Lab and Construction News

New HCI Lab

The new HCI lab is due for use in second session 2001, and is likely to be equipped with Macs. There have been initial discussions regarding configuration, though this is likely to change in the light of conversations with suppliers.

New Thesis Lab

The new undergraduate thesis lab in the Samuels Building has been set up and is open. Half of the computers have been running Linux for some time. However, as reported earlier, there have been a number of small and solvable
but numerous problems getting Solaris onto the new generation of Intel-based hardware and there have been delays in getting the other half of the computers (which had been designated as Solaris computers) installed and running.

Given the delays that have happened and that it is getting into the busy end of session, we installed Linux onto about two thirds of the remaining (designated-Solaris) computers last week. This left seven computers that we have been installing this week. Unfortunately, we are now discovering that how many bad ports there are on the old concentrator driving the Samuels Building, and have patched in another switch and are running a number of sockets into that. This has confused and delayed getting these last computers working. The last few should be on-line by the time of the meeting.

New Systems

Windows support

Another much-delayed project, the replacement of the venerable wincenter server with a grunty linux server running a number of VMware sessions.

The system is now running, and can be accessed via the vm command on all CSG-managed unix boxes, which will pop up a window running a virtual Intel computer running NT. It is a little slower than a similar wincenter session, but is a real NT session rather than wincenter’s multi-user graft onto an NT 3.51 kernel. It will also be fairly easy to upgrade to Win2k (which is impossible with wincenter).

Each NT session is a brand new copy of an image. Any changes or damage are discarded at the end of the session.

Several have been using it for a few days, but we have not load tested it yet and although the system fundamentally works there may yet be a few surprises. Similarly, it is not yet clear how many sessions will happily run on our server, though some arithmetic suggests somewhere between 10 and 20 is likely. We shall see.

Simple expansion is to similarly configure another server.

We are also looking at configuring and easily distributable VMware machine onto any or all of the newer linux boxes on people’s desks, so that VMware runs locally. This will run faster and makes it viable to save state between sessions.

Late news: it still seems that there are problems running multiple sessions, current suspicions are that it might be related to SMP lock problem. See the note on wagner a little further on.

Mac Servers

To provide better infrastructure support for the increasing number of Macintoshes in the Admin group and the Student Office, Chris has been working on server structure. Where there was once a single server that did most of everything, we now three servers to separately handle backups, database server and school file server.

Chris reports:
All the mac servers (Digde, Dodge, Tethys) have had OS upgrades to system 9.1 as well as memory and hard disk additions.

The school file server Didge has been upgraded from a peer to peer machine to a full 50 client Apple share IP server. Meaning that shortage of connections is a thing of the past and that throughput to the box has increased dramatically. It also supports http and FTP and apple clients via IP.

A new filemaker DB server (tethys) has been setup to host the schools filemaker databases and can serve dbs to mac and windows clients via IP, IPX and appletalk...It’s capable of hosting 150 database to 250 clients.

It resolves the bad practice of hosting the same database off didge peer to peer multisizer.

The same school fileserver (didge) hosted the backups as well...This has/is being moved to dodge and is using the new ultrim drive which will enable non filter backups early tests indicate throughput to tape to be in the order of 460 meg a minute.

Upgrades and failures

New CPU Servers

Of the three new CPU servers, we have had hardware problems with two and are currently trying to resolve these with the supplier.

This means that the linux server (wagner) is up and running, but the Solaris server (a new handel) is not yet running, nor is the linux-based simulation server yet running.

Fortunately the load on our other CPU servers has not become critical, hence I perceive that the urgency for these computers is not critical and this issues has taken a lower priority than handling burglary, building access issues, the thesis lab, and a few other issues. I hope to get these resolved next week.

New file-server

The new file-server (called eno, somewhat in the minimalist tradition of glass and cage, though some are saying he is only minimally a composer) is back from the supplier with several configuration problems fixed. It appears to be working and we will be putting it online after some testing.

It is the same sort of system as glass: a linux-based RAID system providing NFS service. Much of the software involved has been developed or tuned locally by Neil Brown and is now part of standard linux distributions.

Solaris 8

Solaris 8 is now ready to roll. It seems to interact fine with the rest of our environment (including Solaris 2.6).
At this stage, there does not seem to be a lot of need to migrate to Solaris 8 except for new hardware where drivers do not exist under Solaris 2.6. Nevertheless, if anyone feels the need to upgrade to Solaris 8, please contact me or Neil Brown.

Linux

Linux is now being installed happily on any new hardware. Basic functionality is definitely there, but a number of systems and applications still need work and with a number of other things out of the way we are making a priority out of working on these.


If you are aware of any problems that are not on this list, please let us know.

There does appear to be an problem with Wagner, where it occasionally locks up. So far it looks like a kernel locking problem in the SMP code (lock not being released). Matt is working at trying to get more information about this, and, hopefully, a remedy.

The School Modem Pool

This is not actually a failure, but we are getting the first instances of saturation in the new(ish) school modem pool, where for several periods of several minutes last Sunday night all sixty modems were in use.

Presuming that this becomes more of a problem, our options include:

- Asking modem users to disconnect periodically.
- Reminding people that the school will pay for (much of) cable/ADSL installation and usage.
- Expand the modem pool by another 30 modems (though that is fairly expensive and if people are going to be moving to cable/ADSL then it might not be particularly useful for long. There are also fairly long lead times involved).

New Tape Subsystem

For a number of years DLT tapes have provided the basis of our tape subsystem for backups and archival storage. For a number of reasons it is now time to look for a new technology. These include:

- DLT has now reached the end of its life. New contenders for its rôle include SDLT and LTO (similar technologies, but ‘next generation’).
- We are close to putting a new file-server on-line, which will significantly increase our storage capacity and hence our need for backup capacity.
The need to push ahead a little quicker has been made more pointed recently in that a couple of our current tape drives are proving troublesome, and indeed we currently have no redundant tape drives. All three series of backups are still working fine but another serious tape failure would be a problem. A description of the three backup series can be seen at


After some research, we are currently in the process of purchasing a new tape subsystem consisting of an HP LTO library unit containing 40 tapes (can be expanded in multiples of 20 in the future) with two tape drives (can have up to two per 20 tape-slots). That is, it will more than cover what we need for the moment, and can be expanded considerably should we need to over its lifetime. It also has a much higher throughput than DLT (which, you might recall, was considered pretty darn good at the time) which will have the advantage of narrowing the slowly growing backup window. Actually, it will be interesting to see where the bottlenecks then show up. We expect to have to redesign the ‘funnel’ feeding the tapes as a development of this.

Security

Thievery

In the week surrounding Easter we four new Dell computers were stolen from the new pipe lab. The computers had been secured but tools had been used to cut through the security. This is a problem of some concern and unless we can stop it, it is likely to continue and become a serious expense and inconvenience for the school.

As a result of this, we are in the process of arranging:

- requiring people to individually swipe into the pipe and bugle labs after 6 pm and on the weekends;
- hiring security guards to patrol the lab after 6 pm and on the weekends;
- installing cameras in a number of labs and associated areas, with monitors and tape recording in Security and monitors at the Undergraduate Help Desk; and
- looking at installing a ‘hot wire’ security system for the newer computers over the winter break.

It seems indeed that the level of theft around the university is increasing, with several data projectors having been stolen from lecture theatres in nearby building in the past few weeks.

This is all a depressing waste of time and money.

Student Access to Buildings

Approximately half our undergraduate labs are in buildings that are not normally open to students at night and on the weekends. For the second half
of session this becomes a serious problem (due to the demand for lab space). In previous years we have made arrangements to allow some students access to Electrical Engineering (to the third floor, we already control access to the undercroft), and now need to make similar arrangement for K17.

Discussions with Security about individual (restricted) swipe access for students has made it clear that, with their current system:

- They are unwilling to consider a list of over 3,000 students (to enter manually).
- They are extremely reluctant to deal with students in person if they can possibly help it.
- Their only ways of collectively dealing with students is via whatever-it-is-that-course-codes-are-now-called (eg, 3978).

That is, we can easily described (and hence enable appropriate access for) all of our students, but those for whom we provide service subjects are difficult to describe to Security. Fortunately, most of our ‘service’ students are first years which gives a natural grouping and hence a way of approaching the problem. Our current plan is to enable access to EE and K17 for our students; and to target first years toward the EE undercroft and the ME undercroft. Any students that are then inconvenienced (maybe second years doing service subjects) can then be handled individually.

**Staff Issues**

**Reclassifications: John and David**

This has finally happened. (I was premature in announcing it last report, but it has now happened.)

John’s position is now a Computing Support Team Leader (as are Neil, Peter and Zain), which is a broadbanded position spanning levels 7/8/9. David’s position is now a Computing Support Officer in John’s team (as are Kieran and Amalan), which is a broadbanded position spanning levels 5/6/7.

**New Hardware Person Required**

It is becoming increasingly apparent that the school is clearly short of staff resources for hardware support. The school now has over 700 computers used in a number of different modes; this number is increasing. The CSG is struggling to provide this support and it is clearly going to get harder. Over the next few months I expect to be working towards employing a new CSG person with particular responsibility for hardware support.