Equipment move for SCRC

Late in August, we discovered that not only would we have to move all of our hardware to a new location due to building construction, but that it would have to be in the main New York University data center which is located down near Canal Street. (I can't give the exact location for security reasons). This location is a new, state of the art data center the size of half of a football field and houses several HPC clusters as well as a good portion of the NYU computing infrastructure. For many reasons, including policies on the age of some of our equipment, we have had to do a major upgrade of our hardware so it can be managed remotely, be mainly fault tolerant etc.

We decided that the easiest path would be to add more computing power to our private cloud, and add a significant amount of Network Attached Storage/ ISCSI storage with a 10gb network providing high bandwidth between the storage cloud and the computing cloud. Our goal was to be able to replace many of our older servers with machines in our cloud, as well as turn off a number of aging storage arrays with no loss of performance. This meant not only replacing many servers and storage arrays , but also developing a new network architecture and equipment to provide the necessary bandwidth.

We have now finalized our plans, which include adding 3 48TB storage devices with 10gb network access to them, as well as a dual processor 20 core, 256GB dell 910 server with dual 10gb nics and 8TB of local disk. Three netgear prosafe 12 port 10gb switches will provide the 10gb backbone, and 4 extreme summit x400-48t (1gb) switches are being repurposed by stacking them in a ring with 10gb between the switches. All servers and storage will have multiple 1gb and 10gb links to the 2 networks, so any single switch failure will only cause the loss of some bandwidth, but no downtime (and hence no cab ride downtown).

This upgraded environment should allow us to expand our new big data cluster by moving much of it into our cloud, but accessing local disk on our 5 VMware servers as well as the new high speed storage. Most of our HPC cluster nodes will also be in the cloud. Since the VMware servers will have a shared, virtual distributed switch connecting all of them, we will also be able to provide some parallel processing across our cluster.

The move is scheduled for early December, and we still have many pieces that have to fall into place. There is a lot of equipment on order and a lot of old equipment to be excised. It is a busy fall.

We hope to be able to do the move in 2 stages, and by using VMware snapshots, keep the downtime to a minimum. But that is another post.

Posted 18th October 2013 by Norman White

Labels: 10gb big data cloud computing cloud storage data center migration HADOOP high speed network HPCVirtualization