What Is New and Improved With DS8870?

Scott Cardinell
IBM

Wednesday, February 6 2013, 1:30-2:30PM
Golden Gate 7, Lobby Level
Session Number 12770

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What Is New and Improved With DS8870?

- Introduction
- Performance
- Hardware
- New Function
What Is New and Improved With DS8870?

Introduction:
Introducing the DS8870

Smarter Storage for enterprise critical information environments

- **Built on the DS8800 base**
  - Exceptionally fast with up to 3x performance increase
  - Proven architecture and code base for optimal reliability with non-disruptive microcode updates
  - Inherited all functionality of DS8800
  - RoHS compliance reduces hazardous material

- **New dual IBM POWER7 controllers**
  - Scalable processor configurations with 2, 4, 8 and 16 cores per controller
  - Scalable cache from 16GB – 1TB
  - Everything scales non-disruptively
  - Entry-level Business Class configuration also available

- **New energy-efficient power supply**
  - Improved efficiency, power dissipation, reliability
  - Up to 20% reduction in energy usage
  - Designed to meet evolving energy efficiency standards

- **Full Disk Encryption drives now standard**
  - Client decides when to encrypt or not *

* Requires deployment of Tivoli Key Lifecycle Manager or IBM Security Key Lifecycle Manager

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Investment protection for existing DS8000 clients

New DS8870 preserves client investments in prior models

• Equivalent functionality across models
• Existing tools and scripts are compatible
• Remote mirror and copy functions are interoperable
• MES upgrade option will be available to enable clients to convert DS8800 to new DS8870 model (2Q13)
5th-generation DS8000 enterprise disk system

- Building on a market-proven, reliable code base!
- 94% of the same proven microcode

- Designed for over 5-9’s availability natively
- Designed for over 6-9’s availability when DS8000 with Metro Mirror is combined with GDPS/PPRC HyperSwap
New hardware delivers up to 3x performance boost

- IBM POWER7-based controllers
- Processor cores that scale from 2-16 per controller
  - Cores aligned with cache configuration
- Cache that scales from 16-1024 GB
- Redesigned power supply for higher energy efficiency
- Dedicated space for new Ultra SSD I/O Drawer (SoD in June)
Key DS8000 Dates

- **DS8870 R7.0 (242x 961 / 96E)**
  - Announcement date - October 3, 2012
  - General Availability date - October 19, 2012

- **Statement of Direction (SOD)**
  - Field model conversion from DS8800 to DS8870
    - To be available in the first half of 2013
  - Ultra SSD Drawer available 2013

- **Announcing withdrawal for DS8800 Base Frame (242x 951)**
  - Due to new RoHS 2013 compliance
  - Effective date: 1st February 2013
  - Latest CRAD date: 29th March 2013
  - MES capabilities will continue for existing DS8800s in the field
What Is New and Improved With DS8870?

Performance:
Extraordinary Performance for Enterprise Applications

<table>
<thead>
<tr>
<th></th>
<th>DS8300 (R4.3)</th>
<th>DS8700 (R5)</th>
<th>DS8800 (R6)</th>
<th>DS8870 (R7)</th>
<th>Increase vs. DS8300</th>
<th>Increase vs. DS8700</th>
<th>Increase vs. DS8800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seq. Read (GB/s)</strong></td>
<td>3.9</td>
<td>9.7</td>
<td>11.8</td>
<td>21.0</td>
<td>5.4x</td>
<td>2.2x</td>
<td>1.8x</td>
</tr>
<tr>
<td><strong>Seq. Write (GB/s)</strong></td>
<td>2.2</td>
<td>4.7</td>
<td>6.7</td>
<td>11.0</td>
<td>5.0x</td>
<td>2.3x</td>
<td>1.6x</td>
</tr>
<tr>
<td><strong>DB z/OS (K IOPS)</strong></td>
<td>165</td>
<td>201</td>
<td>204</td>
<td>640</td>
<td>3.9x</td>
<td>3.2x</td>
<td>3.1x</td>
</tr>
<tr>
<td><strong>DB Open (K IOPS)</strong></td>
<td>165</td>
<td>191</td>
<td>198</td>
<td>550</td>
<td>3.3x</td>
<td>2.9x</td>
<td>2.8x</td>
</tr>
</tbody>
</table>
Official Storage Performance Council (SPC) results

- **SPC-1 throughput of 451,082 IOPS**
  - #1 result for single, enterprise-class all-HDD system
  - 67% faster than HDS VSP

- **SPC-2 throughput of 15,424 MB/s**
  - 17% faster than HDS VSP
  - 59% faster than DS8800

Source:  
SPC Benchmark 1 (SPC-1) results page - http://www.storageperformance.org/results/benchmark_results_spc1  
SPC-1 comparison vs competition*

Higher throughput with 451K IOPS and lower response time!

SPC-1 Results

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS8300 Turbo</td>
<td>480 x 73GB 15K hdds, RAID10, 256 GB Cache</td>
</tr>
<tr>
<td>HDS USP V</td>
<td>1024 x 146GB 15K hdds, RAID1, 256 GB Cache</td>
</tr>
<tr>
<td>HDS VSP</td>
<td>1152 x 146GB 15K hdds, RAID1, 512GB Cache+512GB Cache Flash</td>
</tr>
<tr>
<td>HP 3PAR V800</td>
<td>1920 x 300GB 15K hdds, RAID1, 8nodes, 768GB Cache</td>
</tr>
<tr>
<td>IBM SVC 6.2 + V7000</td>
<td>1920 x 146GB 15K hdds, RAID10, 448 GB Cache (8 SVC nodes@24GB + 16 V7000 nodes@16GB)</td>
</tr>
<tr>
<td>DS8870</td>
<td>1536 x 146GB 15K hdds, RAID10, 32x 8Gb FCP, 1024GB Cache</td>
</tr>
</tbody>
</table>

Source: http://www.storageperformance.org/results/benchmark_results_spc1/#spc1

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What Is New and Improved With DS8870?

Hardware:
Hardware Consistency – DS8800 to DS8870

- DA to DDM mapping / RAID / Intermix / Sparing
  - Unchanged from DS8800
- Front to back airflow
  - Unchanged from DS8800
- Rack dimensions
  - Footprint same as DS8800
  - Same number of drives (1536)
- HA / DA Adapter
  - Cards unchanged from DS8800
    - Provide equivalent performance per port and per adapter as DS8800
  - Port naming unchanged
  - Plug order unchanged
DS8000 Enterprise Disk – Hardware Evolution

Incremental changes between versions maximizes quality
Base Frame Hardware Changes – DS8800 to DS8870

Replace Primary Power Supplies (PPS) and Batteries with DC-UPS

- Provides full wave rectified power for improved power efficiency.

Replace P6+ servers with P7 servers that provide
- Dual 2, 4, 8, 16 core configuration options
- 16GB – 1TB cache
- Provides significant IOP and sequential performance improvements

Redesigned Rack Power Control (RPC)
- Provides improved resiliency and communication paths

June 4 SOD:
- Room for Ultra SSD drawers by rotating 90deg and connecting directly into available PCIe slots
- Will provide substantial additional performance improvement

Complete your sessions evaluation online at SHARE.org/SanFranciscoEval
# DS8000 Hardware Comparison

<table>
<thead>
<tr>
<th></th>
<th>DS8300</th>
<th>DS8700</th>
<th>DS8800</th>
<th>DS8870</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>P5+ 2.2GHz 4-core</td>
<td>P6 4.7GHz 2 or 4-core</td>
<td>P6+ 5.0GHz 2 or 4-core</td>
<td>P7 3.55GHz 2,4,8,16-core</td>
</tr>
<tr>
<td><strong>Processor Memory</strong></td>
<td>32 - 256GB</td>
<td>32 - 384GB</td>
<td>16 - 384GB</td>
<td>16 - 1,024GB</td>
</tr>
<tr>
<td><strong>Drive Count</strong></td>
<td>16-1,024</td>
<td>16-1,024</td>
<td>16-1,536</td>
<td>16-1,536</td>
</tr>
<tr>
<td><strong>Enterprise Drive Options</strong></td>
<td>FC – 73, 146, 300, 450 GB</td>
<td>FC – 300, 450, 600 GB</td>
<td>SAS2 - 146, 300, 450, 600, 900 GB</td>
<td>SAS2 - 146, 300, 600, 900 GB</td>
</tr>
<tr>
<td><strong>SSD Drive Options</strong></td>
<td>73, 146 GB</td>
<td>600 GB</td>
<td>300, 400 GB</td>
<td>400 GB</td>
</tr>
<tr>
<td><strong>Nearline Drive Options</strong></td>
<td>1 TB</td>
<td>2 TB</td>
<td>3 TB</td>
<td>3 TB</td>
</tr>
<tr>
<td><strong>Drive Enclosure</strong></td>
<td>Megapack</td>
<td>Megapack</td>
<td>High-density, high-efficiency Gigapack</td>
<td>High-density, high-efficiency Gigapack</td>
</tr>
<tr>
<td><strong>Max Physical Capacity</strong></td>
<td>1,024</td>
<td>2,048 TB</td>
<td>2,304 TB</td>
<td>2,304 TB</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>Bulk</td>
<td>Bulk</td>
<td>Bulk</td>
<td>DC-UPS</td>
</tr>
<tr>
<td><strong>Rack Space for SSD Ultra Drawer</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>RAID Options</strong></td>
<td>RAID 5, 6, 10</td>
<td>RAID 5, 6, 10</td>
<td>RAID 5, 6, 10</td>
<td>RAID 5, 6, 10</td>
</tr>
<tr>
<td><strong>Internal Fabric</strong></td>
<td>RIO-G</td>
<td>PCI-E</td>
<td>PCI-E</td>
<td>PCI-E</td>
</tr>
<tr>
<td><strong>Max Number of LUNs / CKD volumes</strong></td>
<td>64K total</td>
<td>64K total</td>
<td>64K total</td>
<td>64K total</td>
</tr>
<tr>
<td><strong>Max LUN Size</strong></td>
<td>2 TB</td>
<td>16 TB</td>
<td>16 TB</td>
<td>16 TB</td>
</tr>
<tr>
<td><strong>Host Adapters</strong></td>
<td>ESCON x 2 ports</td>
<td>4 Gb FC x 4 ports</td>
<td>8 Gb FC x 4 or 8 ports per adapter</td>
<td>8 Gb FC x 4 or 8 ports per adapter</td>
</tr>
<tr>
<td><strong>Host Adapter Slots</strong></td>
<td>32</td>
<td>32</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td><strong>Max Host Adapter Ports</strong></td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td><strong>Drive Interface</strong></td>
<td>2Gbps FC-AL</td>
<td>2Gbps FC-AL</td>
<td>6Gbps SAS-2</td>
<td>6Gbps SAS-2</td>
</tr>
<tr>
<td><strong>Device Adapter Slots</strong></td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td><strong>Cabinet Design</strong></td>
<td>Top Exhaust</td>
<td>Top Exhaust</td>
<td>Front-to-back</td>
<td>Front-to-back</td>
</tr>
</tbody>
</table>

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**Note:** This table provides a comparison of DS8000 hardware options, including processor specifications, memory, drive counts, drive types, enclosure options, physical capacity, power supplies, rack space, RAID options, internal fabric, and host adapter information.
## DS8000 key feature comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>DS8300</th>
<th>DS8700</th>
<th>DS8800</th>
<th>DS8870</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-encrypting drives</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
<td>Standard</td>
</tr>
<tr>
<td>Point-in-time copies</td>
<td>FlashCopy, FlashCopy SE</td>
<td>Same plus FlashCopy Manager, Remote Pair FlashCopy</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Smart Drive Rebuild</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Remote Mirroring</td>
<td>Advanced mirroring</td>
<td>Same plus - Global Mirror Multi Session - Open HyperSwap for AIX</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Automated Drive Tiering</td>
<td>No</td>
<td>Easy Tier Gen. 1,2,3</td>
<td>Easy Tier Gen 1,2,3,4</td>
<td>Same</td>
</tr>
<tr>
<td>Thin Provisioning</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Storage Pool Striping</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>I/O Priority Manager</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>GUI</td>
<td>DS Storage Manager</td>
<td>Same plus enhancements</td>
<td>New XIV-like GUI</td>
<td>Same</td>
</tr>
<tr>
<td>Dynamic Provisioning</td>
<td>Add / Del</td>
<td>Same plus depopulate rank</td>
<td>Same</td>
<td>Same</td>
</tr>
</tbody>
</table>
### Business Class and Enterprise Class configuration options

- List price for Business Class configuration option is roughly the same as DS8800
- 30% price premium for Business Class upgrade to Enterprise Class
- Small servers can be mounted in the Business Class frame to optimize space efficiency
- Enterprise Class offers better price/performance than previous models
- Non-disruptive upgrade from smallest to largest configuration

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Physical Capacity (max.)</th>
<th>Disk Drives (max.)</th>
<th>Memory</th>
<th>Host Adapters (max.)</th>
<th>9xE Attach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>961</td>
<td>2-core</td>
<td>216 TB</td>
<td>144</td>
<td>16/32</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td><strong>Enterprise Class</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>961</td>
<td>4-core</td>
<td>360 TB</td>
<td>240</td>
<td>64</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>961</td>
<td>8-core</td>
<td>2,304 TB</td>
<td>1536</td>
<td>128/256</td>
<td>16</td>
<td>0-3</td>
</tr>
<tr>
<td>961</td>
<td>16-core</td>
<td>2,304 TB</td>
<td>1536</td>
<td>512/1024</td>
<td>16</td>
<td>0-3</td>
</tr>
<tr>
<td><strong>First Expansion Frame</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96E</td>
<td>N/A</td>
<td>504 TB</td>
<td>336</td>
<td>N/A</td>
<td>8</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Second/Third Expansion Frame</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96E</td>
<td>N/A</td>
<td>720 TB</td>
<td>480</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
## DS8870 Processor Configurations (Power 7)

<table>
<thead>
<tr>
<th>System Class</th>
<th>Active Processor Configuration per CEC</th>
<th>Processor Cards per CEC</th>
<th>Feature Code</th>
<th>Total Active Cores per DS8870</th>
<th>Total System Memory / Persistent</th>
<th>Expansion Frames Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Class</strong></td>
<td>2 cores</td>
<td>1 x 4 core</td>
<td>#4401</td>
<td>4 cores</td>
<td>16 GB/1 GB</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32 GB/1 GB</td>
<td></td>
</tr>
<tr>
<td><strong>Enterprise Class</strong></td>
<td>4 cores</td>
<td>1 x 4 core</td>
<td>#4402</td>
<td>8 cores</td>
<td>64 GB/2 GB</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>128 GB/4 GB</td>
<td>0 – 2</td>
</tr>
<tr>
<td></td>
<td>8 cores</td>
<td>2 x 4 core</td>
<td>#4403</td>
<td>16 cores</td>
<td>256 GB/8 GB</td>
<td>0 – 3</td>
</tr>
<tr>
<td></td>
<td>16 cores</td>
<td>2 x 8 core</td>
<td>#4404</td>
<td>32 cores</td>
<td>512 GB/16 GB</td>
<td>0 – 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1024 GB /32 GB</td>
<td>0 – 3</td>
</tr>
</tbody>
</table>

![Processor configurations diagrams](image)

*Complete your sessions evaluation online at SHARE.org/SanFranciscoEval*
DS8870 Enterprise Class enclosure layout (no change from DS8800)

240 drives

336 drives

480 drives

480 drives
DS8870 Business Class maximum Configuration
(reduced drive support from DS8800, upgrades to Enterprise Class)

144 drives

- 2 active processor cores per CEC
- 16GB processor memory
  - No copy services support
  - No I/O priority manager support
- 32GB processor memory
  - support copy services and IOPM
- Concurrent upgrade to Enterprise Class
- SSDs supported on all models
- Easy Tier is supported on all models
Energy consumption comparison

DS8700 with 1024 drives
- Base frame: 6.8kW
- Exp frame: 7.1kW
- Exp frame: 6.1kW
- Exp frame: 6.1kW
- Exp frame: 3.1kW
TOTAL: 29.2kW

DS8800 with 1536 drives
- Base frame: 7.5kW
- Exp frame: 6.2kW
- Exp frame: 6.3kW
- Exp frame: 6.3kW
TOTAL: 26.3kW

DS8870 with 1536 drives
- Base frame: 6.0kW
- Exp frame: 5.6kW
- Exp frame: 5.8kW
- Exp frame: 5.8kW
- Exp frame: 3.1kW
TOTAL: 23.2kW

Base frame is 20% more energy efficient

Higher efficiency rating positioned to meet emerging energy efficiency standards

Note: Measurements taken on 100% read miss workload

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DS8870: Why DC-UPS

- Higher efficiency: From 85% with PPS to 98% with DC-UPS. Higher efficiency needed to compete for Energy Star in 201?.
- Substantially greater reliability: Fewer parts, slower parts, cooler parts.
- Opportunity to simplify/improve code: Autonomous decision making, individual batteries per DC-UPS, improved code loading, overall requirements simplification.
DS8870

DC-UPS

AC 200V

DC or Fullwave

DC 200V

Battery

PDU can handle both DC and Fullwave Rectification input

PDU

DC xxV etc

Load (CEC)

PDU

DC xxV etc

Load (DDM)

PDU

DC xxV etc

Load (IO)

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RAS Updates / Enhancements

• New DC-UPS vs Old PPS
  • Cabling Topology Different for Load Balancing
    • DC-UPS to PDUs
    • PDUs to IO-OS and CEC-PS
    • PDU to GP-PS

• Multi-Element, Heavy Battery
  • Battery Service Module (BSM)
  • BSM set = 4 BSMs
  • All replaced at once

• Extended Power line disturbance
  • Protects storage unit up to 50 seconds
Best Practice: Hot Aisle / Cold Aisle

Data centers are moving to hot aisle / cold aisle designs to optimize energy efficiency

DS8800 and DS8870 are designed with complete front-to-back airflow.

Cold air pumped beneath raised floor, up through perforated tiles.

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RAS Updates / Enhancements

- New HMC Write-able Media
  - DVD-RAM Media is going End-Of-Life
  - Switch to SDHC Media
- Used for
  - Data Offload when no remote connection
  - Saving Physical Configuration on Discontinue
- Not Boot-able
- Read-only Media & Drive still included
Full Disk Encryption is now standard

- FDE options across all drive tiers
- Same performance as standard drives
- Key manager supports both disk and tape
- New European Union Privacy Directive makes breaches very costly
- Encryption is the least expensive data disposal technique
- Supports Easy Tier environments
- Over a thousand IBM encryption disk and tape solutions deployed worldwide

*Requires deployment of Tivoli Key Lifecycle Manager or IBM Security Key Lifecycle Manager information online at SHARE.org/SanFranciscoEval

“Within five years, all HDDs and SSDs will be shipped preloaded with some kind of industry-standard FDE technology” – Gartner Hype Cycle for Storage Technologies, July 2012

“Do not wait for an event-driven reaction to secure your data. Proactively securing your data will help ensure against a worst-case scenario and a financial impact that is likely to far surpass that of the data security purchase itself.”

John Monroe
Gartner Hype Cycle for Storage Technologies, July 2012
DS8870 is RoHS compliant

- Reducing hazardous materials for a greener data center
  - Meets 2013 European Union requirements for restricting hazardous materials in system and manufacturing
  - Requirements being adopted across geographies

RoHS - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

GREEN IT!
DS8000 Integration of EXP30 UltraSSD storage

1U drawer
- Up to 30 encryption capable eMLC SSD drives
  - With 387 GB drives = up to 11.6 TB (raw)
- Each drawer is independently installable; up to 4 per rack

Two 6 Gb SAS adapters especially designed for SSD
- Directly connected to DS8000 internal PCIe fabric via currently open slots

Enterprise class RAS
- RAID protected with spares
- Dual power supplies, sensors, adapters and fans
  - Concurrently replaceable components

Easy Tier enabled

IBM June Storage SOD announcement link • UltraSSD Announcement link

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What Is New and Improved With DS8870?

New Function:
Support for T10 Protection Information standard
(formerly Data Integrity Field (DIF))

End-to-end data integrity through the SAN

- Provides advanced, end-to-end data integrity
  (initial support for Linux on System z)

- Checks data integrity to and from the host bus adapter
  and the disk through the SAN fabric

- Checking done by hardware, so no performance impact
Power HyperSwap Technology

- HyperSwap non-disruptively substitutes secondary for primary devices for planned and unplanned events
  - Transparent to applications - continue to use the same device

- Customer Benefits
  - Unplanned HyperSwap
    - Continuous availability against storage failures
  - Planned HyperSwap
    - Storage migrations without downtime
    - Storage maintenance without downtime

- Requirements
  - AIX 6.1 TL8 with SP1 or AIX 7.1 TL2 with SP1
  - PowerHA 7.1.2 SP1 with APAR IV2758
    - Available November 9, 2012
  - DS8700/DS8800 R6.3 SP2 (DS8870 in 2013)

Oct 3 PowerHA HyperSwap Announcement

Brings together AIX, PowerHA and DS8000 to provide a comprehensive application and data availability solution
DS8870 and IBM Power AIX and Power i

• **Performance**
  - Full Easy Tier support for most server OSes, including Power AIX and Power i
  - DB2 End-to-End I/O Priorities and Cooperative Caching for Power AIX
  - SOD: Automated tiering to SSD Ultradrawer on Power AIX
  - Integrated performance monitoring tools between Power i and DS8000

• **Availability**
  - DS8000 copy services support many server platforms, including IBM Power i and Power AIX
  - DS8000 copy services integration and automation with PowerHA SystemMirror for AIX and i
  - Open HyperSwap for Power AIX (managed through TPC for Replication)
  - **New** integration between DS8000 copy services and PowerHA HyperSwap (DS8700/DS8800)
  - Full System FlashCopy (FSFC) Toolkit for Power i
New VMware support

VMware vStorage APIs for Array Integration (VAAI) includes 3 “primitives” for offloading virtual machine and storage management operations to storage systems that support them:

- Atomic Test and Set (ATS) enables hardware-assisted locking of files
- Full Copy - enables the storage array to make full copies of data within the array
- Block Zeroing enables the array to zero out large numbers of blocks

ATS and Full Copy support are available with this DS8870 release; Block Zeroing support is planned for 2013.

DS8870 enhancements for VMware planned for 2013:
- VAAI Block Zeroing
- vCenter Plug-in
- SRM 5.0/5.1
What Is New and Improved With DS8870?

• Summary:
  • DS8870 preserves client investments in prior models.
  • Up to 3x performance boost.
  • New power system gives 20% percent better efficiency.
  • 1 TB cache
  • Full Disk Encryption
  • Future Support for UltraSSD Storage
  • T10 Protection Information Standard for End-to-end data integrity.
  • Power Hyper Swap solutions
  • VMware VAAI Support
Many Thanks To:

- Irma Flores-Mendoza
- Chip Jarvis
- Allen Marin
- Hank Sauter
- Vic Peltz
- Alison Pate
- Andy Walls
- Tony Pearson
- Jared Minch
- Brian Sherman
- Paul Spagnolo
- Joanne Brown
- Mark Kremkus
- David Whitworth
- Yan Xu
- Brian Rinaldi
What Is New and Improved With DS8870?

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Wednesday, February 6 2013, 1:30-2:30PM
Golden Gate 7, Lobby Level
Session Number 12770

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