Sun Storage 7000 Series: Selling a Disruptive Product

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Sun Storage 7000 Series

- A new line of network storage products developed by Sun's Fishworks team, ranging from 2TB to 288TB, single-node to active/active cluster
- Addresses key pain-points in enterprise storage:
  - Too expensive
  - Too slow
  - Too opaque
  - Too difficult to manage
- As such, represents a quantum leap in price/performance and a *disruptive innovation* in enterprise storage

Disruptive Innovation

- Term coined by Clayton Christensen in his book *The Innovator's Dilemma* to denote a technology that – aside (or because of) its technical merit has revolutionary *economics*
- Classic examples:
  - Digital photography disrupted film
  - Steamships disrupted sailing ships
  - Minicomputers disrupted mainframes
  - EMC (with RAID- & cache-based storage) disrupted IBM in DASD
  - Linux/x86 disrupted UNIX/RISC
- Often involve a redistribution of margin: lower overall margin but much higher volume and broader market
- The coal face of Schumpeter's creative destruction

Why is the 7000 Series Disruptive?

- Over time, the value in a storage product has trended from hardware to software...
- ...but storage hardware has remained unnecessarily custom (i.e., expensive and slow)
- Sun can build an appliance out of industry standard components (servers + JBODs): higher performing, cheaper
- ...and because COGS of software is $0.00, Sun need not monetize the software directly – software development costs can be paid with marginal increase in revenue
- Adds up to disruption: 2X performance at ½ cost
- The 7000 Series would have been disruptive based on these economics alone, but along came flash memory...

The Disruptive Effects of Flash

- Flash memory now sits between DRAM and 15K RPM disk in terms of performance and price:
  - Flash is *microseconds* per op, where DRAM is *nanoseconds* and disk is *milliseconds*
  - Flash is *tens of dollars* per GB, where DRAM is *hundreds of dollars* per GB and *disk is dollars* per GB
- Seeing this trend, we integrated flash into a *hybrid storage pool*, where read-optimized flash is used as a cache
- Cache is up to 600GB in currently shipping products, but curves are steep: headed much higher (and much cheaper!)
- For random-read workloads, flash + 7200 RPM drives yields 4X performance of 15K RPM drives at ¼ cost!

Selling Disruption

- Disruptive products have technological advantages that give them much (much) more bang for the buck...
- ...but by their newness they will always be missing some attribute of established technologies
- There will therefore always be some metrics by which a disruptive innovation can be made to fall short!
- Vendors that are being disrupted will cling to these metrics like the shipwrecked to driftwood
- Sell a disruptive innovation not by selling against an established technology, but rather by selling into the *underlying economics*

Selling to the Economics

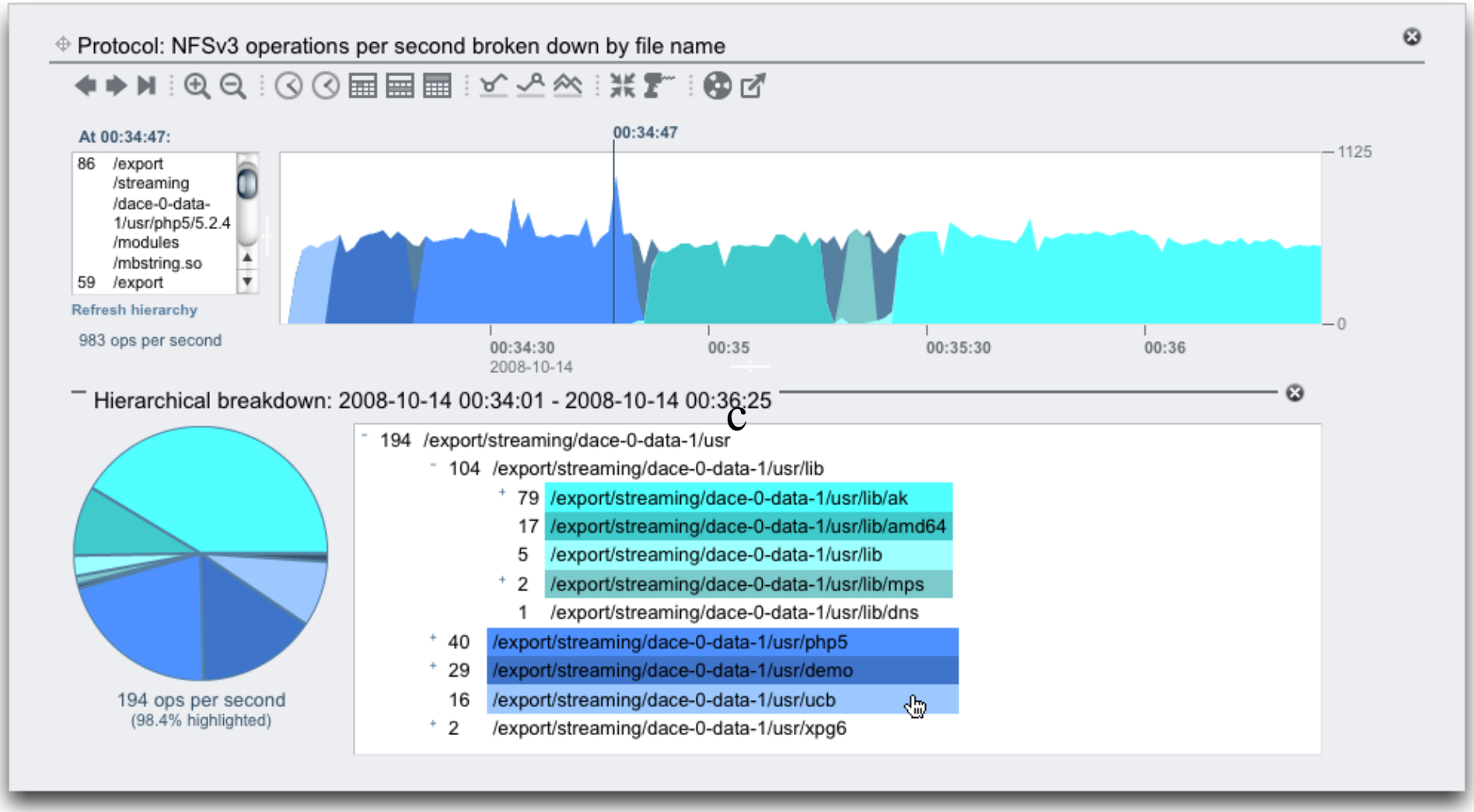
- Go where competition *isn't*: there is a substantial amount of *new* business that *no* enterprise storage vendor is getting
- Questions to ask:
  - "What would you like to put on enterprise storage today, but cannot for cost reasons?"
  - "Where are your storage needs (and cost!) growing the most?"
  - "Where do you find yourself deploying DIY?"
  - "Where do you find yourself deploying larger configurations purely for capacity reasons?"
  - "Where do you find storage performance unacceptable?"
- By going into places where others can't squeeze, you play to disruptive strengths of 7000 Series while dodging a head-to-head comparison

Selling Head-to-head

- If it can't be avoided, head-to-head competition should be welcomed – the 7000 Series has been designed to compete with entrenched NAS market leaders
- The cost advantage:
  - Based on HW alone, 7000 Series will be significantly less $/GB
  - And with 7000 Series, all software is included!
  - Further, support prices are much, much lower than “industry standard” of 20%/annum
- The performance advantage:
  - 7410 delivers top-tier NAS performance (or better!) at mid-tier NAS pricing (or better!)
  - And hybrid storage pool allows better than 15K RPM random-read IOPS – at <200 µsec latency and with 7200 RPM prices

The Analytics Advantage

- Real-time system performance visualization supporting *ad hoc*, high-level queries:



The Feature Advantages

- Beyond key advantages lies a feature-rich product:
  - Built-in compression
  - Built-in remote replication
  - Expressive and flexible roles and authorizations mechanism
  - Unified storage, with both file and block protocols
  - In-kernel CIFS implementation, with first-class CIFS/NFS mixed-mode access
  - Powerful and flexible scripting
- As features are added (deduplication, encryption, etc.), those features will be included *gratis* – software will never be individually licensed!

How to Communicate All This?

- Open the door based on economics:
  - "You can't afford to not take a look at this for Tier 2"
  - "You can cut your spend while increasing storage growth rate"
  - "Why are you sending filers to Brazil?" (or, if filers aren't being sent to Brazil: "Shouldn't Brazil be running enterprise storage?")
  - "This could be your Amdahl mug for storage!"
- *If you don't succeed in one tier, try the next tier down*
- With the door open, use the VMware/VirtualBox images to demonstrate a complete system on your laptop:
  - Demonstrate ease-of-use (have the CEO set it up!)
  - Show analytics, including by file & by latency
  - Convert interest to a try-and-buy – nothing beats a real workload!

Follow the Economics!

- Most important lesson in history of technology: *economics always wins*
- Find where the economic winds are blowing hardest, and position the product there
- 2009 promises to be a tough year for IT spend – great news for a disruptive product!
- Where you see an opportunity that the product doesn't fit (but you think it should), let us know: fishworks@sun.com
- Here's to disrupting the storage market!