

# The Use and Integration of Distributed and Object-Based File-Systems at Brookhaven National Laboratory

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The roles of centralized and distributed storage at the RHIC/USATLAS Computing Facility have been undergoing a redefinition as the size and demands of computing resources continues to expand. Traditional NFS solutions, while simple to deploy and maintain, are marred by performance and scalability issues, whereas distributed software solutions such as PROOF and rootd are application specific, non-posix compliant, and do not present a unified namespace.

Hardware and software-based storage offer differing philosophies with respect to administration, data access, and how I/O bottlenecks are resolved. Panasas, a clustered, load-balanced storage appliance utilizing an object-based file system, has been key in mitigating the problems inherent in NFS centralized storage. Conversely, distributed software storage implementations such as dcache and xrootd have enabled individual compute nodes to actively participate as a unified “file server”, thus allowing one to reap the benefits of inexpensive hardware without sacrificing performance.

This talk will focus on the architecture of these file servers, how they are being utilized, and the specific issues each attempt to address. Furthermore, testing methodologies and expectations will be discussed as they pertain to the evaluation of new file servers.

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