STORAGE INDUSTRY SUMMIT

Realizing the Benefits of the Convergence of Storage and Memory

JANUARY 20, 2015, SAN JOSE, CA

THE ECONOMICS OF NVM

An Analyst Panel

Moderated by Mark Peters, ESG
PANEL MEMBERS

- Don Jeanette, Trend Focus
- Jeff Janukowicz, IDC
- Matt Bryson, ABR Investment Strategy
The Holy Grail of Storage
History Teaches Us....

- Desktop to Notebook
- Notebook to Tablet
- LFF to SFF in enterprise segment
  - Transition didn’t happen until equivalent pricing for ‘like capacities’
- SATA to SAS migration in NL
  - Even $5 cost adder keeps SAS at a much lower share position
- HDD to SSD
  - Use case, $/GB, NAND supply, continuity of supply
- SSHD
  - Performance upsell at industry volume capacity (500GB) did not see large growth (for a $10 cost adder?)
  - BOM – what % is allocated to storage?
- PCIe adoption
  - Higher power, higher performance, higher pricing (= Lower Volume)
  - Many different options (SKUs) causes slower adoption
SNIA Storage Industry Summit
Non-Volatile Summit

Jeff Janukowicz
Research Director
January 2015
New Technologies or Product Categories are NOT always a Success – Even if they are Better

Digital audio tape

HD DVD

DataPlay discs

DVD-Audio/SACD

Magneto-Optical

Microdrives

Laserdisc
Crossing the Chasm
The Challenge of Changing/Creating a Market

Mini-Notebooks

PCIe SSDs
Observations for NV Technologies

- Economics will Ultimately Drive Adoption
  - A vision not grounded with pragmatic reality will fail
- There is a BIG TAM
  - HDD = ~$33 Billion
  - NAND = ~$28 Billion
  - DRAM = ~$46 Billion
  - Enterprise SSD Spending > Performance HDD Spending
- **Today**: Customers want technology and performance
- **Future**: Customers want solutions and convenience
  - Ecosystem (Hardware and Software) development is vital
  - 3rd Platform (Mobile, Cloud, Social, and Big Data) will drive new requirements and business models
Questions

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Research Director
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For more information, please visit, www.idc.com and search for:
• Solid State Storage Technologies
SNIA NVM Summit

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If you have any questions, please contact ABR Investment Strategy, LLC.
Sizing the Market
Transactional Solid State Solutions: Historical Sales ($M)

Sources: Company documents/filings, CapitalIQ
## Market Valuations

<table>
<thead>
<tr>
<th>Company</th>
<th><strong>IPO</strong></th>
<th><strong>High</strong></th>
<th><strong>Last or Acquisition</strong></th>
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<tbody>
<tr>
<td></td>
<td><strong>Mkt Cap ($M)</strong></td>
<td><strong>Mkt Cap ($M)</strong></td>
<td><strong>P/S High</strong></td>
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<tr>
<td>Fusion-io</td>
<td>$1,751</td>
<td>$3,364</td>
<td>10.3x</td>
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<tr>
<td>Violin Memory</td>
<td>$574</td>
<td>$642</td>
<td>6.1x</td>
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<td>Pure Storage</td>
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<td>Nutanix</td>
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Sources: Company documents/filings, CapitalIQ, ABR Estimates
Enterprise Storage Solutions

**Hitachi**
- USP
- VSP

**EMC**
- VMAX
- VNX
- Isilon
- Data Domain
- XtremIO

**Hewlett**
- 3PAR
- StorVirtual
- MSA

**IBM**
- DS8000
- StorWize
- XIV

**Dell**
- Compellent
- EqualLogic
- PowerVault

**NetApp**
- FAS
- E-Series

**Pure Storage**
- Flash Array

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