EECS Instructional Computing - Review and Plans Fall 2012

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Mission Statement

The EECS Instructional Support Group (ISG) installs and maintains networked computers that are used by EECS classes. ISG provides computer accounts for instructors and students in the Instructional labs and on Instructional servers. ISG purchases, installs and maintains application software needed for classes. ISG supports instructional labs in Cory Hall, Soda Hall and Sutardja-Dai Hall.

ISG wishes to anticipate and meet the computing needs of instructors and students in EECS courses and to provide support for new and innovative learning environments. We wish to be accessible and responsive to requests for service. We also wish to learn about new and interesting technologies that may be of value in this service.

Organizational Scope

These are functions in which ISG interacts with other UCB support groups:

▶ we use EECS department services (IDSG) for
  Active Directory, disk space, network access and security scans
▶ we synchronize our user accounts with the EECS department (IDSG)
▶ we obtain enrollments from the Registrar (Student Information Services)
▶ we obtain cardkey numbers from the CAl1 office
▶ we submit cardkey authorization to our labs in batch uploads to UCPD
▶ we bill students' voluntary printer charges to CARS
▶ we manage the computers in engineering labs with ESG
▶ we manage the licenses for Synopsys/TCAD/HSPICE with the Device Group
▶ we manage the licenses for Cadence with the BSAC group
▶ we manage the licenses for Maya and Renderman with the BCAM group

Recent Improvements
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1) 330 Soda: New Lab for Parallel Computing

   Thanks to Prof Yelick and Intel, we obtained 28 new Dell Precision
   T5500 Workstations in 330 Soda for use by CS194-15 (Engineering
   Parallel Software) and other classes (August 2010).

2) Icluster: Increased capacity for Big Data

   Thanks to Prof Canny and Intel, we increased the hardware on our 26-
   node cluster to 16-GB or 32-GB RAM and 2-TB disks. This was to benefit
   CS294-1 (Behavioral Data Mining) running MarkLogic, CS250 (VLSI Systems
   Design) running Synopsys, and several classes running MapReduce.

3) 353 Cory: replaced 10-year-old PCs for Circuit Simulation

   With yet another generous donation from Intel, we replaced 12 10-year-
   old PCs with ZT systems (i7 cpu, 16-GB RAM, 2-TB disk). The new
   systems run Windows7 (the old systems could not), to the benefit of
   EE105 (Devices and Circuits) and EE141 (Digital Integrated Circuits)
   running Ltspice, Hspice.

4) 277 & 349 Soda: added 12 new PCs for Windows applications

   We added 12 more ZT systems (i7 cpu, 16-GB RAM, 2-TB disk, Win7) with
   all of the software that is normally installed in EE labs in Cory, for
   extra seats while room 140 Cory is out of service during renovations.
   In Summer 2012, these systems will probably be moved to 353 Cory to
   complete the replacement of old PCs there.

5) 277 Soda: 100MB network for students' laptops

   12 network ports have been enabled with "wired AirBears", allowing
   students to plug in their laptops to the wired network "legally". They
   authenticate onto the network via a WEB browser, just as with the
   wireless AirBears network. However, this connection provides a 1-Gb
   bandwidth. This is to address complaints that the wireless network
   becomes saturated and slow in our crowded Soda Hall labs.

Pending Improvements
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1) 140 Cory: 6000 SF lab modernization and showcase

   Texas Instruments is funding a major structural and equipment
   renovation to the EE40/42/100/140 (Microelectronic Circuits, Linear
   Integrated Circuits) lab in 140 Cory. There are details in
   http://www.eecs.berkeley.edu/Cory/TI/. The new lab will be ready for
   Fall 2013 classes.

2) 200 SDH: new chairs

   We have cached some funds to replace the chairs in the 200 SDH Mac lab.
   The best of the old chairs will be used to replace damaged chairs on
   the second floor of Soda.

3) 271/273/275/277/283 Soda: 5750 SF lab modernization and showcase

   The CS Division is planning a 3-year project to renovate the labs on
   the second floor of Soda. (This will have to be done between
   semesters, because we cannot take those rooms out of service.) Those
   labs have become decrepit after 18 years of hard use. We will consult
   with the faculty to consider innovative features that we might include.

4) 105 Cory: replace 10-year-old PCs for signals and systems computations

   In Spring 2013, we expect to have funding to replace the 30 10-year-old
   PCs in 105 Cory with new ZT systems (i7 cpu, 16-GB RAM, 2-TB disk,
   Win7). This will benefit EE20N (Systems and Signals) and other courses
   that use Matlab and LabView in 105 Cory.

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Budget Cuts

Since 2008, our state-funded budget for salaries and equipment has
decreased by 20% ($110K) while our course enrollments have increased by
31% (1520 students). The chart below dramatizes the situation.
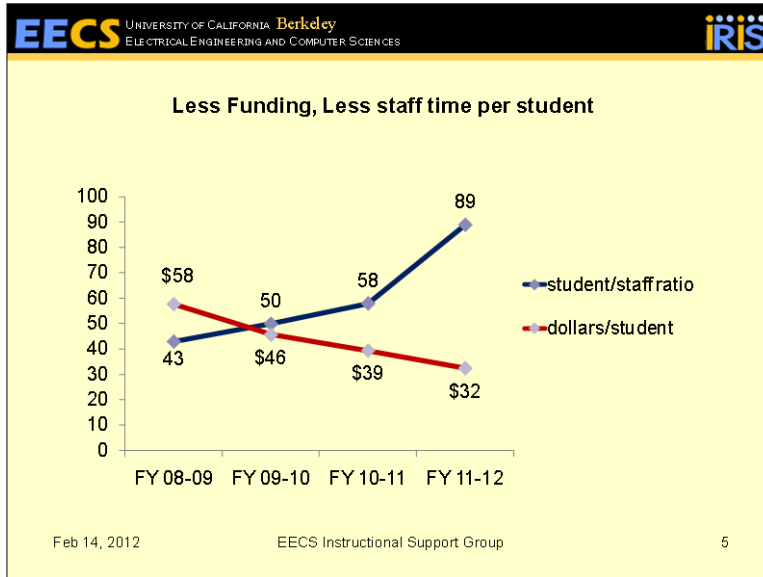
In 2008, ISG consisted
of 6 career staff
positions. Because of
the budget cuts, we laid
off one employee in 2009
and eliminated the
position. A second
staff member resigned in
August 2010, and we did
not refill that
position. Instead, we
have reallocated the
funds to our budget for
equipment, which will be
spent on critical
upgrades. However, it
is also a loss of 22%
(50 hours/week) of staff
time since 2008.

The instructional staff aspires to provide custom IT solutions to serve
the needs of EECS instructors. It is ideal when we can provide services
that are a direct benefit to instructors and students, such as

    - porting customized software for classes
    - providing specific software development environments quickly
    - enabling new mobile devices for labs and projects
    - providing administrative services for course WEB sites

However, much of our time is spent doing necessary background services such
as software patching, hardware maintenance and account management. The
budget cut drives us to look for creative solutions to reduce the time we
spend on these tasks. Some possibilities include:

1) Reduce the maintenance of compute servers by supporting low-cost
   virtual servers for students to do course assignments.

2) Reduce the maintenance of workstations by providing better services for
   student-owned laptops (access to network, files, printers, licenses).

3) Reduce the cost of software by sharing licenses with other departments.

4) Establish partnerships with industry, other UCB IT groups and with UCB
   student organizations to share solutions of common interest.

Development Goals

   We conduct periodic surveys of students for their opinions about the
   computing resources. (http://inst.eecs.berkeley.edu/~inst/surveys).
   Based on these surveys, on requests from our instructors and on our own
   observations, our group has these current development goals:

   1) Replace 80 SunRays with Linux PCs and 4 servers, ensure that all CS
      classes can run on Linux. Estimated cost: $120K for computers.

   2) Provide more rapid response to requests for additional computers and
      networked services for classes. Setting up new computers is too
      labor-intensive. So, enable students to deploy their own VMs on our
      computers. Some classes have already done this. Our servers would
      have space to store VMs that students could run on our servers, on our
      workstations, on their laptops and on commercial sites such as the EC2
      or the VMWare Student Cloud. Wired gigabit AirBears connections would
      allow for the quick transfer of large VM image files from laptops.
      Estimated cost: unknown hardware costs; several hrs/wk of IT staff.

   3) Provide resources for online course materials: deploy Camtasia
      stations for recording simple tutorials; update our Netshow streaming
      video server with an open source, versatile streaming service; plan
      for the permanent archiving of WEB sites & videos (disk/tape space,
      access rights, ownership,labor, cost)? Estimated cost: $12K to
      replace Netshow, $3K/year to store and archive the increasing content.

   4) Enable student-owned laptops to access our printers and software
      license servers. Estimated cost: several hrs/wk of IT staff for
      development and support.

Funding Wish List
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   1) Upgrade Metrics for EE143 to Win7 version $ 76000
   2) Replace old chairs in 3 labs $ 18000
   3) Replace Netshow01 video streaming server and software $ 12000
   4) Renovate 105 Cory: new furniture, wiring, A/V $ 30000
   5) Replace the SunRays and SUN SPARC servers $ 120000
   6) Replace 4 Windows Remote Desktop hosts, buy RDC licenses $ 25000
   7) Replace 8 PCs (circa 2003) in 111 Cory for EE117 $ 10000
   8) Replace 8 PCs (circa 2002) in 218 Cory for EE143 $ 10000
   9) Install HD projectors in 6 labs $ 12000
                                                       (total) $ 313000

Notable Events

   See http://inst.eecs.berkeley.edu/notices.html for current events.

        Nov 30 - some licenses and servers were/are down

               Nov 30, 12:30pm:

               We have restored access to these servers, for licenses and software
               including Cadence, Synopsys, Xilinx, Maya, WindRiver, ADS:

               Cory (Synopsys licenses for entire dept)
               License-srv, License-srv2 (licenses for numerous products)
               Pulsar, Quasar (UNIX login servers, Cadence for EE130, etc)
               Icluster* (Hadoop cluster, Synopsys for CS250, etc)

               The other servers listed below may still down and will be rebooted
               on Monday (Dec 3).

               Nov 29, 815pm:

               * This problem has reoccured at 8:15pm. We don't know when it
               * will be fixed, but it is likely that the systems listed below
               * will be down until at least 9am Friday.

               Nov 29, 6pm:

               From about 4:30pm-6pm, these Instructional servers were down:

               Cory (Synopsys licenses for entire dept)
               License-srv, License-srv2 (licenses for numerous products)
               Ildap2 (backup instructional UNIX password server)
               Pulsar, Quasar (UNIX login servers)
               Iserver* (Windows RDC servers)
               Icluster* (Hadoop cluster and CS250)
               Netshow01, California, Iesg (ESG WEB pages and video streaming)
               Icom1, Ilinux1, Bcom* (Linux login servers)

               A circuit breaker failed in one of the server rooms. It was not
               apparently related to the multi-building power outage this morning.

        Nov 29 - Power outage this morning

               This morning Thursday, 11/29, at approximately 8:40am there was
               a 12 minute power outage in Cory, Soda and Sutardja Dai Halls.
               It included the entire North East quadrant of Campus.

               Most of the Instructional servers stayed up because of UPSes in
               the server rooms, or they rebooted cleanly. A few UNIX servers
               (Cory, Pulsar, Quasar, ICom1) need to be rebooted manually and
               will be up by 11am.

               Reason of failure is unknown. Please see these sites for more
               information:

               https://iris.eecs.berkeley.edu/news/7913-temporary-campus-power-outage-nov
               http://ucbsystems.org/category/active/unscheduled-outage/

        Nov 16 - We're Hiring!

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        We're looking for a few students who have interest and aptitude for:

        * systems administration (configure software, security, etc)
        * building interactive WEB sites (via Drupal, Django, or etc)
        * lab maintenance and improvements

        On the job training, flexible work hours, including winter break.

        Here's more information about the job and about applying:
        http://inst.eecs.berkeley.edu/~kevinm/jobs/

        We look forward to hearing from you!

        The Instructional Support Group
        http://inst.eecs.berkeley.edu/
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Nov 20 - new computers: Linux servers, Windows in Soda

        We have recently added these new "computers for EECS coursework"
        (/~inst/iesglabs.html):

        * 9 servers running Linux; login using 'ssh':

                bcom11.eecs    Tyan, Ubuntu 12.04 LTS Linux
                bcom16.eecs    Tyan, Ubuntu 12.04 LTS Linux
                bcom17.eecs    Tyan, Ubuntu 12.04 LTS Linux
                bcom18.eecs    Tyan, CentOS 6.2 Linux
                bcom19.eecs    Tyan, CentOS 6.2 Linux
                bcom20.eecs    Dell PE1950, CentOS 6.2 Linux
                bcom21.eecs    Dell PE1950, Debian 6.0.5 Linux
                bcom22.eecs    Dell PE1950, Debian 6.0.5 Linux
                bcom23.eecs    Dell PE1950, Debian 6.0.5 Linux

        * 12 PCs (i7 cpu, 16-GB RAM, 2-TB drive, Win7) in 353 Cory (for EE105)
        *  8 PCs (i7 cpu, 16-GB RAM, 2-TB drive, Win7) in 277 Soda
        *  4 PCs (i7 cpu, 16-GB RAM, 2-TB drive, Win7) in 349 Soda

        Students in EE classes that are assigned to labs in Cory Hall can
        also use the PCs in 277 and 349 Soda.
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Sep 21 - new Synopsys licenses were installed today

        A new license was installed for Synopsys at about 9:30pm.  Users
        may have experienced some license errors for a few minutes while
        the server was restarted.   Please report any problems to
        inst@eecs.berkeley.edu.

        There is more information about Synopsys at
         http://inst.eecs.berkeley.edu/cgi-bin/pub.cgi?file=synopsys.help
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Sep 20 - WEB server and some UNIX logins were down, 3:50-4:30pm

        There was a network outage in our Soda machine room from about
        3:50-4:10pm, and that caused many of the NFS filesystem connections
        on our UNIX systems to freeze.  We had to reboot some systems to
        fix that.  That included our LDAP server for UNIX passwords, which
        took about 30 minutes to rebuid its database.

        http://inst.eecs was rebooted and the course WEB pages were available
        again at about 5pm.
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Sep 18 - if your cardkey doesn't work...
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Most students' cardkeys (aka CAL1 cards) are activated automatically
during the first 2 weeks of the semester for the EECS labs that they
need for their classes.

If you are enrolled via TeleBears and other students in your class
have access to a lab but you don't, then you should bring your CAL1
card to the CS Front Office in 387 Soda (weekdays 8am-noon, 1pm-4pm).
They can verify which labs you should have and update the cardkey
database if needed.

Concurrent Enrollment students cannot get CAL1 cardkeys, but they
can pay for a temporary cardkey at 387 Soda.

For information about the cardkeys:
http://inst.eecs.berkeley.edu/cgi-bin/pub.cgi?file=cardkey.help
http://inst.eecs.berkeley.edu/cgi-bin/pub.cgi?file=calnet.help

For information about the lab rooms and schedules:
http://inst.eecs.berkeley.edu/~inst/iesglabs.html
http://inst.eecs.berkeley.edu/~inst/lab-schedules

This is only about getting access to EECS instructional labs.

Jan 2012 - this server was updated; you may need to update your .htaccess files

Please see "http://inst.eecs.berkeley.edu/setup.html#modauth"

What if you are threatened in a lab?

Please see
http://inst.eecs.berkeley.edu/cgi-bin/pub.cgi?file=lab-safety.help
for information about seeking help while you are in one of our labs.

For additional reports, please see https://inst.eecs.berkeley.edu/reports
For additional information, please contact me:

  Kevin Mullally, ISG Manager
  EECS Instructional Support Group
  378 Cory Hall, (510) 643-6141
  kevinm@eecs.berkeley.edu
  http://inst.eecs.berkeley.edu/