

Post-doctoral and Post-Masters Positions in Distributed Storage and Parallel File Systems at the Oak Ridge National Laboratory

The Computer Science and Mathematics Division (CSMD) at the Oak Ridge National Laboratory (ORNL) (<http://www.ornl.gov>) is currently seeking highly qualified candidates for one or more postgraduate (postdoctoral or postmaster's) research positions in "distributed storage and parallel file systems".

The research projects will involve multiple facets of storage systems, including but not limited to

- Storage:
 - LUSTRE parallel file system development,
 - desktop storage scavenging,
 - caching,
 - performance analysis of storage systems,
 - storage and I/O virtualization,
- HPC Operations:
 - scientific data management,
 - supercomputing I/O operations
 - data staging,
 - checkpointing,
 - offloading,
 - parallel I/O,
 - data availability
 - end-user data delivery.
- Scheduling (and MetaScheduling)
 - PBS
 - MOAB
 - Torque
 - Meta-scheduling

The successful candidate will work closely with research staff in CSMD and faculty at North Carolina State University to develop better storage and I/O management techniques for the supercomputer storage subsystems and beyond. The successful candidate will have an opportunity to address and improve the data availability and the I/O bandwidth bottleneck problem for petascale storage systems.

Duties and responsibilities include:

- Work with staff to understand and build on existing distributed storage software
- Contribute ideas and code to numerous areas therein: caching, data availability, storage virtualization
- Analyze and improve day-to-day supercomputing I/O such as checkpointing, staging and offloading by building novel storage abstractions
- Write production quality software to be integrated into parallel file systems
- Proactively publish ideas and results in scientific conferences and journals

Desired qualifications:

- A Masters degree in Computer Science for the Post-Masters position with extensive systems development experience; publications in the storage area a definite plus
- A Ph.D. in Computer Science for the Post-doctoral position with specialization in storage or file systems with a strong publication record

- Extensive systems programming background using the C programming language
- Network programming: extensive socket-based programming
- Experience with the development of distributed storage systems or file systems:
 - LUSTRE or PVFS development
 - I/O scheduling, Virtual File System, file system drivers, file system caching
 - Parallel I/O libraries
 - Hands-on experience with any of the above a definite plus!
- Linux kernel development experience (scheduling, networking, memory management) preferred.
- An understanding of the various supercomputing storage offerings: parallel file systems, mass storage (HPSS), Grid data management tools (GridFTP, SRB, etc.); Hand-on experience with the above systems a definite plus!
- I/O bandwidth performance optimization/tuning, debugging of complex distributed systems software
- An understanding of I/O operations in the context of supercomputing: data staging, checkpointing, offloading, etc.
- Ability and desire to articulate ideas and scientific findings in peer-reviewed conferences
- Good communication skills: both written and spoken English

We are interested in hands-on researchers. Interested candidates can send their resumes, URLs with samples of existing publications, or samples of ongoing research, to Sudharshan S. Vazhkudai: vazhkudaiss@ornl.gov

No clearance is required for this position.

Please reference the position title and number (??), when corresponding about this position. Appointments are offered through the ORNL Postdoctoral and Postmaster's Research Associates Program (<http://www.ornl.gov/orise/edu/postdoc/pdneeds.htm>) administered by the Oak Ridge Institute for Science and Education (ORISE). Applications can be submitted via their website:

Postdoctoral: <http://www.ornl.gov/orise/edu/ornl/ornl-pd/ornlpdoc.htm>;

Postmaster's: <http://www.ornl.gov/orise/edu/ornl/ornl-pm/ornlpmas.htm>).

The postdoctoral and postmaster's programs are open to all qualified individuals without regard to race, color, age, religion, sex, national origin, physical or mental disability, or status as a Vietnam-era veteran or disabled veteran.