Western Digital.

Top Ten Things to Know About Flash

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Top 10 Things to Know About Flash

1

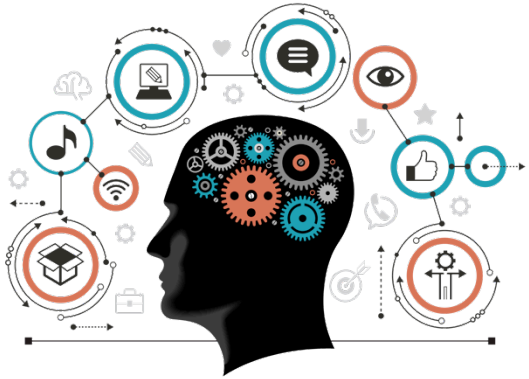
Capacity HDD being optimized for cost/TB. Opportunities for performance optimized solutions with high-density flash

This creates next generation high-density solution opportunities for flash. Western Digital recently announced 96-layer 3D QLC NAND with 1.33Tb per chip

HDDS will continue to have lots of use cases.

2

New "designed for flash" form factors fill this gap and provide both capacity and performance density improvements, including a more efficient way to build with 1u enclosures (8 drives replace (2) 2.5 inch drives)



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3

Flash is moving onto the network. Resource pooled solutions allow for simplified server and storage design points. This week, Western Digital announced OpenFlex™ which allows less complex multi-node "Heavy Iron" systems and more 1u enclosures (leveraging off new small form factors and 2 socket non-multi-node HW)

4

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)

OPEN 19™ Foundation

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5

The industry is enabling this migration to the network. Western Digital's OpenFlex Platform and open source management SW called Kingfish were announced this week. In conjunction with NVM Express® over fabric, these technologies will drive open standards around open software composable infrastructure.

6

RDMA and TCP Flow Control can help reduce the burden of moving data in a dis-aggregated solution. Why burn CPU cycles on the target side simply to move data when you don't have to?

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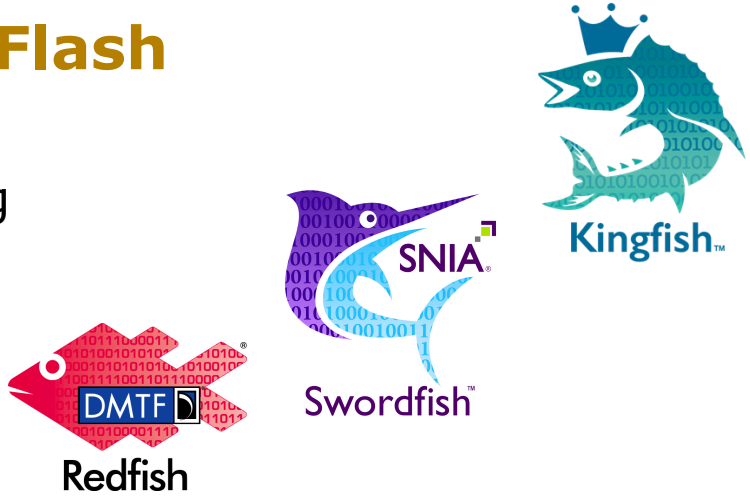
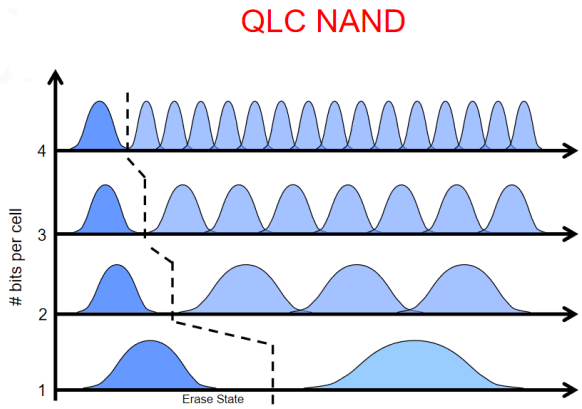
7 Open source SW & APIs are making disaggregation and composability easier



8 QLC expands range of density and cost for flash. Creates broader options for storage services across flash and disk technologies



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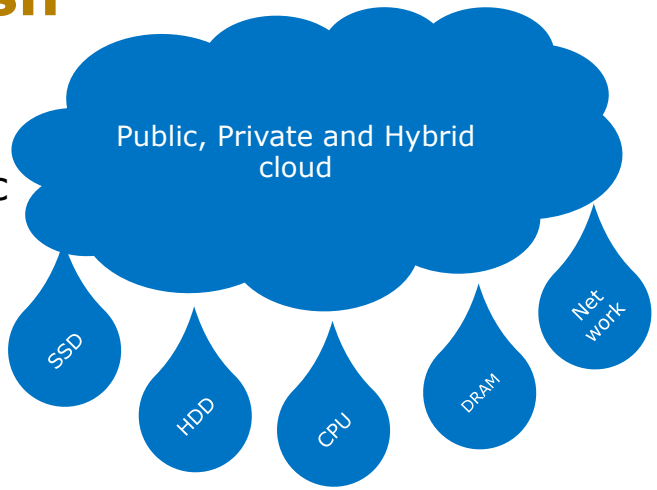
9

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 #10).



10

Disaggregated data center architectures will enable flash to be packaged and data to be accessed in new ways. This will enable compute to be more directly connected to data with more predictable performance where bottlenecks and noisy neighbors can be minimized