

Cyclotron computing

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This past year we increased the Cyclotron Institute's computing capacity and infrastructure. We continued the migration from SL 4.x (Scientific Linux 4.x) to SL 5.x, added three computational servers, two file servers allowing us to decoupling the data directories from the home directories, added server room cooling capacity and a computerized temperature warning system with automated server shutdown facilities. Our goal is to provide the Institute's personnel the computational and network resources necessary to allow them to carry out their research programs and the Institute's mission.

Last year we started the process of migrating administrative servers from SL 4.x to SL 5.x [1], developing disaster recovery plans as we went. We nearly finished the process with the AAA (Authentication, Authorization, and Accounting) servers, firewall servers and mail server still to be migrated. We will continue to run SL 4.x on all computational servers till a migration is required for security or compatibility reasons and run SL 5.x on any new administrative servers acquired. We added a configuration file synchronization system, PUPPET, which enables us to push out changes in configuration files from a central server, rather than logging on to each server and changing each file by hand.

This past year we added three new computational server, Dell PowerEdge 1950 with two Xeon 3.16GHz Quad Core processors, one for the lab and two for SJY-Group. We also relocated the 8-drive SATA enclosure [1], with it's drive slots now full and totaling 6T Bytes of data, from the main file server to its own server, a reallocated Dell PowerEdge computer. Separating the SATA data drives from the home drives allowed us to reduce the main file server's down time due to data drive issues which has impacted the lab at large. This also allowed us to migrate the main file server to SL 5.x and replace aging home drives with larger faster drives running in a RAID 5 configuration. Doing so, we doubled our home directory capacity, enhanced performance and increased storage reliability. Additionally we purchased a 12 drive slot SATA enclosure with 2TBytes of data and a new Dell PowerEdge R610 to augment our data serving capacity and also installed a 12 drive slot SATA enclosure with 3TBytes of data onto a reallocated Dell PowerEdge computer for SJY-Group.

This past year we suffered several server room cooling failures. In an effort to mitigate issues due to cooling loss, we added an air circulation system to pull cooler air from the subbasement and implemented an automated staged server shutdown system.

In an effort to supply the Institute the resources it needs to execute its mission, we have migrated additional administrative servers to SL 5.x, installed a file synchronization system, added computations servers, grown our data serving capacity, and finally to protect our investment, added an emergency cooling system with automated server shutdown.

[1] R. Burch and K. Hagel, *Progress in Research*, Cyclotron Institute, Texas A&M University (2006-2007), p.V-5.