Customer Insight on Flash in the Data Center

Forum D-11: “Flash in Data Centers”

Marco Coulter – Vice President, 451 Research
Marco Coulter, a Vice-President at 451 Research where he manages the storage Voice of the Enterprise practice. His expertise include storage, internal and external cloud, data center operations, software/hardware purchasing, software development, marketing, and product programs.

Before joining 451 Research, he spent 12 twelve years in an IT department advisory role and as Vice-President of several divisions. He helped redesign the IT facility to a virtually-provisioned, automated, tiered model. His product line experience includes spurring revenue growth, directing remote teams, instituting project management methodology, improving product development delivery, optimizing customer support services, and defining business strategy to offer a complete end-to-end storage management platform. He presents at many conferences (including CA World and HP World) and executive events, and contributed quotes and research to articles in CIO Insight, ComputerWorld, Network Computing, and other media outlets. His years of experience on both the vendor and customer side of IT gives him a unique perspective on data center operations, software/hardware purchasing, software development, and storage system management.

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Read other research from Marco Coulter:
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### Sampling of Our Membership

<table>
<thead>
<tr>
<th>Position</th>
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<tbody>
<tr>
<td>Chief Information Officer</td>
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<tr>
<td>Chief Information Security Officer</td>
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<tr>
<td>Chief Technology Officer</td>
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<tr>
<td>Data Center Manager</td>
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<td>Director of Enterprise Mobility</td>
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<td>Director of Information Security</td>
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<td>Director, Business Intelligence</td>
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<tr>
<td>Director, IT - Global Strategy</td>
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<td>Global Information Security Program Director</td>
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<tr>
<td>Global Manager, Enterprise Architecture &amp; Delivery</td>
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<tr>
<td>Infrastructure Integration Officer</td>
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<tr>
<td>IT Senior Manager, Performance &amp; Reporting Excellence</td>
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<td>Mgr. Global IT Facilities</td>
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<tr>
<td>Senior Director Enterprise Architecture</td>
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<tr>
<td>Sr. Manager, IT Vendor Management</td>
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<tr>
<td>SVP Information Technology/CIO</td>
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<td>SVP, Global Head of Capacity Planning</td>
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<td>VP, IT Operations</td>
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<td>VP, IT Security</td>
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Demographics – Storage Wave 19

Industry Verticals

- Energy/Utilities: 4%
- Services: Business/Accounting/Engineering: 7%
- Public Sector: 7%
- Consumer Goods/Retail: 8%
- Industrial/Manufacturing: 9%
- Financial Services: 21%
- Healthcare/Pharmaceuticals: 13%
- Telecom/Technology: 10%
- Education: 10%
- Transportation: 4%
- Materials/Chemicals: 4%
- Other: 4%

Respondent’s Title

- Architect/Engineer/Analyst: 29%
- Director/Manager: 56%
- VP Level and Above: 15%

Enterprise Revenue

- > $40B: 10%
- < $499.99M: 20%
- $500M-$999.99M: 7%
- $1B-$4.99B: 26%
- $5B-$9.99B: 13%
- $10B-$19.99B: 14%
- $15B-$49.99B: 9%
- > $50M: 5%

Storage Budget Level

- < $200K: 13%
- $200K-$1.4M: 29%
- $1.5M-$3.9M: 21%
- $4M-$7.9M: 14%
- $8M-$14.9M: 9%
- $15M-$49.9M: 9%

the storage cornucopia
the storage cornucopia

'Too many options to choose from vendors, solutions, products within a particular vendor.' – LE – Telecom/Technology

'Too many storage vendors. There is no clear path for any technology.' – LE – Healthcare/Pharmaceuticals

'Where to invest? Converged vs. conventional, separated storage, vs. distributed virtual solutions' – LE – Telecom/Technology

'So much going on within storage – server SANs, different kind of flash arrays, choosing the right solution moving forward. … It’s actually quite difficult to figure out. Things that look most interesting – new vendors, haven't been in the market for that long. Seeing whether, ... whether their solutions are viable on a long-term basis, I'm not convinced of it yet. Second thing is whether these kind of arrays are completely outdated and, because we’re running VMware, I should be looking at an open source thing, such as CEPH' – MSE – Public Sector

'[Pain Point] Pace of change within storage technology industry' – MSE – Public Sector

'Complexity of our current environment because we've got one of everything.' – LE – Consumer Goods/Retail

'Too many storage vendors. There is no clear path for any technology' – LE – Healthcare/Pharmaceuticals

Q. What are your top storage-related pain points? List up to three.
Q. What are your organization’s top storage-related projects in the next 12 months? List up to three.

Capacity by Drive Type – Time Series

Unprecedented growth for flash drives

Disk Storage Purchased

<table>
<thead>
<tr>
<th>Year</th>
<th>Flash (as Cache or Solid-State Disk)</th>
<th>Fibre Channel</th>
<th>SAS</th>
<th>Near-line (NL) SAS</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>22%</td>
<td>34%</td>
<td>14%</td>
<td>6%</td>
<td>0.5%</td>
</tr>
<tr>
<td>2014</td>
<td>21%</td>
<td>37%</td>
<td>12%</td>
<td>10%</td>
<td>1.8%</td>
</tr>
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</table>

Growth Rate

- Flash (as Cache or Solid-State Disk): 62% in 2014, 92% in 2015
- SAS: 20% in 2014, 16% in 2015
- SATA: 14% in 2014, 11% in 2015
- Fibre Channel: 12% in 2014, 6% in 2015
- Near-line (NL) SAS: 10% in 2014, 8% in 2015
- Other: 1.8% in 2014

Q. What is your status of implementation for this technology?

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All-Flash Arrays – Implementation Roadmap

1H '12
- 7% In Use Now
- 10% Near-term Plan (In Next 6 Months)
- 4% Past Long-term Plan (Later Than 18 Months Out)
- 2% Don't Know
- 86% Not in Plan

1H '13
- 6% In Use Now
- 2% Near-term Plan (In Next 6 Months)
- 3% Past Long-term Plan (Later Than 18 Months Out)
- 1% Don't Know
- 84% Not in Plan

1H '14
- 8% In Use Now
- 3% Near-term Plan (In Next 6 Months)
- 5% Past Long-term Plan (Later Than 18 Months Out)
- 3% Don't Know
- 67% Not in Plan

1H '15
- 22% In Use Now
- 4% Near-term Plan (In Next 6 Months)
- 7% Past Long-term Plan (Later Than 18 Months Out)
- 11% Don't Know
- 5% Long-term Plan (6-18 Months)
- 50% Not in Plan

All-flash Array: Usage and Architectural Models

**AFA moving from niche to general replacement usage**

### AFA Usage Model

- **Speed Up Multiple Applications**
  - 57%
- **Speed Up Single Application**
  - 42%
- Don’t Know
  - 2%

### AFA Architectural Goal

- **Fully Replace Legacy Array**
  - 26%
- **Complement Existing Array**
  - 49%
- **Application Prerequisite**
  - 19%
- Other
  - 4%
- Don’t Know
  - 2%

Marco is speaking at the Flash Memory Summit, Santa Clara Convention Center:

- Wed Aug 12 3:10-4:15pm
Session 203-D: Flash Storage Outlook (Storage Wars)
Why enterprises choose or reject AFA’s; which workloads go to flash; storage budget trends; architecture trends.
Each individual report summarizes interesting portions of TheInfoPro’s Wave 19 Storage Study and does not comprehensively review the hundreds of pages of research that form the full study. For access to TheInfoPro’s reports and services, please contact sales@451research.com. Methodology questions may be addressed to client.services@451research.com.

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