Computing Services Annual Report 2008/09

”This department delivers a huge range of technology that allows the work and life of the University to run smoothly in this digital information age. We are pleased to present this report which highlights our work and achievements during the past year as well as illustrating the scale and complexity of our service.
I hope you will find it a useful guide to the day-to-day operations, special events and projects that we have been involved in during the Academic Year 2008 – 2009.”

Dr Ian Ellery, Head of Computing Services

In 2008/09, we managed..

207 Servers	**245 Network Switches**	**9,000 Network points**	**2,500 staff and student PCs**	**185 Wireless Access Points**
Over 1500 Student residence connections (ResNET)	**35 UPSs (uninterrupted power supplies)**	**Links to the Five Remote CCCU Campuses**	**155 Networked printers**	**Network Connectivity to 30 FE/HE sites in Kent (Kent MAN)**

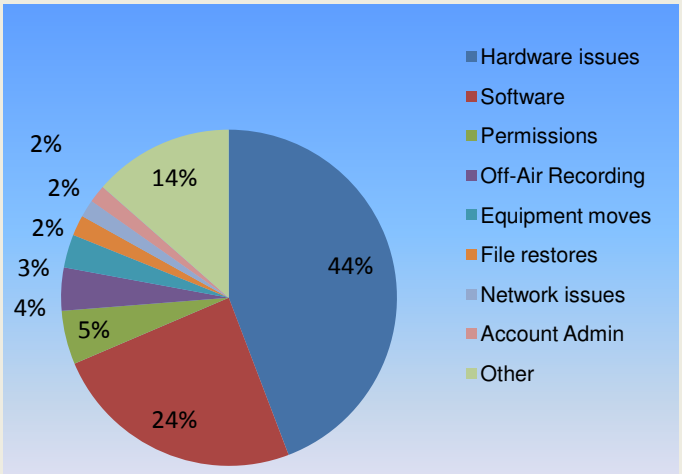
We processed..

500,000 MB of data through our web proxy servers

Approximately 21,000,000 requests per day from 3,600 unique staff and student clients

Which equates to 140 MB and 6,000 requests per client per day

We supported..



How *User Technology* technicians deal with Sunrise calls (85% of UTs time is spent on logged calls)

We delivered..

CCCU receives 25 million emails per week

CS discards 20 million emails (80%) as spam or “undesirable”

We virus scan and deliver 5 million email messages per week

Total email delievered equals roughly 38 GigaBytes

Optical Fibre Ring Project

You may have noticed our sub-contractors from SCD digging up various parts of the streets around the Oaten Hill area over last summer. Before you curse them for causing the inevitable traffic delays, spare a thought for the enormous benefit that this work has brought to the University. The contractors were actually physically threading an optical cable – dark fibre - underground, around the city to various Christ Church campuses in the city.

The Optical Fibre Ring was a Computing Services project to enable better IT connectivity between the different campuses in Canterbury. Because of the exponential growth of Canterbury Christ Church buildings across the city, and of course the Augustine House project, there was a need to invest in and upgrade the links between the local campuses to enable data to be transmitted at a higher speed and in a more secure way.

This solution has provided a resilient, unrestricted bandwidth inter-connection between the major buildings within Canterbury offering high security, at a moderate capital cost and low recurrent costs. It will replace the 100 megabit or 1gigabit circuits that we currently lease from BT, and with this investment, the university will save thousands of pounds in rental charges over the next five years. The project also provides effective, dedicated high bandwidth links between the existing data centre on the NHR site, and the new data centre currently being planned as part of the renovation of Rochester House, and of course the Augustine House project.

In 2008/9, Computing Services' Capital spend of £2m included the following projects:

Server and desktop Virtualisation
Desktop PC Replacement
SAN
Optical Fibre Ring
JISC iBorrow project
Network and Server infrastructure (all sites)

In the Academic year 2008/9, Computing Services spent £2,500 on the disposal of equipment to comply with EC directive 2002/96/EC on waste electrical and electronic equipment

Desktop Virtualization

Virtual Desktop Infrastructure (VDI) - a term used to describe a virtual machine whose processing power and application storage is held on servers within a data centre. The application storage can be "single instance" so that many machines can be cloned from one stored template, an ideal situation for student lab development and maintenance. The device in the classroom would ideally be a thin-client PC which provides the necessary connection protocols to access the virtual machine, but requires limited maintenance and consumes low levels of electricity.

Application Virtualisation (App-V) - a streaming protocol which enables applications to be downloaded and run on a standard - fat - PC or thin client . The applications use the power of the PC, but are never actually installed. They reside in a virtualized layer known as a "bubble" and a PC can have more than one bubble enabling for example Office 2003 and Office 2007 to be run on the same PC without conflict.

Data Storage

SAN Project

Having purchased some of the SAN in the FY2007/2008 we completed the delivery and physical install during Q4 2008.

The new Fibre Channel fabric was commissioned and integrated with the existing fabric supporting the backup system. On a rolling basis we a progressing though the migration of data from our DAS (Direct Attached Storage) to the new SAN.

CCCU has some 150 Terabytes of raw disk space spread over two sites for resiliency. It provides roughly 65 Terabytes (65 thousand gigabytes) of available space to the end user systems.

Disk usage by Canterbury-based staff (N: drives and dept shares) increased during 2008/9 from 3.99 Terabytes to 5.11 Terabytes – a 28% increase

What is a SAN?

(**S**torage **A**rea **N**etwork)

A network of storage disks. In large enterprises, a SAN connects multiple servers to a centralized pool of disk storage. Compared to managing hundreds of servers, each with their own disks, SANs improve system administration by treating all the company's storage as a single resource. Disk maintenance and routine backups are easier to schedule and control.

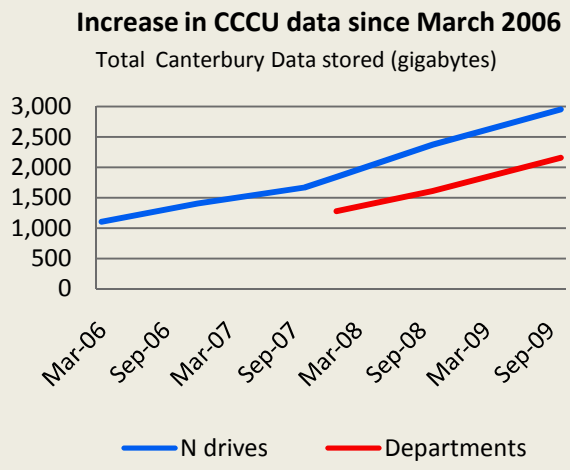
The SAN network allows data transfers between computers and disks at the same high peripheral channel speeds as when they are directly attached. Together with the Optical Ring Project, we are now able to operate this across almost all of our Canterbury campuses.

Megabytes, Gigabytes, Terabytes… What Are They?

These terms are usually used in the world of computing to describe disk space, or data storage space, and system memory. For instance, just a few years ago we were describing hard drive space using the term Megabytes. Today, Gigabytes is the most common term being used to describe the size of a hard drive. In Computer Services at CCCU, we talk in terms of Terabytes.

Every night we backup 5 terabytes of data, which is then sent off site

A Terabyte is approximately one trillion bytes, or 1,000 Gigabytes. To put it in some perspective, a Terabyte could hold about 3.6 million 300 Kilobyte images or about 300 hours of good quality video, or, 1,000 copies of the Encyclopaedia Britannica. Ten Terabytes could hold the printed collection of the Library of Congress. That's a lot of data....



Frontline Services

To enable university events and conferences to run smoothly, all sections of Computing Services have to come together to make sure the IT service delivers what the user wants, and in the timeframe they want it. And, of course, we have to be there to cope with any unforeseen problems with the technology on the day. Liaison collate requirements from the user community, infrastructure make sure we have network connectivity, UT make sure we have the necessary desktop hardware and software in place, and Admin support the whole operation financially and administratively.

Conference Accounts created by CS 2008/9:

Month	Total Conferences	Total Accounts Created
September	12	**175**
October	11	**155**
November	11	**222**
December	5	**120**
January	8	**152**
February	6	**125**
March	7	**156**
April	5	**98**
May	6	**122**
June	7	**110**
July	14	**545**
August	1	**12**
Total	**93**	**1992**

£400,000 was spent on the purchase, installation and Maintenance of Audio Visual equipment

Last year, we helped the university stage a series of Open Days, the Leisure and Sports Association Conference, the Teach First project, the Gifted and Talented project and numerous other educational and commercial projects and conferences run by the university on all five of our campuses.

This is in addition to the regular year-in, year-out projects such as :

• **Registration** - an unusual feat last year of connecting up two marquees with electricity, network services and computer hardware

• **Student IT Labs -** 18 labs upgraded in all last year equating to 347 PCs

•**500 laptops purchased -** enabling more staff than ever to work at home or on the move, especially when used with 3G dongles and/or VPN access

•**Teaching room AV upgrades** – a total of 45 seminar rooms were upgraded last year

•**Software licensing** – making sure we have the best licensing deals with the best fit for departments

Other, one-off IT projects project managed by CS in 2008/09 include:

- Establishment of a specialist Apple Mac area for the new Journalism course on NHR campus
- The resourcing of a new Photography course on the Broadstairs campus
- Installation of the audio visual setup in the Chapel on the NHR campus
- Completion of 8 Assistive Technology cases for staff within CCCU
- Recording and camera equipment Skills lab upgrade in Rowan Williams Court
- The upgrade of all PCs from Windows XP to Vista
- Introduction of VPN
- Establishment of Push-email services.

What Other Projects Did We Complete?

Project	Detail
Network Switch Replacement	Our strategy is to replace the network edge switches on five year cycle. This way we prevent in-service failures, and the replacements can occur during planned maintenance thus minimizing disruption to end users. The replacement cycle also means that our network edge switching is not falling behind in terms of technology.
UPS Replacement	UPS manufacturers only warrant their systems fit for purpose for 3 years for batteries and 6 years for entire unit. If we do not replace on this cycle the batteries are less efficient and thus have reduced run time.
Wireless Replacement	Replaced all the wireless access points in Lanfranc to improve coverage in the area and to permit their connection to the automated registration system.
Fibre Replacement	Some small works of essential fibre replacement and additions on North Holmes Road. The full replacement cycle that is overdue by several years is awaiting final decision of where the redevelopment of NHR is going.
Anselm Projector Room Refit	Made the LAN switching facility within this room compliant with Health & Safety.
Server Consolidation (VMware)	(see virtualisation panel) We are firmly on the leading side of the wave of adoption. More significantly , we are taking this further than many Universities and our objective is to virtualise every server.
Backup Tape Library Replacement	We now have a larger more efficient backup system to further our capability of disk-to-disk-to-tape backup.
Augustine House	Installed and imaged 360 PCs and 21 printers. Specified, designed, procured, configured, tested and implemented a resilient layer 2 network for Augustine House.
Cathedral Court	Installed and imaged over 80 PCs and 20 printers. Managed all aspects of providing the wired and wireless infrastructure.
Sports Centre	Managed all aspects of providing the wired and wireless infrastructure, including significant work to connect it via duct to NHR.

Total logins to the CCCU Network this calendar year

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
249,926	252,342	289,730	244,261	250,329	174,070	102,841	82,880	139,105	107,356

And there's More....

Software Development Projects

- Single sign-on to Terminal Server 2008 offering students applications remotely through a single icon

- Development and launch of Application Virtualisation via Microsoft "App-V" providing flexible delivery of various applications; e.g. Office 2003 and 2007 on the same PC

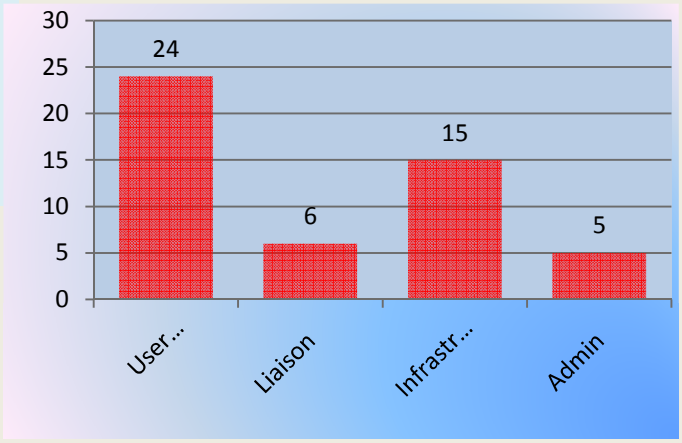
- Wi-Fi technology to enable the iBorrow project in Augustine House. 200 in-house developed netbook clients

- OPAC "thin clients" to enable students to search for books electronically in the library

Annual subscriptions payable by Computing Services 2008/9 included:

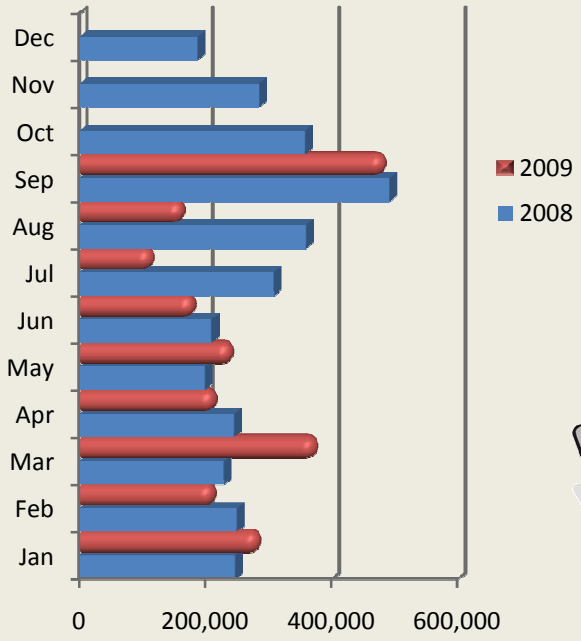
£24,000 on JANET
£45,000 on KentMAN
£118,000 on Network Maintenance contracts

Staff Numbers in Computing Services



£440,787 was spent on IT related equipment on behalf of departments other than Computing Services

Pages Printed via Networked Printers



Mobile Working

In the 11 months the staff VPN service has been active, 386 staff have made 12,127 connections to the CCCU network via the VPN

Every 24 hours, there are:-

- Over 109 connections to the *Push Email* service with 68 MB of data received and 16 MB of data sent

- 611 connections made to OWA (off-site email) with 265 MB of data received and 1 GB sent