



Disk is Dead!

Storage Buyers at a Crossroads...

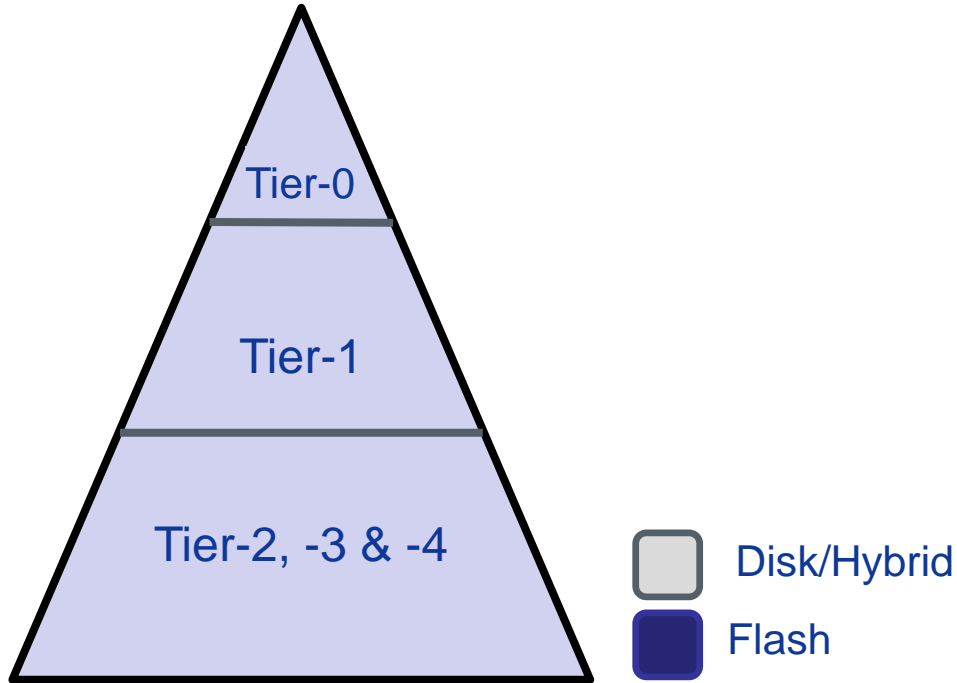
Flash Memory Summit 2015

Andrew Chen

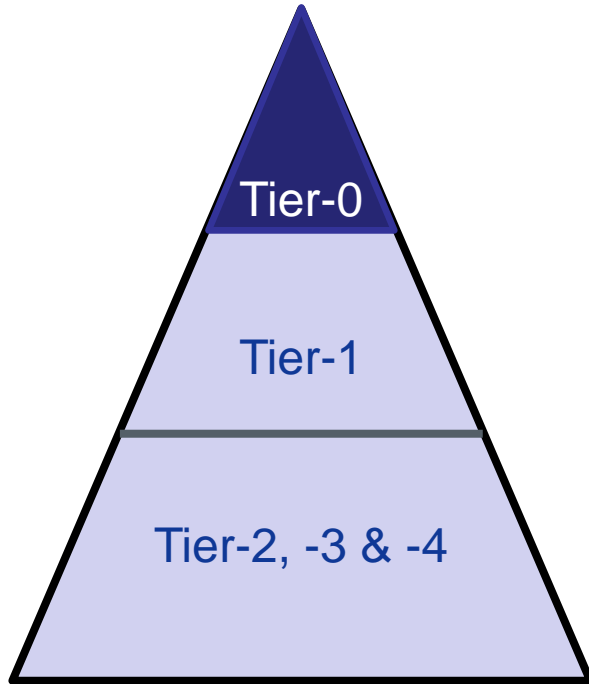
VP, Product Management, Violin Memory

achen@vmem.com

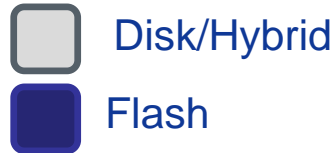
The Journey to the All Silicon Data Center



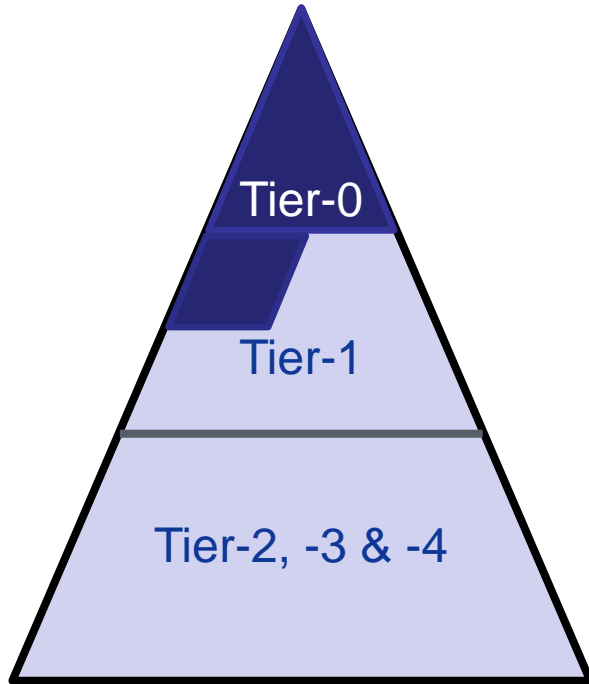
The Journey to the All Silicon Data Center



- Performance, Performance, Performance
- Lowest \$ per IOPS
- Lowest TCO for Performance Intensive Applications

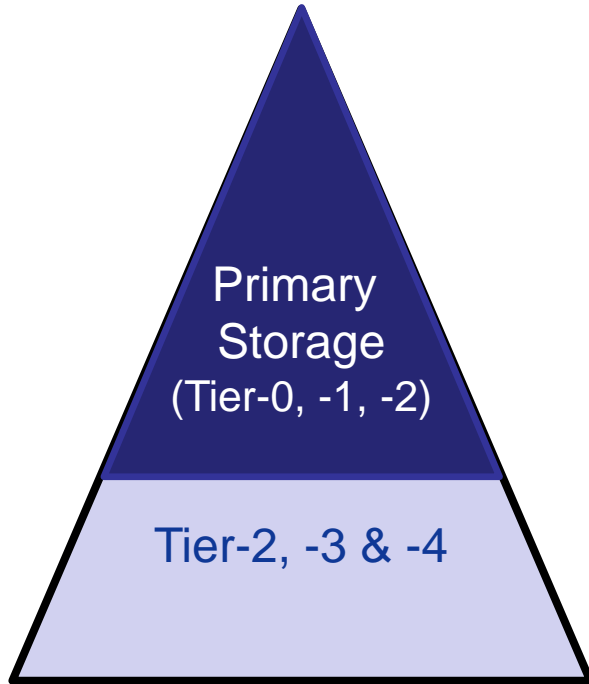


The Journey to the All Silicon Data Center

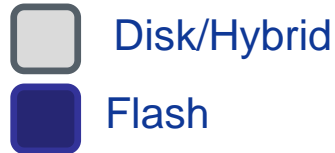


- Virtualized Environments
- In-Line Data Reduction Lowers \$ per GB and Increases Capacity Scale

The Journey to the All Silicon Data Center

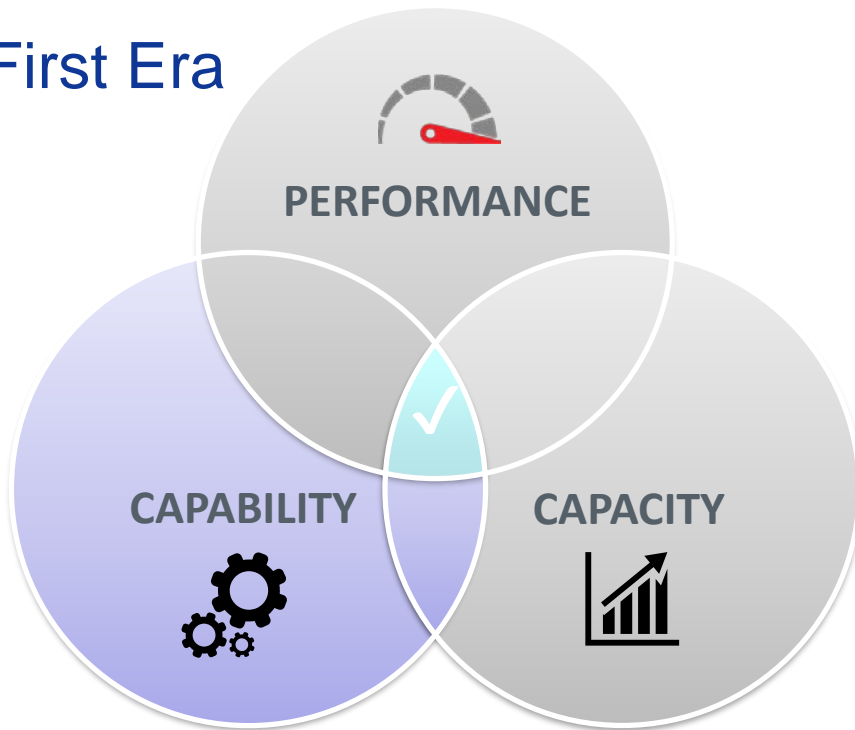


- Comprehensive Data Management Services
- The End of Compromises
- +Legacy Technologies Increasingly Fail to meet IT Demands of Present and Future



Enterprise Primary Storage Requirements

The First Era



The Final
Missing Link

The Second Era

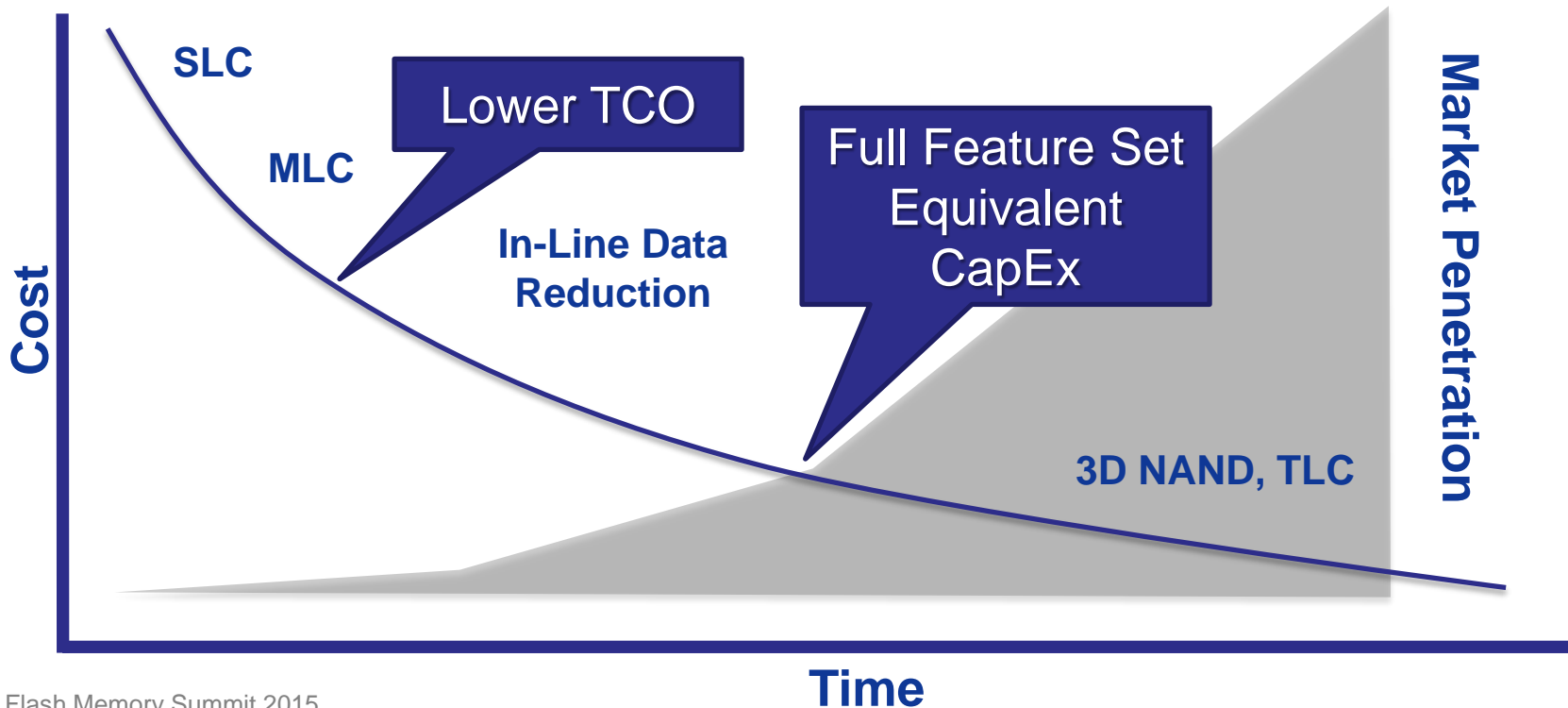
Hard Disk Drives

- Declining in Volume Base
- Performance Stagnation
- Prohibitive Investment Requirements

NAND Flash

- Consumer Demand Provides Volume Scale
- Multiple Technology Innovations Ahead

Acceleration of Flash Adoption



Architecture Matters

SSD Retrofit

Benefits:

- ✓ Rich Feature Set

Drawbacks:

- Low Performance
- High Cost
- Low Density

SSD-Based All-Flash Array

Benefits:

- ✓ In-line Data Reduction → Low \$/GB *Effective*

Drawbacks:

- Low Performance
- Low Density
- Limited Features

Purpose Built All-Flash Array

Benefits:

- ✓ Most Effective Use of Flash

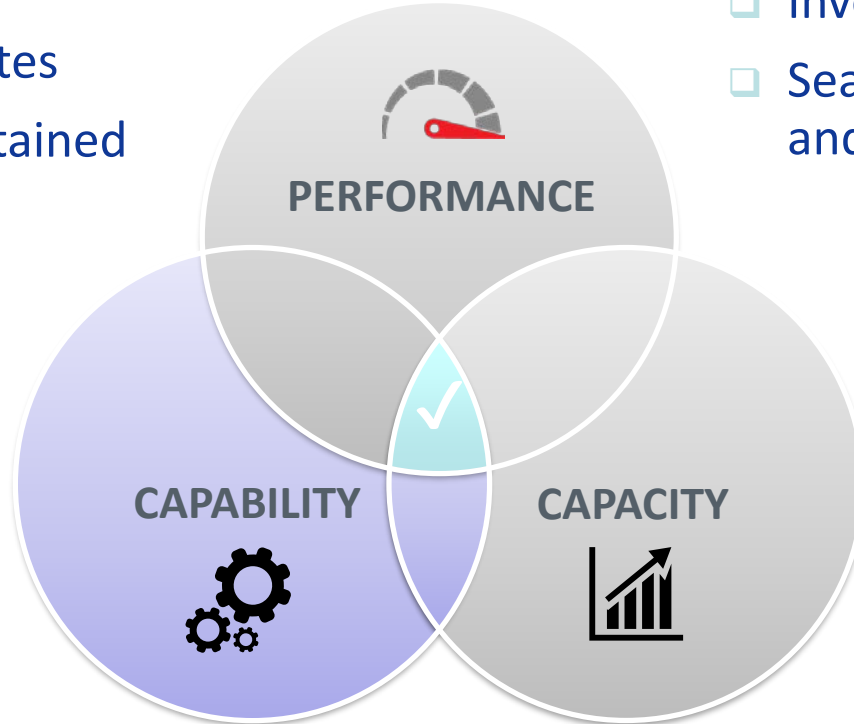
Drawbacks:

- High Investment to Develop

Enterprise Primary Storage Requirements

- ❑ Writes
- ❑ Sustained

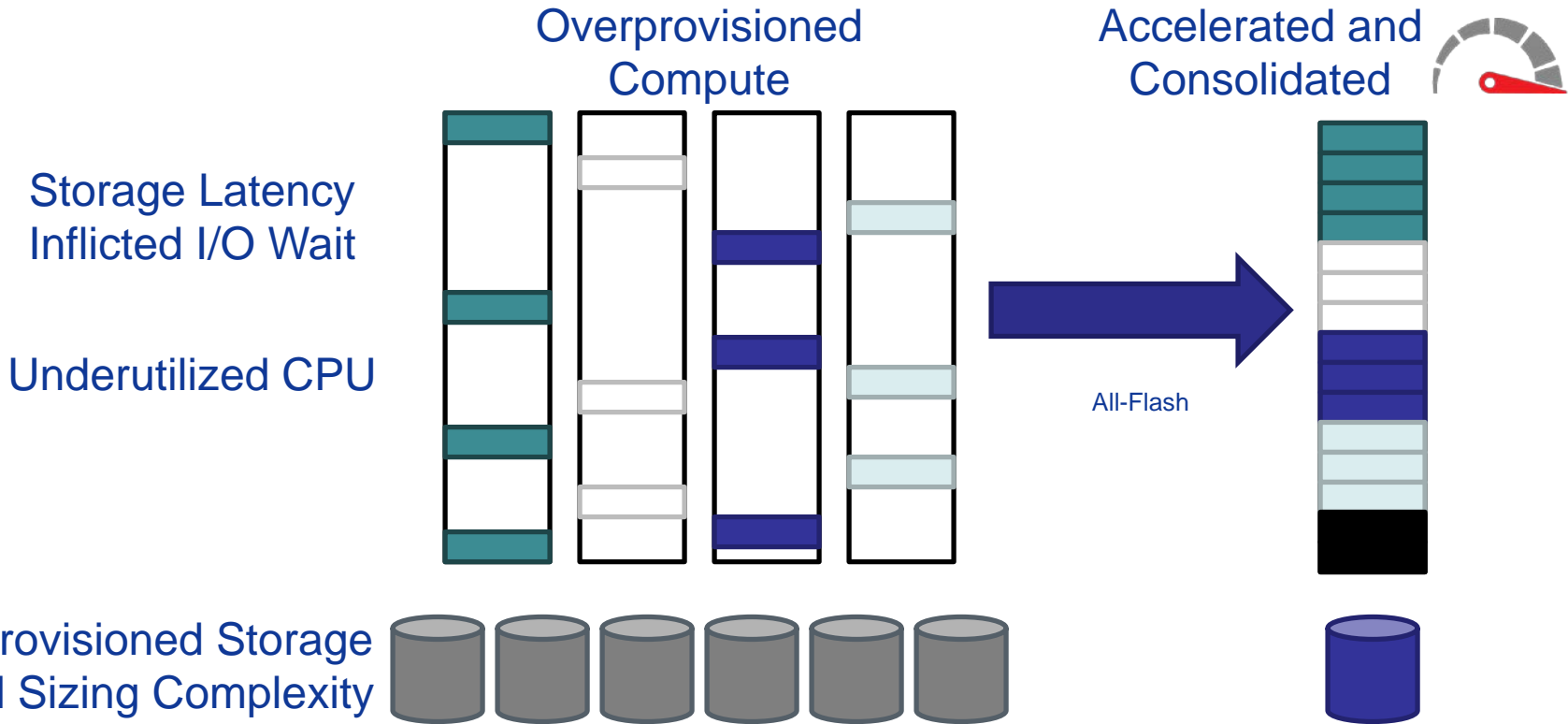
- ❑ Extensive Data Management Services
- ❑ RASM
- ❑ Integrated, No Compromises



- ❑ Investment Protection
- ❑ Seamless Capability and Manageability

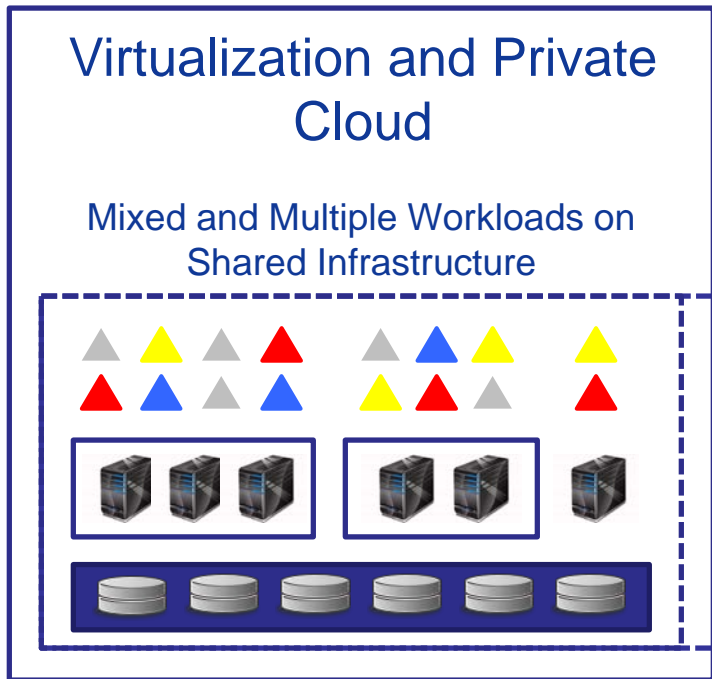
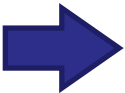
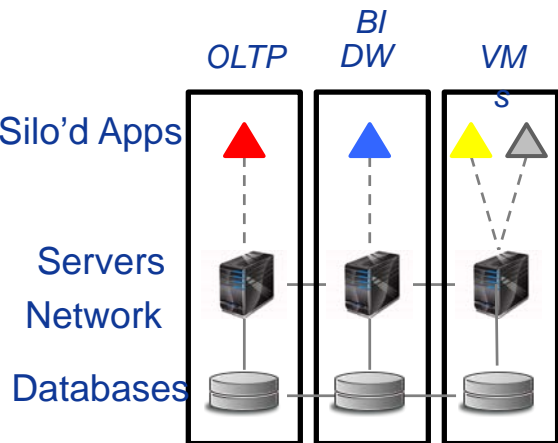
- ❑ Cost
- ❑ Scale
- ❑ Choice
- ❑ Density

Flash Drives Consolidation



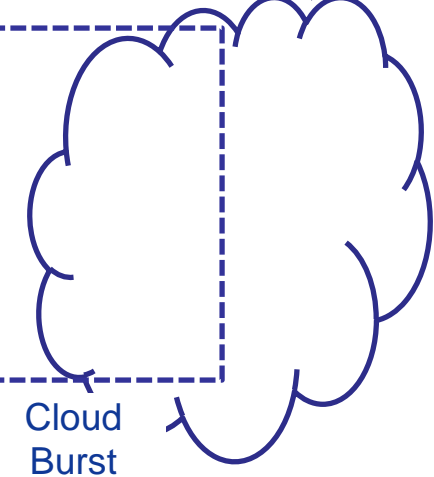
Flash Fulfills the Promise of Cloud

Performance Constrained
Application Niches



Hybrid
Cloud

Public
Cloud



The Effects of Flash in a Data Center



↑ **20X**

APPLICATION PERFORMANCE



↑ **90%**

STORAGE CONSOLIDATION



↓ **90%**

POWER AND COOLING



↓ **80%**

SERVERS



↓ **80%**

SOFTWARE LICENSES



<1YR

RETURN ON INVESTMENT

Business Transformation

- Enabling Workflows
- Meeting Customer SLA's
- Speed to Insight as a Differentiator
- New Revenue Sources

Data Center Transformation

- Consolidation and Build Out Avoidance
- Power, Cooling, Space
- **No More Compromises Required**



Who is Flash For?

EVERYONE!



Thank You!