Research and Administrative Computing Committee
Meeting Summary
April 1, 2009 1:30-2:30pm
NUL Forum Room & Lurie 7-127

Attendees:
✓ Ted Belytschko, MEAS ✓ James Hurley, Budget ✓ Sarah Pritchard, Library
✓ Craig Bina, WCAS ✓ Vicky Kalogera, WCAS ✓ Mort Rahimi, NUIT
✓ Tom Board, NUIT ✓ William Kath, MEAS ✓ Jennifer Roden, WCAS
✓ Betty Brugger, NUIT ✓ Marv Lofquist, WCAS ✓ Mark Satterthwaite, KSM
✓ Rex Chisolm, FSOM ✓ Richard Lueptow, MEAS ✓ George Schatz, WCAS
✓ Noshir Contractor, MEAS/SOC ✓ Franziska Lys, WCAS ✓ Jean Shedd, Provost's Office
✓ Rebecca Cooke, FSOM ✓ Rick Morris, SOC ✓ Ingrid Stafford, Treasurer
✓ Holly Falk-Krzesinski, Research ✓ Martin Mueller, WCAS ✓ Patricia Todus, NUIT
✓ Tassos Fragkos, WCAS ✓ Ron Nayler, FM ✓ Jay Walsh, Research
✓ Catherine Grimsted, WCAS ✓ Joseph Paris, NUIT

Guests:

1. Data Center Project Status
   a. Evanston research room expansion. Tom Board reported that room 173 had been rearranged and was being expanded through removal of the wall into the main room (172). A fence has been erected to divide the research space from the balance of the 172 administrative computing systems. Tom cautioned that until the power remediation project is completed, there will only be power for two additional racks in the new research space. Tom also described the overall strategy for space utilization at the Evanston data center between research, HPC, storage and administration. See attached presentation slides.
   b. Evanston center power remediation project. Tom Board said that the engineering work for the power remediation project was to be completed by April 3rd and that bidding the job would take place during April. The project should be completed in November. Other than the two additional research racks described above, all additional power is now reserved for the incoming HPC cluster.
   c. New engineering project to examine and price expansion of Chicago data center. Tom Board described a new project now underway to engineer and ultimately price the cost to expand the Chicago NUIT space by approximately 650 sq ft to accommodate additional computer racks. If this engineering were to lead to an approved construction project, Tom estimated that it would be 18 months before the space was available. See attached presentation slides.

2. NUIT Reports
   a. Virtualization of administrative systems. Tom Board presented a status report on virtualization of administrative systems, reporting that 212 virtual servers were in operation – up from 156 in December. Over 60 current physical servers are earmarked for conversion to virtual before the end of August. In response to a question, Tom said that the 212 virtual servers are being run on 12 host systems. Tom also described the need to extend virtualization to current central applications in order to avoid significant future hardware replacement or maintenance expenses that will occur in 2012. See attached presentation slides.
   b. Research HPC cluster and storage RFP. Tom Board reported on the state of the acquisition process. Finalist vendors are submitting best-and-final-offer proposals while NUIT and faculty are conducting benchmark tests using vendor-provided cluster facilities. Tom expected to have a final recommendation within two weeks. Joe Paris then spoke about the maintenance and scheduling software selection process.
3. Other items
   a. Academic Red Hat Linux licensing. Joe Paris stated that the HPC cluster purchase process has prompted NUIT to adopt the academic Red Hat Linux operating system as the basic OS for the cluster. In the future, scheduling software will allow faculty to specify the OS to be used for a particular job; however, the large Red Hat community at Northwestern will benefit from use of the same OS on the cluster. NUIT will take over the license fee and distribution server.
   b. Status of hiring research/HPC support staff into A&RT. Joe Paris reported that A&RT had added one new staff member as HPC engineer and that two additional positions were being recruited. Jim Hurley stated that the University’s financial situation prompted an elimination of about 25 mostly staff and faculty positions previously approved but not yet filled, including seven IT positions, which included these two HPC support staff. Vicky Kalogera, Rex Chisholm and others expressed concern that these positions not be delayed since they would directly influence the successful utilization of the new HPC cluster. Mort Rahimi, Jim Hurley and Jean Shedd indicated they would meet to find means to fund these two positions, which will need to be done within available IT resources.
   c. Descriptions of central data center hosting services and processes for requesting services. Tom Board offered the documents for comment. Tom said that his unit was now operating under these policies, which coordinate consideration of physical and virtual hosting requests with the Provost’s Office and other units.
   d. Intention to end support of Solaris operating system within the data center. Tom Board announced that the data centers would be moving away from the SUN Solaris operating system in favor of Linux. Current applications, which rely upon Solaris, will be coordinated between the owner and NUIT to investigate migration to Linux at an upcoming software release. New applications will be implemented on Linux. This will also allow the data center to retire expensive hardware most commonly used with Solaris.
   e. Future cluster acquisition planning. Jean Shedd described the efforts underway to set standards for approaching commitments for computational resources in grants and faculty recruiting. She emphasized that this process involves close collaboration between the Office of the Provost, Office for Research, deans, and NUIT. The goal is to adopt a process and financial model for supporting research computing that can serve faculty well, attract new faculty, and will efficiently use resources. Jean expects there to be a combination of information sources and assistance for recruiting new faculty, education for all faculty on the use of high-performance computing, and support for computing through commitment of compute-hours and underlying compute cores as needed. She cited recent success in recruiting a candidate under this model. The Office of the Provost will be speaking to the deans about this matter.
   f. Effect of NIH and NSF solicitations under the economic stimulus package. Mort Rahimi described efforts underway with the faculty to identify and submit possible research projects for funding under the recent federal program. One particular proposal, between Feinberg and Life Science faculty in Evanston, could result in significant additional research computing and storage facilities.
Evanston data center

Current Data Center Layout
Evanston data center

Future Data Center Layout

Research

Admin

Storage

HPC

Legacy
Chicago data center

Additional Space Under Study

Possible access

Room 243
400 sq ft
i-static VCT

Room 234
700 sq ft
i-static VCT

Room 232
800 sq ft
Anti-static VCT
Virtualization

A Server Cost "Wall" is Coming

- Mainframe
- Miscellaneous
- Monitoring
- Departmental
- Infrastructure System
- Platform Service
- Storage Service
- Central System
- Enterprise System

Server and storage replacement or post-warranty maintenance costs
### Virtualization

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<th>Total in Feb-09</th>
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<th>Add’l by Aug-10</th>
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<td>Total</td>
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<td>212</td>
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- **3-month increase**
- **planned replacement of physical servers**

### Production

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