FLASH TECHNOLOGY

Daniel Cobb – Distinguished Engineer
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Flash Strategy

**THUNDER:** shareable, scalable, optimal latency & throughput

**VMAX, VNX:** tiering, caching

**ISILON:** scale-out file store

**VFCache:** high performance cache and (future) DAS

**XtremIO:** in-line de-dup, MLC flash, very low latency

- **Extends FAST into the server; common mgmt for hot & cold data. Web apps**
- **High-frequency trading**
- **HPC**
- **blade server VFCache**
- **VDI, DB test & dev**
- **100% hot data**
- **mixed workloads**
- **5% flash for perf**
- **95% HDD for cost**

**Server**

**Storage**
storage hierarchy: another perspective

- **4000X** Better Performance
- **300X** Better Performance
- **80X** Higher Cost
- **20X** Higher Cost

Cost / GB

- SATA / FAT HDD
- FC / SAS HDD
- FLASH SSD
- DRAM DIMM

Performance

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flash across the data center

Capacity Cost

Transaction Performance

HYBRID ARRAY

ALL FLASH ARRAY

PCle FLASH

FLASH APPLIANCE

FLASH CARD

Storage Network

Server Network

HIGH CAPACITY HDD

15K RPM HDD

FLASH SSD

15K RPM HDD

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EMC flash portfolio

HYBRID ARRAY
- VNX
- Isilon
- VMAX

Transaction Performance

Capacity Cost

ALL FLASH ARRAY
- "Thunder"
- Flash Appliance
- Flash Card

Storage Network

Server Network

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