Computing Strategy

School of Informatics

28 November 2007

Contents

1. Long-term vision and strategic objectives

The aim of the Informatics Computing Service is to ensure that members of the School of Informatics (staff, students and visitors) receive computing services necessary for their research, teaching and knowledge transfer activities. These services should be efficient, state-of-the-art, fit to users' requirements, and good value for money. Appendix A outlines the evaluation processes that we have established to ensure that we are fulfilling this aim.

Strategic objectives

We have four principal strategic objectives underpinning the Informatics Computing Strategy:

S1. Maintenance, review and update of state-of-the-art computing environment for all members of the school.

S2. Increased interoperability of Informatics Computing with College and IS services.

S3. Development and deployment of new computing services.

S4. Engagement with international best practice.

In addition to these overall strategic objectives, we have specific objectives relating to the computing infrastructure and to the activities of the school: research, teaching and knowledge transfer.

Infrastructure   We are committed to providing an infrastructure that ensures that members of the school get those services that they they need. These services may be provided by the school or centrally. Using centrally provided services, particularly commodity services, releases effort to better meet specific research/teaching needs and to develop new services.

I1. Transfer of commodity services to IS (or college), and working with IS to ensure that centrally provided services meet the needs of Informatics.

I2. Provision of Informatics knowhow and technologies to college and university level, and beyond.

I3. Development of new services.

I4. Review and evaluate computing infrastructure change taking account of changing user needs and general computing trends.

Research   In addition to providing a flexible, responsive environment for research in the school, we must meet the specific research requirements across our research institutes, and structure research computing support to be well-matched to the ways researchers propose and carry out research projects.

R1 Continued development of lightweight, responsive support for research computing that is fully compatible with full economic costing of research

R2 Ensuring that Informatics users get efficient, responsive access to high performance research computing and storage facilities

R3 Provision of support for interdisciplinary and collaborative research projects.

Teaching   In addition to provide a stable environment for the schools teaching activities, we shall develop appropriate instrumentation in the teaching environment to support research/teaching synergy.

T1 Enable student creativity and flexibility through increased personalization of the computing environment.

T2 Support research-led teaching by providing support for the transfer of research tools to our standard teaching platform.

T3 Ensuring that our infrastructure complies with open e-learning standards where possible.

Commercialization and knowledge transfer   Informatics Computing can support the schools knowledge transfer activities by providing a bridge between research and use.

C1 Using the school's commercialization infrastructure as a driver to develop prototype services from applied research in Informatics.

Strategic assumptions

The computing strategy outline in this document makes a number of assumptions.

- Much of our short-term planning is dominated by the move to the Informatics Forum, expected to be in Spring 2008.
- Informatics computing does not take place in a vacuum and our strategy reflects a number of general computing trends, such as mobility, personalization and multimedia computing.
- Development of the school strategy will be coupled with the university and college computing strategies.
- Several of these objectives require additional resourcing (eg via JISC, the Reasearch Councils, SFC) and thus there needs to be some complementarity with the aims and objectives of the political and funding environment.
- Informatics Computing serves over 300 staff, over 250 research students, over 150 taught postgraduate students, over 500 undergraduates, and over 100 visitors and associates. Appendix B outlines the the staffing and resources that make Informatics Computing, and appendix D outlines the computing services that we provide.

2. Report on plan for 2006/7

There was no formal plan.

Four major projects completed during 2006/2007:

- Deployment of Fedora Core 5 (FC5) on all managed desktops and servers;
- Development of a 64 bit LCFG (Large Scale Unix Configuration System) platform;
- Development of an LCFG FC6 platform;
- Development of a release management system for configuration data to improve system stability.

The organizational restructuring of the Informatics computing team, which took place in 2006 Q2, continued to bed down. Particular items of note were:

- Development of a lightweight project management framework with a monthly project meeting and supporting projects database;
- Formation of a unit dedicated to non-commodity research (and teaching) needs, and development of a resourcing model for research computing;
- All unit managers attended a five day Management Development programme.

3. Revised plan for 2007/8

Goals

Our goals for 2007/8 are dominated by the move to the Informatics Forum which will result in the schools activities being moved from four sites across the university to the Forum and Appleton Tower.

1. Move to to the Informatics Forum (expected spring 2008). This includes design, procurement and deployment of infrastructure, planning the move of desktops and services, and restructuring support desks.

2. Continued investigation of migrating commodity services to centrally provided services.

3. Improved collaboration with IS and other schools.

4. Reduction of energy footprint of the School's desktops. These are currently powered 24/7 for maintenance reasons, we will look at hibernating desktops overnight (weighing the benefits against use in Condor pools). Cost benefit estimate is £15-20k per annum.

5. Development of an LCFG Scientific Linux (SL5) platform; benefits include compatability with the ECDF compute clusters (and other schools), and longer server platform lifetime.

6. Development of a new account management framework (including multitier authentication and lightweight accounts) to improve flexibility and managability in securing School services.

7. Continued transition of users to AFS file servers - all new students and new staff now hosted on AFS.

8. Ringfencing 10% of individual computing staff's time for staff development.

9. Increase emphasis on research computing support

Deprioritised areas

Informatics Mail: We are aiming to transition all our staff from the School's mail service to the central staffmail service during 2007/2008. Computing staff, and new staff since September 2007, are already using staffmail.

Relationship with IS (and other schools)

Our collaboration with IS, and with other schools in the College, is focused on a migration to central services where appropriate, significantly increased technical collaboration, and interactions at a technical and strategic level (also outlined in appendix C).

- We are encouraging the School's research groups to utilise, and invest in, the ECDF compute clusters. We will review the School's existing compute cluster provision in the light of the central IS provision.
- We are collaborating with IS on deploying IBM's GFS (global file system) to integrate the central ECDF storage and the School's storage such that both central IS and school compute facilities, including desktops, will have seamless access to all storage provision.
- We are continuing to consider the migration of commodity services to central IS provision. The following are likely candidates for the 2007/2008 year:
  - Staffmail;
  - Call management system, to allow transfer of user queries between School and IS support staff;
  - Central wiki for new wiki requirements. Further consideration will need to be given to the migration of existing content on the School service to the central service.
- We are making efforts to improve technical collaboration with IS and other schools. So far, in 2007/2008, we have:
  - Held regular meetings with IS infrastructure to improve awareness of each others' developments. We would be keen to meet on a similar basis with other IS sections.
  - Continued with a regular LCFG deployers' group, with members from IS and various other schools.
  - Collaborated with EPCC in developing an LCFG Scientific Linux (SL5) platform, and with IS in developing their central LCFG service. IS intend to roll out the LCFG SL5 platform in all central labs in 2008.
- We are engaging with the development of a university strategy for the acquisition and implementation of a range of e-learning components, including virtual learning environments and an e-portfolio.

4. Plan for 2008/9

Goals

Moving to the Informatics forum will provide a good environment to review and evaluate the current computing provision in Informatics. Specific goals for 2008/9 are:

1. To address the increasing move to portable and/or personal machines, and how this impacts our commodity computing provision.
2. The reduction of server energy consumption.
3. Development of the teaching environment as a "living lab" that supports innovation in teaching and informatics research in education.
4. Continued consideration of migration to central services:
   - Transition to central wiki sevice;
   - Migration to central call management system;
   - Use of central teaching labs.
5. Review and refresh existing core technologies (eg LCFG rewrite).
6. Development of prototype services from R&D projects (eg lecture recording and indexing).
7. Investigation of virtualisation for desktops (specialist teaching and research requirements).
8. Begin move to central web service.

Deprioritised areas

The areas that we plan to deprioritise are all related to Informatics take up of a new or improved central service (or planned central service):

- "Vanilla" cluster computing---due to transition to ECDF, subject to ECDF continuing to meet research needs.
- School database---functionality transitioning to EUCLID
- Local wiki service---migration of existing wikis to central wiki service

Relationship with IS

Our relationship with IS during this period will continue with the themes that we have already esablished:

- Continued technical collaboration on projects such as ECDF and LCFG;
- Further integration of school resources with ECDF;
- Continued consideration of migration to central services, focusing on central wiki and call management system;
- Development of an open, standards-based e-learning environment at the Uiversity level;
- Use of central teaching labs, which would be facilitated by common use of SL5;
- Consideration of common storage facilities.

Appendices

A. Evaluation

We have established a number of evaluation processes, to ensure that we are delivering a service in line with our strategic objectives.

- **Fit to requirements** User requirements are captured using various mechanisms. Teaching requirements are met through a stable and well-established system for the collection, negotiation and delivery of computing requirements. We have implemented a newer mechanism to capture research computing needs, based on a basic level of recharge per researcher, in return for which certain services (eg disk space, network connectivity, cluster computing usage) are provided. Research input to school computing strategy comes via the school committee structure in which the convenor of research advisory committee sits on computing strategy group. Specific requirements are also captured in depth via focussed innovation meetings, to which all members of the school may attend.
- **Value for money** This is a criteria for the annual review document, and is related to transparent support for research computing, centralised procurement that remains close to academic needs, and official audits of various research project expenditure.
- **Objective evaluation** Each unit provides a quarterly report, which includes proportions of staff time spent on various activities, projects undertaken, etc. This data is used to inform strategy, and management: for example, consistently lower proportions of time spent on development activities (due to operational demands) than planned can be identified, and emphases changed.

B. Staffing and Resources

The school employs 27 computing staff (25.4 FTE).

There are 770 managed DICE (Linux) desktops, 520 personal machines for staff and research students, and 250 in student labs (7 undergraduate teaching labs and 2 tutorial rooms). There are a further 55 managed Windows desktops for administrative staff.

In addition there are many self-managed Linux, Mac OS and Windows desktops and laptops.

There 160 managed DICE (Linux) servers, and a further 150 beowulf nodes spread over 4 clusters. In addition there are 10 managed Solaris servers. Servers are currently housed in four air-conditioned machine rooms, with a total area of around 120 m^2.

C. College, University, External Relationships

The school has a high degree of interaction and engagment at the college and university level, arising in particular from the expertise within the school. We are engaged with university committees concerned with authentication, security, and information architecture, for example, and play a leading role in envisioning the development of computing at a university level. Externally, our computing staff interact intensively with organizations such as Usenix and UKUUG through workshops, conferences and tutorials.

D. Services

D.1. Authentication

An authentication and authorization infrastructure, suitable for multiple platforms.

The underlying technology used for authentication is MIT's Kerberos, with KX509 and Cosign being used for services that can't directly use Kerberos. This provides a true single-signon for an increasing number of our services.

A powerful locally developed technology is used for authorization.

We have recently developed and deployed a lightweight authentication system iFriend, similar to the Cosign Friend system, to allow users not affiliated to Informatics to authenticate to our systems. The advantage of iFriend over Cosign Friend is that it allows us to provide access to non web services, such as subversion.

Scope School

Resources Several linux servers, with per-site replicated servers.

Local/Central The university authentication service is based on EASE.

We use kerberos in many innovative ways for a wide variety of services, such that we are recognised as being world leaders in kerberos deployment. Transitioning to the central EASE service, as it currently stands, would lose us the benefits of our innovative uses and affect the manageability of our managed platform.

Export Many of our enhancements and bugfixes to various software have been accepted upstream. Presented a number of papers on our deployment to conferences.

We participated heavily, contributing both language and example code, in the standardisation effort for SSH-GSSAPI and are acknowledged in the resulting RFC. Code derived from our SSH-GSS implementation ships with all Unix operating systems.

D.2. Backups

A data backup service for servers with master copies of data; eg file servers, software repository, WWW servers.

This is achieved by a combination of nightly mirroring of data to off-site disk storage and nightly dumps to tape.

The off-site mirrors of users' home directories is accessible directly by the users via the network filesystem. This means that users can themselves restore files that they have accidentally deleted, without bothering support staff; this has obvious support savings.

The backup service is primarily for disaster recovery, not for archival purposes. The issues of backups and archival are scheduled for review.

Scope School

Resources

- A number of mirror servers using a combination of large local IDE disks or, increasingly, cheap SAN storage.
- A Solaris tape backup server (using Sun's Enterprise Backup software).

Local/Central   Our understanding is that the existing central backup service is too small in scale to meet our requirements. However we are investigating the possibility of making use of the forthcoming SAN based service.

We are very interested in the mooted central archival service and would welcome involvement in its specification.

D.3. Cluster computing

The school currently has 4 beowulf clusters, totalling 152 nodes (some dual cpu). The individual nodes run the same DICE Linux platform as the commodity desktops; this is not only important from the view of avoiding duplication of effort, but it also means that users' experiments do not need porting to use the clusters. Gridengine is used to manage the beowulf resources; eg job submission and monitoring.

The School is already making heavy use of the ECDF cluster and the current expectation is that central provision will replace much of our local provision over time.

In order to make the most of our existing computing resources, we have deployed Condor across around 200 of our desktop machines to harness spare compute cycles when such machines are idle. We expect to increase the size of this Condor "flock" in the near future.

Much of our cluster computing requires fast access to large amounts of data. We are currently investigating, in partnership with the ECDF team, the deployment of GPFS on our compute clusters and SAN storage; this hopefully will provide high performance fileaccess of both ECDF storage and School storage on both ECDF cluster nodes and School cluster nodes.

The school's computational requirements are ever increasing and we expect this trend to continue.

Scope   Principally research, but it is likely that teaching may require heavy computational power in the medium future.

Resources   150 Linux PCs, network switches for node communications, dedicated file server.

Local/Central   We are already making use of ECDF and expect our local provision to decline over time. There will, however, be some residual requirement for our own compute clusters, particularly to meet the requirements of those researchers working on systems research where clusters need to be reconfigured at short notice as research requirements change.

We also harness spare compute cycles of our Linux desktops using the Condor system, but given that this sits upon a School administered resource (our desktops), it is not clear how this could be a central provision.

D.4. Database

A database, developed within Informatics, dealing with all student and staff administration.

The database includes information on the following :-

- staff and visitors
- students
- taught courses
- student assessment results
- research publications
- research postgraduate applications

producing reports such as :-

- reports to Boards of Examiners (calculated marks etc)
- staff teaching duties
- telephone and email lists
- research institute membership lists
- tutorial membership lists

Some of the data is sourced via a feed from MIS databases. The database is also used to feed the DICE user account generation process and to create roles for the DICE authorization system.

Scope   School

Resources   Linux database server (running Ingres)

Local/Central   The deployment of EUCLID will necessitate a full review of the school database. However, EUCLID appears to only address student administration.

D.5. Directory services

A directory service infrastructure, suitable for multiple platforms. The directory service contains user data (such as home directory location, unix UID, group memberships, roles, email addresses) and information on physical devices such as printers.

The underlying technology used in the school for directory services is LDAP (specifically OpenL-DAP).

For efficiency and security, each DICE client carries its own replicated copy of the LDAP directory.

Scope   School

Resources   Various Linux servers.

Local/Central   There is currently no general purpose directory service provided by IS.

Export   Informatics were one of the first large scale organisations to use LDAP as a replacement for the traditional unix directory service, NIS. Many of our enhancements and bugfixes to various software accepted upstream. Presented a number of papers on our deployment to conferences.

D.6. Email

An email service for staff only; with IMAP and IMP user access.

The service was deliberately designed to be as similar to the university's staffmail service as possible, to minimize the user disruption should the school choose to transition to the centrally provided service.

A mailing list service is also provided, using mailman. The mailing lists are automatically generated from the school database.

Mail forwarding for email addresses from the formative departments of the school is provided.

Scope   School - staff only

Resources   Linux email server

Local/Central   All students use the central student email service.

We are planning to move staff to the central staff email service in the near future; all computing staff have already moved across in order to identify any issues.

Once we have moved staff to the central service, we shall continue to require an internal email service for system mail, albeit with much reduced required functionality.

The majority of our mailing lists are generated from the school database so it is likely that we would need to continue to run our own mailing list service.

D.7. File service

Provision of a network file service to users using various technologies including OpenAFS, NFS and Samba.

The school is part way through migrating all users from NFS to OpenAFS, which provides a more secure and flexible cross platform file system allowing self managed machines to access shared unix filesystems.

We are currently trialing Linux OpenAFS file servers.

Scope   School

Resources   7 Solaris NFS/OpenAFS file servers 2 Linux OpenAFS file servers (shortly) 2 Linux samba servers

Local/Central   The School's heterogeneous platform nature dictates the provision of a cross platform file service. We also require a file service to be performant and secure. We are unaware of a central IS service that meets all these requirements and would be very unlikely to migrate to a central service that did not meet them.

Export   We are active participants in the OpenAFS community, sending a delegate to the annual AFS and Kerberos Best Practices workshop. Paper presented on our OpenAFS deployment at UKUUG Spring 2007 conference.

D.8. Front line support

A team of six computing support officers providing front line user support.

All user fault reports and requests are entered into a fault tracking system (RT), either by users or CSOs responding to phone calls. CSOs process and deal with as appropriate, passing any that need more technical input to the relevant CO team.

It is worth noting that the school's user base, in general, is very computer literate; consequently the queries and requests made tend to be of a much higher technical nature than those of other schools.

This team also handles the allocation, deployment and operating system upgrades of all managed desktops (both Linux and Windows), along with the management of user accounts (eg account creation, home directory moves etc).

Scope   School

Resources   RT server, 850 managed desktops

Local/Central   Our increasing shift to using more and more central services makes it more difficult to manage a single point of contact for our users' queries/fault reporting. Adopting the central IS CMS for all our queries/fault reporting would make it easier to pass tickets between ourselves, central services, and any other university service providers. A move to the central IS CMS is being investigated.

D.9. LCFG

LCFG, developed in Informatics, is a system for managing the configuration of large numbers of Unix systems. It is particularly suitable for sites with very diverse and rapidly changing configurations, such as Informatics.

LCFG is used not only to configure machine configuration, but also most of the services described in this document. This means that (re)installing a server, eg a print server, often entails no more than booting the LCFG installation process off the network.

Scope   School, SEE, EPCC, IS, research grants, external

Resources   A number of Linux servers for machine configuration compilation and delivery.

Local/Central   No central provision

Export   Several papers presented to conferences worldwide.

The European DataGRID project originally used a version of LCFG to manage testbed Grid farms. The project has now developed a new configuration toolset (Quattor) based on the LCFG architecture.

IS Desktop Services are using LCFG to configure aspects of their managed MacOS platform.

A LCFG Deployers group, consisting of those active in LCFG development, meets monthly; this currently has attendees from IS, SEE and EPCC.

D.10. Linux platform

A managed Linux platform, using LCFG to manage system configuration and locally developed tools for machine installation and software package management.

Currently supported platforms are both 32 bit and 64 bit versions of Redhat's Fedora Core 5 and 6.

The School and EPCC are currently collaborating on producing a Scientific Linux version of the managed Linux platform. Other CSE schools have indicated an interest in deploying this platform.

Scope   School (over 1000 machines), SEE

Resources   A number of Linux servers for delivery of software packages.

Local/Central   No central provision

Export   LCFG/Linux is in use by the School of Engineering and Electronics, School of Mathematics, a number of IS public labs and is being considered by other schools for delivering a managed Linux platform.

D.11. Miscellaneous infrastructure services

A number of infrastructure services, including :-
- console servers
- NTP time servers
- UPS monitoring

A reliable NTP time service is critical as synchronised time is fundamental to Kerberos.

Scope   School, UK wide (NTP)

Resources   A number of Linux servers

Local/Central   No central provision

Export NTP service UK Wide.

D.12. Miscellaneous user services

A number of user services, including :-

- CVS - change control system for storing software projects
- Subversion - replacement for CVS
- Software license service
- Room booking system (shezhu)
- Calendar service (not widely used)
- FTP service (for legacy domains)
- Corpora provision
- bugzilla - a bug tracking system used to track software bugs and work tasks
- PostgreSQL service for teaching and research databases

Scope

Resources A number of Linux servers

Local/Central It is expected that the school will drop its own Calendar service when the central University service, eDiary, becomes available.

We are investigating the possibility of deprecating our room booking service in favour of the eDiary service.

We are not aware of equivalent central provision for the other services.

D.13. Network

A managed network on 4 sites, with the following features :-

- over 4440 live network ports
- 75 network switches, of which 5 provide hardware routing.
- four EdLAN connections and four SRIF connections
- 70 different VLANs - many different functions with different access rights.
- extensive firewalling, both externally and internally.
- traffic load monitoring
- DNS service
- MAC address tracking and port locking
- DHCP - configured via individual machine configuration
- powerful switch configuration system with change control for audit trail and rapid switch reinstallation.
- soft patching - no manual patching once switches installed
- policy that all wall ports are live
- VPN service

We are planning on providing a 10Gb backbone when we colocate in the Forum.

Scope   School

Resources

- 75 HP network switches
- 34 wireless access points
- a number of Linux servers acting as firewalls and secondary routers

Local/Central   Our wired network is our "virtual lab"; it underpins all our diverse research and teaching requirements as well as our commodity needs. As a result it has flexibility, performance and reliability requirements well in advance of what other Schools require.

The school has traditionally provided its users with a network in advance of what IS have been able to provide, both in terms of performance and functionality. For example, Computer Science deployed structured wiring in 1991, long before the rest of the University. The new Informatics Forum will present 1000T to the majority of desktops, with fibre ducting to offices in readiness for future technologies.

We will be using the port probing service from IS to probe us from out-with our firewalls and to probe self-managed machines through holes in our firewalls.

We have an extensive wireless service, with over 30 access points; these are part of the centrally managed wireless service.

Export   Switch configuration code is used in School of Engineering and Electronics.

2 of the 5 university external DNS servers are managed by Informatics

D.14. Printing

Provision of a multi-platform networked printing service.

The underlying technology is LPRng, with LDAP used for listing printers and their capabilities. Windows clients connect via Samba.

We are currently investigating moving from LPRng to CUPS as the LPRng code base is no longer being actively maintained, and CUPS should allow us to meet our long held goal of authenticated printing. It is very likely that we will be collaborating with another School in this development.

We are also investigating the use of MFDs to replace some of our printer provision in the Informatics Forum.

Scope   School

Resources   56 network printers - 41 mono A4, 6 mono A3, 9 colour A4.

The number of printers appears large, but this is mainly due to the physical layout of our Buccleuch Place accommodation. We expect to have significantly fewer printers once we move to the Informatics Forum.

Local/Central   We are not aware of a central multi-platform printer service.

D.15. Solaris platform

A managed Solaris platform, using LCFG to manage system configuration locally developed tools for machine installation and software package management.

The current platform is based on Solaris 9.

Scope Whole school - underpins file and backup services and multi-user Solaris machines.

Resources

Local/Central No central provision

D.16. Storage Area Network

Three separate Storage Area Networks (SANs), providing a total of 58TB of fibre attached storage to around 20 servers.

We are planning to reduce to one SAN once the school is colocated in the central area.

The school also has an allocation of 35TB of SRIF storage. An Informatics server is directly connected to the SRIF SAN at the ACF to allow the school to access a portion of this storage from its systems. The remainder of the school's allocation is available, via GPFS, for the school's ECDF cluster users.

Scope School

Resources
- 5 QLogic fibre channel switches.
- 7 Nexsan storage arrays, providing 58TB of storage.
- 35TB notional allocation of SRIF storage

Local/Central

D.17. Teaching applications

Support for over 100 taught courses, most of which require software packages to be installed, sometimes ported, and tested on the DICE platform.

Well over 100 packages, some simple, some complicated, are involved.

Scope Teaching

Resources

Local/Central No equivalent central service. The large majority of software is specific to Informatics teaching.

D.18. Videoconferencing

The school has recently introduced a desktop videoconferencing service, based on Adobe Connect, for a research group. Should this service prove successful, it may be scaled up to support the whole school.

Scope   Research

Resources   A Windows 2003 server

Local/Central   No equivalent central service, but IS are being involved in the trialing.

D.19. Web service

A managed Web hosting service.

The main school Web site, www.inf.ed.ac.uk, uses technology to enforce publication of standards compliant HTML; this is to ensure the pages are as browser independent as possible. All content is change controlled to provide an audit trail. A subtantial number of pages on this site are autogenerated as reports from the school database. CGIs are carefully controlled.

There are around 20 virtual web servers for specific projects and interdisciplinary groups.

All users, including undergraduates, can publish their own content on the homepages.inf.ed.ac.uk web service, though use of this service for official material is strongly discouraged. CGIs are permitted, except to first and second year undergraduates.

A small number of virtual servers support the web sites of the formative departments of the school; the content of these sites is frozen.

A review of the school's web service indicated that there was a clear and pressing requirement for a CMS service for, particularly, research institutes. After discussions with the IS web development team, we concluded that the central polopoly service would not be able to meet our requirements in the short to medium term. This service, based on Zope/Plone, should enter service in October 2007.

Scope   School

Resources   A number of Linux servers

Local/Central   We are expecting the School site to transition to the central polopoly service. Transition of other sites (research institute/ collaborative sites) will depend on the ability of the central service to meet content representation and access rights requirements of individual research groups.

D.20. Wiki

A wiki service, based on twiki.

Scope   School

Resources   A linux server.

Local/Central   Ideally we would like to make use of the new central Wiki when it enters service. However, whilst we can almost certainly use the central Wiki for new requirements it is not clear whether it will be possible or practical to transfer existing content from our current school Wiki service to the central Wiki.