

Cyclotron computing

R. Burch and K. Hagel

Our mission is to provide the Cyclotron Institute personnel with stable, fast, secure computational and network resources necessary for their research programs. This past year we upgraded the mail, firewall, list-server, and the password change service servers. We stopped the pursuit of virtualizing¹ due to difficulties with logistics including provisioning, maintenance, disaster-recovery and fail-over redundancy. We switched to using 35 Watt fan-less small form-factor PC's thus allowing us to better utilize server room rack space, power and cooling.

Further responding to user comments, we analyzed the mail server/mail client responsiveness¹ and found it lacking in its ability to handle the large graphics intensive emails utilized today. We replaced the aging mail server with a new stronger Dell PowerEdge server with dual quad core processors, 16GByte of RAM, RAID drives, and are running the Zimbra open-source mail system on a Ubuntu Long Term Support operating system. User mail was migrated to the new system with little or no loss. The new system currently handles the load without noticeable strain.

During the past year, the lab suffered a power-outage (voltage swings) which caused the primary firewall's disk to die. We switched to our secondary firewall which spontaneously rebooted every several days with increasing frequency. This was determined to be a hardware problem. To solve the problem, we built two new "twin" firewalls utilizing the 35 Watt fan-less small form-factor PC's mentioned above. These PC's appear to easily handle the network load providing full bandwidth on request with little to no processor load.

We also moved the data acquisition firewall, list-serve, syslog and web-password-change services each to 35 Watt small form-factor PC's. These changes help to reduce our power and cooling footprint and allow the reallocation of power and cooling to future new computational servers.

New hardware for mail, firewall, syslog, list-serve, and web-password-change servers as well as running the Zimbra for the mail service, and general maintenance allows us to continue to supply the Institute with stable, fast, and secure resources it needs to execute its mission.

[1] R. Burch and K. Hagel, *Progress in Research*, Cyclotron Institute, Texas A&M University (2010-2011), p.V-5