



Education

## **pNFS Panel - Parallel Storage for Grid and Enterprise Computing**

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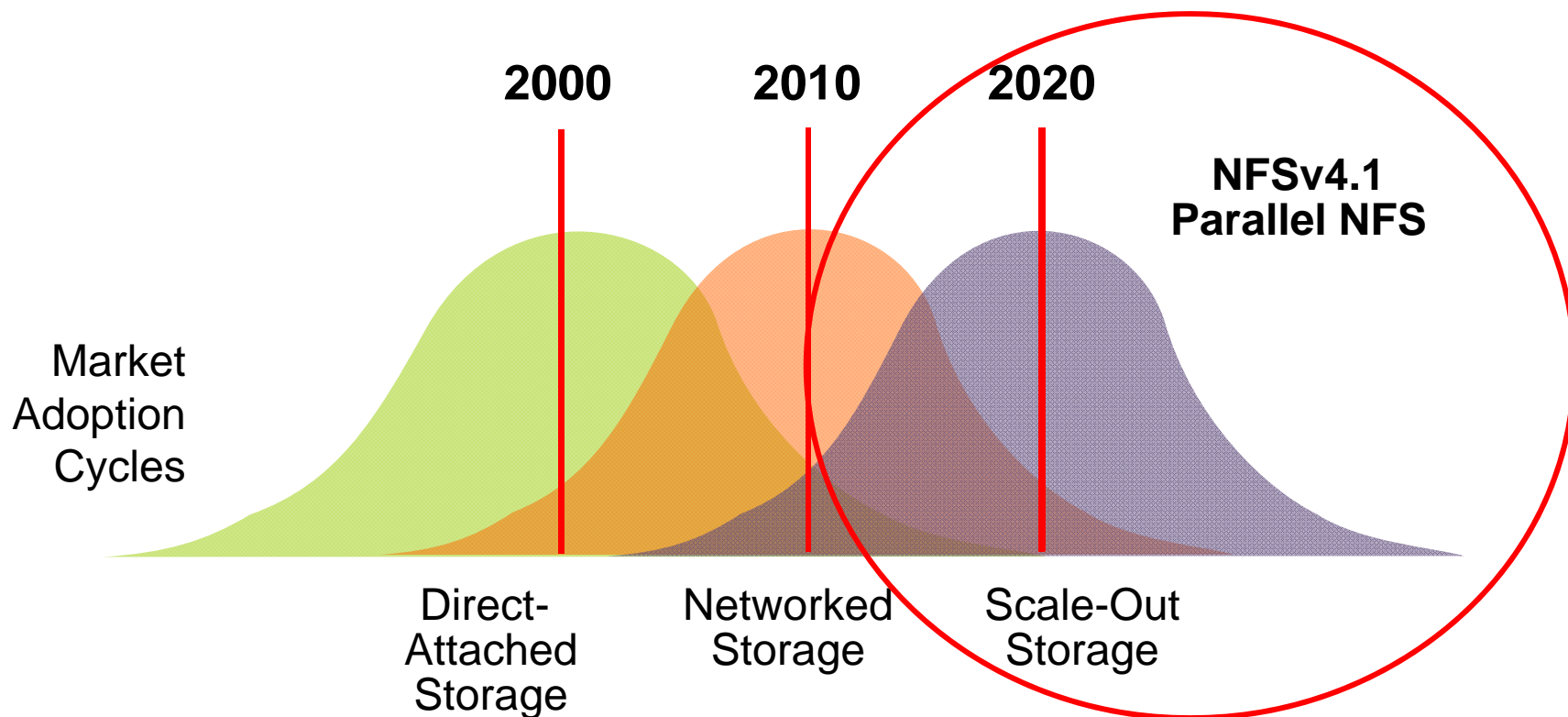
## ➤ pNFS Panel - Parallel Storage for Grid and Enterprise Computing

- ◆ This is a complimentary panel to the presentation on pNFS. In this panel you'll have an opportunity to ask detailed questions about pNFS technology, specifications and panel participant plans. Panel will consist of authors, co-authors, editors and co-editors of the NFSv4.1/Parallel NFS IETF Specification approved by IESG in December of 2008.

# Panelists

- Moderator: Joshua Konkle
  - ◆ pNFS Files Parallel Layout
- pNFS – Blocks Parallel Layout
  - ◆ David Black
  - ◆ Ken Gibson
- pNFS – Object Parallel Layout
  - ◆ Brent Welch
- pNFS – Files Parallel Layout
  - ◆ Mark Carlson

# What is the Solution?



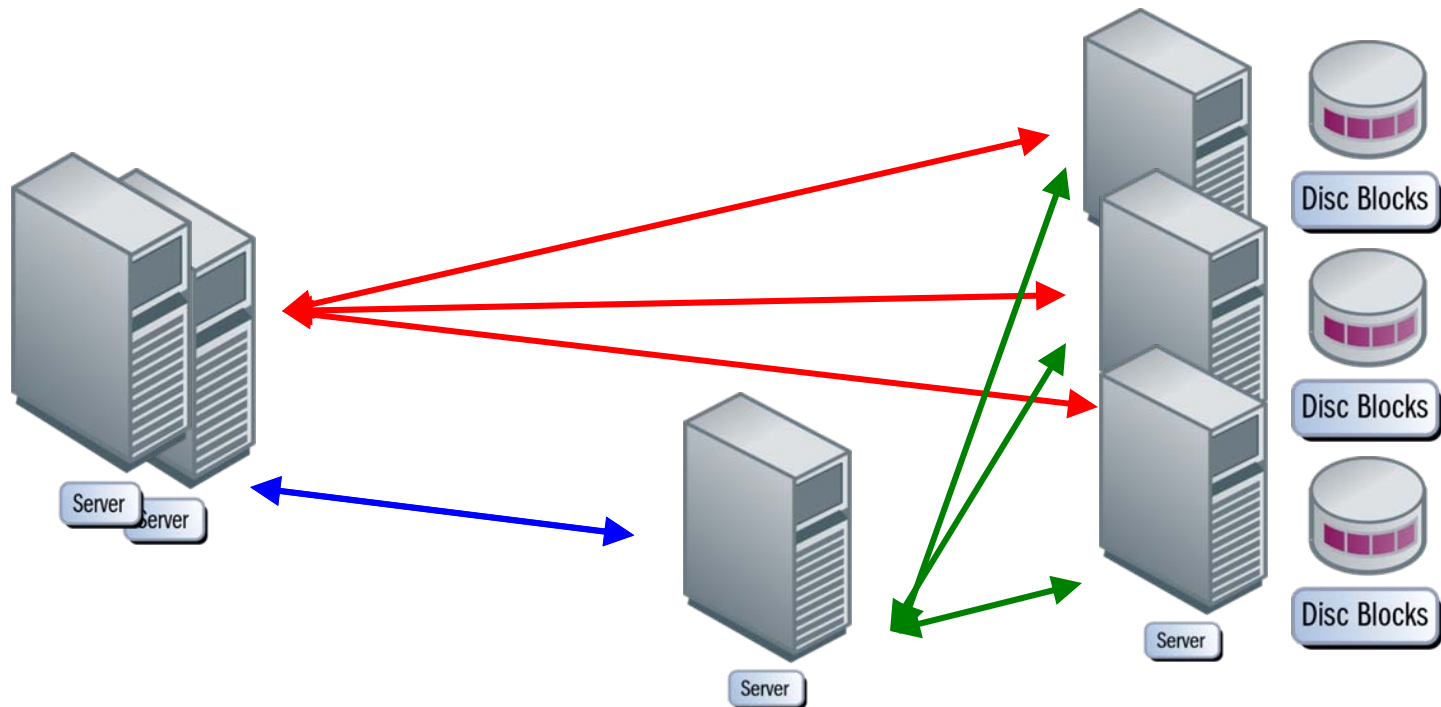
# NFSv4.1 – Parallel Data Storage

## ➤ NFSv4.1 – Three Storage Types

- ◆ Files – NFSv4.1
- ◆ Blocks – SCSI
- ◆ Objects – OSD T10

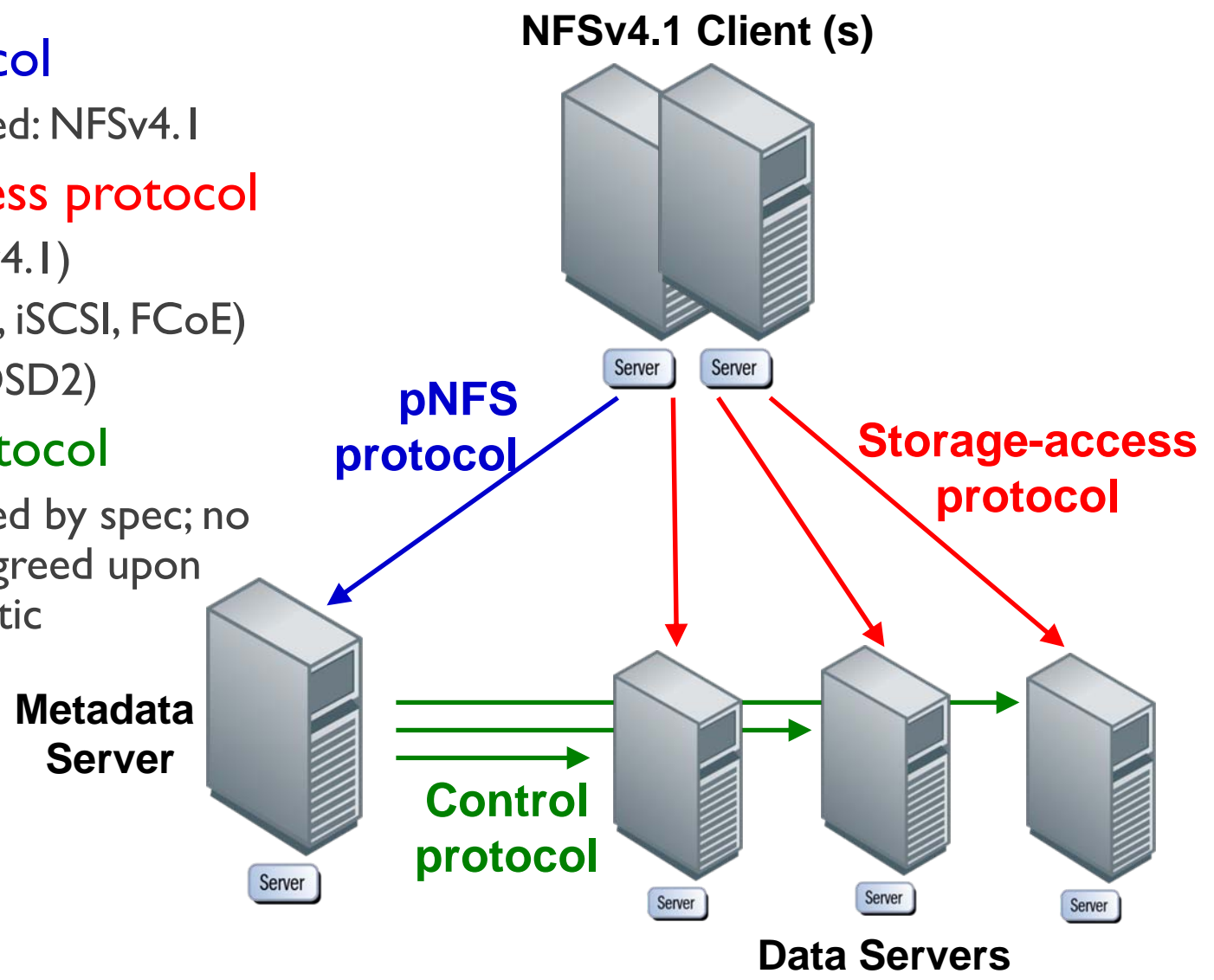
## ➤ Results in Improvements

- ◆ Global Name Space
- ◆ Head and Storage scaling
- ◆ Non disruptive upgrades while maintaining performance



# NFSv4.1 - Parallel NFS 101

- **pNFS protocol**
  - ◆ Standardized: NFSv4.1
- **Storage-access protocol**
  - ◆ Files (NFSv4.1)
  - ◆ Blocks (FC, iSCSI, FCoE)
  - ◆ Objects (OSD2)
- **Control protocol**
  - ◆ Not covered by spec; no generally agreed upon characteristic



# Questions – Client Technology

- When will a valid pNFS client be available?
- How does the parallel NFS block layout work?
- What's an object layout, how do objects compare to blocks/files?
- How do current cluster file systems work with pNFS client and server?
- Are there any working clients and servers available today? If not, then when?
- How is client access to data servers coordinated and controlled?
- Attendee Questions Encouraged...



# Questions – Files, Blocks and Objects **SNIA**

- How many layout types can there be?
- How does pNFS make managing a lot of systems easier?
- Can my application control how its data is striped?
- When can we expect to see real pNFS performance, not vendor claims based on older technology?
- How can I use pNFS in an enterprise environment; would it support non-disruptive (NDU) upgrades?
- Attendee Questions Encouraged...

# Questions – Data Management

- Can I retain data management practices I use today based on Snapshots and Volume replication?
- Can File, Object and Block layouts co-exist in the same storage network?
- Can a client use volumes accessed via each layout concurrently?
- I'm deploying a Unified Ethernet Fabric; how do I secure data access – files, blocks & objects?
- Attendee questions encouraged...

- Please send any questions or comments on this presentation to SNIA: [trackfilemgmt@snia.org](mailto:trackfilemgmt@snia.org)

**Many thanks to the following individuals  
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**- SNIA Education Committee**

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