

Radiation monitor data logging

R. Burch, F. Abegglen, L. Gathings, and D. Menchaca,

Our mission is to provide the Cyclotron Institute accelerator users with the accelerator control system and networking resources necessary for the Institute research and development programs. This past year we developed preliminary display, logging and archiving of both the Canberra stack monitor and the Ludlum Measurements Inc (LMI) Radiation Monitor systems with injection of important events into the electronic logging system. A backup system was also implemented to maintain several years of history for the stack monitor archive, the LMI RAD monitor archive, and the electronic log as well as backups of accelerator control runtime and development software.

The Canberra stack monitor system utilizes the Canberra iCAM software to monitor the stack emissions. We set the iCAM software to write both the spectra snapshot file and the measurements file at once per minute. A new snapshot file is written every minute while the measurements file is appended. We wrote a small LabVIEW program which reads the snapshot file, plots the spectra and other snapshot values, moves the file into an archive directory which has the structure: /canberra/History/YYYY/MM/DD/. The LabVIEW program also moves the measurements file into the same directory as the snapshot files but at the beginning of each new day.

The LMI RAD system utilizes LMI detectors to monitor radiation levels in areas of interest. The LMI units broadcast their values. We wrote a small LabVIEW program which collects and plots these values and an erlang program which collects and logs values in an archive which has the directory structure: /rad/repo/YYYY/MM/DD/ with the file name CHXXX.HRYY.cvs, where XXX is the channel number and the YY is the hour.

A backup system for both the Canberra stack monitor and the LMI RAD system archives was implemented to provide adequate storage for several years of history. The backup system (Fig. 1) is a four tier system and includes the original archives, a primary NAS (Network Attached Storage) unit, a secondary NAS unit, and an eSATA disk attached to the secondary NAS for offsite backups.

The archives are remotely mounted to the primary NAS which takes snapshots every 4 hours and keeps the last 6 copies for 24 hours. Daily, weekly and monthly snapshots are also maintained. These copies are then synced to the secondary NAS for archival redundancy and again to the external disk for off-site backups. Control system accelerator control runtime and development software are also backed up in a similar manner.

Further development and refinements for the Canberra stack monitor and the LMI RAD area monitor system may include redundancy and report generation. These developments and those envisioned allows us to continue to supply the Institute with a stable, fast, and secure control system and radiation monitoring system.

Synology DS211+ Based Backup

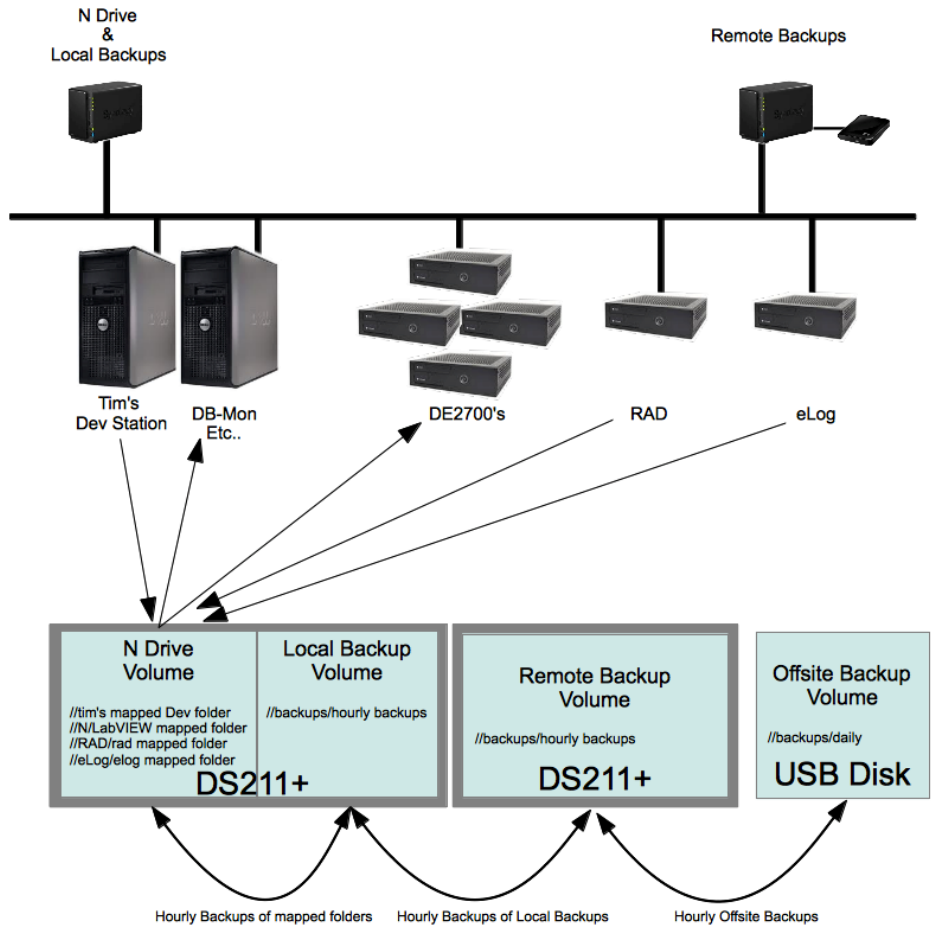


FIG. 1. Four tier Cyclotron Computer Control System Backup.