloud computing

**HP Solution**
HP StoreOnce B6200 with Data Protector
HP 3PAR with X3800 NAS Gateway
- Consolidated 5 backup systems to 1
- Collapsed 10 racks to 3.5
- 75% savings in power and cooling
- 40% reduction in storage capacity costs

---

$1.1 million immediate savings

John Olsen
SVP & CIO
MetroPCS Communications
HP delivers the industry’s only meaning based information protection solution
Legacy backup processes have hit a wall

Total data growth to over 35ZB by 2020. 85% of which is 'human information'.

Legacy backup cannot scale...
- Performance gaps
- Patchwork solutions
- Painful to recover
- Value of data is locked away
Meaning based protection is the answer

**Autonomy IDOL10**
**Next Generation Information Management Platform**

- Derive meaning from any data type... based on context
- Overcomes the fundamental barriers of recovering and searching massive unstructured data backup repositories
- **Example:** Recover all relevant information related to “Meg Whitman” across all file types, e.g. documents, video, audio, SoMe, etc... [will also find info. related to “HP’s CEO”]

---

**Targeted Restore**  **Faster Recovery**  **Enabling Smarter Information Governance**
Manage data based on meaning to optimize recovery

HP Data Protector 7 powered by StoreOnce with Autonomy IDOL 10 integration

The only meaning-based solution in the industry

- StoreOnce federated deduplication and StoreOnce Catalyst integration for efficiency and performance

- Autonomy IDOL 10 enabled for meaning-based protection – all backups can be indexed so information has meaning

- Adding secure integrated cloud backup with comprehensive support for physical and virtual environments

---

**StoreOnce**

Application source deduplication for efficient centralization

**Meaning**

Ex: Only restore files associated with Meg Whitman at HP

**50+PB**

On-ramp to world’s largest private cloud repository
HP introduces the industry’s first Flat SAN architecture
Building on HP Converged Infrastructure Leadership

- 7 of 10 largest hosting providers
- Fastest Growing in the high-end
- Triple digit growth Q/Q

- 6+ Million VC ports shipped
- 6+ Thousand VC Customers
- #2 Vendor 10Gb ports shipped*

- #1 in Blades
- 3.1 million Blades shipped
- More Blades shipped than Dell, Cisco and IBM combined

* Dell'Oro Report 4Q11
The simplest way to connect systems to any network

HP Virtual Connect - *Over 6 million* VC ports deployed around the world

**Old World**

- **2007**
  - Redefined server edge networking (Virtual Connect)
- **2010**
  - Redefined fabric convergence (VC FlexFabric)

**Today...**

**Traditional Infrastructure**

- From 217 Parts
- 73 parts
- 144 cables

**HP Virtual Connect FlexFabric**

- To 2 Parts
- 2 parts
- No cables

95% 65% 40%

- Less parts
- Less cost
- Less power
We’ve done it again...

...meet the industry’s first flat SAN for virtual and cloud solutions
The industry’s first flat SAN architecture
Eliminates 50% of SAN Fabric cost, complexity and bottlenecks

HP Virtual Connect for 3PAR with Flat SAN technology

ONE TIER Flat SAN
2.5X Faster provisioning
86% Fewer components
55% Lower latency

HP VirtualSystem BladeSystem and 3PAR
Efficiency and agility at cloud-scale

The foundational networking technology for HP’s Converged Systems

- **1** 3PAR P10000 – up to 1.6PB
- **48** BladeSystem enclosures
- **768** ProLiant Gen8 blades
- **25,000+** Virtual machines

Zero

Dedicated SAN Infrastructure
Transforming storage with the power of convergence

HP takes the deduplication innovation lead
HP StoreOnce B6200 Backup system and StoreOnce Catalyst software

HP delivers industry’s only meaning based protection
HP Data Protector 7 with StoreOnce and Autonomy IDOL 10

HP introduces the industry’s first flat SAN architecture
HP Virtual Connect for 3PAR with Flat SAN technology for virtual and cloud solutions
Thank you