HP ConvergedSystem for SAP HANA

08.10.2014
Kostiantyn Grygortsov  Technical Consultant
Project “Sharks”

HP ConvergedSystem

Purpose Built | Automated | ROI, Redefined
HP ConvergedSystem for SAP HANA
Real time big data management optimized for SAP HANA

- Optimized for in-memory computing
- Unmatched scalability
- Faster time-to-value
HP ConvergedSystem 500 for SAP HANA

Real-time data management Optimized for SAP HANA

- Economical way to start
- Entry to medium-sized SAP landscapes
- 2TB for business apps, up to 16TB Analytics/Data Warehouse
- Built-in high availability and data protection

Updated benchmarked release 3/26/14
SAP NetWeaver® Business Warehouse-Enhanced Mixed Load (BW-EML) standard application benchmark

© Copyright 2012 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice.
Making Project Kraken real…

- Large, demanding, complex SAP landscapes
- Massive system with 12TB, 16 sockets
- Mixed analytics and transaction workloads
- Mission-critical high availability and data protection
- Fault tolerant, bladed architecture and the highest I/O bandwidth of any current x86 scale up system
- HP co-innovation with SAP

Maximum scale up
- Up to 12TB single in-memory pool

Maximum scale out
- 2TB Nodes
- Scale to 80 TB*+ and beyond

*On SAP Platform Availability Matrix (PAM) for 32TB

Breaking the sound barriers on Big Data
HP ConvergedSystem for SAP HANA

Complete portfolio

General Purpose (OLAP) | Business Suite (OLTP)

- 256 GB
- 512 GB
- 1 TB
- 2 TB
- 6 TB
- 12 TB
- 16 TB
- 6 TB
- 12 TB

Scale Up | Scale Out

General Purpose (OLAP) | 80 TB+

End to End consulting and deployment services | Single point of contact for solution level support | Factory Integrated | Warranty

CS 500 shipping now
CS 900 shipping Q4

Built on Next Generation Intel Ivy Bridge platform
# HP ConvergedSystem 500 for SAP HANA: At a glance

<table>
<thead>
<tr>
<th>Component</th>
<th>Scale Up - X-Small 2s/256GB</th>
<th>Scale Up – Small 2s/512GB</th>
<th>Scale Up – Medium 4s/1TB</th>
<th>Scale Up – Large 4s/2TB</th>
<th>Scale Out – Base Rack 4TB = 4Nodes(4s/1TB each)</th>
<th>Scale Out-Expansion 4TB = 4Nodes(4s/1TB each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>ProLiant DL580 Gen8</td>
<td>ProLiant DL580 Gen8</td>
<td>ProLiant DL580 Gen8</td>
<td>ProLiant DL580 Gen8</td>
<td>4x ProLiant DL580 Gen8</td>
<td>4x ProLiant DL580 Gen8</td>
</tr>
<tr>
<td>Processor</td>
<td>2x Intel x86- E7-4880 2.5Ghz</td>
<td>2x Intel x86- E7-4880 2.5Ghz</td>
<td>4x Intel x86- E7-4880 2.5Ghz</td>
<td>4x Intel x86- E7-4880 2.5Ghz</td>
<td>4x 4 Intel x86- E7-4880 2.5Ghz</td>
<td>4x 4 Intel x86- E7-4880 2.5Ghz</td>
</tr>
<tr>
<td>In-Memory DB</td>
<td>256GB 16x 2Rx4 PC3 DD3 (16GB)</td>
<td>512GB 32x 2Rx4 PC3 DD3 (16GB)</td>
<td>1024GB 64x 4Rx4 PC3 DD3 (32GB)</td>
<td>2048GB 64x 4Rx4 PC3 DD3 (32GB)</td>
<td>4x 1024GB Each server -32x 4Rx4 PC3 DD3 (32GB)</td>
<td>4x 1024GB Each server -32x 4Rx4 PC3 DD3 (32GB)</td>
</tr>
<tr>
<td>In-Memory DB</td>
<td>(96 DIMMs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal storage</td>
<td>8x 600GB 6G SAS 10K RAID5 Xfs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATA</td>
<td>8x 600GB 6G SAS 10K RAID5 Xfs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>SLES for SAP 11 SP3 SAP HANA SP57</td>
<td>SLES for SAP 11 SP3 SAP HANA SP57</td>
<td>SLES for SAP 11 SP3 SAP HANA SP57</td>
<td>SLES for SAP 11 SP3 SAP HANA SP57</td>
<td>SLES for SAP 11 SP3 SAP HANA SP57, HP Serviceguard NFS, 3PAR Management Server, HANA Studio</td>
<td>HP Services &amp; Support for SAP HANA</td>
</tr>
<tr>
<td>&amp; Support</td>
<td>for SAP HANA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addn. Components</td>
<td>Command Center: 1x DL380 Mgmt Server, Network: TOR LAN Switch 2x S9000AF for 10GBE. File Server: 2x DL380 NFS HA server</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# CS900 Converged System for SAP HANA 8s/6TB

## Hardware
- Single rack configuration
- Server based on ProLiant and Superdome technologies
- Intel Xeon E7-2890 v2 processors
- 3PAR StoreServ7400-N4 Storage (Direct Attach)
- 10x memory RAID10
- Management Server

## Software
- HP Partitions Basic License
- SLES 4 SAP 11 SP3
- SAP HANA SPS7
- Serviceguard
- Serviceguard for HANA

## Diagram
![Converged System Diagram](image)

## Tables

| Management       | DL380p Gen8  
|                  | Win12 Std. Ed. incl. Hyper-V |
| Software         | HP Partitions Basic License  
|                  | SAP HANA SPS7  
|                  | SLES 4 SAP 11 SP3  
|                  | Serviceguard/Serviceguard for HANA |
| Network          | HP ProCurve 6125XLG Blade Switch (2x)  
|                  | HP 16GB /28C SAN Switch BladeSystem (2x) |
| Storage          | 3PAR StoreServ 7400 series 4-node  
|                  | 96x 900GB SAS  
|                  | Direct Attach to C9000 SAN switch |
| Compute          | 8 Intel E7-2890 V2 Processors (Ivy Bridge 15 core)  
|                  | 6TB RAM |
CS900 Converged System for SAP HANA
16s/12TB

Hardware
• Single rack configuration
• Server based on ProLiant and Superdome technologies
• Intel Xeon E7-2890 v2 processors
• 3PAR StoreServ 7400-N4 Storage (Direct Attach)
• 10x memory RAID10
• Management Server

Software
• HP Partitions Advanced License
• SLES 4 SAP 11 SP3
• SAP HANA SPS7
• Serviceguard
• Serviceguard for HANA

Management
DL380p Gen8
Win12 Std. Ed. incl. Hyper-V

Software
HP Partitions Advanced License
SAP HANA SPS7
SLES 4 SAP 11 SP3
Serviceguard/Serviceguard for HANA

Network
HP ProCurve 6125XLG Blade Switch (2x)
HP 16GB /28C SAN Switch BladeSystem (2x)

Storage
3PAR StoreServ 7400 series  4 nodes (2x)
96x 900GB SAS (2x)
Direct Attach to C9000 SAN switch

Compute
16 Intel E7-2890 V2 Processors (Ivy Bridge 15 core)
12TB RAM
CS900 Converged System for SAP HANA
Scale Out 8s/2TB
4 Nodes shown

Hardware
- Modular expansion
- Server based on ProLiant and Superdome technologies
- Intel Xeon E7-2890 v2 processors
- 3PAR StoreServ7400-N4 Storage
- Management Server

Software
- HP Partitions Advanced License: multiple partitions
- SLES 4 SAP 11 SP3
- SAP HANA SPS7
- Serviceguard
- Serviceguard for HANA

Management
- DL380p Gen8
- Win12 Std. Ed. incl. Hyper-V

Software
- HP Partitions Advanced License: multiple partitions
- SAP HANA SPS7
- SLES 4 SAP 11 SP3
- Serviceguard/Serviceguard for HANA

Network
- HP ProCurve 6125XLG Blade Switch (2x)
- HP 16GB /28C SAN Switch BladeSystem (2x)

Storage
- 3PAR StoreServ 7400 series 4-node
- 96x 900GB SAS SN6000B SAN Switch (4x)

Compute (per HANA node)
- 8 Intel E7-2890 V2 Processors (Ivy Bridge 15 core)
- 2TB RAM
- DL360p Gen8 NFS File Server (2x)
Compute engine purpose-built for the CS900 for HANA

Leveraging HP ProLiant and Superdome technologies

**Scalability**
- 3x greater scalability at 55% less solution cost
- SPECjbb benchmark

**Reliability**
- 20x more reliable than software-only virtualization

**Availability**
- 60% reduction\(^1\) in downtime

**Serviceability**
- Failover recovery in as little as 4 seconds

\(^1\)Peter Piet and Bruce Edson, using markov chain high availability modeling, running applications on separate nPars vs. running them together on the same nPar using virtual machines. HP, California. July 2010.
### ConvergedSystem 900 for SAP HANA

#### Optimized for in-memory computing

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faster performance</td>
<td>2 hours to &lt; 2 minutes improved runtime*</td>
</tr>
<tr>
<td></td>
<td>1.5 hours to 1 second improved query time*</td>
</tr>
<tr>
<td>Uninterrupted performance</td>
<td>Resiliency and unique, high availability features</td>
</tr>
<tr>
<td>Flexible consolidation</td>
<td>Multiple apps on same platform with workload isolation</td>
</tr>
<tr>
<td>Enterprise data protection</td>
<td>Complete and SAP certified data protection options</td>
</tr>
</tbody>
</table>

*HP Superdome running, HP-UX, Oracle database, SAP ECC (SAP Enterprise Central Component).
Faster performance in the real world - realized by HP IT

Goal: enterprise scale, *mission critical* OLTP on HANA

- Moved HP’s largest SAP transaction environment to ConvergedSystem 900 for SAP HANA
- Developed advanced use case and user experience requirements with SAP
- ConvergedSystem 900 running with 12 TB of memory – running today in Waldorf

Real world results
- Complex transaction run times reduced from *7+ minutes to seconds*
- *Instant* productivity increase

*Existing environment is a Superdome (running HP-UX) and an Oracle database*
*New environment is the ConvergedSystem 900 (running Linux) and a HANA database*
Uninterrupted performance
Industry’s only Automated Unattended Failover for SAP HANA

Automated High availability/Disaster Recovery system replication
• Uniform, cross-application HA/DR technology
• Unattended secondary takeover
• Automated role reversal
• Client access handling

Simplified High availability/Disaster Recovery configuration and administration
• Integrated with SAP startup framework
• Non-intrusive design
• Regular configuration verification
• Context-driven instance restarts

HP Serviceguard Extension for HANA

- Increase Availability
- Reduce errors caused by human intervention
- Easy to deploy
- Prevents data corruption
Uninterrupted performance

HP ConvergedSystem 900 only – advanced server architecture

---

**Generic x86**
- No critical analysis
- Error Detected
- OS crashes (no analysis, no recovery and no resolution)
- Bad data may end up in storage

**ConvergedSystem 900**
- Deep analysis and self-healing

- **Unique, high availability** functions in the system that prevent downtime
- **Automated and unattended failover** for high availability/DA system replication with HP Serviceguard
- **Simplified** high availability/disaster recovery configuration and administration with HP Serviceguard
Flexible consolidation

Run SAP HANA business apps and analytics side by side safely

**Single instance**
- Single workload, e.g.,
  - Large Business apps
  - Scale-up analytics

**Partitioned**
- Mixed workloads with different compute/memory requirements, e.g.
  - Business Apps and analytics
  - Multiple development environments

**Virtualized**
- Mixed workloads with different compute/memory requirements, particularly < 1 blade, e.g.
  - Training environments
  - Smaller production environments

- Single system
- Hard partitions with electrical isolation
- Virtual machines with workload mobility
Enterprise Data Protection
Complete and SAP certified data protection options

• **Single-step backup** with HP StoreOnce Backup
• **Faster backup** and **recover** with StoreOnce Catalyst
• **Enterprise-class backup** capabilities with HP data protector 7.0
• **Heterogeneous backup** agent support and reference architectures
• **Protect data** in the event of **disaster**, with SAP System Replication

HP StoreOnce and Data Protector
# Faster time-to-value

ConvergedSystem 900 for SAP HANA

<table>
<thead>
<tr>
<th>Deploy FAST</th>
<th>Order to operations in as few as <strong>30 days</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple to support</strong></td>
<td><strong>One Company: HP</strong></td>
</tr>
<tr>
<td></td>
<td><strong>New dedicated</strong> CS900 support</td>
</tr>
<tr>
<td><strong>Fast ROI</strong></td>
<td><strong>New</strong> Migration services enable the <strong>full potential</strong> of your data quickly</td>
</tr>
<tr>
<td></td>
<td><strong>“Shark Economics”</strong> business model</td>
</tr>
</tbody>
</table>
## Delivering the best platform for SAP HANA deployments

<table>
<thead>
<tr>
<th>Industry standard servers comparison</th>
<th>HP ConvergedSystem 500 for SAP HANA</th>
<th>HP ConvergedSystem 900 for SAP HANA</th>
<th>The Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optimized for in memory computing</strong></td>
<td><strong>Benchmarked performance</strong></td>
<td>Yes, Leader</td>
<td>Yes, Leader</td>
</tr>
<tr>
<td></td>
<td><strong>Automated, uninterrupted failover</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>Multiple workloads with no performance impact</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Unmatched scalability</strong></td>
<td><strong>Max data warehouse nodes</strong></td>
<td>1TB up to 16TB+</td>
<td>2TB up to 80 TB+</td>
</tr>
<tr>
<td></td>
<td><strong>Max in-memory pool for business apps</strong></td>
<td>2TB</td>
<td>12TB SAP certified</td>
</tr>
<tr>
<td></td>
<td><strong>Shared SAN storage</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Time to value</strong></td>
<td><strong>One-Stop, System level, proactive support</strong></td>
<td>Direct access to HP Center of Expertise</td>
<td>Direct access to HP Center of Expertise</td>
</tr>
<tr>
<td><strong>SAP innovation</strong></td>
<td><strong>Roadmap</strong></td>
<td>Clear roadmap</td>
<td>Clear roadmap</td>
</tr>
</tbody>
</table>

© Copyright 2014 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice.
Innovation for SAP HANA

Delivering on the future today with an eye on tomorrow

“\textit{The HP-SAP co-innovation labs deliver the depth of expertise and services to help organizations drive high-performance data analysis, handling huge volumes of data in real time for instant business insight.}”

– Bill Veghte, Executive Vice President and General Manager, Enterprise Group, HP

Roadmap

• Next phase Project Kraken
• Future – Memristor

Partnership

• HP-SAP co-innovation labs
• 25+ year HP-SAP partnership

Experience

• 9,500 trained SAP professionals
• 100+ SAP and HP engineers working

Co-innovation labs

• Walldorf
• Palo Alto
• Chennai
Thank you