



Journey to the All-Flash Data Center

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Introduction



A leader in technology solutions for the transportation industry, TripPak SERVICES provides document capture and processing solutions for hundreds of motor carriers nationwide. Leaders in innovation for transportation, the organization's comprehensive line of solutions focusing on imaging and workflow and safety and compliance create opportunities for their customers to cut costs, while making a difference in how carriers are doing business and how drivers experience life on the road.

Introducing Pure Storage

- Enabling the all-flash enterprise
- 600+ storage industry veterans globally
- \$470M from committed investors
- 150+ patents in process



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NETPROMOTER
SCORE

EMC: 38 NetApp: 20
Dell: 28 Hitachi: 15

Application Performance Issues



- Grow our existing SAN = \$\$\$\$
- Add Flash to our existing SAN = \$\$\$, only helped for cached reads
- Flash in the Servers = Inflexible, limited use-case
- Hybrid Solutions = Unable to meet the write workloads, high IO peaks, and backups while servicing write IO
- We wanted an affordable all-flash array that could meet all our performance goals with room for growth

Seeking a Solution



15 Physical Servers

> 200 Virtual Servers

OLTP Databases

- 90% Virtualized environment including 120 Virtual Desktops
- SQL Servers causing extremely high storage latency
 - Avg. 300ms, spikes to >1000ms
 - Impacted entire environment for 4-6 hours every night
 - Oracle Servers isolated to their own dedicated array
 - Backups causing noticeable performance impacts

Flash to Accelerate Infrastructure



15 Physical Servers



> 200 Virtual Servers

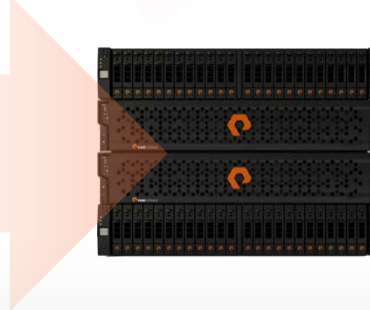


OLTP Databases



NetApp SAN + PCIe Server Flash

- Capped at ~7,000 IOPS
- 8ms write latency
- 3ms read latency



Pure Storage FA-320

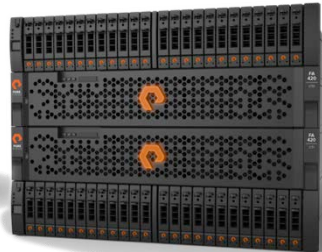
- 200,000 IOPS
- <1ms write latency
- <1ms read latency
- Moving all production VMs to Pure Storage

Selected the Pure Storage FlashArray



FA-405

Up to 40TBs
2 controllers in 2U



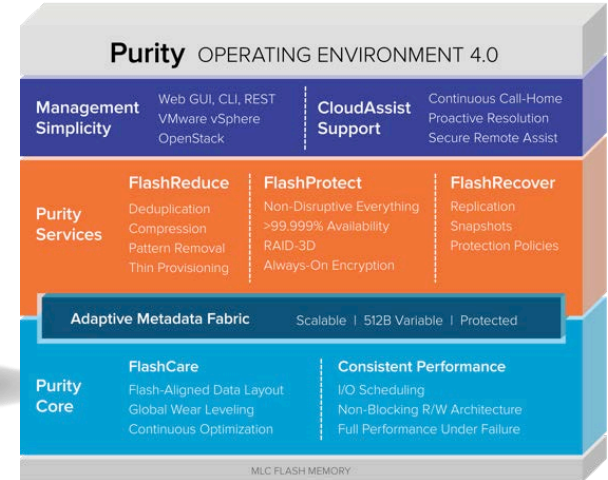
FA-420

Up to 125 TBs



FA-450

Up to 250TBs
16 Gb/s FC



- FlashReduce:** inline data reduction
- FlashProtect:** end-to-end resiliency
- FlashRecover:** local/remote protection
- FlashCare:** global flash management

A FlashArray for any application, and any budget!

Fair and innovative business practices



Immediate Results with Flash



- SQL Server data audits reduced from > 4hours to ~1 hour
 - Storage latency reduced from >400ms avg to <1ms avg
 - zero impact to other VMs or databases on the storage array during peak times
- Deliver consistent virtual desktop user experience
- Data reduction 5.7:1, no more post process dedupe
 - Pattern Removal
 - Adaptive, Inline Deduplication
 - Adaptive, Inline Compression
 - Deep Reduction
 - Zero-cost snapshots, clones & XCopy



Immediate Results with Flash



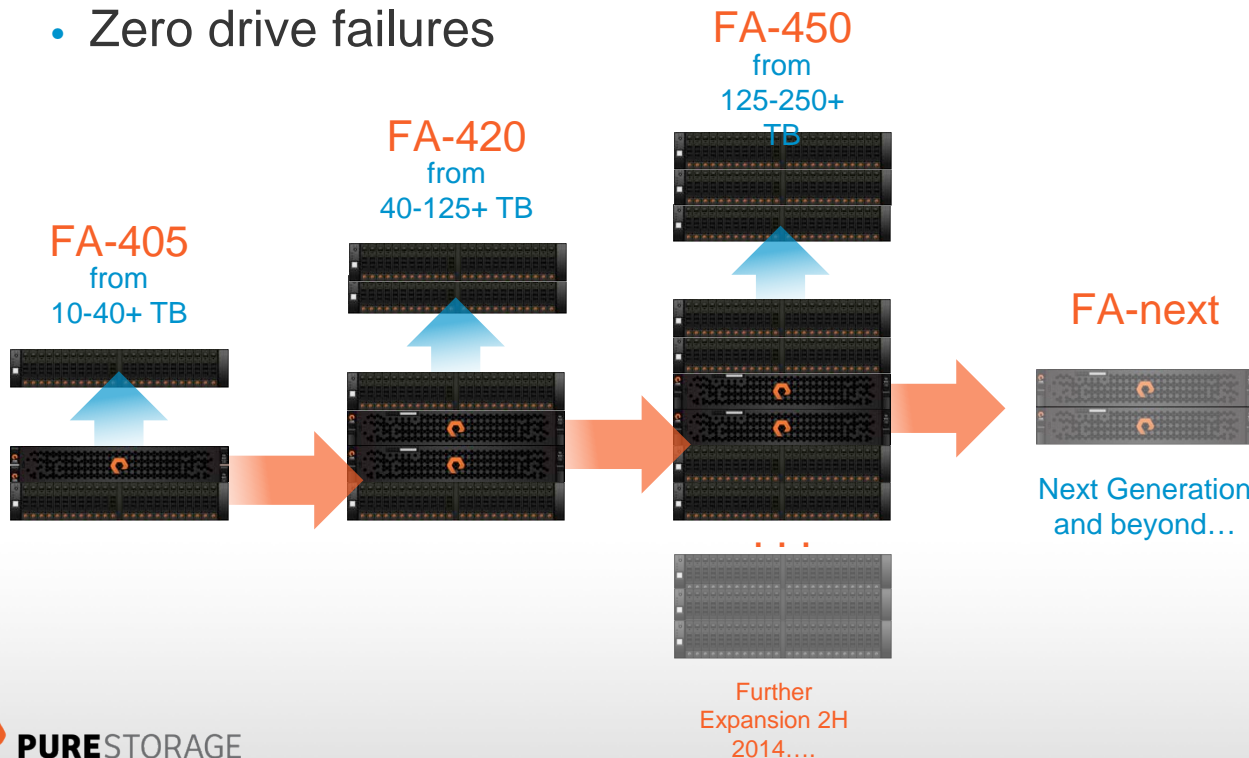
- Backup throughput increased 10X+
 - From 100-150MBps to 1-2GBps
 - No issues with storage slowdowns during backup windows
 - Decreased RPOs for non-critical systems from weekly to daily
- Increase VM Density on hosts due to overall CPU reduction ~5%
- Splunk Indexers & Clustered Search Heads
 - Search times reduced 40-60%
 - Dashboard responsiveness increased 200%

Unexpected Benefits of Flash



- Storage Availability

- 100% storage availability over the past 18 months
- Array upgrade from FA-320 to FA-420 with production load, zero impact
- Numerous software upgrades 2.x to 4.0.0, zero impact
- Zero drive failures



Always On Operations

- Scale Capacity
- Scale performance
- 99.999+% uptime
- All with 100% performance

Pure Storage: Flash Leadership and Innovation

From edge use cases to the eventual replacement of disk





Questions and Follow Up



For more information go to www.purestorage.com

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