HP Converged Infrastructure
Project Odyssey

Hans-Jürgen Fuks / 24.09.2013
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Agenda

Converged Infrastructure

- Marktisuation
- Converged Infrastructure

Odyssey

- Strategy
- HP Integrity Server
- Roadmap
- Mission Critical x86
- HP Serviceguard for Linux
Marktsituation
Veränderte Erwartungen an ‘Mission-Critical’

Yesterday

- x86
- EPIC/RISC
- MISSION-CRITICAL
- MAINFRAME

Today/future

- x86
- EPIC/RISC
- MISSION-CRITICAL
- MAINFRAME

INDUSTRY STANDARD MISSION-CRITICAL

GREATER FLEXIBILITY

EXCEED SLAs

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A New Style of IT is emerging in The Enterprise

New Style of IT

- Cloud
- Social
- Big Data
- Mobility
- Client / Server
- PCs
- Transactional Systems
A new era of accelerated innovation

Forever changing how consumers and businesses interact, enabling new opportunities

**2013**

**Every 60 seconds**
- 98,000+ tweets
- 695,000 status updates
- 11 million instant messages
- 698,445 Google searches
- 168 million+ emails sent
- 1,820TB of data created
- 217 new mobile web users

**Growing Internet of Things (IoT)**

**Pervasive Connectivity**

**Smart Device Expansion**

**Explosion of Information**

**By 2020**

- 30 Billion (1)
- 40 Trillion GB (2)
- 10 Million (3)
- ...for 8 Billion (4)

**A new style of IT required for IoT solutions**

(1) IDC Directions 2013: Why the Datacenter of the Future Will Leverage a Converged Infrastructure, March 2013, Matt Eastwood; (2) & (3) IDC Predictions 2012: Competing for 2020, Document 231720, December 2011, Frank Gens; (4) http://en.wikipedia.org
Die IT Landschaft verändert sich
...zu einfachen, skalierbaren, effizienten und verfügbaren Lösungen

Heute

HP Produkt Innovationen

Transformation

Morgen

Serviceorientiert
Geringer Capex Invest
Homogenisierte Landschaften
Komplexitätsreduzierung
Vereinheitlichung

Build on-premises cloud services
Consume off-premises cloud services

Traditional
Private Cloud
Managed Cloud
Public Cloud

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HP Converged Infrastructure
HP Converged Infrastructure

Accelerating IT for better business results

What is it?

HP Converged Infrastructure accelerates the provisioning of IT services & applications through shared pools of interoperable resources

The Foundation for HP Converged Cloud
Current data centers are UNSUSTAINABLE

Your business and apps don’t run in silos ... nor should your IT.

The fundamental data center flaw

Too ...
• Sluggish service delivery: 10 weeks
• Admin time on maintenance: 80%
• Data center utilization: 30%

... To ...
• Service delivery: Minutes
• Admin time on maintenance: 20%
• Data center utilization: 70%
The journey to convergence and cloud

**HP Converged Infrastructure** —
the foundation for Converged Cloud

**STEP-BY-STEP APPROACH**

1. **Standardize and consolidate**
2. **Virtualize and automate**
3. **Self service infrastructure**
4. **Self service applications with full lifecycle management**

**FAST-TRACK APPROACH**

Converged Cloud — Becoming a service broker in a hybrid environment.

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HP unique technologies enable Convergence

- Moonshot
- HP Servers
- Matrix Operating Environment
- "Flat SAN"
- HP 3PAR Storage
- HP Converged Infrastructure
- Virtual System
- CloudSystem
- AppSystem
  - Vertica
  - Hadoop
  - SAP HANA
  - Microsoft PDW
- HP Converged Infrastructure
- HP SDN Controller
- HP Networking
- Virtual Connect
- HP 3PAR Storage
CloudSystem - Innovation for the cloud
Most complete, open, integrated system

HP CloudSystem
- Single services view across hybrid cloud
- Intelligent automation and orchestration
- Multi-hypervisor, multi-OS, heterogeneous infrastructure
- Rapid application and infrastructure deployment

Announced enhancements to all 3 offerings in June:

- HP CloudSystem Matrix
  - IAAS for enterprises
- HP CloudSystem Enterprise
  - PAAS & SAAS for enterprises
- HP CloudSystem Svc. Provider
  - XAAS for svc. providers
Market leadership and continuous innovation

First to announce a Convergence strategy, #1/2 in every market

**HP Servers**
20 years of leadership, from server to blades

**HP Storage**
80% of Global 100 uses HP Storage

**HP Networking**
Leadership from the edge To the data center core

**HP Technology Services**
Global expertise, largest IT support services organization in the world

**Moonshot, Odyssey, Voyager**

**3PAR and StoreOnce**

**Virtual Application Networks**

**Insight Online**
Die HP Odyssey Strategie
Die Server Strategie von HP

HP umfangreiches Technologie-Portfolio (UX-UX, Nonstop, VMS) und Expertise von HP

UNIX/ Mainframe

Standard Server

HP Weltmarktführer für x86 Plattformen

Converged Infrastructure ergänzt um Missiion Critical x86 (Odyssey)
HP Commitment mit dem Projekt Odyssey

HP will deliver a UNIX-like experience for your mission-critical x86 environments by 2014

- Advance HP Integrity, HP-UX, NonStop as mission-critical design center
- Change the game: HP as only vendor unifying UNIX and x86 within a single architecture
- Revolutionize mission-critical with a suite of products for choice and investment protection

Courtesy NASA/JPL-Caltech.
Langfristiger Investitionsschutz

Longevity with Integrity

MISSION-CRITICAL
CONVERGED INFRASTRUCTURE

NonStop  HP  UX  OpenVMS

Integrity

INVESTMENT PROTECTION

Mission-Critical your way

Integrity

NonStop  HP  UX  OpenVMS

MISSION-CRITICAL
CONVERGED INFRASTRUCTURE

ProLiant

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Das Beste von HP Mission-Critical in x86 Umgebungen

Innovations in established mission-critical

- Serviceguard High Availability
- Fault Tolerant Fabric*
- Rich Virtualization Continuum
- Mission-Critical Services
- Analysis Engine*

Mission-Critical x86

- Services
  - Infrastructure Software
  - Operating Environment
  - System Software
  - Mission-Critical x86 Servers
HP’s Linux Entwicklungsmodell

- Driving innovations with partners and suppliers
  - Processor advancements (Intel)
  - Hardware Innovation
  - Data Center Ecosystem

- Research & Development
  - Decades of mission-critical experience

- Contributing what matters for mission-critical
  - Upstream Communities
  - Distribution R&D teams

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### Partnerschaft mit Microsoft

**Extend mission-critical for Windows environments**

<table>
<thead>
<tr>
<th>Boost scalability and performance</th>
<th>Expanded virtualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced error handling, HA/DR with SQL Always-on, System Center integration</td>
<td>Windows Server Hyper-V™</td>
</tr>
<tr>
<td>Technology collaboration impacting mission critical environments</td>
<td></td>
</tr>
<tr>
<td>Optimized for HP mission-critical x86 platforms</td>
<td></td>
</tr>
<tr>
<td>HP integration with full Microsoft stack</td>
<td></td>
</tr>
</tbody>
</table>

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**Mission Critical Ecosystem**

HP MCx86 with Microsoft Windows and SQL Server
## HP Project Odyssey Roadmap

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HP Integrity: Established mission-critical</strong></td>
<td></td>
</tr>
<tr>
<td>NonStop</td>
<td>Advancing fault tolerant computing</td>
</tr>
<tr>
<td>Integrity with &lt;br&gt; HP UX</td>
<td>11iv3 updates: Flexible and integrated workload solutions</td>
</tr>
<tr>
<td>V8.4 updates and enhancements</td>
<td></td>
</tr>
</tbody>
</table>

| **HP ProLiant: Enterprise scale-up x86** |  |
| 4s rack and blades | Gen8 Refresh |
| 8s+ systems | New RAS features |
| 8s+ systems | DragonHawk (16s) |
| SAP HANA 1st release | Windows, Linux, and VMware |
|  | Breakthrough reliability and scalability |
|  | Mission-critical experience (Services and Software) |
HP Integrity Server
Update Poulson
Seit Anfang 2013: Poulson Itanium Architecture

Most advanced Itanium processor

✓ New architecture with 8 Cores
✓ Consistent design with Tukwila-based systems
✓ Total 54MB on-die memory (50MB SRAM)
✓ Intel® Instruction Replay Technology
✓ Enhanced Intel® Hyper-Threading Technology with Dual-Domain Multithreading support
✓ Intel® Itanium New Instructions
✓ 3.1 Billion Transistors on 32nm technology

Innovation & Investment Protection

• Greater system scalability
  • 2x the cores, 2x instructions throughput

• Better performance
  • 33% higher system bandwidth, targeting 2-3x performance

• Enhanced reliability

• Improved power management
Mehrwert für den Kunden

Integrity rx2800 i4 Server
Integrity server blades BL860c i4, BL870c i4, BL890c i4
Integrity Superdome 2 CB900s i4 blades
11i v3 September 2012 update release
HP Advisory Services & Evolution Programs

33% TCO savings
10 x Faster threat detection
Up to 3x Performance improvement

Featuring Intel® Itanium® processor 9500 series
Integrity Server Roadmap

HP Integrity c-Class blades and servers

Today

Superdome 2
BL860c
BL870c
BL890c

Future

rx2800
HP-UX 11i Lifecycle

- 11i v3 now supports Intel® Itanium® 9500 and is planned to support "Kittson" processor as well. HP-UX 11iv3 will be supported at a minimum through 31-Dec-2022.
- ** Previous Version Support with Sustaining Engineering (PVS w SE) will be offered for HP-UX 11i v1 and 11i v2 for the period 1st Jan 2014 to 31st Dec 2015.
Wir schauen nach vorne: OpenVMS Pläne

Communicated 5th June 2013

Strength and longevity on Integrity i2 servers

- Deliver Integrity i2 Tukwila systems to at least end 2015, upgrades to at least end 2016
- Deliver OpenVMS 8.4 support to at least end 2020
  Updates planned: 3PAR support, security. i4 Poulson support not planned.
- ~Annual maintenance releases

Earlier versions of OpenVMS

OpenVMS V7.3-2 / Alpha: prior version support to end 2015
OpenVMS V8.3 / Alpha: standard support to end 2015
OpenVMS V8.4 / Alpha: standard support to at least end 2016
OpenVMS V8.3./V8.3-1H1 / Integrity: standard support to end December 2015

OpenVMS plans

3PAR Storage enablement:
StoreServ 10000, 7000 series

Security updates: SSL, SSH,
DECwin, TCP/IP, Java, Apache,
PHP, SeaMonkey, Firefox, WSIT

Updated Middleware: RTR on
Linux and Windows
x86 (Odyssey) Roadmap Update
ProLiant Scale-up Server Rack Evolution

Recommended transition paths

**Current**

- **DL980 G7**
  - 8 socket EX, E7-7500

**Future**

- **4-socket scalability and performance**
- **RAS feature set**
- **Intel E7 architecture**

- **Extreme scalability:** Up to 16 sockets and 24TB* memory
- **Uncompromising reliability:** Enhanced RAS feature set, Intel E7 architecture, SD2

- **DL580 Gen8**
  - 4 socket IvyBridge-EX

- **DragonHawk**
  - 16 socket IvyBridge-EX

*with 64GB DIMM support

DL980 Neusysteme verfügbar bis mindestens Januar 2015
DragonHawk: Next Generation system

- Extreme RAM scalability—**24 TB+**
- Massive scale-up environment—**up to 16 sockets**
- Ideal for running **OLTP + OLAP environments**

Proof-point for SAP Project Kraken - DragonHawk

Built on **industry-standard architecture**
HP Serviceguard for LINUX
Serviceguard for Linux: für höchste Ansprüche an Verfügbarkeit

Leading HP-UX clustering solution for high availability now (again) available for Linux

Built on 20 years of experience to
• Get protected fast
• Maximize uptime
• Ensure business continuity
Was sind die Hauptursachen für Downtime?

Single-system RAS is key but not sufficient for your most mission-critical workloads

**Human error**
- Lack of knowledge or training
- Distractions / Carelessness

**Application failures**
- System patching (~2 months)
- Performance / Capacity Planning
- Application Architecture / Design

**Hardware, OS & Power failures**
- Fan / Memory / Disk failures
- OS crashing
- Natural disasters

Causes of unplanned downtime

Source: Building an IT Disaster Recovery Modernization Business Case, Gartner Symposium 2011
Die komplette HA Lösung für Linux

HP Serviceguard Solutions for Linux

- Heal transparently and recover gracefully
- Protect geographically dispersed data centers

HP Serviceguard and Serviceguard Manager for Linux

- Extended Distance Cluster for Linux
- Metrocluster for Linux
- Continentalclusters for Linux

Simplify setup and management

- SGeSAP/LX
- Oracle DB
- EnterpriseDB
- SAP Sybase ASE

Toolkits and Extensions

- SAP Sybase Replication Server
- Contributed Toolkits
- Developers Toolbox

HP Disaster Recovery Solutions for Linux
The Serviceguard Solutions for Linux Portfolio

HP Continentalclusters for Linux
HP Metrocluster for Linux
Serviceguard Extended Distance Cluster

Application-targeted availability

Oracle Database
Serviceguard Toolkit for Oracle database for Linux

SAP
Serviceguard Extension for SAP for Linux (SGeSAP/LX)

Contributed Toolkits#
Apache, Samba, MySQL, PostgreSQL, Sendmail, Tomcat

EnterpriseDB PPAS
Serviceguard Toolkit for EnterpriseDB PPAS for Linux

Sybase Database
Serviceguard Toolkit for Sybase ASE / RS for Linux

New

NFS#
Serviceguard Toolkit for NFS for Linux

Developer’s Toolbox#
Standardized Development Framework

Serviceguard Manager – GUI based management

HP Serviceguard for Linux– Protection against planned & unplanned downtime
Automatischer schneller SAP Failover

Serviceguard Extension for SAP for Linux

- Simplifies setup of SAP environments
- Restoration in minutes with zero lost in-flight transactions
- No performance hit after a failure
- Protects the SAP central instance and database
- Provides SAP availability during upgrades
- Backed by world class support from HP and SAP

Certified Linux solutions (database independent):
HP Serviceguard/LX A.11.20 + HP SGeSAP/LX A.06.00 + RH5, RH6, SLES 11 on x86_64

For the official reference list of SAP-certified cluster solutions, see: [http://scn.sap.com/docs/DOG-31701](http://scn.sap.com/docs/DOG-31701)
## Supported OS and File Systems

<table>
<thead>
<tr>
<th>Supported OS and File Systems</th>
<th>Servers</th>
<th>HP Storage</th>
<th>3rd Party Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHEL 5.7</td>
<td>ProLiant DL Series G7 and Gen8 (Intel and AMD)</td>
<td>HP P10000 3PAR</td>
<td>EMC Symmetrix DMX 6, 6.5, 7.0</td>
</tr>
<tr>
<td>RHEL 5.8</td>
<td>ProLiant BL Series G7 and Gen8 (Intel and AMD)</td>
<td>HP P7000 3PAR</td>
<td>VMAX 10K, 20K, 40K VMAXe</td>
</tr>
<tr>
<td>RHEL 5.9</td>
<td>VMWare 5.0, 5.1 KVM</td>
<td>HP 3PAR F-Class Storage Systems</td>
<td>EMCClarion</td>
</tr>
<tr>
<td>RHEL 6.1</td>
<td></td>
<td>HP 3PAR T-Class Storage Systems</td>
<td>EMC VNX Series (With Block Storage Option only)</td>
</tr>
<tr>
<td>RHEL 6.2</td>
<td></td>
<td>HP 3PAR StoreServ 7200 / 7400</td>
<td>HDS, Hitachi</td>
</tr>
<tr>
<td>RHEL 6.3</td>
<td></td>
<td>HP EVA 3000 / 5000</td>
<td>NetApp (Only NFS (filer) option supported)</td>
</tr>
<tr>
<td>RHEL 6.4</td>
<td></td>
<td>HP EVA 4x00 / 6x00 / 8x00</td>
<td>IBM SAN Volume Controller (supported under certain conditions)</td>
</tr>
<tr>
<td>SLES 11 SP1</td>
<td></td>
<td>HP P6x00 (EVA FC)</td>
<td></td>
</tr>
<tr>
<td>SLES 11 SP2</td>
<td></td>
<td>HP P9500, XP 10000 / 12000 20000 / 24000</td>
<td></td>
</tr>
<tr>
<td>Ext2, Ext3, XFS</td>
<td></td>
<td>HP P2000 G3 (MSA FC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>HP StoreVirtual (iSCSI)</td>
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</tr>
</tbody>
</table>

“The mission critical server market will undergo significant changes over the next decade including the adoption of more x86 platforms for critical applications. As such, x86 customers are looking for an equivalent mission critical experience to what they have today in UNIX environments. An ideal scenario for customers is to leverage an infrastructure that is flexible enough to evolve and adapt to address their changing mission critical needs.”

Andrew Butler,
Research Vice President & Distinguished
Gartner Group
Thank you