



### **Introductions**

- Dr. Sideli thanked those that responded to the recent email request for topic suggestions.
- Irv Bruckstein with CUIT was introduced to talk about Virtualization.

### **Virtualization**

- Virtualization is being looked at as a way to share space and processing cycles as well as providing more uptime for applications.
- It allows for more than one operating system to run on a server at a time, allowing applications can to run as well.
- ESX can be installed to allow a number of Virtual Machines (using any OS) to run off of one server.
- Since the hardware/server is no longer tied to just one OS, servers can be consolidated and provide the same functionality more efficiently by using less hardware.
- VMotion is a Virtualization feature that can move applications from one server to another with less than a minute's down time. This could also frequently eliminate the need for technicians to be on site with the server during outages.
- Snapshot images can be made of a system's baseline configurations, allowing for set up of additional Virtual Machines as they are needed.
- Morningside is looking to use Virtualization to consolidate hardware by estimates of 50%.
- An exploratory initiative to collaborate with others involved in research computing at Columbia has been sponsored.
- Using VM to build a cluster of research systems allows for guaranteed priority on space/cycles to those who donate or opt in to the cluster.
- One challenge in using VM this way is that time must be rigidly scheduled on the cluster.
- The cost of the EXS license is approximately \$10-15k per system. The vendor is willing to give Columbia a license for research only, and would like to do a joint press release if this happens.

### **Considerations:**

- Previously researched issues for the CUMC network are that the Virtualized/VMotion clusters must be on the same logical network.
- Physical memory does not necessarily have to be divided for the Virtual Machines; limits can be set and Virtualization can manage memory for the system.
- OS partitioning is typically done by carving out space on the SAN; space size must be considered for backups and snapshots.
- Non-research use will cost more but still have a steep educational discount.
- Groups are typically willing to have their servers/hardware managed for them but do not want to give up cycles; contributors would have top priority on their own machines.
- The Morningside Data Center is manned at all times, providing constant support for those who opt in.

### **Data Centers and Floor Space**

- There is a small amount of surplus space at the Morningside Data Center that might be shared. Cooling/power availability is not currently known.
- Long term solutions such as sharing resources and obtaining space in Manhattanville should be considered by all.
- Columbia is large enough that this additional space at other locations should be required for both normal use and disaster recovery.
- In the next fiscal year, groups at CUMC must begin paying rent; pooling resources and obtaining space at Manhattanville would help defer some of this new cost.
- Virtualization would help avoid issues that can occur with physical moves.

**Exchange Project**

- The initiative to move the approximately 1600 users at CUMC from Oracle to Exchange is being researched due to issues with transferring data for all current workstations.
- Smartphones have also posed some issues, due in part to service delivery and the variety of devices being used.
- Utilities to assist with data migration are being researched. A solution to keep the migration time as short as possible is needed to avoid offices such as the Dean's from dealing with delays in being able to use a shared CUMC Calendar.

**Next Meeting**

- Items from the previous meeting will be revisited; this will also occur regularly for the Roundtable.
- Database issues, Disaster Recovery plans/locations will be discussed.
- The next scheduled Roundtable is November 7<sup>th</sup>, 3pm at the Merritt Conference Room.