Worlds Colliding: Why Big Data Changes How To Think About Enterprise Storage

Intersect 360 Research

Addison Snell
addison@intersect360.com
Overview, Mostly in Order

• Okay, who invited the HPC guy?
• The hazards of “forecasting” Big Data
• What is Big Data, if not Hadoop?
• What’s the real opportunity?
• (Vendor) hype vs. (end user) reality
• The satisfaction gap
• Worlds colliding = bad. Trends colliding = worse.
• The big finish: I don’t care how you solve the problem. Just don’t call it HPC!
Technical vs. Enterprise Computing

Technical Computing
• Top-line missions:
  – Find the oil
  – Design the minivan
  – Cure the disease
• Driven by price/performance
• Fast adoption of new technologies, algorithms, and approaches

Enterprise Computing
• Keeps business running
  – Communicate/collaborate
  – Market and sell the product
  – Accounting, HR, finance, …
• Driven by RAS: reliability, availability, serviceability
• Slow adoption of new technologies, algorithms, and approaches
New Survey Data

• 278 total respondents
  – 178 “Technical” (HPCwire and HPC500 user group)
  – 100 “Enterprise” (Gabriel Consulting)
  – 165 commercial, 67 academic, 46 government

• Surveys completed April – August 2013

• Builds on original survey from early 2012 (306 respondents: 204 Technical, 102 Business)

• End users discuss their environments, challenges, solutions, and “satisfaction gaps” in addressing Big Data challenges
Insight #1: Big Data, Big Opportunity

What percent of your organization's IT budget in 2013 will be related to Big Data?

- Money is being spent on Big Data
- 60% of those responding will spend more than 10% of the IT budget relate to Big Data
- Use caution in describing “the Big Data market”
What Are Big Data Applications?

- When we ask vendors to describe their Big Data solutions, they use words like *Hadoop* and *graph*.
- When users describe their Big Data applications, they use words like *analyze* and *algorithm*.

<table>
<thead>
<tr>
<th>Application usage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>281</td>
</tr>
<tr>
<td>Purchased</td>
<td>144</td>
</tr>
<tr>
<td>Open source</td>
<td>133</td>
</tr>
<tr>
<td>Unspecified</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>574</strong></td>
</tr>
</tbody>
</table>

**Number of respondents** 225

*Intersect360 Research, 2012*
Insight #2: Not Just Hadoop

• In 2012, only 17% of respondents mentioned Hadoop when describing their Big Data applications. In 2013, this went down, driven by Enterprise respondents.

• Deployments might be based on Hadoop, but the majority of Big Data implementations are on in-house applications and algorithms.

• Most common source of data is also “in-house.”

• ISV software for Big Data is thinly scattered.
Defining the Opportunity

- How much added spending is there because of Big Data? Look at IT budget growth (below)

- What technologies have expanded opportunities? Look at “satisfaction gaps”

Expected two-year change in IT budget

[Bar chart showing expected change in IT budget with categories: Up by more than 20%, Up by 10% to 20%, Up by 5% to 10%, Up by 1% to 5%, No change (0%), Down by 1% to 5%, Down by 5% to 10%, Down by 10% to 20%, Down by more than 20%).]
Insight #3: Performance Counts

Satisfaction Gaps for Storage Solutions
Satisfaction Gap = Importance Score - Satisfaction Score

<table>
<thead>
<tr>
<th>Technical</th>
<th>Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I/O performance (+.94)</td>
<td>1. I/O performance (+.77)</td>
</tr>
<tr>
<td>2. Storage capacity (+.67)</td>
<td>2. Storage capacity (+.55)</td>
</tr>
<tr>
<td>3. RAS (+.58)</td>
<td>3. RAS (+.52)</td>
</tr>
</tbody>
</table>

- Metrics of performance show up as key factors in Enterprise as well as Technical
- Big Data will be a driver for expanded usage of HPC, IF they can still meet enterprise requirements
- But end users might not want to think of it as HPC
Cloud + Big Data: When Trends Collide

I like sushi. I like ice cream. Therefore I like sushi-flavored ice cream.

• Cloud is a major business computing trend. Big Data is a major business computing trend. Therefore …
• But the barriers to Big Data in cloud are the same as HPC in cloud (security, data movement, etc.)
• Not as simple as offloading everything to Amazon
• If cloud is a priority, invest in management software to coordinate workloads across public and private
Technologies in the Discussion

• “Storage” beyond spinning disk
  – Flash / Solid-state (max I/O)
  – Tape (max capacity)
• Parallel file systems
• High-speed fabrics (e.g. InfiniBand)
• MPI
• Large shared memory spaces
• Accelerators (e.g. GPU, FPGA, Intel Xeon Phi)
Advice on Big Data

• To end users:
  – There is a competitive advantage to performance
  – Open your datacenter to new ideas
  – Invest in the technology and skill to scale

• To vendors:
  – Don’t assume you know what the problem is. Ask.
  – Don’t assume you know what the solution is. Think.
  – Discuss high performance in enterprise context
For More Information and Results

• Technology Vendors: You can buy it. Reasonable prices. See me or email sales@intersect360.com

• HPC Users: Join our HPC user group, HPC500, to get free access to research studies.
  – We will ask you to participate in surveys
  – We will keep your organizations anonymous if desired
  – www.hpc500.com
Worlds Colliding:
Why Big Data Changes How To Think About Enterprise Storage

Addison Snell
addison@intersect360.com