

CSCI DEPARTMENT LABORATORY COMMITTEE

SUMMARY OF FACULTY SURVEY FORM

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I. Introduction

The College of Engineering, Computer Science, and Construction Management (ECC) houses a “large site”¹ to support its computing and technology needs. Currently, the College manages 17 labs² with a combined total of more than 300 machines (not including machines in faculty and department offices), 16 servers³, multiple operating systems, supporting approximately 20,000 users on the Unix servers⁴, using about 90GB of file usage⁵, spanned over 350GB of disk space^{6,7}. Of the 17 labs in the College, four are Computer Science labs⁸. The labs are all managed by one (1) system administrator; hence, it is important that faculty needs are addressed so as to maximize the utility of our available resources.

One of the charges of the Department of Computer Science’s Laboratory Committee is to solicit faculty computing needs to support their teaching, research, and service activities. This information is collected annually so that the appropriate entities are informed of the status of the Department’s computing infrastructure as well as any perceived deficiencies that need to be addressed.

This document presents Computer Science faculty computing needs organized into three categories: high priority, medium priority, and low priority. Items listed and detailed within each category are ordered in descending urgency as determined by the faculty.

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- 1 According to SAGE (<http://www.sage.org/>, a Special Interest Group of the *USENIX Association*) a “large site” is characterized by “100 or more computers, potentially running more than one operating system, and 100 or more users.”
 - 2 College of ECC labs are in the O’Connell Technology Center rooms OCNL 133 (30 computers), 136 (36), 241 (26), 244 (30), 246 (15), 251 (29), 255 (1 server), 334 (8 computers), 337 (12), 339 (3), 343 (5), 344 (6), 346 (6), 431 (25), 434 (39), 438 (38), in Langdon Hall room LANG 120 (31 computers), and in Plumas Hall room PLMS 121a (8 computers).
 - 3 College of ECC servers include tiglon, cougar, jaguar, a file server, a web server, a mail server, an authentication server, two DNS servers, five windows servers, a license server, and an admin/backend support server.
 - 4 Approximately half of these users are also active on the Windows Domain.
 - 5 Not including (operating) system files.
 - 6 Not including spare partitions in case of emergencies.
 - 7 There is not a permanent storage solution for each user on the Windows Domain. However, there is a “permanent” Faculty storage location for students to turn in homework, and a temporary storage location for everyone. The Faculty storage is roughly 5Gb, and the Temp Space is roughly 10Gb.
 - 8 Computer Science computing labs are OCNL 241, 244, 246, and 251 – a total of 100 machines.

II. High Priority Needs

A. Secure Additional System Administration Personnel to Support Elbert Chan

- i. Rationale: The College has a computing system with an fairly complex configuration requiring system administrator to oversee. The department believes that most, if not all, of its ongoing laboratory/computing needs will be addressed if the College's system administration group, currently consisting of just one "Intermediate/Advanced"⁹ system administrator, were modified with additional personnel – at least at the "Junior,"¹⁰ but preferably at the "Intermediate/Advanced" or "Senior"¹¹ level.
- i. Previous solutions providing additional support personnel for Mr. Chan through work study students with roughly an equivalent of "Novice"¹² level experience provide only temporary relief for the daunting task of managing the College computing systems.

B. Address Issues with OCNL Labs

- i. Rationale: The OCNL Labs are the primary on-campus computing resource students use within our College. The level of quality we maintain our labs is a clear indication of our level of commitment to deliver quality education to our students.
- ii. Question: Has OCNL been taken out of the Campus Technology Infrastructure Initiative (TII) list?
- iii. Network issues in computer labs in OCNL; e.g. why does it take 5-10 minutes for students in a class to get through the login prompt? Potential solutions:
 - a) authentication server for domain control
 - b) proxy server for caching
 - c) additional solutions as recommended by Clarke Steinback for OCNL 251/241:
 - for O'Connell 241:
 - Single 48 port 10/100/1000 switch. Approximate cost \$600 – 800.
 - Two (2) 24 port 10/100/1000 switches. Approximate cost \$120 – 140 each for unmanaged totaling ~\$250 or \$140 – 250 each for managed totaling ~\$400.
 - Two (2) 16 port 10/100/1000 switches. Approximate cost \$200 – 250 each for unmanaged totaling ~\$400 or \$300 each for managed totaling ~\$600.
 - Four (4) 8 port 10/100/1000 switches. As low as \$55 each, though commonly \$80 – 100 each for unmanaged totaling ~\$220 to 320.
 - Note: When printers and print server are added, then an additional switch would be needed. If any cable is being run for the current solution, it would be best to consider running a CAT 6 to the interior wall that the printers would be against.

9 SAGE, *Job Descriptions for System Administrators*, <http://www.sage.org/field/jobs-descriptions.mm#Intermediate>.

10 SAGE, *Job Descriptions for System Administrators*, <http://www.sage.org/field/jobs-descriptions.mm#Junior>.

11 SAGE, *Job Descriptions for System Administrators*, <http://www.sage.org/field/jobs-descriptions.mm#Senior>.

12 SAGE, *Job Descriptions for System Administrators*, <http://www.sage.org/field/jobs-descriptions.mm#Novice>.

- O'Connell 251:
 - Single 48 port 10/100/1000 switch. Approximate cost \$600 – 800.
 - Two (2) 24 port 10/100/1000 switches. Approximate cost \$120 – 140 each for unmanaged totaling ~\$250 or \$140 – 250 each for managed totaling ~\$400.
 - Three (3) 16 port 10/100/1000 switches. Approximate cost \$200 – 250 each for unmanaged totaling ~\$600 or \$300 each for managed totaling ~\$900.
 - Six (6) 8 port 10/100/1000 switches. As low as \$55 each, though commonly \$80 – 100 each for unmanaged totaling ~\$330 to 480.
 - Note: With the instructor station in this lab on a different wall than the other computers, we would either need a separate cable run from the switch room or a cable run from the front wall to the back wall where the local switch would be. Alternatively, we could 'live' with the poor connectivity on the instructor workstation if all the other workstations are improved.

iv. Software:

- a) Upgrade all Windows-based machines to run MS WinXP
- b) Make it standard procedure to verify with faculty that the configuration of the ghost image to use at the start of each semester actually works.
- c) guarantee uniform software setup/availability between labs (e.g. Adobe Acrobat Reader, MS-based compilers, other support software)

C. Upgrade Networks Lab (OCNL 340)

i. Hardware:

- a) 26 workstations (includes 1 instructor workstation): minimum 3GHz Intel Xeon processor, 1GB RAM, 2 80GB hard drives; approx \$1.5K/workstation
- b) 2 servers: minimum 3GHz dual Intel Xeon processor, 2GB RAM, 2 160GB hard drives; approx \$3K/server
- c) 1 inkjet printer (optional)
- d) 1 projector (connected to instructor workstation)
- e) networking cables
- f) 5 Cisco 2600 (<http://cisco.com/en/US/products/hw/routers/ps259/>) or better multi-service series routers
- g) 5 Cisco 7200 (<http://cisco.com/en/US/products/hw/routers/ps341/>) series or better service routers
- h) 3 Cisco Catalyst 2800 (<http://cisco.com/en/US/products/hw/switches/ps597/>) series switches

ii. Software:

- a) *CiscoWorks* (<http://cisco.com/en/US/products/sw/netmgmtsw/>) network management software

iii. Current plans:

- a) Hilzer and Challenger submitted a Microsoft Research¹³ grant for a security/networks lab
- b) Hilzer and Zenor (EECE) will work/negotiate with Cisco to try to get the Cisco routers and switches donated or discounted

D. Setup a web-based turn-in application for submitting programming assignments ...

E. Setup an e-mail list management software (L-Soft's LISTSERV, <http://www.lsoft.com/>) for the College.

F. Upgrade Thin Client Lab (OCNL 244)

i. Hardware:

- a) Additional Sun Fire (<http://www.sun.com/servers/>) AMD Opteron-based dual-processor server to serve as a Linux server
 - preferably a Sun Fire V20z (<http://www.sun.com/servers/entry/v20z/>) or better (Note: the faster Sun Fire server will be used as a Linux server; the other Sun Fire will be used as a Windows server.)
 - current configuration: thin clients can connect to *tiglon* (Sun Enterprise 3500 server running Solaris 2.8), *leopard* (Sun Fire V20z running MS Windows server 2003), or *jaguar* (Dell 1850 dual Intel Xeon running Slackware 10.0)
 - current usage indicates the Windows side is not so heavily used

ii. Software:

- a) need multiple MATLAB licenses to run on the Linux server – currently have multiple licenses for the Windows server and only 1 for the Linux server.

G. Partition hard drives in Computer Graphics Lab (OCNL 251) from 20GB to 30GB to support *Unreal* graphics applications.

III. Medium Priority Needs

A. Hardware: Technology in classrooms and labs:

- i. Goal: setup projection systems in all teaching classrooms and labs in OCNL (HP Digital Projection Systems, see <http://www.shopping.hp.com>; InFocus Projection Systems, see <http://www.infocus.com>)
- ii. Install SMART Technologies “smart board” *interactive whiteboards* in OCNL classrooms (see <http://www.smarttech.com>)
- iii. Interactive classroom feedback system (GTCO CalComp Peripherals’ *InterWrite PRS*, see <http://www.gtcocalcomp.com/interwriteprs.htm>).

¹³ Microsoft Research, External Research and Programs, Trustworthy Computing Curriculum 2005 Request for Proposals (RFP), http://research.microsoft.com/ur/us/fundingopps/RFPs/TWC_Curriculum_2005_RFP.aspx

- B. Acquire department license(s) for Adobe *Acrobat Professional* to create, control, and deliver Adobe PDF documents (see <http://www.adobe.com/products/acrobatpro/>)
- C. Acquire department license(s) for Macromedia *Dream Weaver*, web development tool to efficiently design, develop and maintain websites and applications (see <http://www.macromedia.com/software/dreamweaver/>)
- D. Check out similarity and differences between The Mathwork's *MATLAB* (see <http://www.mathworks.com/products/matlab/>) and Wolfram Research's *Mathematica* (see <http://www.wolfram.com/products/mathematica/>); in particular, available licensing options.

IV. Low Priority Needs

A. Hardware

- i. Update/upgrade printers in faculty offices
- ii. Update/upgrade faculty station in OCNL 214, department conference room
- iii. Provide faculty access to color printers

B. Software support for Spring 2006 classes

- i. Bloodshed *Dev-C++* (<http://www.bloodshed.net/devcpp.html>, freeware)
- ii. *JFLAP*: Java Formal Language and Automata Package (<http://www.jflap.org/>, freeware)
- iii. *Weka 3*: Data Mining Software in Java (<http://www.cs.waikato.ac.nz/ml/weka/>, freeware)