Getting to One

The case for NVMe as the unifying interface for storage devices

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Why is PCIe-NVMe Synonymous with SSD?

Why?
Because it was designed for SSD

1

Massive Parallelism

- Many IO queues, direct connect to the memory complex.
- A rich, but light-weight protocol
- Flexible capacity management

2

Protocol

- Rich, but light-weight
- Abstracts device complexity
- Security innovation

3

Capacity Management

- Name spaces & associated benefits to space allocation and performance segregation

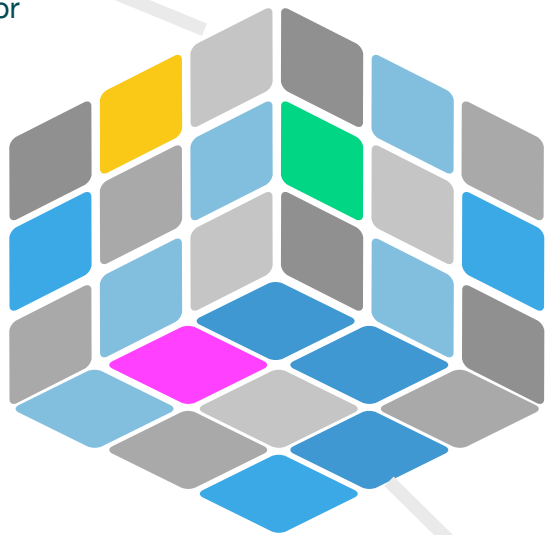
Four Pieces of the Puzzle to Bring HDD into the Family

PCI connectivity

- ✓ PCIi Switch architectures for dense JBOD applications

Direct Connect

- ✓ Copper connection to storage servers
- ✓ Now available in some HBA configurations



Command “Standard”

- ✓ NVMe has the needed commands for HDD
- ✓ Some optimization would be nice

- ✓ Fabric solutions for disaggregation and virtualization
- ✓ “Composabilty”

Indirect Connection

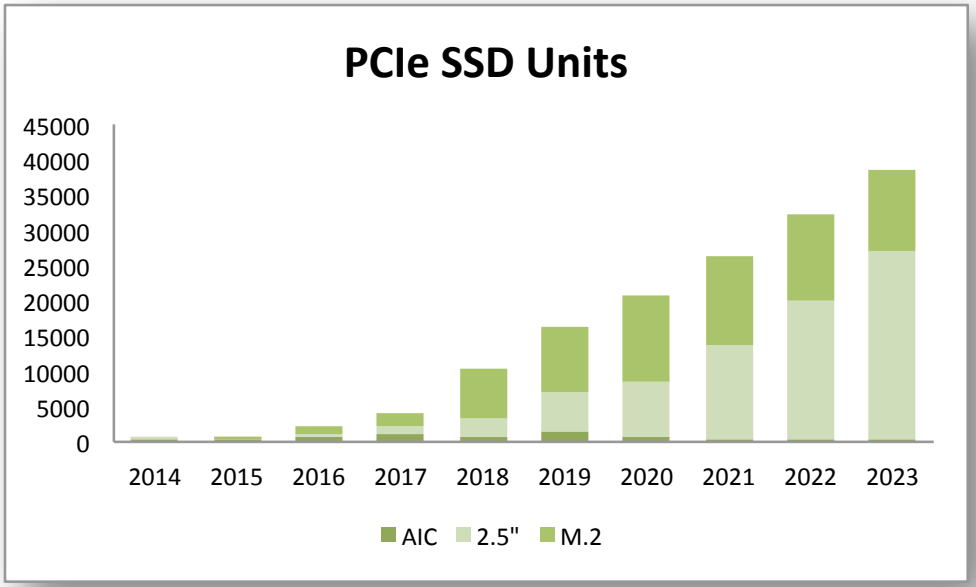
Getting to one Interface: “Friends with Benefits”

Optimized Silicon

Streamlined Software & Firmware

Simple Device Management

Low Cost PCIe Switching



Singular Interface Protocol

Source: Trend Focus

Next Steps

OCP Working Group?

- NVMe HDD command review
- Connector standard for HDD & Contribution to OCP
- Evaluation of other enabling developments (PCIe switches and design, HBAs, Smart NICs, etc…)

Questions