

Please go on 'Mute' 😊

Dell Fluid Cache for SAN



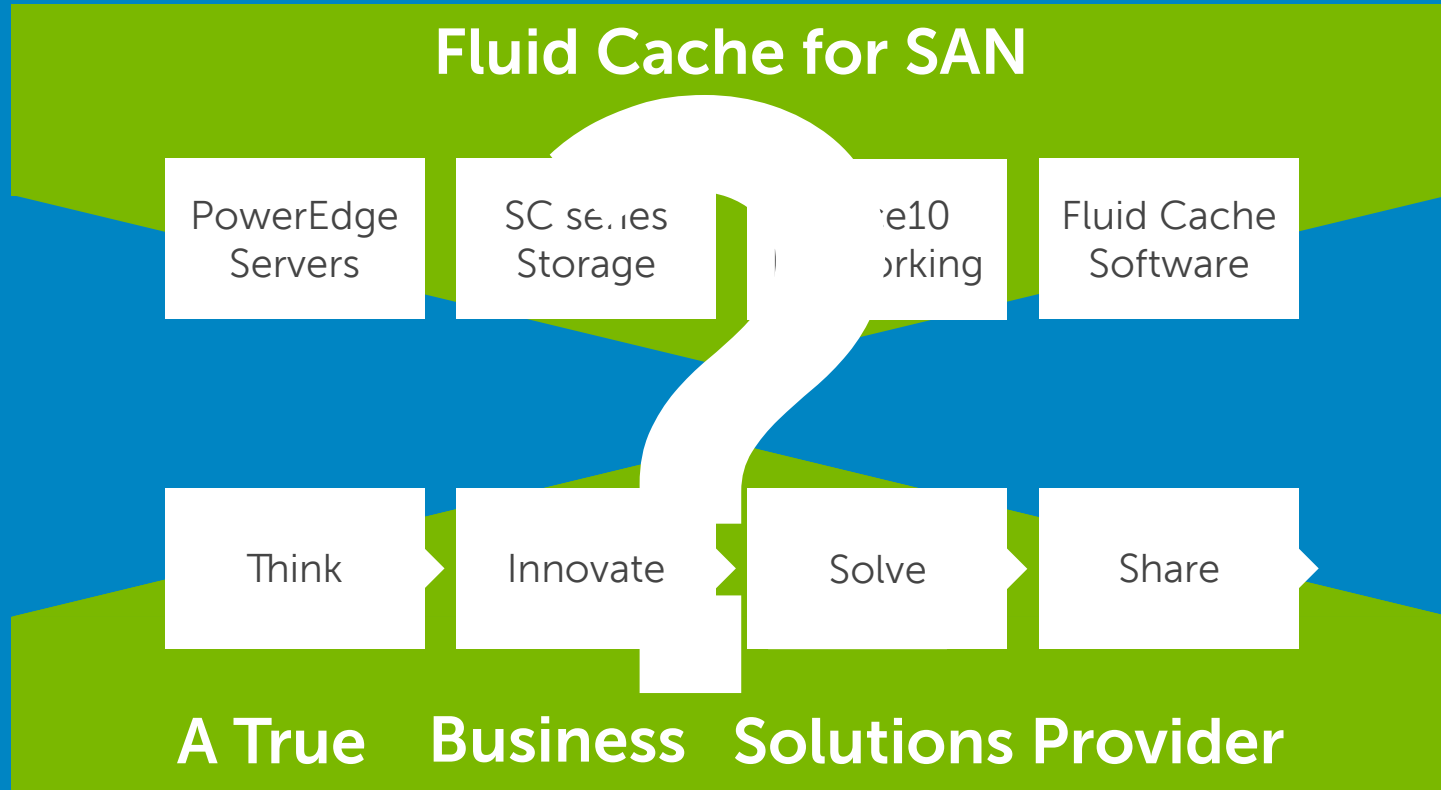
Dell Fluid Cache for SAN

Mark Dik

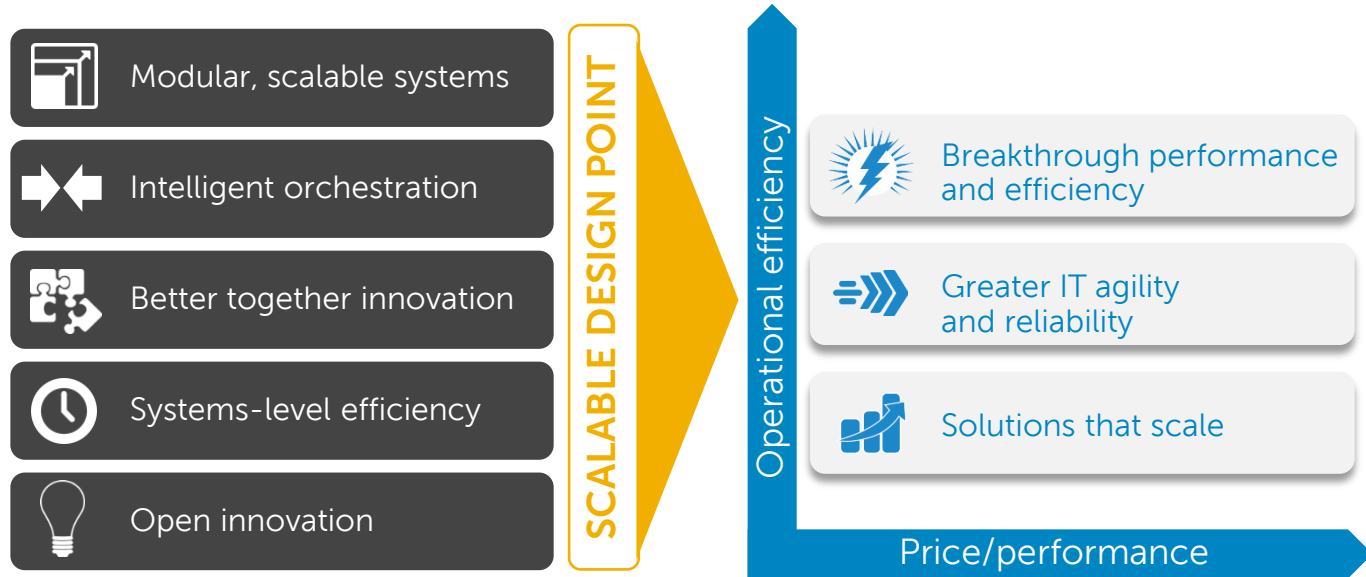
Enterprise Technologist - Storage EMEA



How Do We Do All These Things?



Pillars of Enterprise Solutions strategy



Many factors affect application performance



Development Factors

- Inefficient code
- Poor configuration
- Lack of pre-built indices



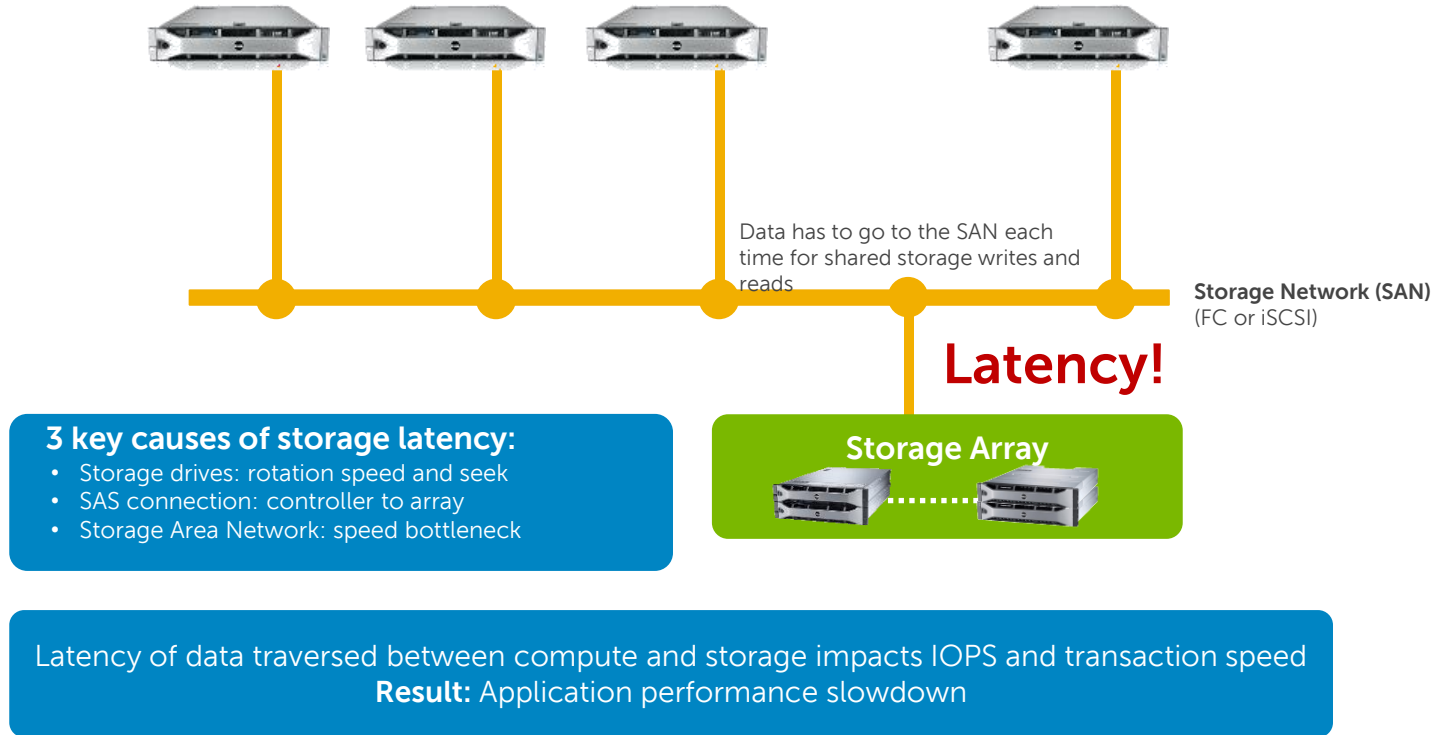
Deployment Factors

- Lack of compute performance
- Very slow access to data ←

What's the challenge?

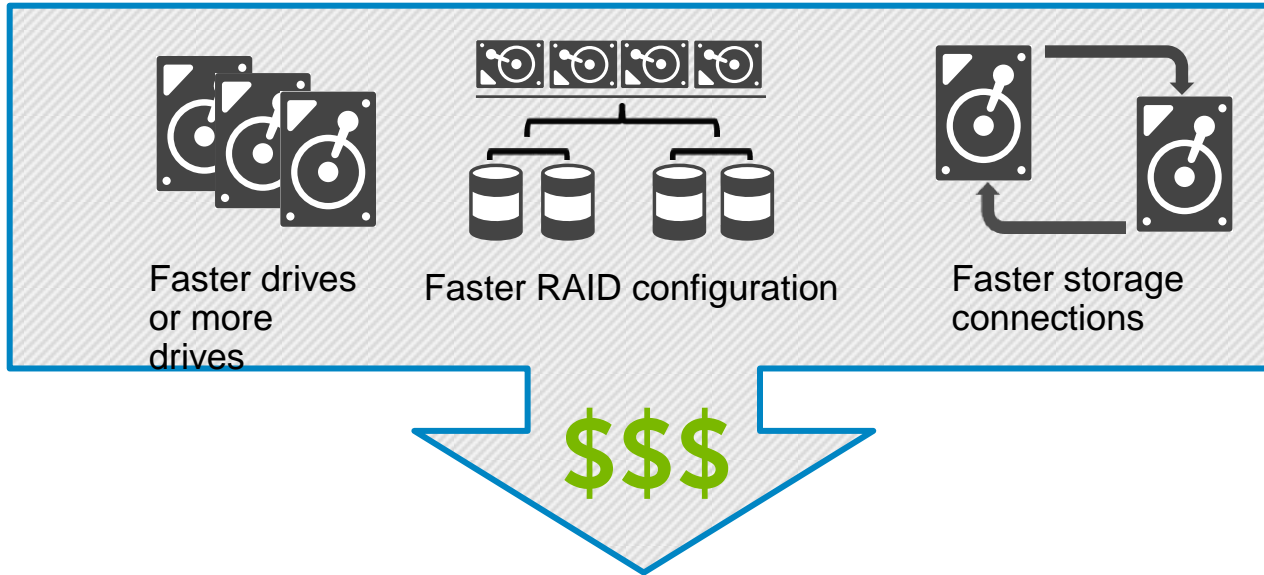


Issues facing applications: The latency issue



The storage I/O bottleneck

Methods to boost storage I/O performance:



How do you manage this within a budget?

You can do more of the same ...
more spend for more
performance...



Or ... you could think outside
the box ...

Dell Fluid Cache for SAN



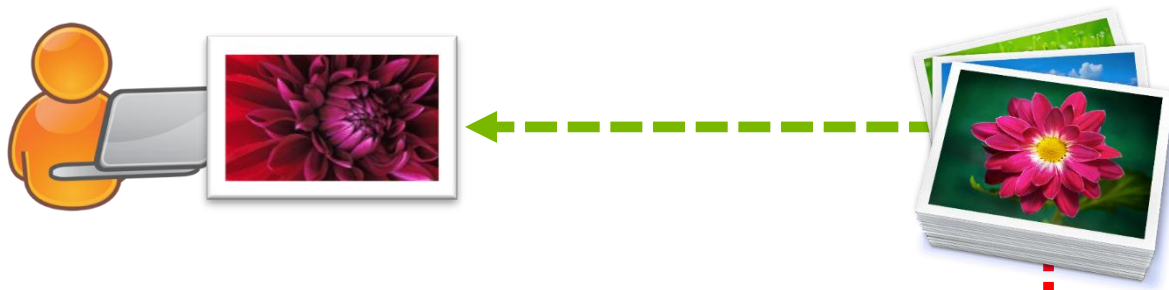
What's Cache?!;





... WWW /
Somewhere
Far Far Away





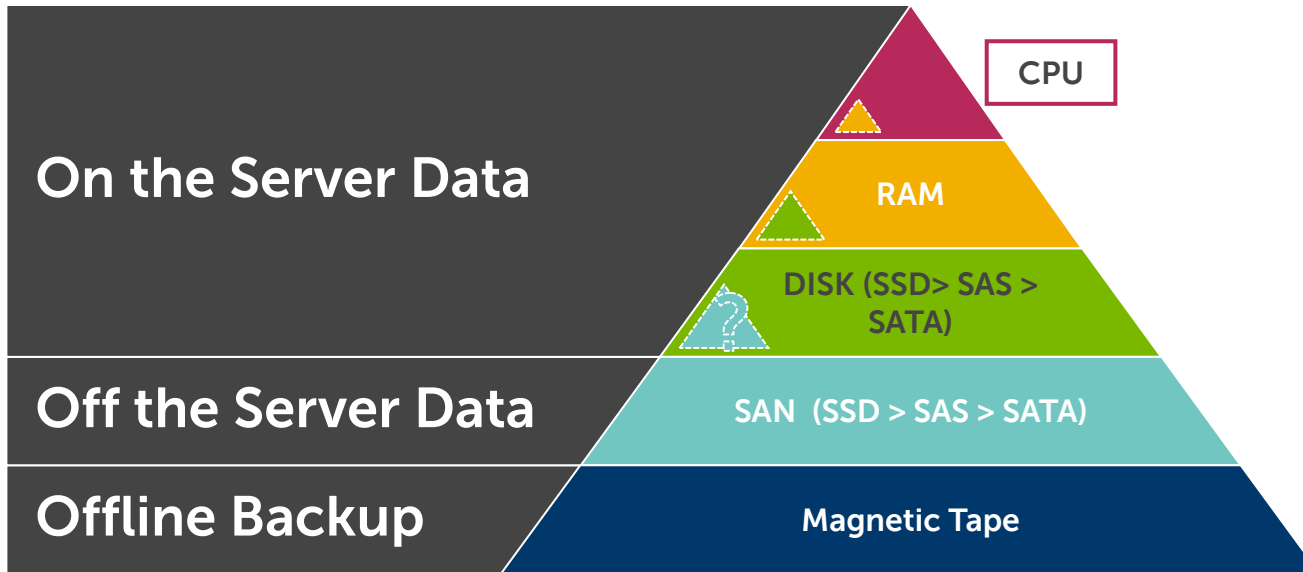
... WWW /
Somewhere
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Memory Hierarchy – The Balancing Act

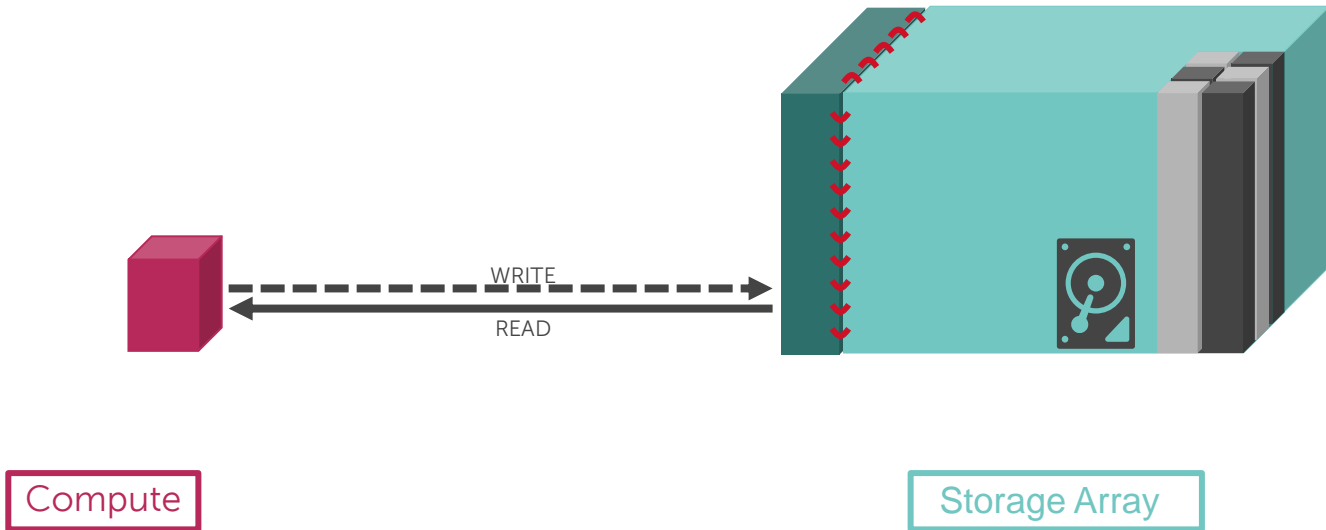
Going down hierarchy... getting further away from compute.

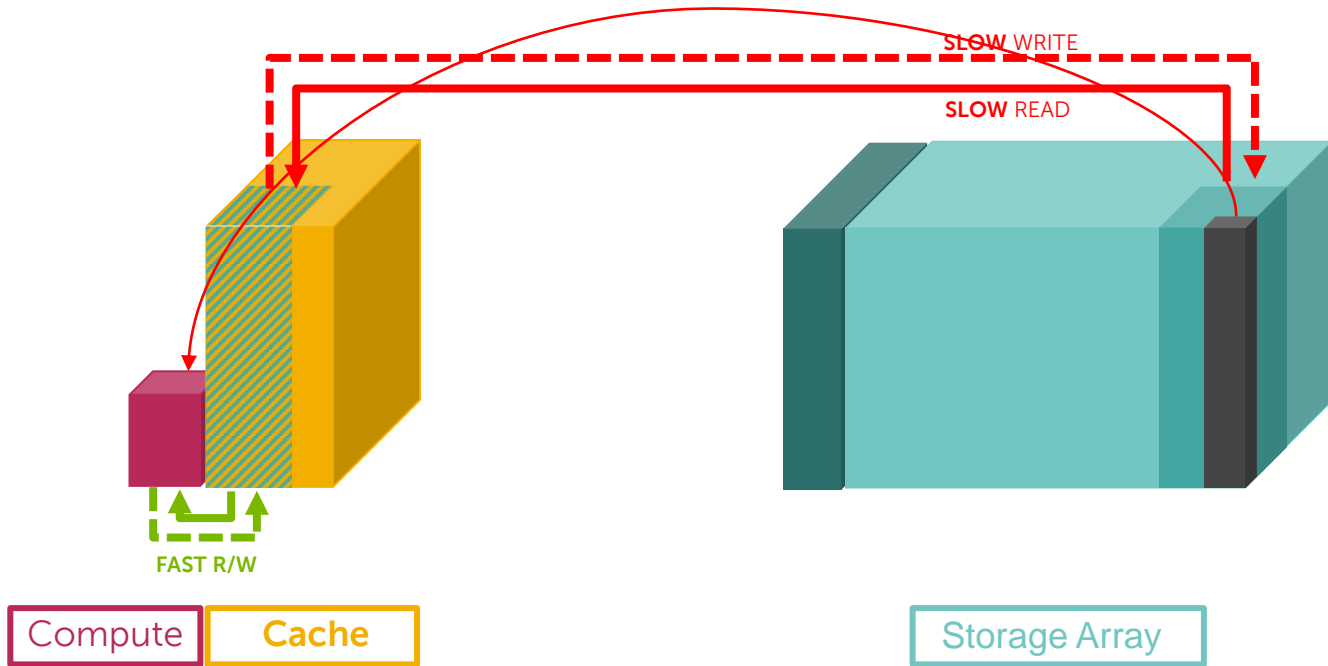
▼ Costs ▲ Capacity ▲ Access Time ▼ Frequency of Access



3 key causes of storage latency:

- Storage drives: rotation speed and seek
- SAS connection: controller to array
- Storage Area Network: speed bottleneck



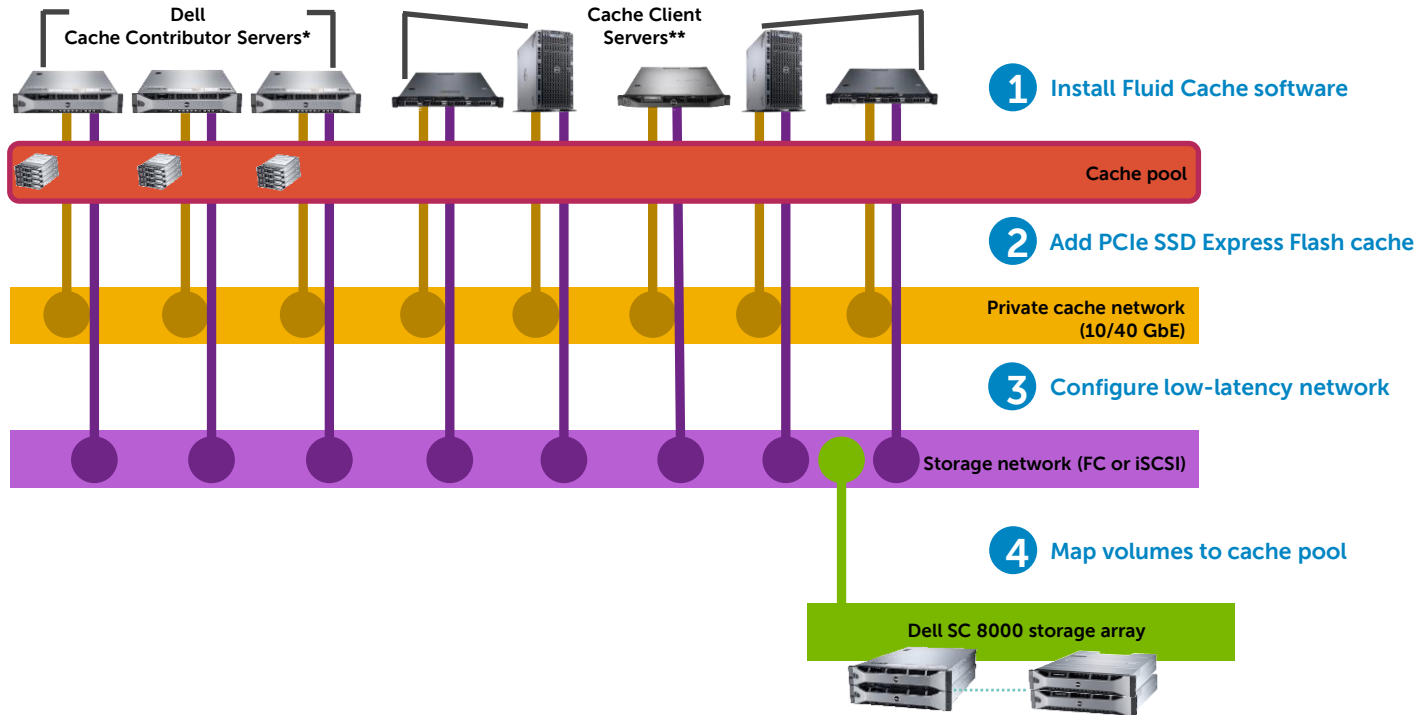


Architecture



Bring data closer to compute

Dell Fluid Cache software + Dell Compellent = Accelerated application response

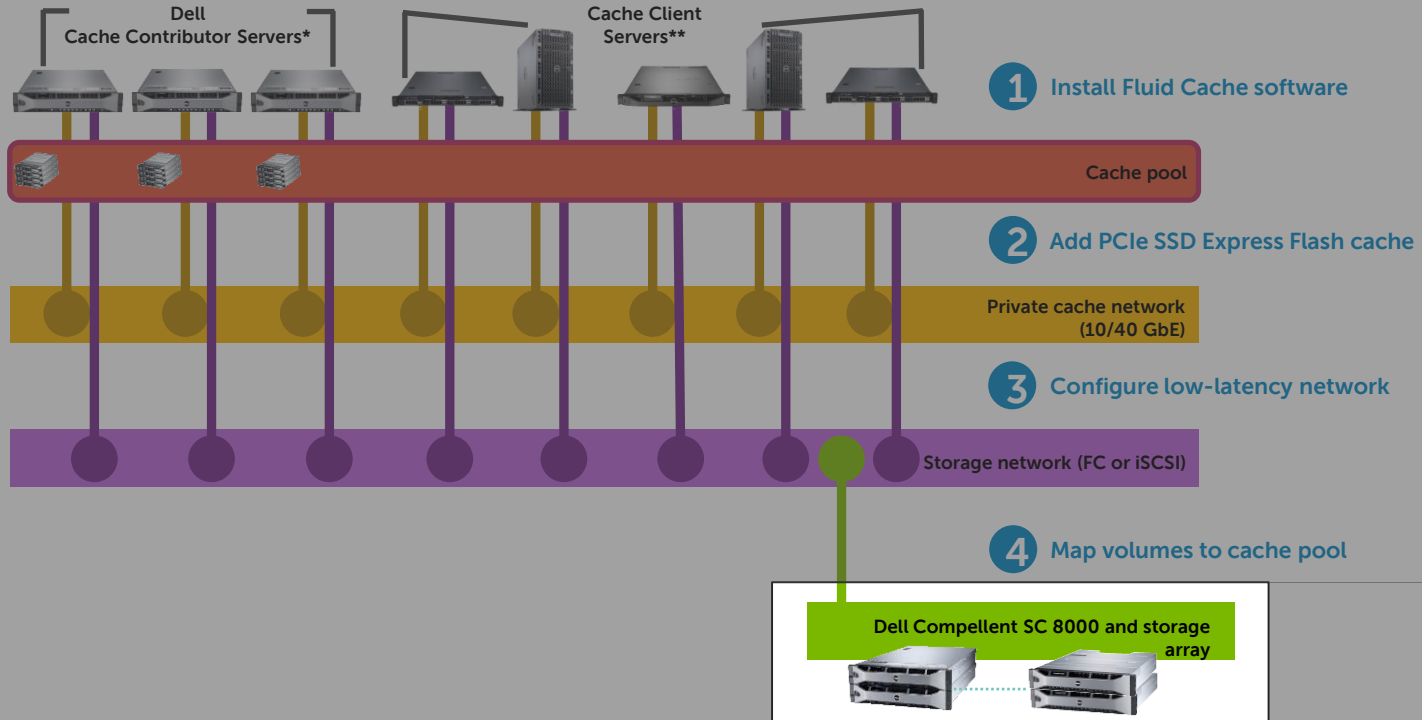


*A minimum of 3 validated Dell servers are required to establish the cache pool.

**Cache client servers can be a mix of Dell and other servers that run a supported OS and have an available PCIe slot.

Bring data closer to compute

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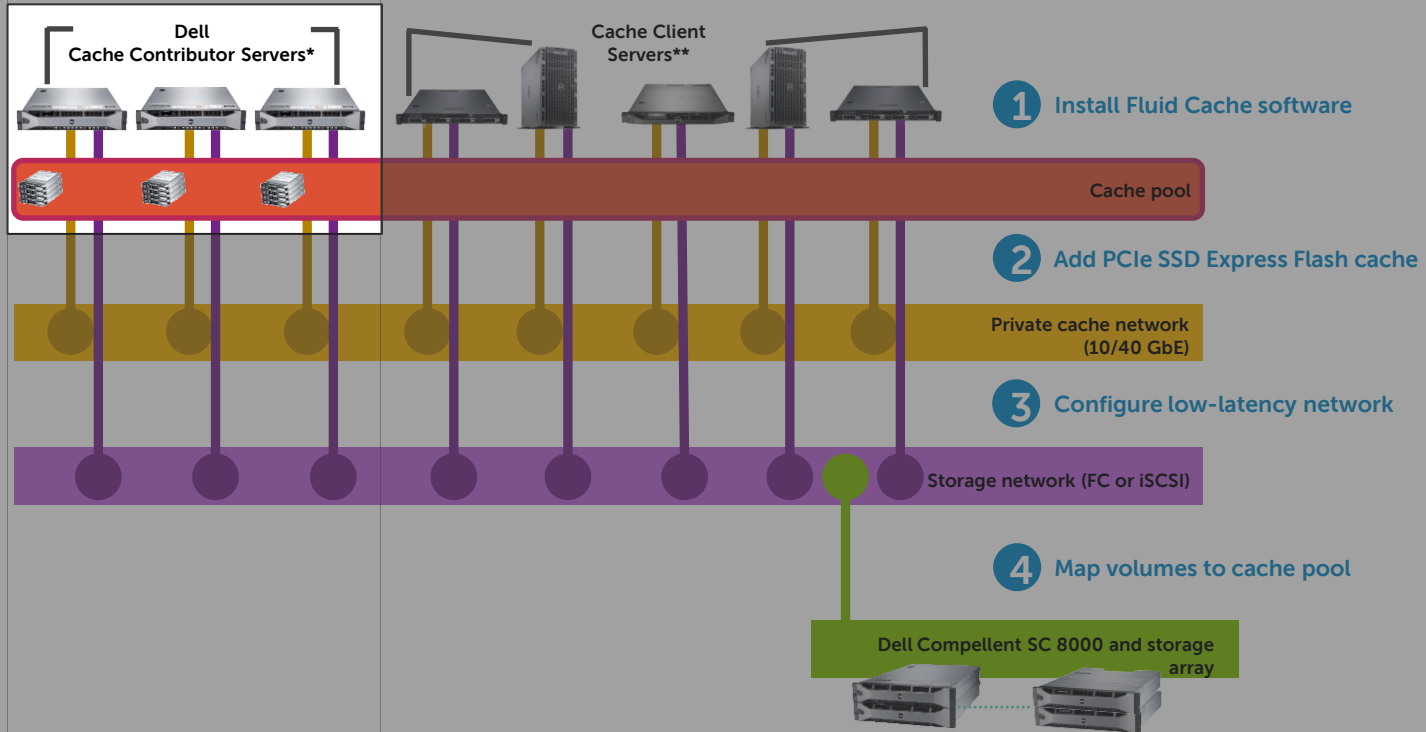


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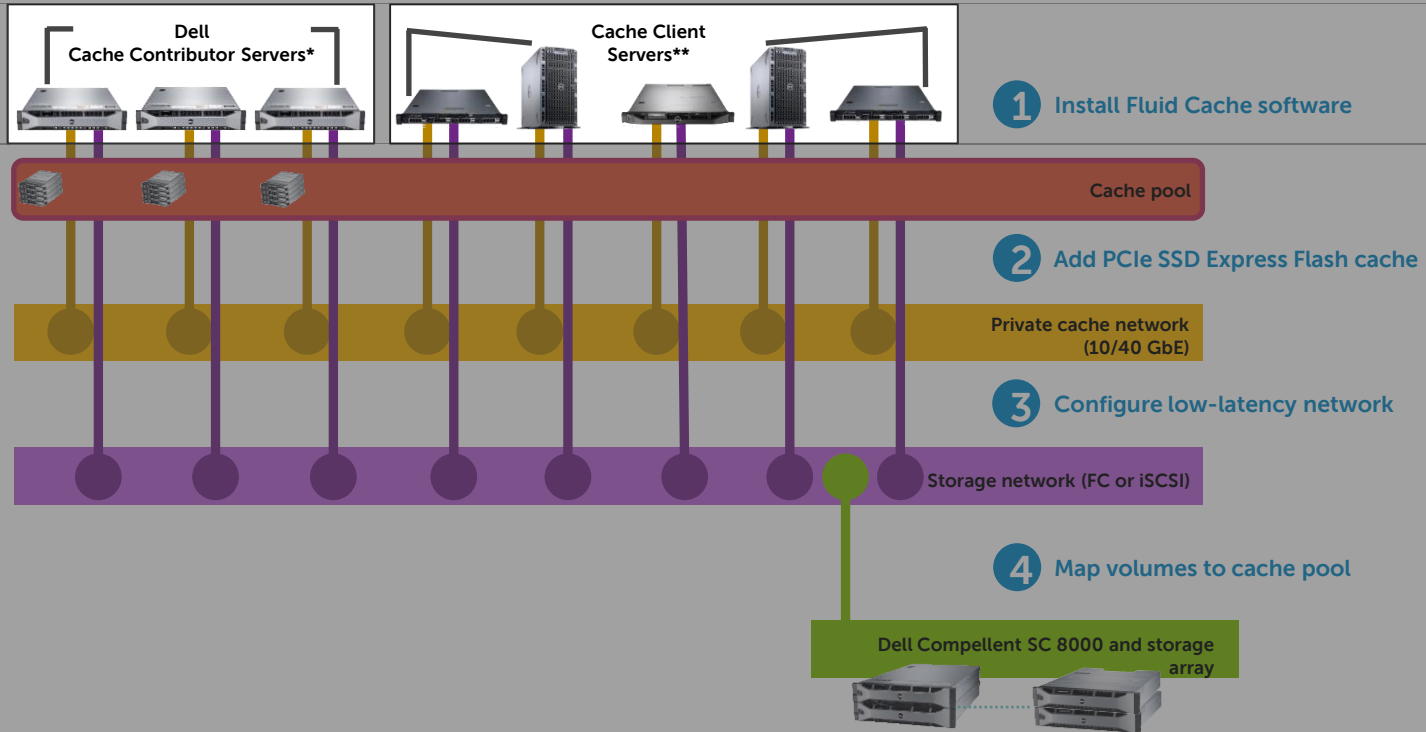


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Bring data closer to compute

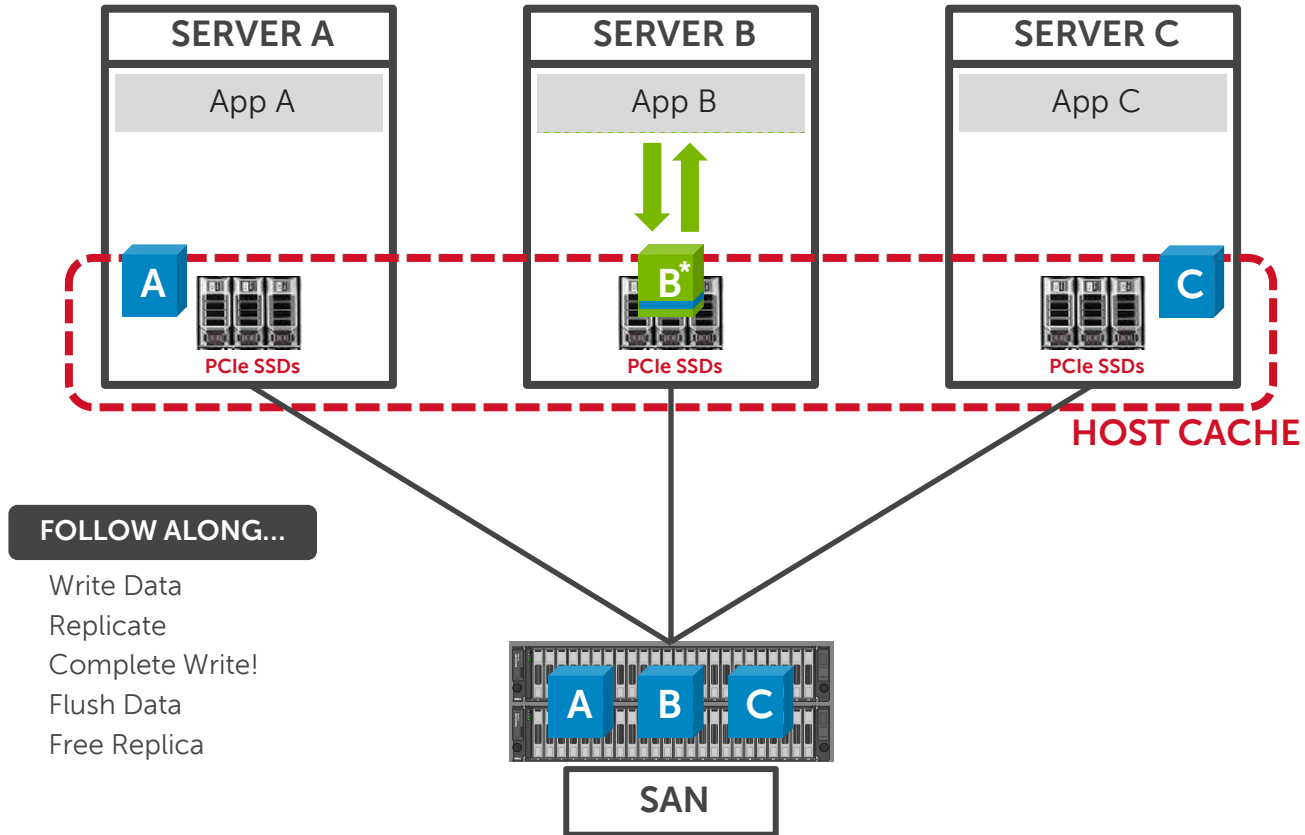
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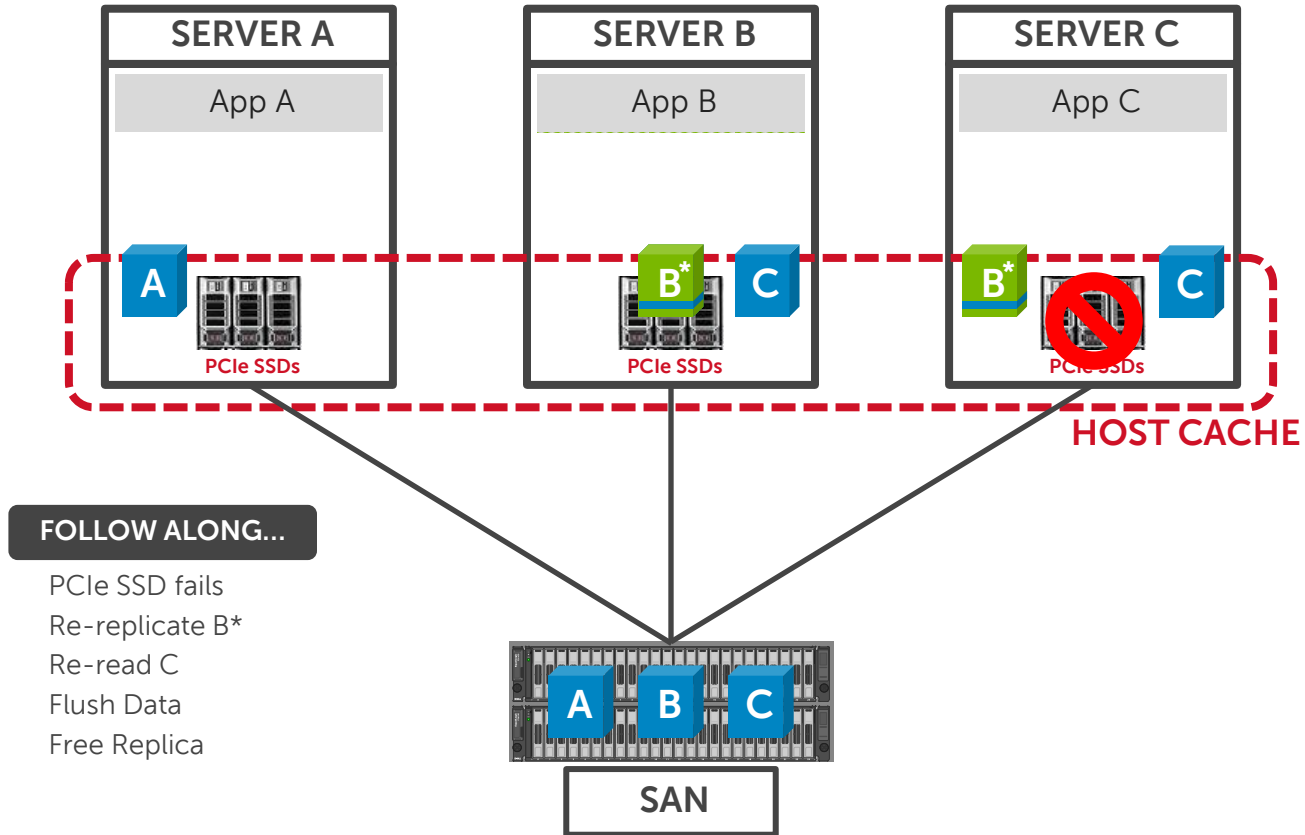
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Write Cache with High Availability



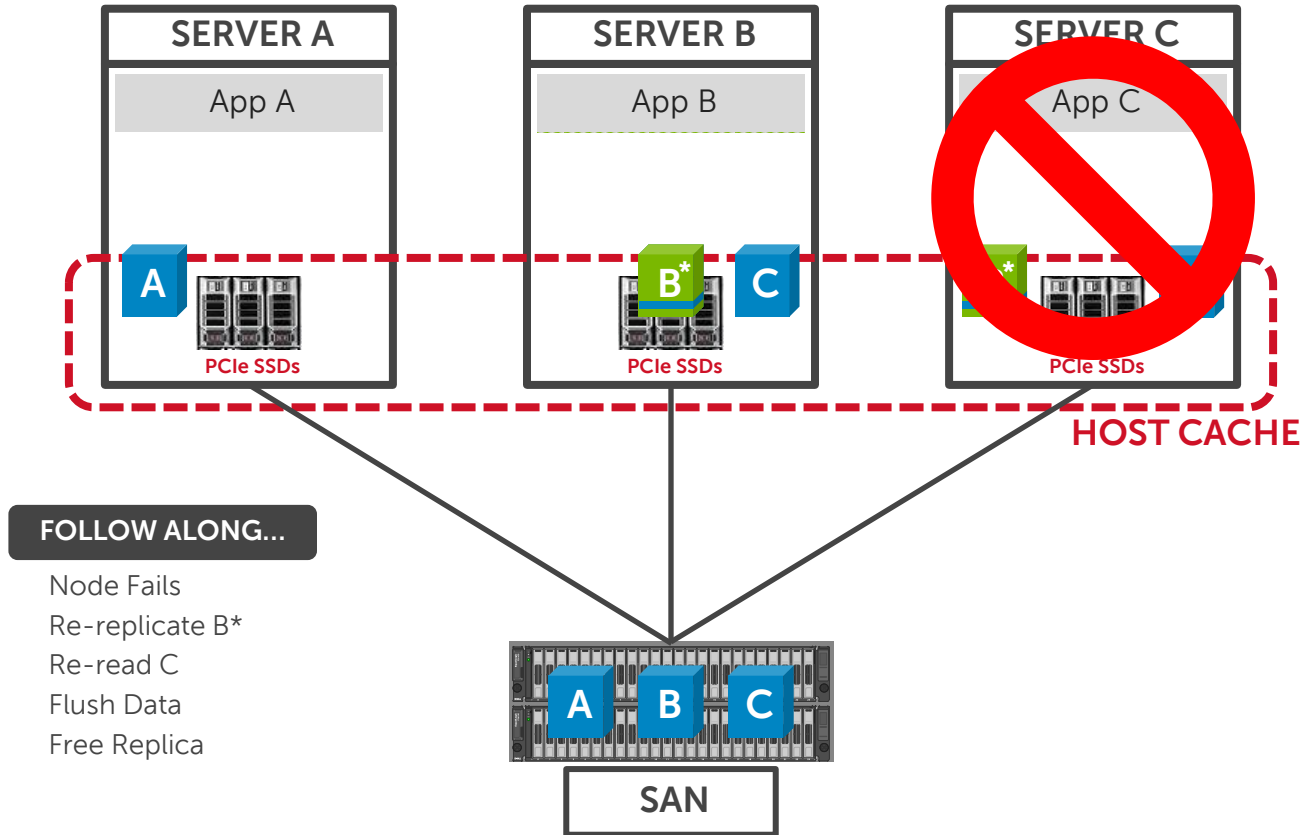
Write Cache with High Availability

PCIe SSD failure



Write Cache with High Availability

Entire Node Failure



Fully integrated with the
SC8000

- management
- monitoring
- snapshotting



What's the outcome?

What's the Outcome...

<https://www.youtube.com/watch?v=6QQBYN10xNY>

5 Million I/O per Second



Using a 4 kilobyte block size

Thanks!

Questions?



Backup slides



Compatibility

Component	Equipment Description
Cluster Nodes	(Min) 3 < ... < 8 (Max)
Operating Systems	RHEL 6.4 SLES 11 SP3 VMware 5.5
Platforms	R720, R620, R820, R920 M620, M820
Cache Network Switches	F10 4810 (10GbE) F10 S6000 (40GbE) F10 MXL (Blade 10GbE) Cisco Nexus 5548UP
Cache Network NIC	Connect X-3 10Gb Adapter Connect X-3 40Gb Adapter Connect X-3 10Gb Mezz
CML SC/EM	6.5.1

Customer Issues & Dell Fluid Cache for SAN resolutions

Virtualization

- Power users require higher storage I/O performance.
- Avoiding user delays due to high storage performance demand.
- Accommodating increasing concurrent power users.

- Extraordinary I/O cache pool performance improves experience for power users.
- Extraordinary I/O cache pool performance minimizes (almost eliminates) delays from peak usage spikes, such as boot storms, etc.
- A lower TCO per VM, simultaneously allowing more power users, and increasing server performance; even through rotating media storage.

Databases

- Storage to/from compute latency becomes slow responses and long wait times for customers.
- Accommodating increasing concurrent power users.
- Confidence in transactions on write-cache solutions.

- Bringing data closer to compute significantly reduces average response time and increases data transactions per second.
- Flexibly scale cache pool to 12.8TB to accommodate more simultaneous users with performance improvements.
- Dell write-back capability ensures cache data integrity maintained.

Resources...

- Dell Fluid Cache for SAN SalesEdge page Dell Tech Center Fluid Cache for SAN and Dell.com/fluidcache
- Dell Fluid Cache for SAN Customer NDA Deck on SalesEdge
- Dell Fluid Cache for SAN white papers
 - Dell Internal researched Whitepaper – VDI (At RTS)
 - Dell Internal researched Whitepaper – OLTP Workload on Virtualized SQL Database (At RTS)
 - Dell Internal researched Whitepaper – OLTP Workload on Oracle Database (At RTS)
 - PT 3rd Party Whitepaper -- Fluid Cache for SAN stability, flexibility and EMC SW comparative (Post RTS)
 - TBR 3rd Party Whitepaper; Organizations are Improving Workload Performance with Server-side Cache (At Announce)
- Dell Flash playbook
- Dell Fluid Cache for SAN Marketing Video
- Dell Fluid Cache for SAN Tech Video

