Project Universe: 2003 February: Progress Report

Other formats: .dvi[1], .ps[2], .pdf[3].

1. Former Eric Clients

Eric was purchased with 12 Sun workstations. One is used as a console for Eric, Cosmos and sometimes Kenny. The other 11 are distributed around the three research groups (in Chemistry, Civil Engineering and Mechanical Engineering) which funded the purchase of Eric.

The 11 workstations were NIS+ clients of Eric (and were used as X clients). Owing to Project Universe each client need totally reconfiguring.

Nine of the machines have been:

1. Installed with Solaris 8 from scratch and patched.
2. Secured further with IP Filter.
3. Left in the charge of John Chinn (Mech Eng), Steven Liem (Chemistry) and Dave Reilly (Civil Eng).

The remaining two machines are in storage (in Civil Engineering).

Issue: It is not clear that the former Eric clients are being actively administered/secured/patched. Yet these machines have NFS access to Eric.

2. Eric: NIS+ to NIS

Eric has been converted from NIS+ to NIS/YP in order to work with LDAP in the same was as Cosmos. Since Eric is used for long-running jobs it was decided to attempt the conversion with the machine up and running in standard user-mode (Init Level 3). All users were emailed (twice) to warn of possible disruption. The conversion was achieved in a few (seriously stressed) hours with a few minor hiccups. Most users seemed happy that their jobs kept running. A certain professor complained of his research group being thrown into chaos because of the changes. It was politely but firmly explained to him in great detail, with much supporting evidence and documentation that his claims were groundless.

3. eUMISTification of Cosmos and Eric (LDAP Authentication)

Originally Cosmos used NIS/YP for account details and authentication (with a small number of "local" — `/etc` — users); Eric used NIS+ for account details and authentication.

Both machines now authenticate standard users via the LDAP server (`padl.umist.ac.uk`) and both use NIS/YP for holding account details of most users. The original "VIP" accounts/users of Eric are now local (`/etc`).

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[1] `http://talby.csu.umist.ac.uk/~isd/_universe_project/prog_report_2003Feb.dvi`
[2] `http://talby.csu.umist.ac.uk/~isd/_universe_project/prog_report_2003Feb.ps`
[3] `http://talby.csu.umist.ac.uk/~isd/_universe_project/prog_report_2003Feb.pdf`

4. Universe

The illusion of the existence of “Universe” (Cosmos and Eric being the constituent parts) has been created:

- Users now can (and should) access their Cosmos/Eric accounts using the hostname `<username>.unix.umist.ac.uk`. DNS entries are automatically created — thanks to Cornelis and Rachid for this.
- Documentation has been altered to reflect the “existence” of Universe.

5. Home Directories

The “VIP” accounts on Eric have their original home-directories in tact. These exist on the two D1000 disk arrays attached to Eric.

Standard (non VIP) Eric users and Cosmos users both see disk-space which exists on the disk array attached to Cosmos — Cosmos’ disks are NFS-mounted on Eric. (As a rule, new Universe users are given an account which may be on either machine, but some “advanced” users have accounts on both.)

6. System Monitoring: Homegrown and SNMP

Eric is currently monitored by a homegrown suite of Perl — email is sent to Simon when, for example, partitions get (nearly) full.

Cosmos is monitored by SNMP. Currently partition-usage is the only monitored thingy. Work is continuing on this. (Thanks to Gresh.)

7. ACLs, Telnet, FTP, SSH/SCP, `rexec`

- The SSH Communications `sshd` has been installed and configured on both machines.
- SSH and SFTP have been installed on the PC Cluster machines (thanks to Ian (and Chris?) for this).
- Access to both via `rexec` has been blocked. (Most eXceed users used `rexec` to connect until recently — this was a security nightmare as the Solaris `in.rexecd` (daemon) did not log anything!)
- The router-level ACLs have been changed for Eric (Peter S.); similar changes are planned for Cosmos, but these are complicated by the presence of the virus-scanner software and updates on `ftp.umist.ac.uk` which currently points to Cosmos :
  - Telnet and FTP access are blocked from outside `.umist.ac.uk`. Telnet and FTP access will be totally blocked at some point (when?).
  - Access to Eric is now global — via SSH/SCP only.
  - Most ports are now blocked to both machines.

Issue: when is access to Telnet and FTP from within `.umist.ac.uk` to be blocked?

Issue: when can we move `ftp.umist.ac.uk` off of Cosmos? The presence of the virus-scanner software prevents us from blocking FTP access for Cosmos.

8. Security: Remote Logging, Patching, IP Filter, IDS

Several further steps have been taken to ensure the security of Cosmos and Eric (in addition to regular patching):

- IP Filter (a stateful packet filter) has been installed on both machines and configured to block all but required ports.
- Both now copy all system logs to Gresh's logserver.

Further steps are planned:

- Intrusion detection systems are being evaluated for installation.

9. Documentation

The ISD Unix documentation has been rewritten and expanded[4]. A move to the new style is underway (the pages themselves are managed by Simon and are wrapped with the new style by Andrea's PHP script).

10. Galaxy

The former galaxy nodes are currently as follows:

Galaxy 1

Complains "Target 0 rejects BUS DEVICE RESET", which sounds like the SCSI card has died or possibly the (internal) disk attached to the card is unhappy. I have not investigated further.

Galaxy 2, 4 and 5

These are healthy and form three-quarters of the current NQS batch system attached to Cosmos.

Galaxy 3

Occasionally falls over and `/var/adm/messages` shows corresponding "Uncorrectable memory error".

Galaxy 6

Is healthy and configured ready to be added to the batch system.

Galaxy 7

Is apparently healthy.

Galaxy 8 and 9

Galaxy 8 was experiencing intermittent disk problems; Galaxy 9 would not boot. Solution: cannibalise! Galaxy 8 now has the disk from Galaxy 9 and has become `oldbob` and is being looked after by Sajjad. Galaxy9 won't boot (system board problem?) and now has a dodgy disk too!

Galaxy 10

Is Simon's Solaris 9 box.

Galaxy 11

Is an Ultra 1 and is with Sajjad.

[4] `http://www.umist.ac.uk/isd/unix`

11. Applications

Commercial Apps

Zaiem...

Gnome

By way of dragging Cosmos out of the Stone-Age, Gnome 1.2 has been compiled and installed on Cosmos. This can be used to create fully-graphical desktop on a user's screen, via `gnome-session`, either in one large window, or as a second desktop (see the Universe Web-based documentation[5] for more).

12. Queue/Batch on Eric: LFS and NQS — SUNWhpc

The licence for LFS has run out and is too darned expensive to renew. Zaiem is looking at installing NQS on Eric.

In addition, we need something which supports multi-processor programming (apparently LFS helped here). SUNWhpc/CRE has now been installed after a little headbanging.

13. Account Clear Out: Cosmos and Eric

There were many "old" accounts on Cosmos: many accounts were apparently unused; many accounts had non eUMIST usernames and in many cases it was difficult or proved impossible to determine the account's owner!

Accounts on Cosmos now all have eUMIST usernames and all have corresponding entries in the URS [Page 4]. Files associated with terminated accounts have been compressed and backed up.

Many of the owners of VIP accounts on Eric have left. Files associated...

14. The URS, New Accounts, Terminated Accounts

All accounts on Cosmos and Eric (except VIP accounts on Eric) have corresponding entries in the URS. Accounts are now created via the following procedure:

1. "Cosmos" account is created in the URS for a user.
2. Necessary attributes are added to the LDAP front end to the NDS, `padl.umist.ac.uk`.
3. Account is created on Cosmos and the user is emailed.

This procedure is not yet fully automated, but could be made so.

Accounts are terminated via the following proceedure:

1. A username expires in the URS.
2. Account is removed from Cosmos and associated files compressed.

Again, not yet fully automated...

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[5] `http://www.umist.ac.uk/isd/unix/accessing_cosmos.html`