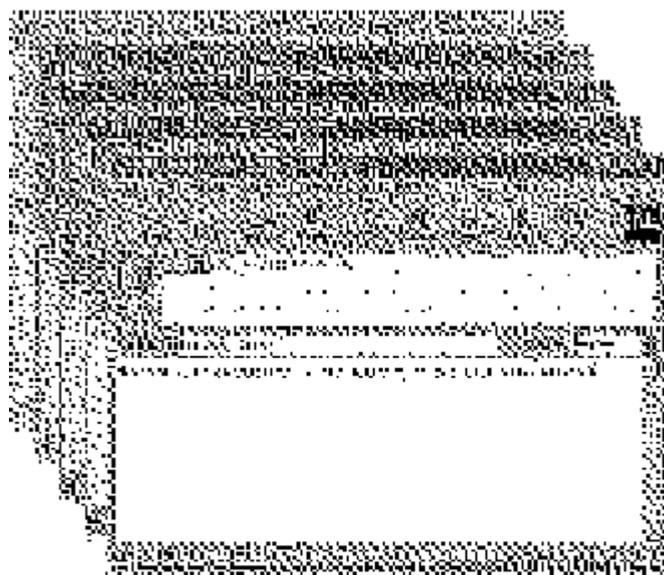


Keynotes

Volume 27 Number 5 May 2001

Mailing List Management



Also in this Issue:

LDAP

Events Diary

Windows 2000

YIMS: New Systems

From the Editor

Assuming it's not too early on a Monday morning, you'll probably notice a few stylistic changes in this issue of Keynotes. I'd be pleased to receive any comments. Rest assured the content remains unaffected.



On page 6 Mike Brudenell explores the differences between distribution lists and mailing lists, and outlines the planned implementation of a mailing list management service based on Lyris ListManager.



The introduction of the Windows 2000 operating system has been a topic occupying much time and energy in recent months. On page 1 Robert Demaine and Andrew Smith outline the decisions which have been taken on the installation timetable, and give details of the likely impact.



Joanne Casey

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Keynotes on the web

Back copies of Keynotes can be found at:
www.york.ac.uk/services/cserv/offdocs/keynotes/

Windows 2000

Robert Demaine and Andrew Smith

During recent months work has continued on developing a supported Windows 2000 service in response to the University's requirement to adopt Microsoft Office as the standard desktop applications suite. The news of Microsoft's plans to withdraw support for Windows95, reported in the last issue of **Keynotes**, has added a degree of urgency to the project.

Most of the issues which hampered progress last year have been resolved, and the decision to use native Windows 2000 filestore has meant that more of the underlying functionality of the architecture can now be exploited. However, some problems remain with non-Microsoft applications software, as not all vendors have rushed to bring out Windows 2000 compliant versions of their products. Taking into account the overall maturity of the technology it has been decided that during the coming academic year a phased rollout should take place, with two new Computing Service 24 hour study centres offering the Windows 2000 service. The existing Windows95 classrooms will remain in operation for a further year with a final "frozen" release of applications software which includes the Microsoft Office suite. These classrooms are scheduled for an upgrade to Windows 2000 in the summer of 2002. This timetable allows ample scope for training, and the revision of documentation and teaching materials where appropriate.

For office users the Windows95 service will continue, again in a "frozen" state, though anyone purchasing new PCs is likely to find that the hardware will only

support Windows 2000. Subject to having the minimum hardware specification suitable for Windows 2000 (Pentium III 400MHz processor, 128Mb RAM, 8Gb hard disk) users may request an upgrade from Windows95. For those migrating from Windows95 during the next academic year the choice will be available between a new supported Windows 2000 service offering the benefits of a secure and robust platform with access to a range of software and services, or a stand-alone unsupported configuration. Plans are underway to develop a charging model which will make the former a more attractive option for many users.

Information Desk

Brian Souter

As you may know, we are currently two staff short on the Information Desk. This is likely to be a particular problem at the start of term, generally a busy time.

Our main priority will be to keep the Information Desk open with at least one member of staff, but in rare circumstances we may need to close over the lunch period. Our second priority will be to answer extension 3838, but during busy periods the queuing system may be switched off.

Wherever possible, we prefer non-urgent enquiries to be made via email or ETS (www-db.york.ac.uk/cfm/csrv/ets/enqintro.cfm). These enquiries will be processed as quickly as possible, but we may slip over our target of replying within twenty four hours. We appreciate your understanding until we are back to full strength.

Computer Graphics

Susanne Hodges

Iliad for Work is piloting a new multi media course in the Summer Term. The course will teach the principles behind handling and applying computer graphics and the syllabus will consist of the following:

Session 1: Introduction to computer graphics

Different media, difference between vectors and bitmaps, file formats, colours.

Sessions 2 and 3: Vectors

How and when to use vectors, structuring, editing tools, colours.

Sessions 4 and 5: Bitmaps

How and when to use bitmaps, structuring, editing tools, colours, modifying small areas of graphics, layers, masks, filters.

The course is open to all students and runs for six weeks. As with all Iliad courses there will be an assessment and successful participants will receive a University validated certificate.

For more information about Iliad for Work courses, visit:

www.york.ac.uk/services/cserv/liad/forwork.htm

May Bank Holidays

The Computing Service building, including the Information Desk and entrance lobby, will be closed for the Early May Bank Holiday (7 May) and the Late May Bank Holiday (28 May). All computer systems, including the PCs and printers in the colleges, will be available as for a normal weekend.

Staff News

Mike Jinks

Head of Networking

Congratulations to John Mason on his appointment as Head of Networking. John was previously the Network Manager and takes over from Robert Demaine following the latter's appointment as Head of Infrastructure. John has wide knowledge of our campus network and we know that its operation and development will be in capable hands.

New staff

We are pleased that the post of Network Manager will be filled from 1 May by Peter Turnbull from Computer Science. Peter has wide experience in computing, within both the Higher Education and commercial sectors, and has been supporting the complex networking in Computer Science. He thus brings practical experience to the post, together with a knowledge of the University's networking.



Sarah Hall, Finance Officer

We welcome Sarah Hall who has joined us part-time as Finance Officer. Sarah has taken on the financial responsibilities of the previous Deputy Director following his retirement, and will provide professional financial support in the increasingly

challenging environment in which the Service operates. Following a degree in Psychology, Sarah gained postgraduate diplomas in Personnel Management and Accounting, before becoming a member of the Scottish Institute of Chartered Accountants. After a varied career in the public and private sectors in Scotland, Sarah joins us from a similar post at Leeds University Business School.

We wish both our new colleagues an enjoyable and stimulating time with us.

Iliad Office

Debra Fayter who is responsible for the delivery and development of the ILIAD courses is taking adoption leave until the beginning of September. We wish her every happiness in her new challenges and look forward to her return in September. Susanne Hodges, the Information Assistant who has been intimately involved with ILIAD in recent years is assuming responsibility for ILIAD courses in Debra's absence.

Moving on

By the time this edition of Keynotes is published, four colleagues will have moved on to further their careers.

John Robinson has been with us for almost 12 years and has carried a variety of responsibilities during this period, including external services, numerical methods, word-processing (including printing!) and, most recently,

overseeing the installation of PC applications software in the standard software bundle. This latter has been a particularly complex task with many interactions between separate items of software.



John Robinson

We shall particularly miss John's ability to solve bizarre problems with PC applications software, where a combination of lateral thinking and impeccable logic is essential.

Although they have each been with us for a somewhat shorter time, we're also sorry to see the departure of: Michael Woodhead, one of our Technicians, who is taking up a post at Leeds Metropolitan University; Nick Walker, one of our Computing Assistants, who is moving to work for Jarvis in York and Mark Wilson, who served as a temporary technician during an extended period of staff vacancies - he will still be seen around the University as he continues to teach on Iliad courses.

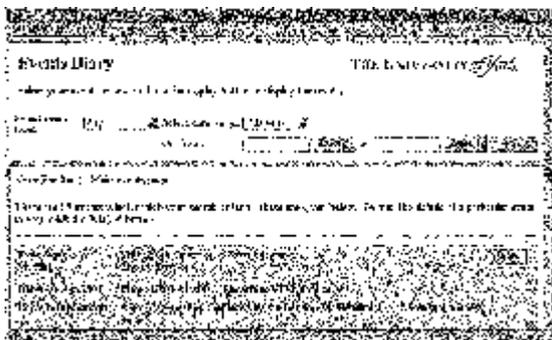
We thank them all for their work for us, carried out with good humour and commitment, and wish them every success in their new posts.

Events Diary

Kriss Fearon and Chris Kilgour

Until recently there was no one place where you could find out about the variety of events that take place on campus. Step forward the Events Diary, now online at www.york.ac.uk/admin/presspr/cfm/events.yku/, which was set up to meet this need.

The Events Diary is a ColdFusion application that uses an Interbase database to store all of its information. The whole application is web-based and all routine administration is carried out via the web. There are two main screens - a search screen to look up events and a data entry screen to add or amend them. Any user can search the Diary but currently only the Press Office can enter events.



Each entry is categorised according to its type. The

list of types is flexible and may include both series of courses and more general definitions such as Lunch Clubs, Seminars or Concerts. Events are searchable by type or by date and users can have the results of their search emailed to them at the click of a button. To allow events to be advertised only within the University, there is an option to make the event 'internal only', which will restrict access to those who can supply a Computing Service username and password.

The Diary has a single administrator who is able to control which users have access privileges to add or amend events. The list of event types may be altered at any time by those with the appropriate privileges. The date of each entry is used to determine when an event is no longer current. Out of date entries do not appear in the results screen and can then be removed from the database.

Currently, the Diary is in a test phase and is available only to those with Computing Service user accounts. Once this has been completed and any necessary alterations have been made, it will be accessible outside the University.

If there is an event you'd like to add, please contact Sarah Mitchell (slm7) in the Press Office for further details. There's also an entry form for feedback if you'd like to comment.

Accessible Web Pages

Joanne Casey

Web authors should ensure that their pages are accessible to older browsers, text based browsers and to the screen reading software used by visually impaired users.

Typically, heavy use of graphics, image maps and javascript will cause problems. Always ensure you include <alt> tags to describe the content of an image and consider supplementing a page which is reliant on javascript or image maps with a text only version. See: www.york.ac.uk/services/cserv

Remember that some colour combinations can also cause problems - opt for strong contrasts.

Accessibility is now more important as the Disability Discrimination Act will shortly apply to educational institutions.

Text Messaging From Your Web Page

Joanne Casey

Many of you will be aware that free web-based services such as Genie, Lycos and Breathe offer you the opportunity to send short text messages to mobile phones.

There is now a service which enables you to embed such a feature in your own web page, allowing visitors to your site to send text messages to your phone, without the need for you to disclose your mobile number. Visit www.quios.com for more information.

For details of an online facility allowing applications for University accommodation see **News from MIS** on page 4.

YIMS - Implementation of New Systems

Geoff Houlton

Many colleagues will be aware that the last few months have been particularly busy for staff involved in the YIMS Programme. Two parallel projects have been running, the first to select a new Payroll and Personnel system and the second to select a Time and Attendance system.

Payroll and Personnel

A contract has been awarded to Northgate Information Solutions to supply their 'Resource Link' application. For the technically minded, this application will use PRO-IV 4GL running against an Oracle 8i database, on a Sun E420R Solaris7 server.

Work is currently underway on the installation of this hardware. An implementation team under the leadership of Alison Smyth in the Personnel Office will be introducing the system into the University by the autumn.

Time and Attendance

A contract has been awarded to Kronos Systems to supply their 'Workforce' application. This software will enable staff, where appropriate, to record their hours worked by 'clocking in' using a Windows PC, web browser or telephone. By the end of 2001, manual staff in the Directorate of Facilities Management will be using the telephone clocking option to record their hours worked. An electronic interface to the ResourceLink payroll system will ensure they receive accurate and timely pay.

The Workforce software offers a number of other features which may well be of interest to other departments - for example, the ability to operate a flexi-time system, and the ability to track the hours worked on particular projects, or the proportion of time spent on teaching and research.

On a technical level, the system will rely on a combination of Sun Solaris8 and Windows NT4 servers. A proprietary NT server provides an 8-line link with the Telephony Switch. Once again, an Oracle 8i database will operate at the centre of the system - collecting together the clockings and translating them into meaningful pay data.

And finally

This is a significant time for the MIS Group, as it marks the first 'visible' steps towards the replacement of the MAC system and the technologies on which it relies, i.e. Compaq Alpha servers, VMS operating system, Powerhouse 4GL etc.

We are confident that the technologies being introduced, e.g. the Oracle 8i database, will provide a robust and flexible platform on which to build effective information systems for the whole University.

However, YIMS is a University project, not a Computing Service project. It is vital that all staff feel fully involved in the programme. More information is available on the YIMS website: www.york.ac.uk/univ/org/yims/local.yrk.

Applications for University Residences

Sue Bolton

I have recently completed work on a web-based form for a student to make an application to live in a University residence. The purpose of this was to streamline the current manual, paper-based process and improve the way in which places are allocated to students.

The system was piloted with a sub-set of Alcuin College students and started on 26 February 2001. The closing date for applications was 16 March 2001.

The benefits gained:

- Faster application and allocation process for the student
- Accommodation Office time saved in prioritising applications and allocating places
- Quicker and easier communication with the student and the College
- Management information is available to the Accommodation Office and the College
- Saved paper and postage costs and envelope-stuffing time

Computing at the University of York Part II

Peter Roberts continues to recount the development of computing provision

The story so far...

Computing had begun at York in the late 1960s with a batch processing system running on an Elliott-NCR 4130 computer. Batch processing meant submitting programs and data on punched cards and obtaining a print out of results from a line printer.

Now read on...

A small scale interactive service, KOS, had been introduced, using VDUs and Teletype teleprinters, and this had proved very popular, so the University sought to replace its ageing 4130 system with one that would provide a good interactive service.

The pre-eminent supplier of such systems was the Digital Equipment Company, based in Maynard, Massachusetts who had two of its DEC System 10s in use at British Universities, Essex and Hatfield. However government policy was to support the British computer industry which effectively meant using ICL equipment. Unfortunately ICL was mainly committed to batch processing and its interactive systems were rudimentary.

A prolonged argument took place between the University and the Computer Board over whether York should be allowed to buy a non ICL system. Eventually it was agreed that York should be allowed to seek competitive tenders for a new computer system and an Operational Requirement was issued in March 1975. Six companies tendered by the due date in May and after considerable discussion it was agreed to purchase a DEC System 10.

Once funding and permission had been given for a replacement system it was possible to ask the University Grants Committee for funding for a major extension to the Computer Building to provide office space and a computer room with an air conditioning system suitable for the DEC System 10. Plans were drawn up and building work commenced at Easter 1976. However completion was not due until the following Easter. Therefore, since the new system would be available in the summer of 1976, it was decided to install it on a temporary basis in the existing computer room. Accordingly the 4100 was shut down at the end of June 1976 so that the room was available for the DEC System 10 to be delivered on 5 July 1976 and, after some problems, it passed its acceptance test on 30 August. A service to users was begun on 6 September. During the period of two months while the installation was taking place computing facilities were provided to York by the Universities of Leeds and Manchester.

Acceptance of the DEC 10 had been delayed by a back wiring fault in the store module and though the system passed its acceptance test the problem persisted. Therefore at the time when the system was moved into the new computer room in the summer of 1977 a major renovation effort was conducted by DEC who fitted sleeves to 14000 connections on the back plane. This resulted in a considerable improvement to the reliability of the system.

The initial configuration of the DEC System10 consisted of a KL10 processor, 256K of 36 bit word memory (equivalent to 1.2 megabytes), 3 100 megabyte disk

drives, 4 tape decks and two card readers and line printers.

A communications system connected to this provided support for 64 terminals though this was increased to 96 after a few months. During the first year of use over 88000 sessions of terminal use were provided while at the same time 26000 traditional batch jobs were processed. In the second year of operation, with reliability problems overcome, the figures increased to 115000 interactive sessions and 35000 batch jobs.

As users became more familiar with interactive computing their demands and expectations grew. To meet the increasing work load the Computer Board agreed to the University's request for a substantial upgrade. This was installed in January 1979 and included a more powerful processor, a second disk channel and a 200 megabyte disk drive. At the same time various upgrades to the communication system meant that our users could contact some other Universities and Science Research Council sites via an X25 network and later via British Telecommunications Packet Switched System.

So in the space of five years computing at York had changed from punched card input with line printer listing output to a style of use that is now familiar to 21st century users. Though by modern standards the facilities were rudimentary, at the start of the 1980s we were providing interactive computing together with access to a national network.

New Service: Mailing List Management

Mike Brudenell

As email continues to grow in popularity as a means of communication, sending a message to a list of recipients provides a fast and effective way of disseminating information to others.

This article outlines a new Mailing List Management Service that will be brought into operation by the Computing Service in the near future, and compares this with distribution lists in your mail program's Address Book.

The past: Distribution lists

By and large people at York wishing to send mail to a group of users currently keep such lists in the Address Book of their mail program. More properly these should be referred to as "distribution lists": they are available for use only to the person who owns that Address Book, and must be manually maintained by them. As a result they suffer from a number of disadvantages:

1. Only the owner of the Address Book can send a message to the list's recipients.
2. When people change their email address, or wish to join or leave the list, they must contact the owner, who must then amend their Address Book accordingly.
3. If a recipient's mailbox becomes full and cannot receive new mail then the owner will receive error responses back, and have to decide whether to keep the recipient on the list (and suffer the errors) or remove them (remembering to add them again in the future).
4. No record is kept of mail that have been sent out; new members, or members who have deleted messages, have no way of reviewing their content.

The above may not be overly problematic for lists with a small number of members. However the day-to-day administrative tasks can become onerous — for example tracking down a couple of non-existent addresses in amongst a list of hundreds can be non-trivial!

In addition...

5. If a distribution list contains a large number of members then sending a message to it is likely to impose a significant load on the University's central mail service.

The future: Mailing lists

For medium- or large-sized lists or when shared access to the list is needed, it is better to make use of a proper Mailing List Management service. The software which runs such a service typically has features to address the issues outlined above, as well as including additional functionality.

Considering each of the above issues in turn ...

1. Because a list's membership is stored centrally within the Mailing List Management system different people are able to send messages to a special email address and have it redistributed to the members. Access controls determine whether anyone in the world can post to the list, only members of the list (the norm), or only selected people (editors, for a managed "announcements-only" list).
2. People wishing to join or leave a list, or to amend their personal details, can do so by communicating with the Mailing List Management software. This can be done by sending it emails containing special commands, or more simply by using forms on its World-Wide Web pages. This can significantly reduce the workload of the owner in administering the list.
3. The software which runs the mailing list system can attempt to detect email addresses which are no longer valid, or which have run out of space in their mailbox. It can then place such addresses "on hold" and, for a given time, try to notify the person affected by the problem. It can then, if desired, remove the problem address from the list's membership, again helping to reduce the administrative workload of the list's owner.

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4. Messages sent out through a list can be archived, and later searched or reviewed using the World-Wide Web interface.
5. The Mailing List Management software can be configured by systems administrators to work co-operatively with mail servers, and avoid flooding them with arriving messages.

Additionally, other features may include:

- The owner of a list being able to choose whether its messages are redistributed immediately (an “unmoderated” list), or must first be seen and approved by an editor (a “moderated” list);
- Each member being able to control how the list works for them by adjusting their personal settings. For example they can update the email address to which their copies of the list’s messages are sent. Another example might be the choice between receiving each message immediately it is redistributed or delaying them into a daily “digest” — a single email containing all the messages from the previous day.

When will the new service be available?

The Computing Service has been considering and evaluating various Mailing List Management

software packages, and has decided to implement a service based on Lyris ListManager.

We anticipate that the service will be made available sometime during the Summer Term.

We will be designing a form for people to use when requesting a mailing list. This will offer various options affecting how the list works, and will enable us to create it with settings appropriate to the owner’s requirements. (The list owner will be able to change most of these themselves thereafter as necessary.)

And who is it for?

The new Mailing List Management Service is provided primarily for lists internal to the University. For example, a department may find it useful to manage lists containing its second-year undergraduates, or taught postgraduates, or perhaps all members of staff.

While the primary focus of the service is to support the University’s internal activities we anticipate that some collaborative ventures may require the inclusion of non-University of York people within York lists. While this is perfectly permissible we would suggest that anyone requiring a list with a wide membership across UK academia should continue to use the excellent national JISCMail Service, details of which may be found at www.jiscmail.ac.uk/

Removal of AppleTalk Zones

Mike Brudenell

Do you have or use an Apple Macintosh that is connected to the Campus Network? If your answer is “No” then you can ignore the rest of this article! Otherwise keep reading for news about some changes that will take place on Monday 2nd July.

A brief history

Some years ago the Computing Service provided a small general access classroom containing Apple Macintoshes connected to the Campus network. To service this classroom we purchased a device called a GatorBox to provide file sharing capabilities.

The GatorBox also enabled us to set up a list of named “collections” — properly called “AppleTalk zones” — on the Campus Network to which networked Macintoshes could be assigned. Typically these zones were named after departments which owned a significant number of Macintoshes, along with a “Miscellaneous” zone for everybody else. Assigning a department’s Macintoshes to a specific zone made it easier for people using them to locate departmental file-sharing and printing services.

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The Macintosh classroom was eventually discontinued but the GatorBox remained in service, primarily to continue defining the list of available zones. When the GatorBox reached the end of its life we were fortunate to discover that the task of defining the zones names could be performed by another of our existing network devices — a Bridge Router — along with its regular duties.

What's about to happen?

However time and technology wait for no-one. The Bridge Router now serves no useful purpose other than setting up the AppleTalk zone names, and is well past its lifespan. On Monday 2nd July we will be removing the Bridge Router from service and when we do so, the AppleTalk zones will disappear from the Campus Network.

This will cause a change in the way the Chooser appears on networked Macintoshes. Instead of a three-panel window showing service icons, zone names and services within the selected zone, a two-panel display will appear. This will show service icons on the left, and a single long list of all service names on the right.

How will this affect you?

If you connect from your Macintosh to printers or file servers on the network then you may find these stop being accessible. The reason is that your Macintosh has memorised the facility as a combination of the service name and the zone name it was assigned to ... but the zone names will no longer exist!

To be able to use your networked printers or file servers again you will need to reselect them in the Chooser.

If you have any aliases pointing to printers or to items on file servers you will probably need to recreate these as well.

Please accept our apologies if you do experience any disruption. There are now relatively few Macintoshes in use on the Campus Network so we do not anticipate too many people will suffer disturbance.

After John Robinson...

As you will have seen in **Staff News** on page 2, John Robinson is leaving the Computing Service on 18 May. This could mean that, until we appoint a replacement, we are unable to match the current level of user support.

Areas that may be affected are listed below:

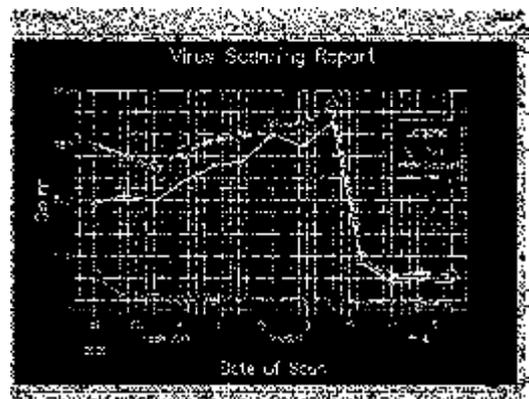
- Maple support
- Some WordPerfect and Corel Office problems
- Problems with Windows 95 installations
- Installation of Teaching Software
- C++ course and user support
- Delphi user Support
- WordPerfect for Thesis writers
- Econometric packages software support
- Tex software support

Users should continue to send all queries to the Information Desk by email (infodesk@york.ac.uk) or via ETS (www-db.york.ac.uk/cfm/csrv/ets/enqintro.cfm), and every effort will be made to answer them.

Virus Scanning

A graph tracking virus presence in campus filestore can be found at:

www.york.ac.uk/services/csrv/sw/sophos/progress.html



New LDAP Service

John Byrne

The Computing Service will shortly roll out a new background service based on a technology known as LDAP - this is essentially a database system which is distributed across multiple hosts and accessed as a whole from special servers known as LDAP servers.

LDAP gets its name from the communications language used between clients and servers - the Lightweight Directory Access Protocol.

LDAP databases are organised hierarchically, rather like computer file systems but with folders and files replaced by objects - container objects and leaf objects. Each type of object has its own set of attributes which can be assigned values. LDAP servers provide a large number of standard objects. For example:

- the 'person' object which is used to store contact details about an individual
- the 'organisational unit' which is a container for other objects and often represents a branch in the database hierarchy.

If a suitable object is unavailable you can create your own by extending the functionality of existing objects. For example we have created a 'yorkperson' to store york-specific information for the new White Pages system (described below).

The following facilities are currently being developed for the LDAP service:

Enhanced access control to YorkWeb resources

YorkWeb developers will be able to restrict document and application access to selected groups of users. The groups will be defined and stored in the LDAP server. A large number of standard groups will be available, for example third year Biology students, staff in the Philosophy department, etc. Authors will also be able to define their own groups and use them in the same way.

New White Pages system

The current YorkWeb directory of email addresses and telephone numbers will be replaced by a new

system which will provide additional fields such as forenames, internal addresses, preferred email, URL of personal web site, and so on.

Staff and students will be able to configure which fields are seen by other staff, other students and the general public. The data for each individual and the corresponding access control rules will be held in the LDAP server. Subject to access control restrictions, standard internet applications such as Netscape Messenger and Microsoft Outlook will be able to search the server for address book entries.

This service will be introduced in a very controlled way so that sensitive information is not released without the prior permission of each user. Details will be announced nearer the time.

General announcement system

A new system will allow information providers to post announcements on 'channels' and target those announcements at groups of users. Each user will be able to view selected channels with a small, highly configurable desktop viewer which can run on the desktop or be embedded in a web page. Announcements will take the form of a headline, a short message, and an optional link to further details on the web. The channels, announcements, and target groups will be held on the LDAP server.

General Authentication for UNIX and Windows95 services

The LDAP server will store UNIX and Windows95 authentication details for each registered user at the University. Anyone logging in to one of these services will have their access checked using their LDAP entry.

In due course the Computing Service will be exploring the potential for LDAP technology in more general areas of computer resource management both locally and in collaboration with other institutions.

Please contact John Byrne (**jcb1**) in the Computing Service if you would like further information.

Contacting the Computing Service

Computing Service
University of York
Heslington
YORK YO10 5DD

Telephone: (01904) 433800
Direct dial: (01904) 43 followed by ext no.
Fax: (01904) 433740
Email: *username@york.ac.uk*

www.york.ac.uk/services/cserv/

Information Desk

The Information Desk is your first point of contact with the Computing Service

Telephone: ext 3838
Email: *infodesk*

Open from 9am to 5.15pm Monday to Thursday, and 9am to 4.15pm Friday (*may be closed for training Wednesdays 2pm-3pm*), for problem solving, advice and information, fault reporting, network connections, file restoration, sales, course bookings and user registration. Printed output can be collected from the lobby entrance which is open from 8am to midnight.

Computing Service Staff

Director:	Mike Jinks	3801	<i>kmj1</i>
Departmental Secretary:	Lorraine Moor	3801	<i>lsm1</i>
Head of Infrastructure:	Robert Demaine	3808	<i>rld1</i>
Head of User Services:	John Illingworth	3803	<i>jj1</i>
Head of MIS:	Kay Mills-Hicks	2101	<i>kmh8</i>
Head of Technical Services:	Doug Moncur	3815	<i>dgm1</i>
Head of Systems:	Andrew Smith	3809	<i>abs4</i>
Operations Manager:	Brian Souter	3814	<i>bs1</i>
Head of Networking:	John Mason	3813	<i>jrm13</i>
Information Officer:	Joanne Casey	3805	<i>jmc8</i>

Sue Bolton	2102	<i>sjb28</i>	Sue Hodges	3839	<i>sh32</i>
Mike Brudenell	3811	<i>pmb1</i>	Paul Hodgson	4347	<i>ph25</i>
Lisa Burkinshaw	3818	<i>ljb4</i>	Geoff Houlton	2100	<i>gph2</i>
John Byrne	3812	<i>jcb1</i>	Jenny Jackson	4455	<i>jj5</i>
David Chambers	3742	<i>dac6</i>	Chris Kilgour	4454	<i>crhk1</i>
Michael Clark	3745	<i>mpc3</i>	John Marsden	3832	<i>jpm1</i>
Arthur Clune	3129	<i>ajc22</i>	Darren Munday	3821	<i>dam6</i>
Paul Conacher	4346	<i>pac1</i>	Nicola Normandale	4695	<i>ncn1</i>
Steve Downes	3741	<i>sd21</i>	Colin Rea	3817	<i>cr9</i>
Ken Finch	4452	<i>kf1</i>	Chris Reece	3807	<i>car7</i>
Rob Fletcher	3816	<i>rpf1</i>	John Robinson	3833	<i>jsr1</i>
Kevin Gardner	3739	<i>pkg4</i>	Sam Scott	3817	<i>svs2</i>
Chris Gowland	3823	<i>cg1</i>	Daniel Shelton	4349	<i>ds23</i>
Sarah Hall	3827	<i>seh11</i>	Sam Vines	3749	<i>sccv1</i>
Peter Halls	3806	<i>pjh1</i>	Timothy Willson	2123	<i>ftmw1</i>
Linda Hearn	3800	<i>lch8</i>			