This paper describes objective technical results and analysis. Any subjective views or opinions that might be expressed in the paper do not necessarily represent the views of the U.S. Department of Energy or the United States Government.

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Sandia National Laboratories

Sandia HPSS Site Update

Mike Martinez – SNL Production HPSS Lead

HPSS User Forum (HUF) 2022

U.S. DEPARTMENT OF ENERGY | NNSA

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Current

- Four production environments
  - RHEL7, HPSS v7.5.3, DB2 v10.5, HSI/HTAR 6.3, Local tools
- SpectraLogic libraries
  - Two 9-frame Tfinity, Two T950
  - LTO8 drives (40 each per Tfinity)
  - RAIT 3+1 for large files (>8GB)
- Disk Cache – larger environments
  - NetApp E5600 w/ 5 expansions
  - ~3PB, 32 virtual volumes
- Movers
  - 10Gb ethernet, FC direct connect tape, 16G FC disk

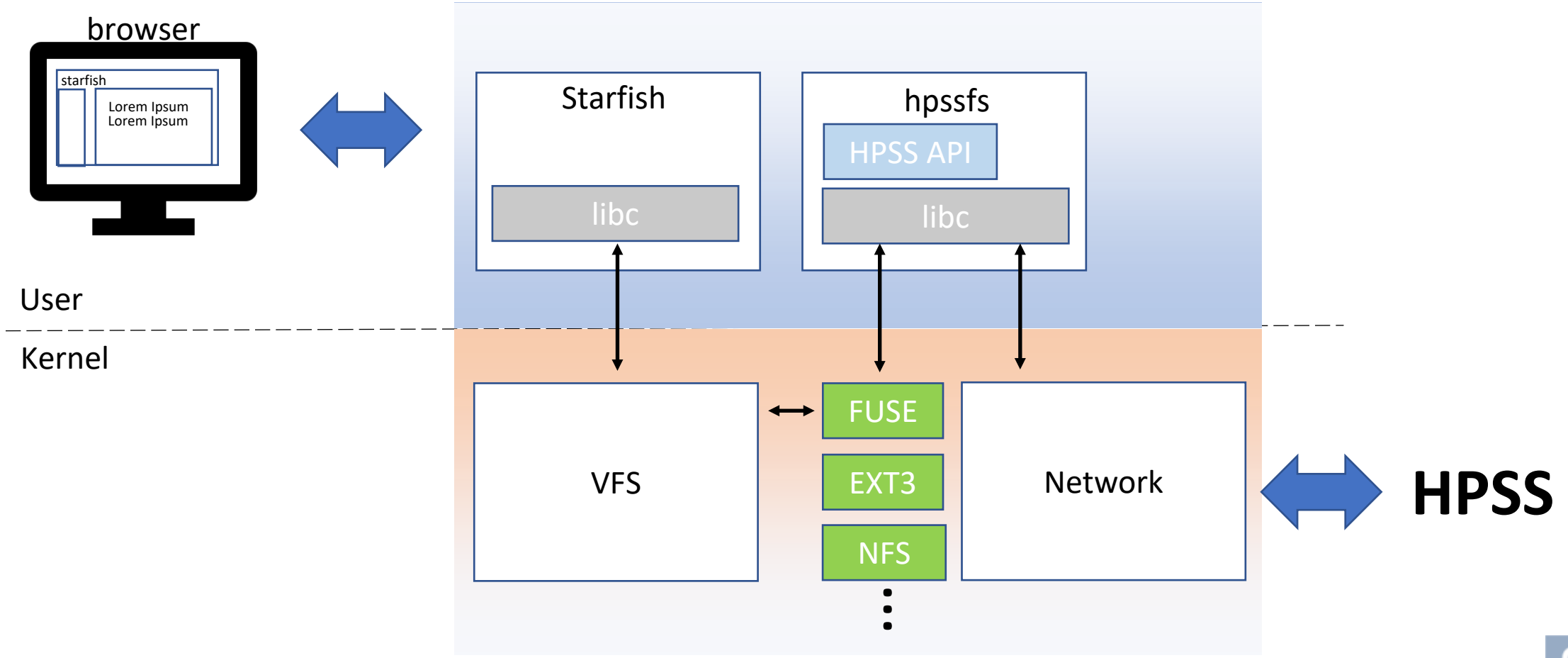
Tape Libraries

- SpectraLogic libraries purchased in 2020, installed 2020-2021
- All data migrated from Oracle/Sun/STK during 2021-2022
  - Oracle libraries and associated systems have been retired

HPSS-FUSE

- Implemented full HPSS-FUSE test environment during 2022
  - RHEL7, HPSS v7.5.3, FUSE 2.1
  - SpectraLogic T380 tape library
  - Test cluster mount/connectivity
- Starfish integration
  - Directed transfers
  - Filesystem crawl/scan – not ideal
- Next-generation HPSS-FUSE test in progress
  - RHEL8, HPSS v9.X, FUSE 2.2
  - Auto chcos, Starfish-Rumbler integration

Starfish driven HPSS-FUSE transfer



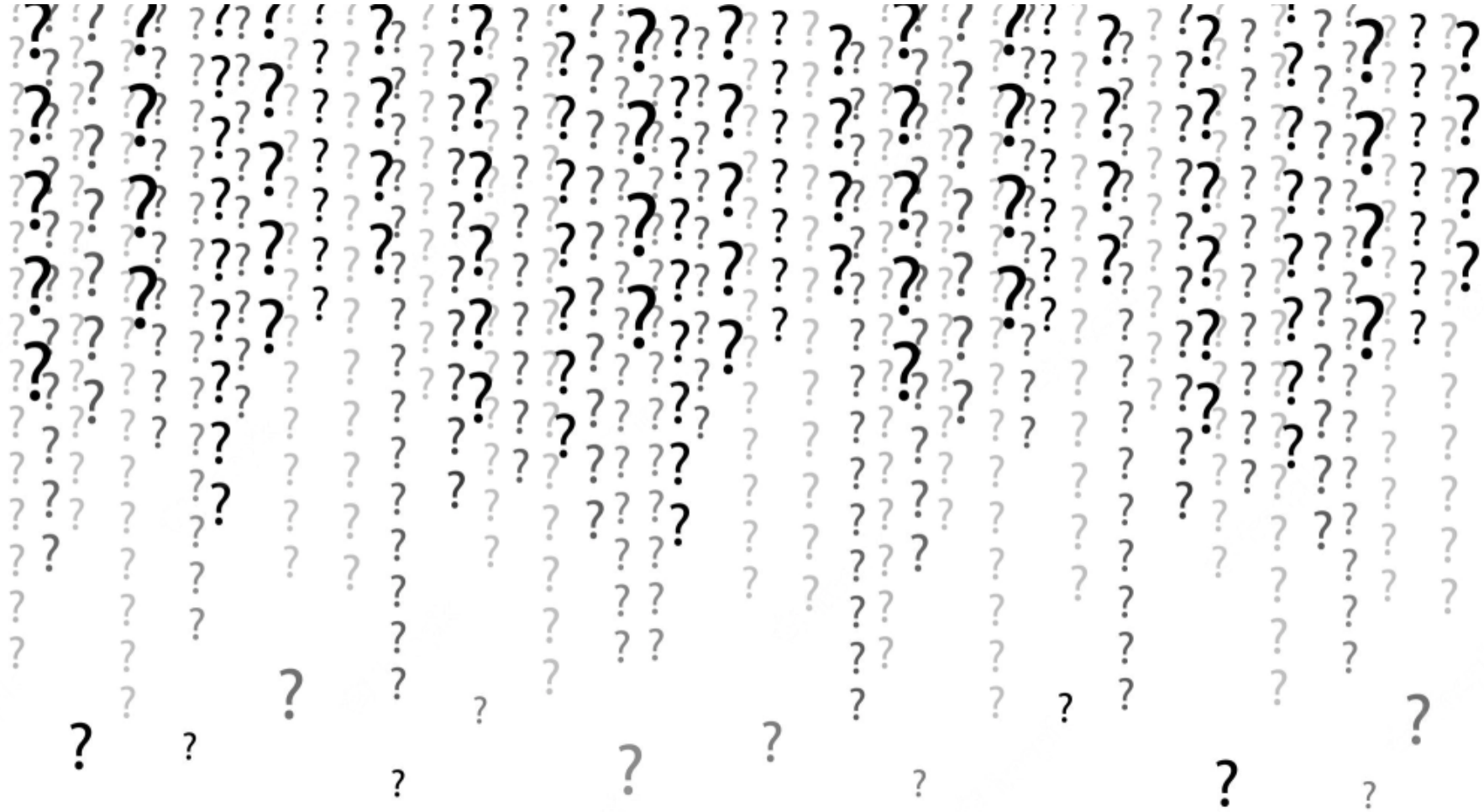
Collaborations

- 2022 contract with IBM HPSS support
  - Site survey, recommendations, report
  - Focus areas:
    - Specific HPSS settings
    - User usage, feedback
    - Growth opportunities
    - Path forward
- Sandia Analysis Workbench (SAW)
  - HPC user workflow platform
  - Work towards integration of HPSS interface(s) for seamless data transfer

Issues

- Small file performance, volume
- Metadata storage/backup/performance
- LTO8 hard write errors
  - Recent firmware upgrade to P380 for LTO8
- Interface support, simplification, education
  - User experience
  - Development priorities

Future

- HPSS version upgrades
  - 7.5.3 → 8.3 → 9.X → 10.X
- Back-end network upgrades
  - 10 Gbps → 40/100 Gbps
- Interface focus
  - Local tools, Web, FUSE
- LTO10 tape
- Disk cache upgrade/replacement
- Ansible playbooks for movers

Questions?