Unconditional Performance

Server-i-zation of Storage

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Evolution of Application Infrastructure

1st

MAINFRAME

Mainframe-centric Datacenters

Focus on automation of Financial accounts

2nd

CLIENT-SERVER & WEB

Server-centric Datacenters

Focus on automation of Most paper processes

3rd

CONSUMERIZATION

Cloud-enabled Datacenters

Focus on new experiences, New business models

Corresponding Evolution of Storage Infrastructure

1st

TAPE SILO

Mainframe-centric Datacenters

Tape silo --
data access in seconds

2nd

SPINNING DISK

Server-centric Datacenters

Network-storage --
data access in milliseconds

3rd

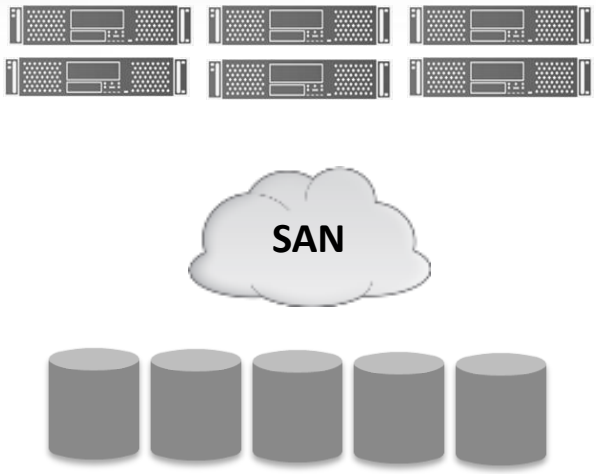
FLASH STORAGE

Cloud-enabled Datacenters

PCIe flash storage --
data access in microseconds

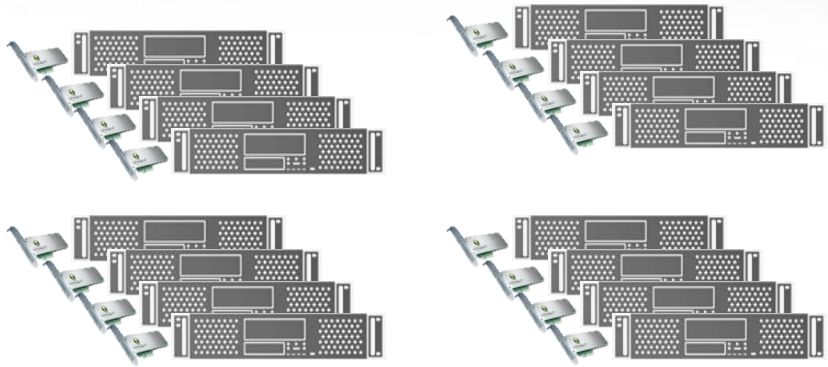
How do you Index the World's Information?

Traditional Shared Storage



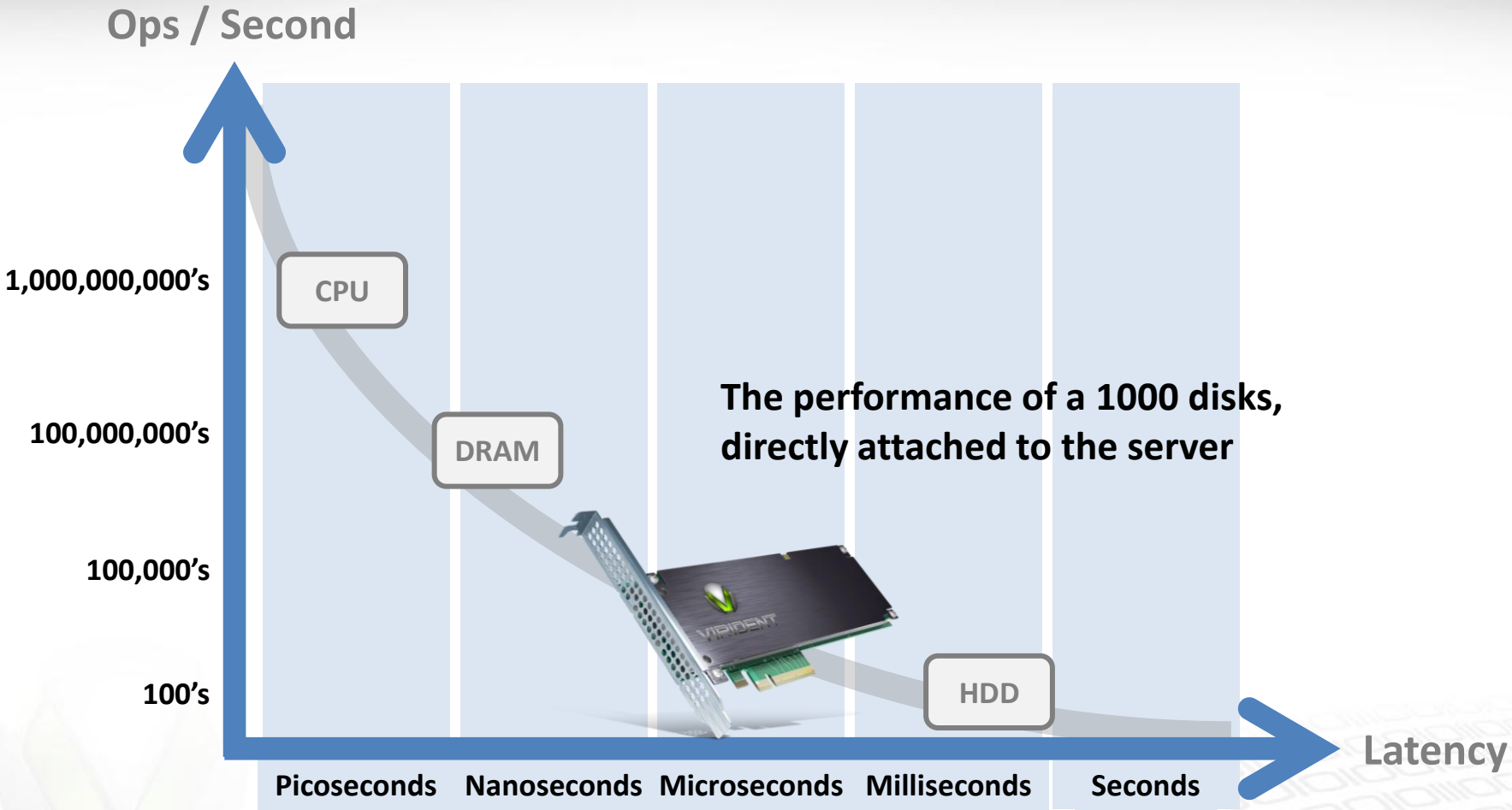
- Shared with many servers
- Data Management Built In
- Maximizes Utilization

Clustered Server-Based Flash DAS



- Flash in all servers in a large cluster
- Deliver maximum compute resources to applications
- Minimizes latency and accelerate applications
- Applications include built-in data management
- Data replicated/distributed automatically throughout cluster
- Master-Slave relationship (many-1 replication) means most copies of data are read-only
- Typical deployments use MySQL or noSQL and are in the webscale database area

Virident Bridges the Storage Performance Gap
Storage Class Memory & Flash Platform

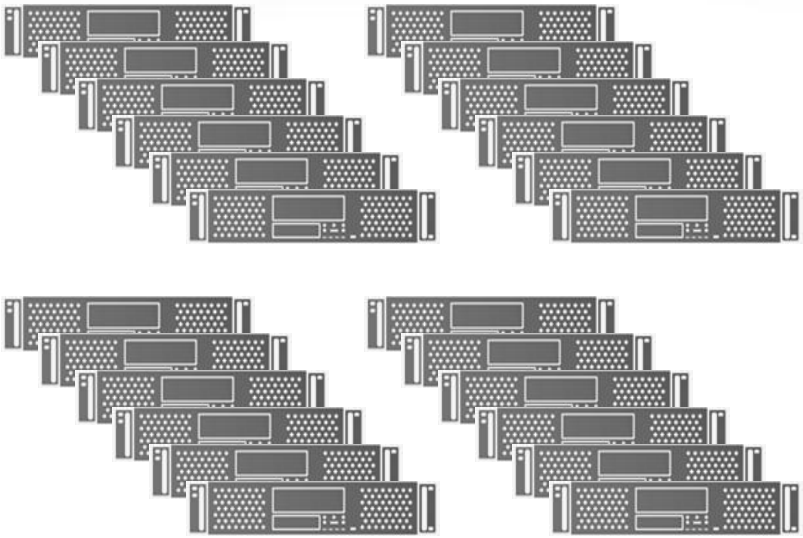


FlashMAX II Specifications

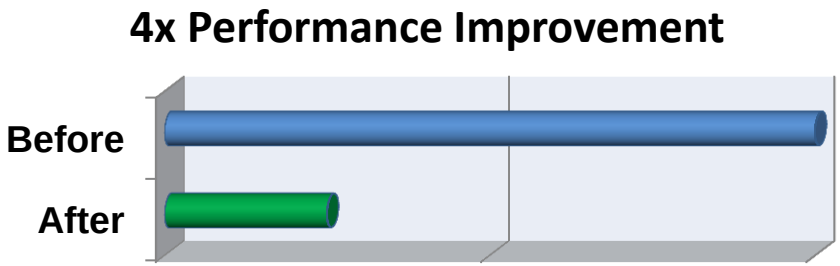
Specification	Standard	Performance
Capacity – MLC (GB)	550, 1100	1100, 2200
Read Bandwidth	1.6 GB/s	2.7 GB/s
Read IOPS (4k)	175K	350K
Write Bandwidth	540 MB/s	1.0 GB/s
Sustained Mixed (70% rd) (4K) IOPS	105K	217K
Read Latency	76 us	78 us
Write Latency	16 us	18 us
Data Reliability	Flash-aware RAID, Advanced end-to-end Error correction, Global/Local wear-leveling	

Social Blog Hosting Site: 4 x 1 Consolidation

Before



After



- 4:1 server consolidation
- 4x increase in performance
- Accommodates higher user growth and increased revenue
- Lower management overhead and lower data center costs

vFAS Software

Delivering the Benefits of Flash to Applications

Virtualization Layer

- Virtualizes underlying Flash media
- Provides quickest path to data with no intermediary storage protocol layers
- Lowest latency data-delivery

Adaptive Scheduler

- Ensure flash management does not impede application data access
- Performance scales across diverse workloads and dataset sizes, consistently delivered over time

Flash-aware RAID

- Ensures enterprise-class reliability and data availability

Evolution of Storage Platforms

Traditional Approaches

Direct-Attach Storage

- × Shareability
- × Scalability
- × Data availability
- × Data services

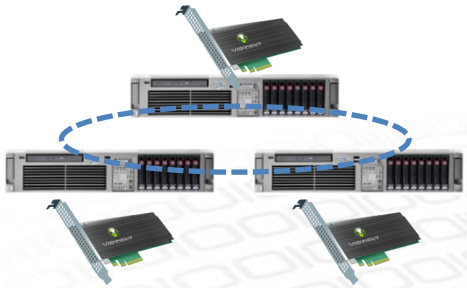
Networked Storage (SAN)

- ✓ Shareability
- ✓ Scalability
- ✓ Data availability
- ✓ Data services

Modern Performance Storage Tier

PCIe Flash Storage (DAS)

Networked Flash Storage (Server-based SAN)



Viridient FlashMAX Connect Software Platform

Data Protection: **vHA** enables high-performance synchronous mirroring

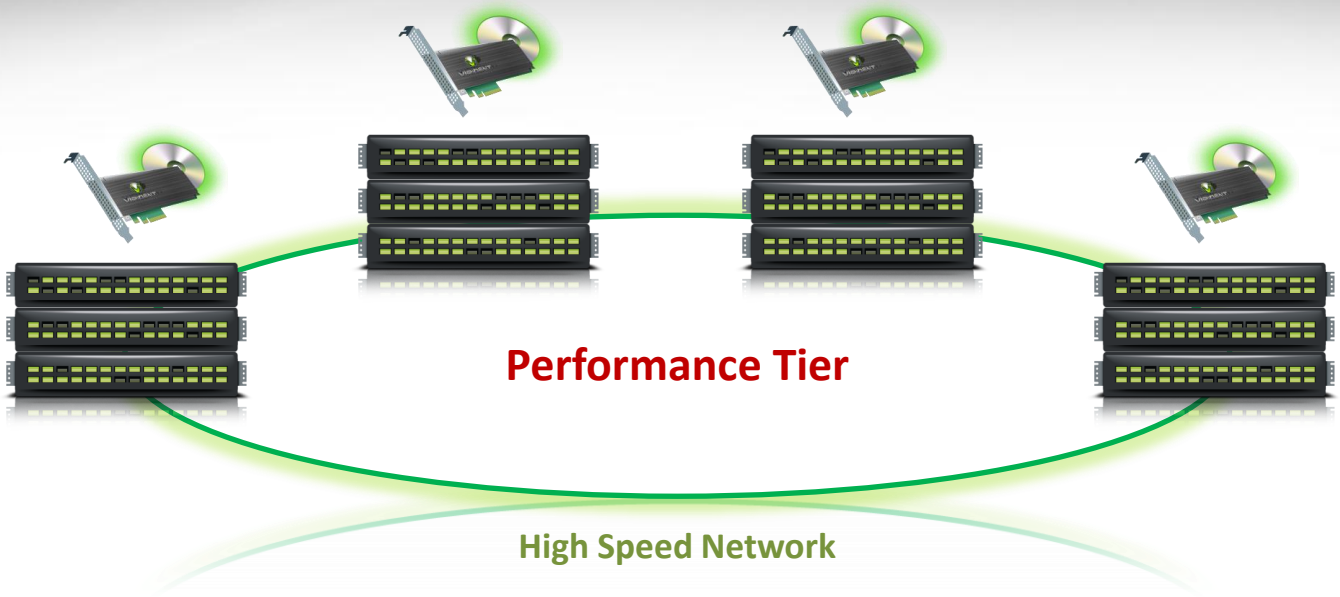
Storage Management: **vShare** enables iSCSI-like access to a flash aware partitions of a remote PCIe SSD

Data Management: **vCache** enables construction of transparent block cache devices

Performance: All capabilities of the software with IOPs and latencies of direct-attached PCIe Flash

Introducing Virident FlashMAX Fabric

Enabling True Performance Tier for the Software Defined Flash World



Flash Aware Performance Tier Optimized for Databases and Virtualization Applications

- ✓ Performance storage closer to applications
- ✓ Highest Performance
- ✓ High efficiency
- ✓ Lower Costs

- ✓ Direct Attach Storage
- ✓ Shareability
- ✓ Capacity
- ✓ Manageability

Virident High Performance Flash Storage Platform

- Application Acceleration & Business Advantage
- Re-architecting the storage stack
- Storage Class Memory (SCM)
- Flash as a Platform (Software & Solutions Delivery)

where information now lives