



Simplification: Get All Flash Performance Easily, Gradually, As Your Needs Grow

Scott Shadley

Sr. Product Line Manager
Micron Technology, Inc.

Nick Suh

Head of Product Marketing
PernixData



What's Important To Customers?

A Look At CIOTop Priorities

Top 10 Priorities for CIOs: 2015

Source:
Informationmanagement.com

1. Improve Security
2. Cloud Services
3. Consolidate and Optimize
4. Connectivity
5. Budget and Cost Control
6. Staff/Talent Management
7. Strategic Initiatives
8. Mobility
9. Disaster Recovery
10. Customer Relationship Management

Source:
Information Week

1. IT Is Too Slow
2. Make IT More Relevant
3. Improve IT Security
4. Optimize IT Spend
5. Increase IT Efficiency
6. Prepare for the Post-PC Era
7. Social Media and The Right People
8. Consumerization of IT
9. Cloud Computing
10. Improve Collaboration

Source:
ComputerWorld

1. Analytics and BI
2. Mobility
3. Cloud and SaaS
4. Collaboration/Workflow
5. Legacy Modernization
6. IT Management
7. Customer Relationship Management
8. ERP Applications
9. Security
10. Virtualization

**What Do Many Of These
Have In Common?**

Top 10 Priorities for CIOs: 2015:

70%+ Improved With Flash

Source:
Informationmanagement.com



Flash can improve
~70% of Top 10
priorities

Source:
Information Week



Flash can improve
~70% of Top 10
priorities

Source:
ComputerWorld



Flash can improve
~90% of Top 10
priorities

Majority of IT Priorities Improved w/Flash Majority of Applications Virtualized

Yes, But...Where To Put The Flash?

Customer Example

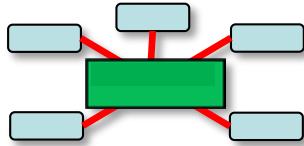
Challenges

- › Delays in being able to manage large files from cloud
- › Avoid cost from storage upgrade and save Doctors time on reviews

Results

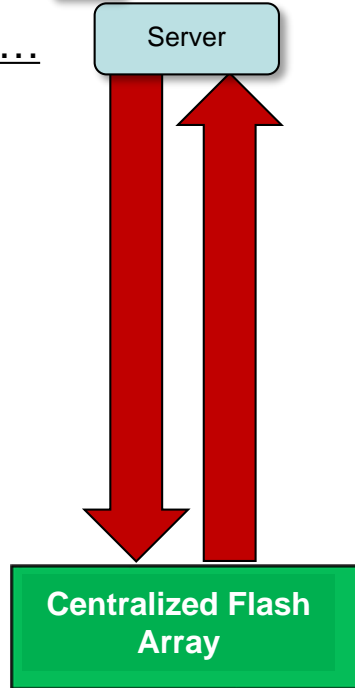
- › Response time for images from 15 sec per image to instant results
- › The average lifespan of our servers is four years, which works out to \$640,000 more revenue per server over the life of each server





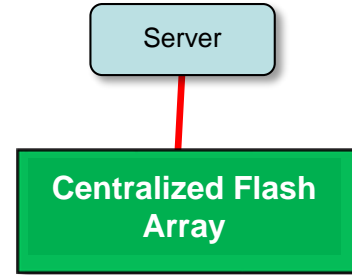
IO Path Is Long...

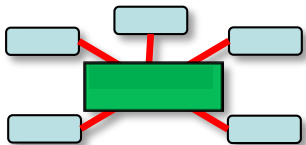
- Server
- Driver
- Bus
- HBA
- Interconnect
- Switch
- Interconnect
- HBA
- Driver
- Bus
- Flash



How Flash Helps

Centralized Flash: A Circuitous IO Path



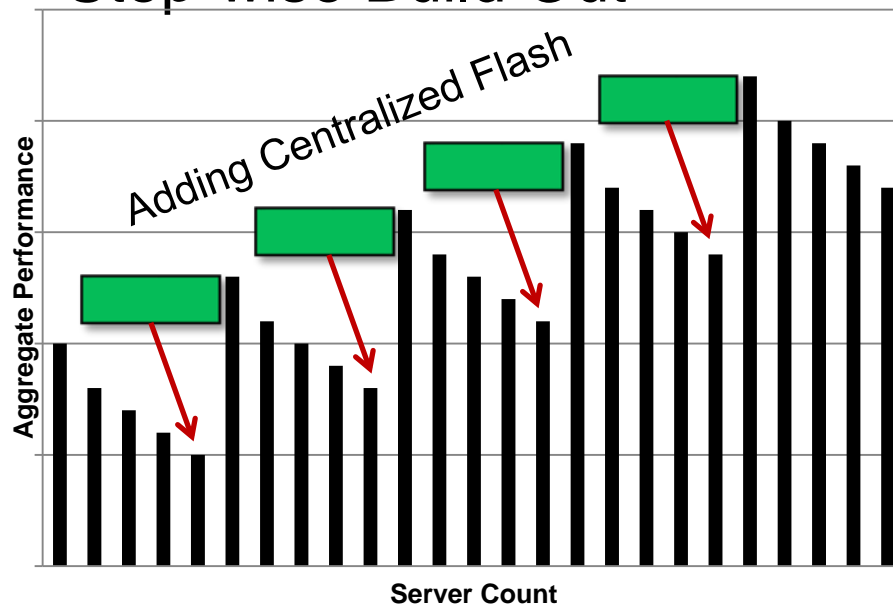


Challenges

1. As servers are added, performance may drop
2. Adding centralized flash 'boxes' = large performance step
3. Moore's law?

How Flash Helps

Centralized Flash: Step-wise Build Out



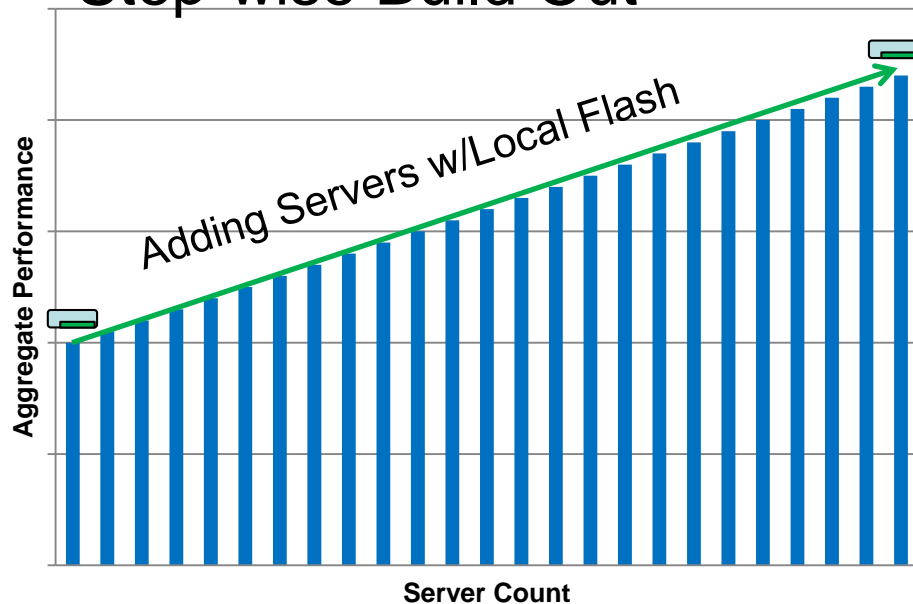


Benefits

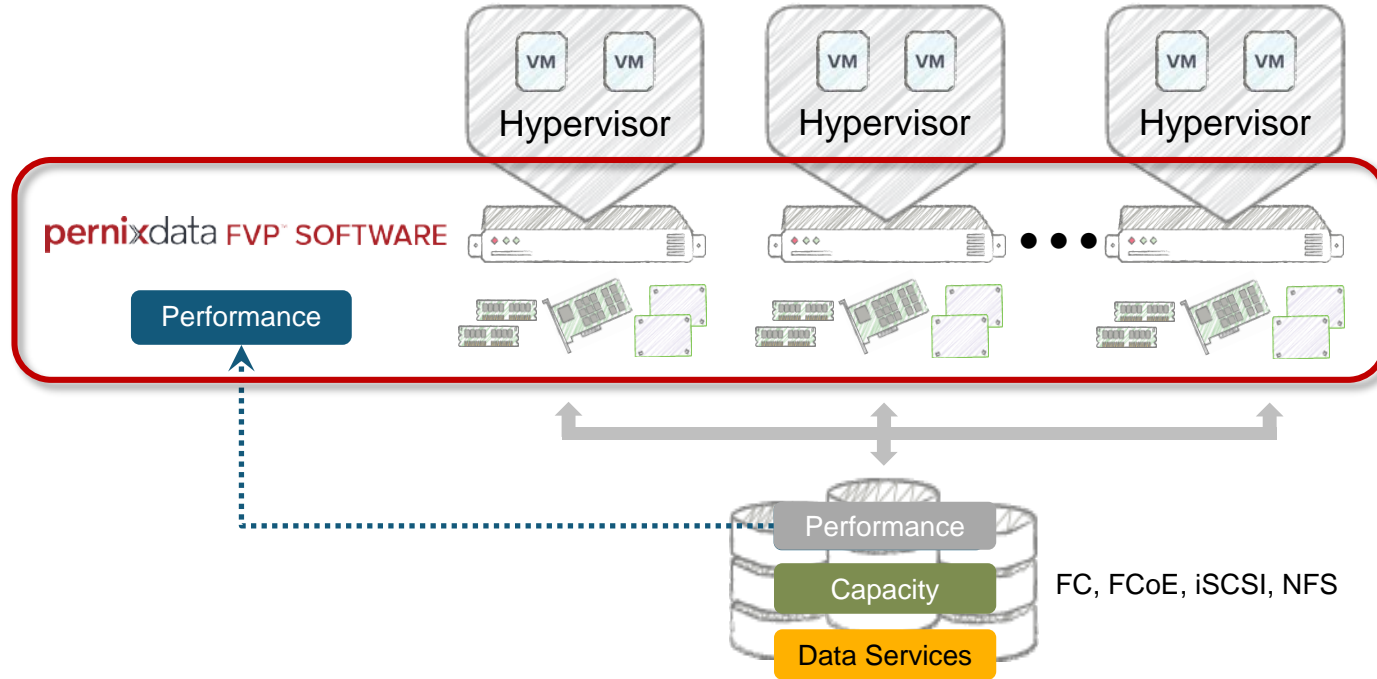
1. As servers are added, performance can grow (w/each server added)
2. As servers w/local flash are added, small performance steps
3. Moore's law in Full Force!

How Flash Helps

Server-Local Flash: Step-wise Build Out

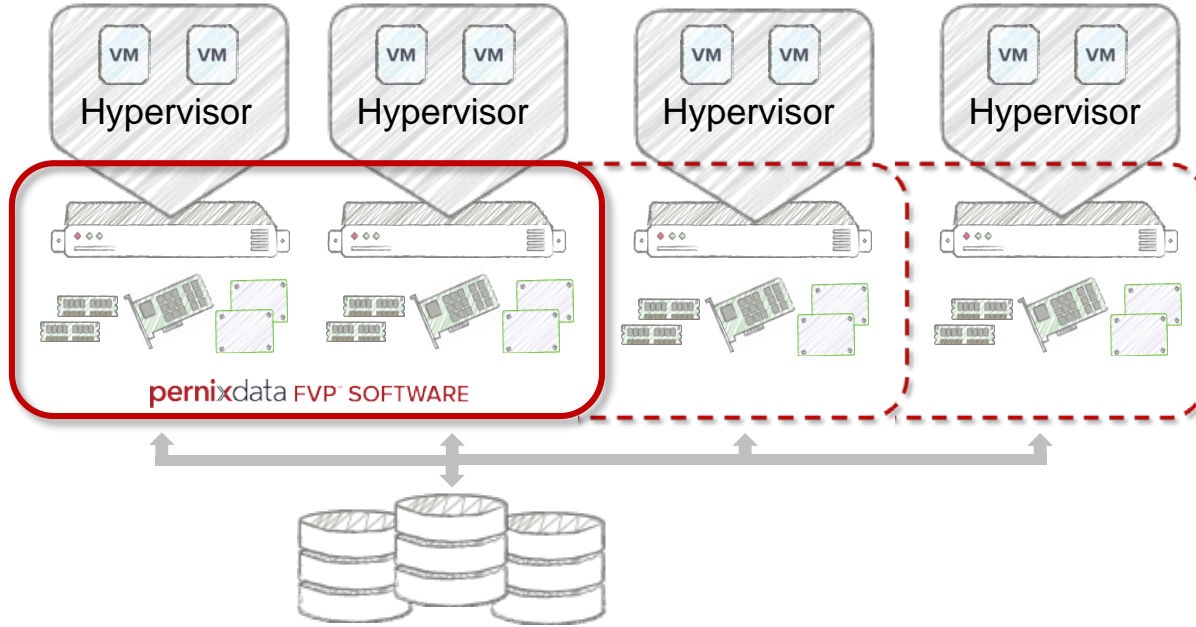


Aggregate Flash (and RAM) into a Data Acceleration Tier



Any server, any storage; No reboots, application rewrites or process changes

Scale-Out Storage Performance with Compute



Challenges

- Struggling to complete nightly data analysis within the allocated time window
- Avoid cost & disruption from storage upgrade

Results

- Critical business processes running more than 60% faster
- Nearly 1.8 billion IOs saved from array in the first 38 days
- Removed the need for a \$80K storage upgrade

Realtime

VM IOPS (Sum)	330
VM Throughput (Sum)	11971 KBps
VM Latency (Avg)	1.33 ms

Historical (Since Dec 8, 2014 4:00:54 PM)

IOs Saved from Datastore	1,793,652,659
Datastore Bandwidth Saved	31.86 TB
Writes Accelerated	1,160,968,000
FVP Network Savings	13.18 TB

So What?

Distinct Choices...Distinct Differences

Call To Action

- Recognize: Flash is not a panacea. Well-placed flash can help address IT Imperatives
- Understand: There can be architectural considerations
- Persuade: Flash is mainstream, use it where it fits, reap the benefits