



The Winning Combination is: FC-NVMe

Benefits of FC to NVMe over Fabrics

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The logo for Flash Memory Summit features a yellow starburst graphic above the text "Flash Memory" in red and blue, with "SUMMIT" in white on a blue rectangular background below it.

Flash Memory Summit Agenda

- A Quick look at (familiar?) NVMe Technology
- Is Technology the Only Dimension?
- Factors in Adoption
- Summary



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Quick Look at NVMe Technology

- SSD focused: No disk overhead
 - Simplifies / accelerates the stack
 - Not block structured
- FAST as heck: Bandwidth / Latency / IOPS
- Initially PCIe
 - Now scaling to fabrics
 - Numerous fabric transport options, all very fast



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Is Technology the Only Dimension?

- It depends...
 - Typically “better technology” alone is not enough
- Each of these had arguably better tech, but...
 - Itanium vs x86
 - Fluorescent vs Incandescent lighting
 - Chip-and-PIN credit cards vs Magnetic stripe
 - Electric Cars vs Internal Combustion
 - Many more examples...



Clearly other factors weigh heavily

"Better" Technology	Advantages	Adoption Resistance
Itanium	Scale up, speed	Interop, mobility, scale out
Fluorescent	Energy efficiency	Price, color, delay, disposal
Chip-and-PIN CC's	Security	Infrastructure, ecosystem, habits
All-electric cars	Power, quiet, clean	Infrastructure, range, charge time



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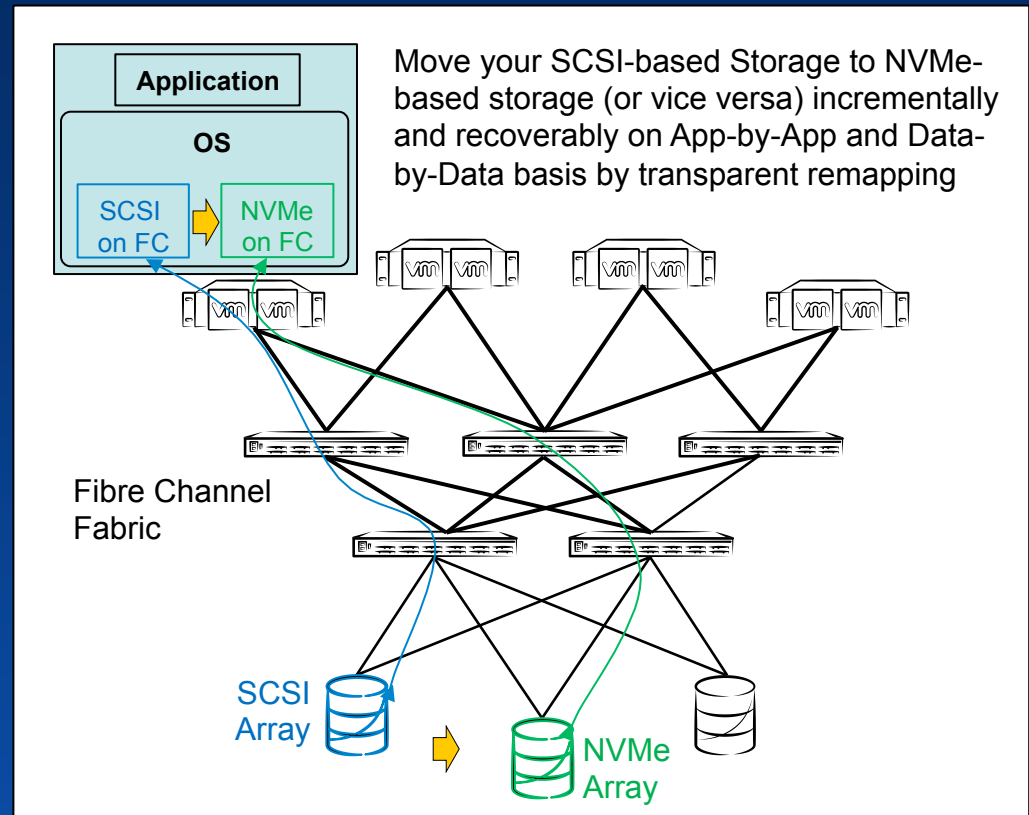


Factors in Adoption vary by Fabric

- Familiarity
 - Your preferred fast storage fabric today is likely best for you
- Forklift-free App transition
 - SCSI and NVMe freely co-exist
 - Migrate SCSI to NVMe on LUN by LUN basis
- Support
 - Ensure preferred array vendor advocates your chosen fabric
- Low Market Risk
 - Fabric that runs now and supports the future will accelerate the future

NVMe Adoption is easiest on FC

- Familiarity
 - FC is preferred for today's AFAs
- Forklift-free App transition
 - SCSI and NVMe in parallel
 - Same cabling / adapters
- Support
 - Array / HBA vendors do both
- Low Market Risk
 - Slow NVMe ramp? No worries





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Summary

- NVMe over Fabrics likely (eventual) future of storage
 - NVMe over Fabrics has compelling performance
 - New SSD technologies demand that performance
 - As SSD's rise, SCSI-based protocols will decline
- Several Fabrics options all offer NVMe's performance
 - Fibre Channel, Ethernet (RoCEv2), FC+Ethernet, Infiniband
- The best fabric for you depends on your world
 - Fibre Channel provides the cleanest path for most