Top Ten Things to Know About Flash

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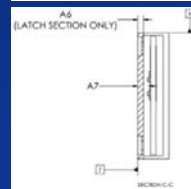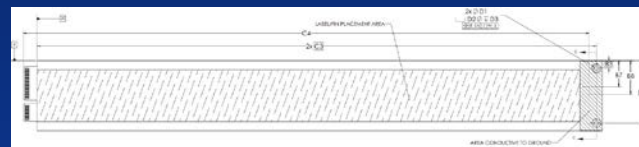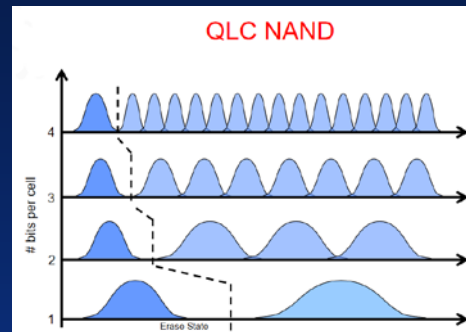
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1 Growth of dense QLC Flash usage as well as performance optimized solutions with high-density flash will continue

HDDs will continue to have lots of use cases. Flash production can't realistically replace all HDDs even if we wanted it to.

2 *New "designed for flash" form factors fuel this change and provide both capacity and performance density improvements, including a more efficient way to build with 1u enclosures (8 EDSFF drives replace (2) 2.5 inch drives)*
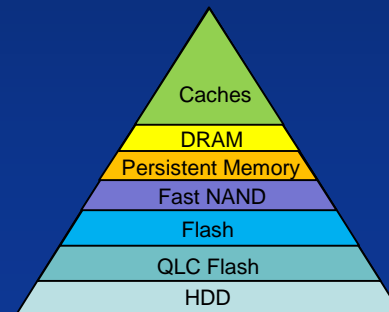
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intel
Pod Manager

SNIA
Swordfish™

DMTF
Redfish
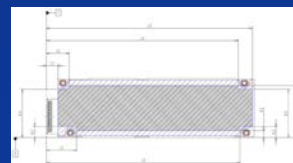
3 Open source SW & APIs are making disaggregation and composability easier. Many startups will also offer specialty solutions

4 FastNAND and other high endurance media expands use cases for QLC by behaving as a workload buffer in tiered environments. It will also see use as a performance tier with both high performance NAND and HDDs

Caches
DRAM
Persistent Memory
Fast NAND
Flash
QLC Flash
HDD

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5 Infrastructure will become increasingly data-centric. Agility needed for complex and dynamic workloads will drive adoption of disaggregated architectures and software composable infrastructure with both flash and disk attached to a common fabric.(See #4).

6 Disaggregated data center architectures will enable flash to be packaged and data to be accessed in a more versatile way. Compute will be more directly connected to data with more predictable performance where bottlenecks and noisy neighbors can be minimized

Public cloud

Hybrid cloud

Private cloud
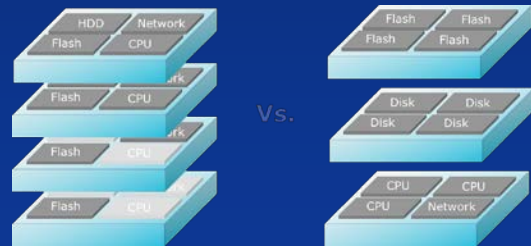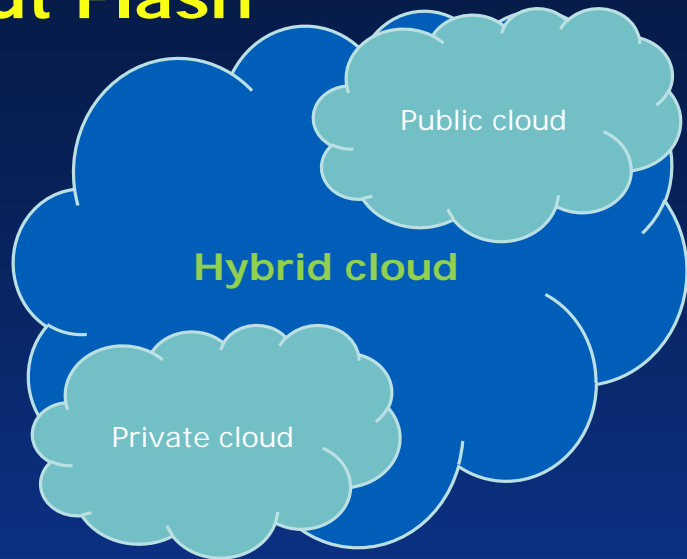
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7 The industry is enabling this migration to the fabric. NVM Express® over fabric, RDMA and similar technologies and the open standards community are focusing on open software composable infrastructure.

8 Local storage centric CPUs will help reduce the burden of moving data in a dis-aggregated solution. Why burn network bandwidth simply to move data when you don't have to? Open source RISC V will lead the way, including providing a persistent memory path.
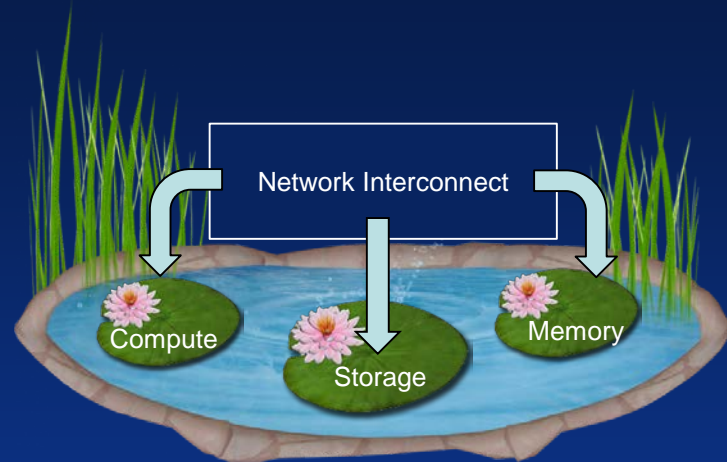
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9 Flash and compute are both moving onto the network as separate but configurable resources. Resource pooled solutions allow for simplified server and storage design points with building blocks but will cause a move towards common management methods to occur as opposed to separate server and storage management

10 Efforts such as Open19 and other open design efforts will accelerate the resource pooled design footprint in the industry while still allowing for "in the box" differentiation (resource pooled implementation is best designed for flash use)

Thanks!