HP Update
IDC HPC Forum, Tucson

Ed Turkel
Group Manager, WW HPC Marketing, HP Servers
May 1, 2013
Make it Matter

Tackle any challenge, with HPC solutions from HP

Overcome barriers to Innovation and Scale

- Realized system performance and throughput
- Power capacity and cost
- Infrastructure complexity and inflexibility

**Faster**

Speed advancements with a converged infrastructure, purpose-built for scale.

**Better**

Optimize your performance footprint with the world’s most efficient systems.

**Smarter**

Deploy easily, adapt quickly to change, and improve quality of service.
The Next Generation ProLiant Family for Hyperscale
Extending modularity and innovation with workload driven product developments

**HP ProLiant SL6500 Servers**
Dense, efficient, serviceable, shared infrastructure for hyperscale

**HP ProLiant SL4500 Servers**
Densest storage, efficiency and serviceability purpose-built for big data

**HP Moonshot Servers**
Unprecedented scale, efficiency and choice with the world’s first software defined servers
The first server purpose-built for big data
Introducing the HP ProLiant SL4500 server

- Workload Optimized
- Converged and balanced architecture
- ProLiant class solution

Built on HP ProLiant Gen8 server innovations

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compute nodes per rack</td>
<td><strong>UP TO 27</strong></td>
</tr>
<tr>
<td>Drives per rack</td>
<td><strong>UP TO 540</strong></td>
</tr>
<tr>
<td>IOPs per server</td>
<td><strong>UP TO 500K</strong></td>
</tr>
<tr>
<td>Storage per rack</td>
<td><strong>UP TO 2.2PB</strong></td>
</tr>
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1 GB Drive Q1 2013

www.hp.com/go/proliant/bigdatasserver

1 4TB Drives Q1 2013
Optimized for big data workloads
Match your exact needs with an ideal combination of core to spindle ratios

<table>
<thead>
<tr>
<th>Core/Spindle</th>
<th>Capacity/Node (TB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:10</td>
<td>45, 60, 75, 100, 180, 240¹</td>
</tr>
<tr>
<td>1:2</td>
<td>2 node each with 25 LFF drives</td>
</tr>
<tr>
<td>1:1</td>
<td>3 node each with 15 LFF drives</td>
</tr>
</tbody>
</table>

1:10

- **Distributed parallel processing**
- **Big data analytics**
- **Object Storage**

¹ 4TB Drives Q1 2013
HP Moonshot System
The world’s first software defined server

Moonshot 1500 Chassis
Supports shared components including power, cooling, and management and fabric

Software defined servers
45 individually serviceable hot-plug cartridges

80% Less space | 77% Less cost | 89% Less energy | 97% (1) Less complexity

Source: HP internal research
HP Moonshot 1500 Chassis front view

The essential foundation for the new style of IT

45 hot-plug cartridges
- Single-server = 45 servers per chassis
- Quad-server = 180 servers per chassis (future capability)

Dual low-latency switches
- HP Moonshot-45G Switch Module (45 x1Gb downlinks)

Compute, Storage, or Combination
x86, ARM, or Accelerator
Servers tailored and tuned for specific workloads

Delivering on the promise of software defined servers

Workloads
- Dedicated Hosting
- Web Front End
- MemCache
- Big Data
- Desktop Infrastructure
- Accelerators
- And more...

Advanced

Optimized

Revolutionary cartridge design enabling business breakthroughs

77% (1)
Lower TCO for dedicated hosting

Source: HP internal research
Highly flexible fabric

Supporting a range of current and future capabilities

- Traffic isolation and stacking for resiliency with dual low-latency switches
- Economical and flexible storage with shared storage lanes
- Multiple servers managed as one platform with dedicated iLO network
- Integrated cluster fabric with point-to-point connectivity
HP Pathfinder Innovation Ecosystem

Select technology partnerships focused on quicker, customer-driven innovation

Driven by

More to come...

Best of the best technology leaders

Leveraging pan-HP expertise to create new market opportunities
Enabling a new style of IT
Driving breakthrough efficiency and scale for customers

HP Moonshot Server

HP Pathfinder Innovation Ecosystem
Select technology partnerships focused on quicker, customer-driven innovation

HP Moonshot Concierge Support
New ownership experience including Discovery Labs, expertise and on-demand capacity

Leading Technology Partnerships
Solution Builder Program
Faster time to innovation

HP Discovery Lab
Service & Consulting
Acquire on your terms

www.hp.com/go/moonshot
What’s next?
NREL Selects Partners for New High Performance Computer Data Center

NREL to work with HP and Intel to create one of the world’s most energy efficient data centers.

September 5, 2012
The U.S. Department of Energy’s National Renewable Energy Laboratory (NREL) has selected HP and Intel to provide a new energy-efficient high performance computer (HPC) system dedicated to energy systems integration, renewable energy research, and energy efficiency technologies. The new center will provide additional computing resources to support the research goals of the Energy Systems Integration Facility (ESIF) and the National Laboratory for Agriculture and the Environment (NLAER). The ESIF is currently in design and construction.

Cross section view into ESIF and the high performance computing data center. Photo courtesy of SmithGroup JJR.
New Ultra-Efficient HPC Data Center Debuts

March 11, 2013

Scientists and researchers at the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) are constantly innovating, integrating novel technologies, and "walking the talk." Since 1982, NREL has won 52 R&D 100 Awards — known in the research and development community as "the Oscars of Innovation" — for its groundbreaking work.

When it came time for the lab to build its own high performance computing (HPC) data center, the NREL team knew it would have to be made up of firsts: The first HPC data center dedicated solely to advancing energy systems integration, renewable energy research, and energy efficiency technologies. The HPC data center ranked first in the world when it comes to energy efficiency. The first petascale HPC to use warm-water liquid cooling and reach an

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Thank you

HP-CAST 20 – Leipzig, Germany 14-15 Jun’13
HP-CAST 21 – Denver, Colorado 15-16 Nov’13

www.hp-cast.org