

# Pre-Conference Seminar E

## Flash Storage Networking

Rob Davis, Gunna Marripudi, Ilker Cebeli, J Metz, Scott Kipp, John Kim, Peter Onufryk, and Jim O'Reilly

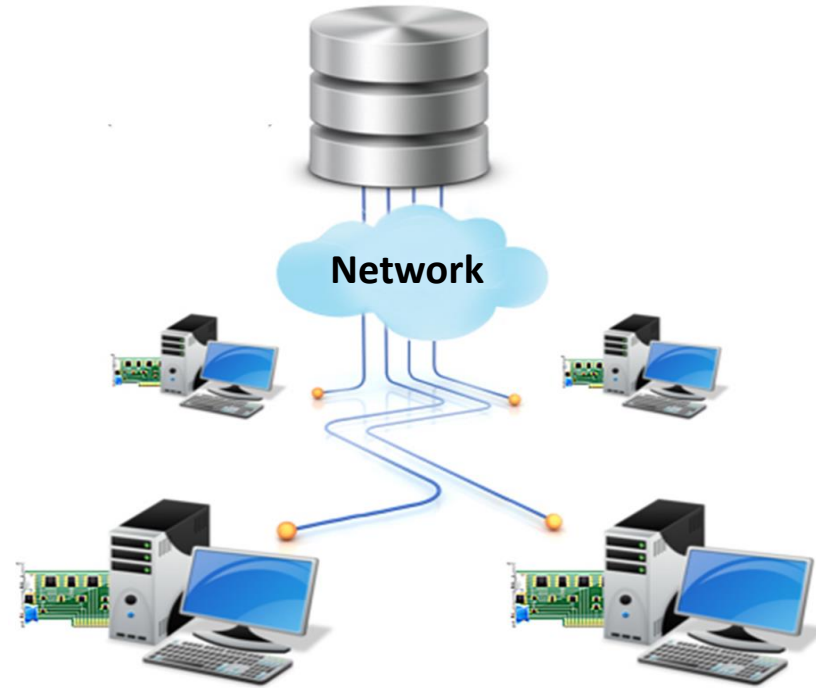
- Networked Flash Storage Overview – 8:30 to 8:40
  - Rob Davis, Mellanox, VP Storage Technology
- PCIe Networked Flash Storage – 8:45 to 9:05
  - Peter Onufryk, Microsemi, Sr. Dir. of Product Development
- InfiniBand Networked Flash Storage – 9:10 to 9:30
  - Motti Beck, Sr. Dir. Enterprise Market Development
- Fibre Channel Networked Flash Storage – 9:35 to 9:55
  - Scott Kipp, Brocade, Dir. of Engineering
- Break – 9:55 to 10:00

# Agenda (cont.)

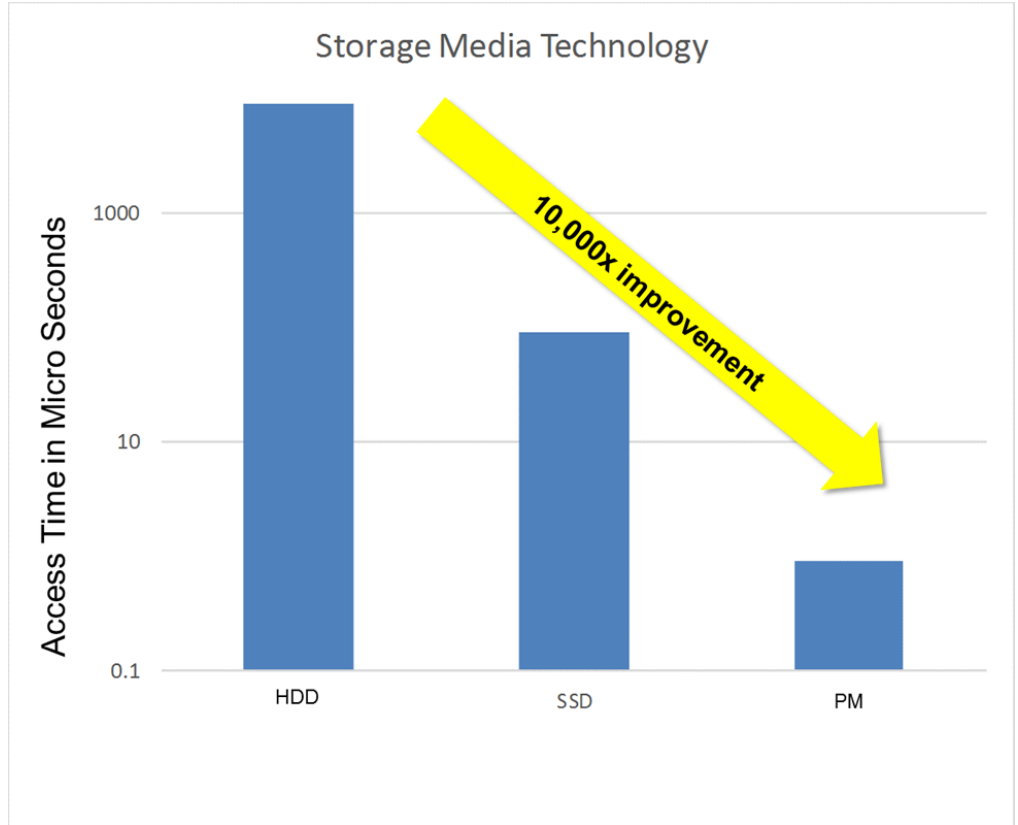
- Ethernet Networked Flash Storage – 10:00 to 10:20
  - J Metz, Cisco, R&D Engineer, Advanced Storage, Office of the CTO, UCS Systems Group
- How Networking Affects Flash Storage Systems – 10:25 to 10:45
  - Ilker Cebeli and Gunna Marrisudi, Samsung, Sr. Dir. Product Planning and Principal Software Architect
- Networks in the Time of Flash – 10:50 to 11:10
  - Jim O'Reilly, Valanto, President
- Panel Discussion – 11:15 to 12:00
  - All Presenters

# Why Network Flash Storage?

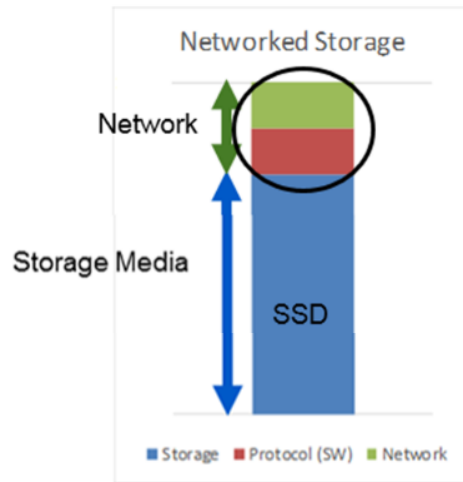
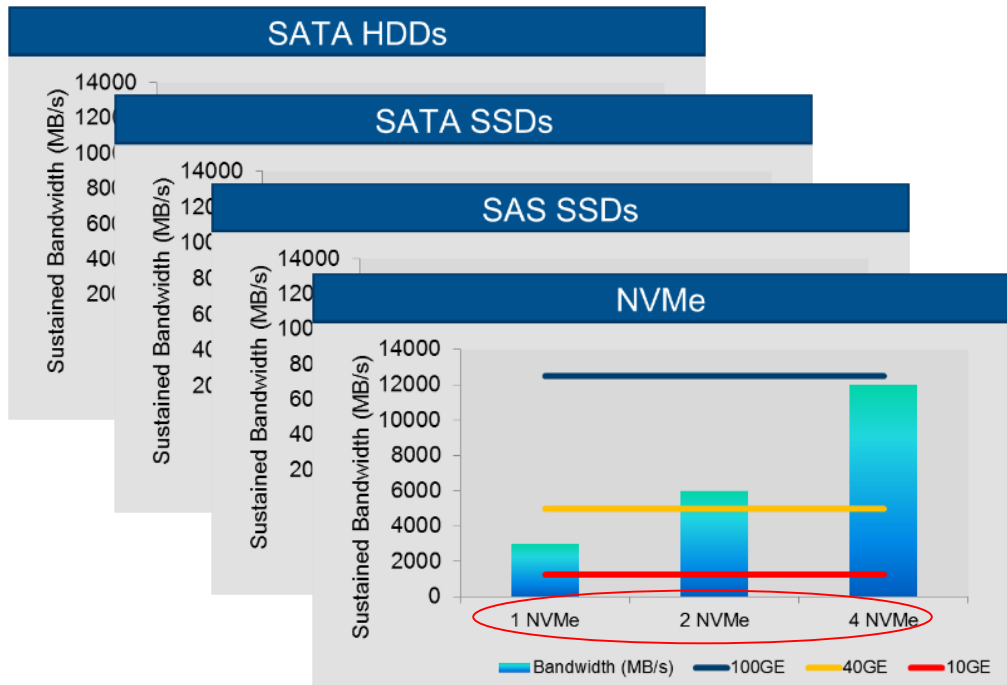
- There are advantages to shared storage
  - Better utilization:
    - capacity, rack space, power
  - Scalability
  - Manageability
  - Fault isolation
- Shared storage requires a Network



# Flash Makes Networking More Difficult

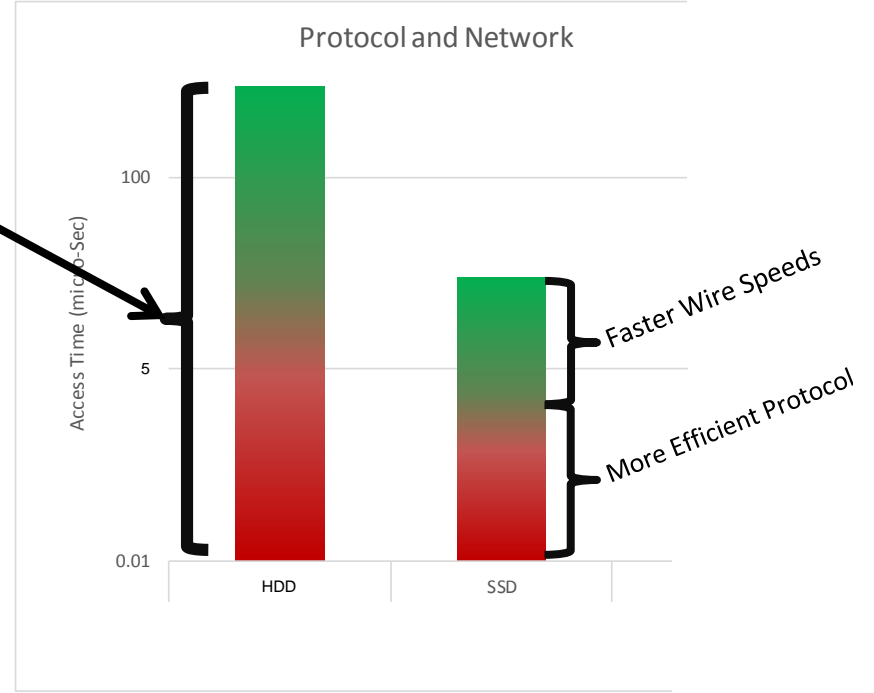
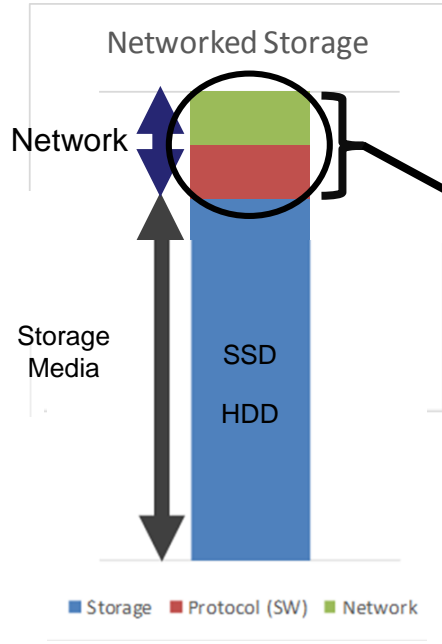


# Faster Storage Needs a Faster Network



Flash SSDs move the Bottleneck from the Disk to the Network

# What is the solution?



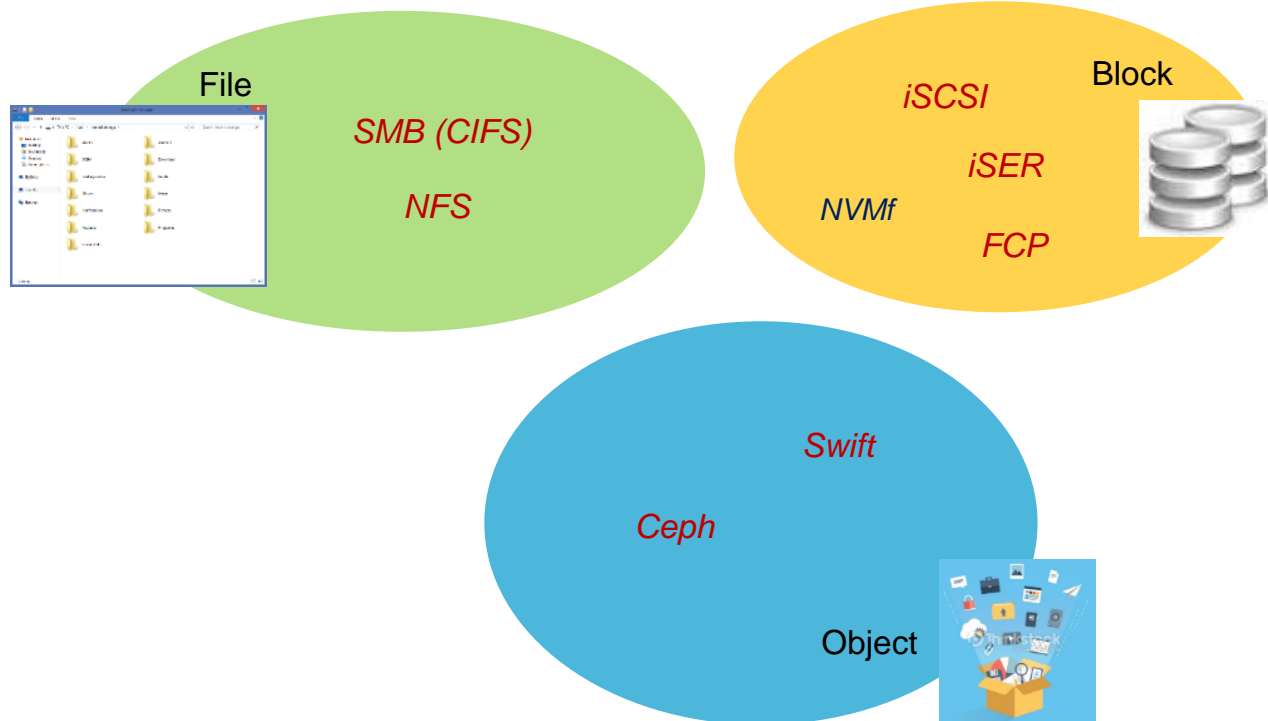
# What's Required to Network Flash





# Match the Network to the Solution

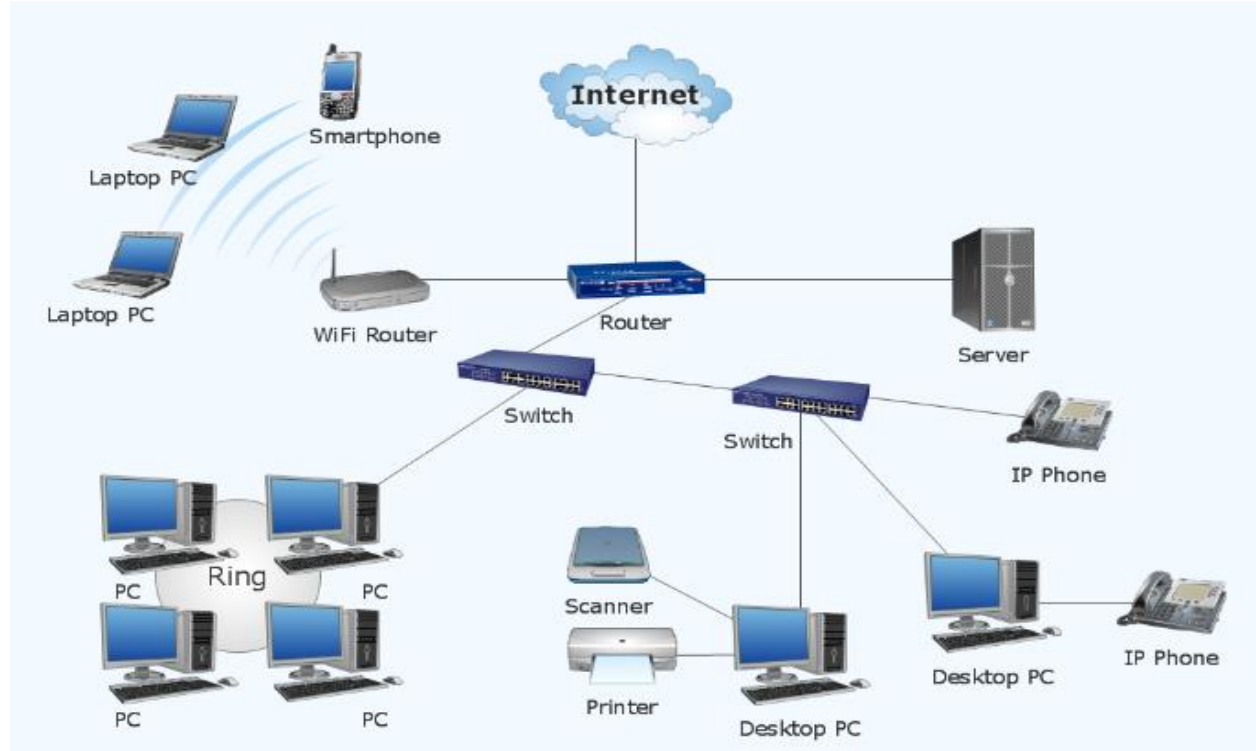
- The Solution will often drive the protocol and the connectivity technology
  - All technologies support Block
  - All technologies do not support File and Object
  - Technologies can be layered: Block behind File



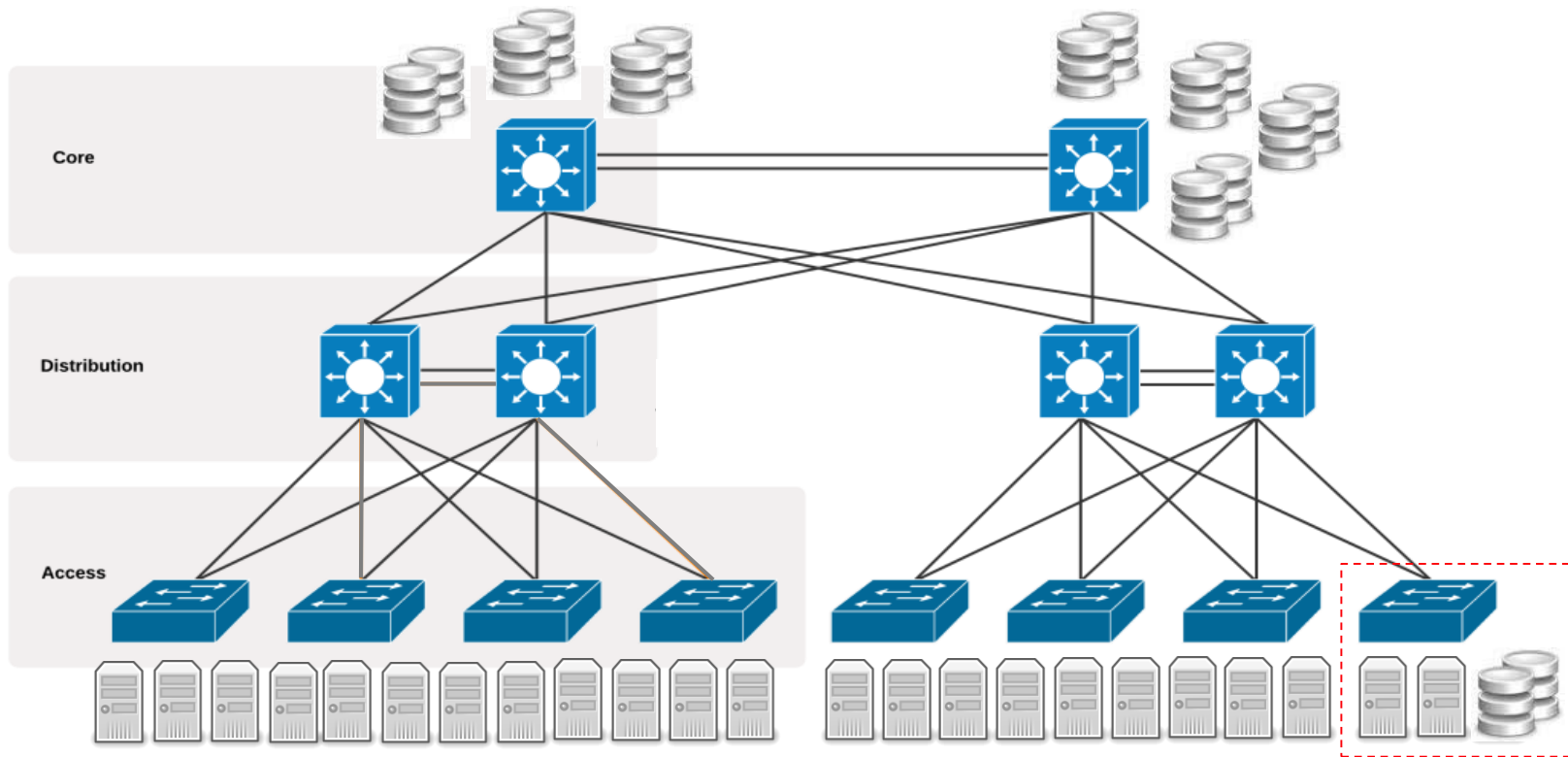
# Equipment/Hardware Needed to Networking Flash Storage

- Pick a Network Technology
  - Ethernet, Fibre Channel, InfiniBand, PCIe
- Make sure your networked storage device or software supports the technology choice – including the needed speeds and protocols
- Network Adaptors for your servers
  - NIC or LOM – Ethernet
    - iSER and NVMf need RDMA support
  - HBA – Fibre Channel
    - NVMf over FC
  - HCA – InfiniBand
  - Bus Extender – PCIe
- Switches – including the needed speeds and protocols

# Where best to plug in?



# Flash Storage – Closer to Servers



# Conclusions

- There are tried and true reasons for networking your storage
- Networking flash requires special considerations
  - Faster Storage needs Faster Networks!
- For the next few hours this team will present the different options and trade offs
- Then you get to question us



Thanks!

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