IT Inventory and Optimization

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Introduction

The Department of Energy (DOE) has an annual check of all the equipment and hardware it owns. All of the assets from their database need to be found during the check. The main task assigned to me for the summer was updating the LCLS section of Property Control and the LCLS/PCDS database. Aside from that, the PCDS server room needed some improvements, so I was tasked to track and optimize optical fibers, assist the PCDS IT group with the installation and assembly of hardware for LCLS, and organize and label all sort of cards, special cables, components, etc.

Research

The first task assigned to me was the collection of the PC numbers, host names, and rack locations of all the LCLS servers and switches in the hutches, control rooms, and server rooms. There were a total of seven hutches and seven control rooms, XRT, and several control rooms in Buildings 950, 999, 84 and 50, with up to 800 servers and switches.

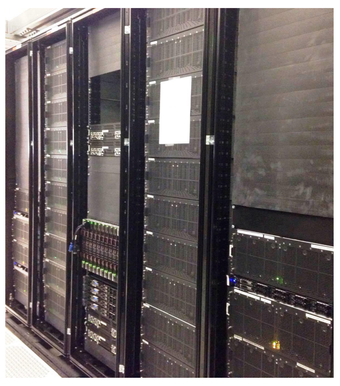

Fig 1. The servers and switches are housed in racks.

Fig 2. A PC number sticker on a switch.

After writing down the needed information for the servers and switches, the LCLS LCLS database had to be checked and some information had to be changed to make sure it was updated.

Afterwards, the information had to be updated in the Property Control database, a database that the DOE uses to track its properties in SLAC.

This first task took three weeks for me to complete, making sure and double-checking that I collected the correct set of information for each server, since the people in charge of the LCLS Property Control trusted me to update some sections of the database for them.

Aside from the databases, rack profiles also had to be updated. Rack profiles are visual representations of the racks and are done in Excel. They show how the rack is structured, with all the correct elevation, and the corresponding positions of the servers and switches on the racks.

Rack profiles help in planning for the new locations of servers that need to be added or moved. They need to be updated with any changes to the locations of servers and switches. Currently, I still update the databases and rack profiles every time changes are made.

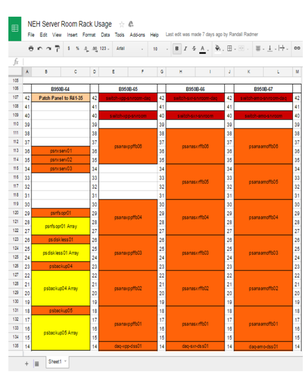

Fig 3. An example of a rack profile.

After updating rack profiles for the servers and switches, I also created a rack profile to keep track of the end points of more than 100 optical fibers. Optical fibers run from the PCDS server room in Building 950, through panels and pipes in the ceiling, to the hutches and into different systems. These optical fibers are important to connect different machines in all hutches and are essential to the experiments.

Fig 4. These optical fibers branch out from these racks to panels, and into different buildings through pipes.

The PCDS server room also serves as a storage room for different components for some of the hardware, such as hard drives, cables, video cards, etc. that are needed to install servers. My task was to separate these components and organize them into bins. I also had to label the cables with their corresponding lengths, and label the bins for each type of component it stored.

Fig 5. These bins in the PCDS server room house different components.

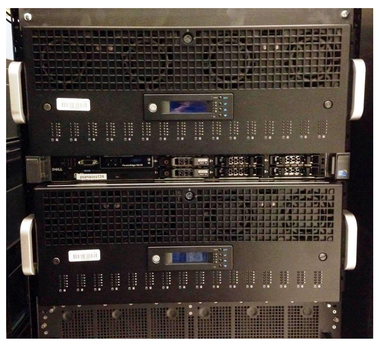

Fig 6. PETABYTE is the new medium storage system installed in B050.

Aside from doing work in the PCDS server room, I also did some work on PETABYTE, which is the new medium term storage system. I helped in installing it in the server room in Building 50. Actions and preparation for the new ONLINE monitoring system were done, and I helped in assembling some hardware needed for PETABYTE. I had to assemble up to 144 2.5” SSD Hard Drives that are to be installed in the new systems.

Moreover, other types of hardware also had to be installed by the LCLS/PCDS IT Group. During my time here, I worked closely with some of the members. I shadowed some of them and assisted them with what they had to do. My tasks included helping out in installing video cards in the control rooms for MFX, XPP, CXI, and XCS. Cabling for these control rooms also had to be fixed and organized.

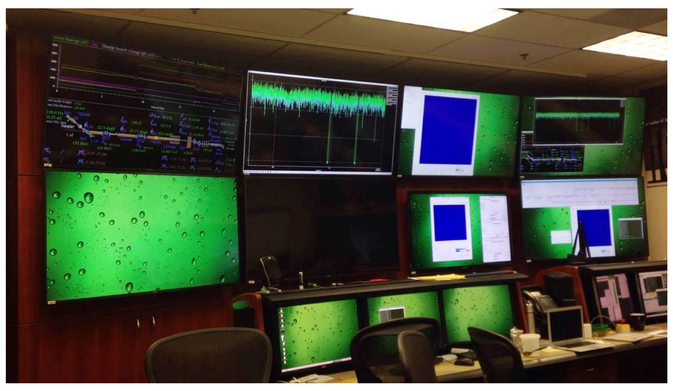

Fig 7. New screens are installed in the XPP hutch.

Overall, the PCDS IT Group takes care of the technical side that need to function for the experiments to be done. Working with them is very educational and informative.

Conclusions

The work I have done for PCDS has helped improve the efficiency of the IT and the Property Control departments.

Time that was previously spent on searching for SLAC property, hardware, cables, etc., and keeping the server room organized, clean and safe was saved. Troubleshooting problems of the fibers and systems will also be largely improved with the updated locations and labels.

Now, less time can be spent on unimportant things and more can be spent on doing the actual work.

Acknowledgments

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