

UNIVERSITY OF NAIROBI

ICT GROWTH REPORT 2011

30th June 2011

1 FOREWORD

The 2011 ICT annual report highlights latest developments in the section for the year ending June 2011. This is the second annual publication, the first having been published for the year ending June 2010.

Besides the traditional functions of providing connectivity, systems development, user support, and telephony, ICT has embarked on innovative projects that are improving service delivery in the University.

Wifi hotspots have enabled our students to access online resources beyond normal lab hours with the busiest time being between 6pm and 11pm. The SMIS has been extended to allow online room booking and direct receipting thus reducing queues experienced previously in manual receipting.

The number of PCs purchased through the ICT centre now stands at over 5,600. The Wezsha Initiative has enabled over 3,000 of our students to access laptop computers. With this in mind, the data centre upgrade project is at the tender stage, and is meant to address the increasing demand on our computing services.

The office of the director also moved from the old offices next to Principal CBPS to second floor SCI/ICT building. The new offices are spacious and well furnished, and ICT is grateful to the University management for the new facilities.

At ICT centre, we strive to achieve service availability of over 95%.

2 ICT CENTER MANDATE

The ICT Centre was established in the late 2002 with the aim of assisting the university realise its mandate of innovative use of ICT services and products to support research, learning, teaching and administrative processes. The University has mandated the ICT Center to carry out the following functions: -

- To develop and implement an evolutionary ICT policy and strategy that is sensitive to emerging technologies and responsive to changing needs and practices
- To guarantee the security of ICT resources and the safety of people working in ICT environments
- To enhance skills to develop, implement, support and exploit ICT resources effectively and efficiently
- To provide quality network infrastructure and improve student & staff access to ICT services in line with University priorities
- To ensure that business systems accommodate and facilitate changes in business practice that reflect changing institutional, staff and student needs
- To advance the need for adequate and sustainable ICT funding from within the University and develop capacity to attract external resources.

In a bid to realize this mandate, the Centre offers the following services: -

- Information Systems Development and deployment
- Communication & Network Infrastructure services
- User Support and Maintenance Services
- Consultancy, Innovation and R&D

3 MANAGEMENT INFORMATION SYSTEMS (MIS) SERVICES

The University relies heavily on several information systems to carry out its administrative, teaching and learning functions. Most of the applications have been developed in-house by the ICT team, including the flagship SMIS system. We highlight recent developments in the MIS section.

3.1 University System of Websites

A new look version of the website was implemented in 2011, on the main URL <http://www.uonbi.ac.ke>. The new website has continued to support Colleges, Schools, Faculties, Centres and Departments in uploading and managing content on the University Website.

Future enhancements include creation of blogs and chat forums and revamping of the intranet, as well as creation of journal sites, conference sites, online surveys and staff profiles.

The URL of the previous University website can be accessed at <http://archive.uonbi.ac.ke>.

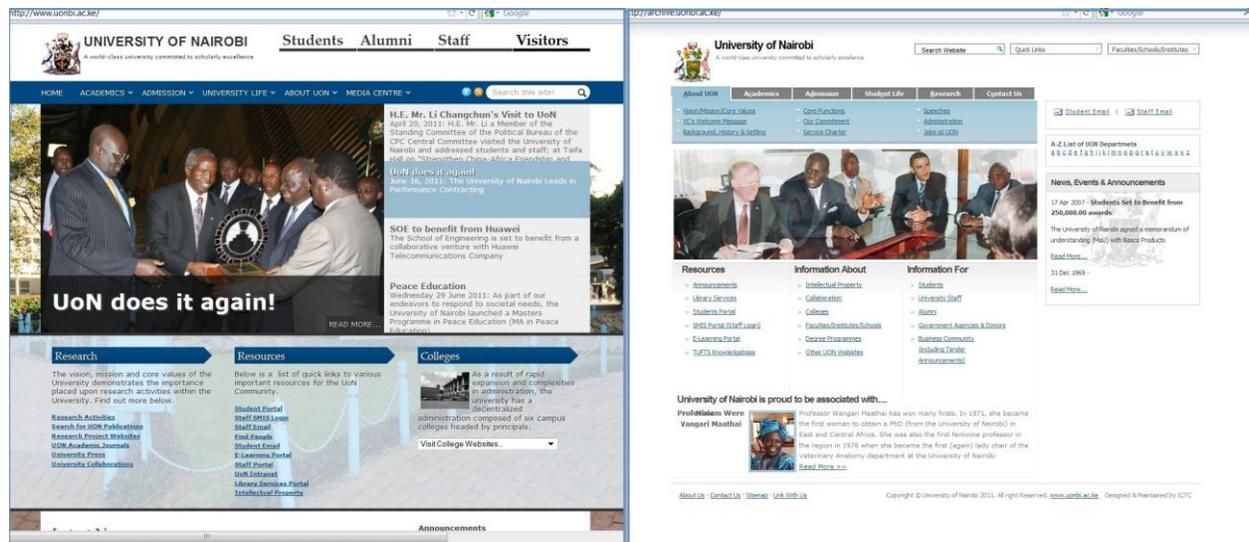


Figure 1 - Collage of new and old website

Visits of UoN website by region

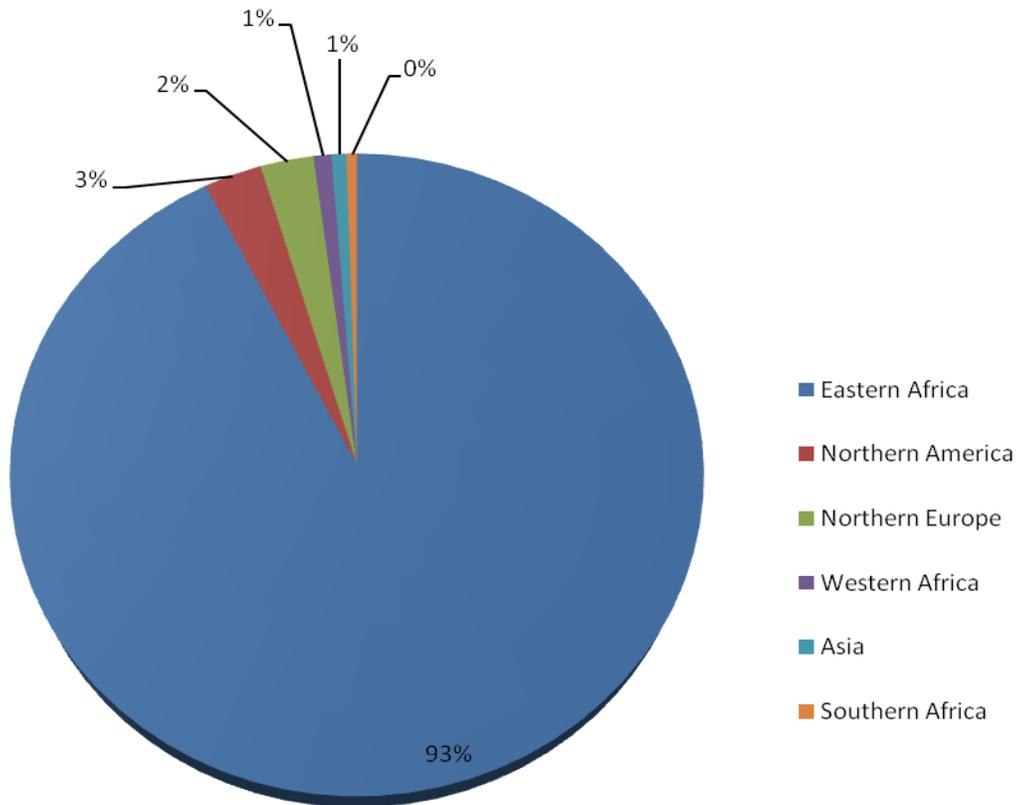


Figure 2 Visits to www.uonbi.ac.ke from July 2010 to June 2011. Source - Google analytics

3.2 Student Management Information System (SMIS)

This system was revamped in 2008/2009 at a cost of approximately Kshs 25M. It has continuously been used to implement core functions of students' educational processes that include:

- Admission
- Course registration
- Marks entry
- Issuance of transcripts
- Graduation
- Provisional online fees statement and
- Provisional marks on the student portal.

During the year up to June 2011, further security features were improved in the system to enhance the integrity of the examination process and student marks. In addition, a subsystem of direct receipting was added to enable payments done directly to the

bank to be downloaded and imported into the system, thus reducing queues of manual receipting.

3.3 Online Room Booking and Allocation System

This system was implemented in 2010 at a cost of approximately Kshs 3M. The system has increased efficiency in online room allocation process. Previous cases of refunds to students due to paid but missed rooms have been eliminated. Further amendments in the system that will be done include: group room allocation and use of mobile technology to enhance accommodation fee payment as well as application and confirmation of rooms by students.

3.4 Online Leave Application System (OLAPIS)

This system automates the process of leave application. Implementation was carried out in 2010 at a cost of approximately Kshs 1.5M. Using a workflow system of online leave application, the process has been streamlined, thus making approval process more manageable. Information is sent to users via email on their leave application status. Furthermore, this has contributed to a paperless community. In future, other forms of leave will be implemented e.g. sabbatical leave.

3.5 University Health Service Management Information

This system has been re-engineered at an approximate cost of Kshs 5M. It has automated the operations of the University Health Services including treatment and drug stock control. Future modifications to be made include creation of modules in counselling, theatre operations and full integration of audit and finance.

3.6 E-Learning platform

This was revamped in 2010/2011 at an estimated cost of Kshs 4M. It is a Web based e-learning platform for deployment of online course materials, teaching and collaboration among students and lecturers. It is hosted on <http://multimedia.uonbi.ac.ke>. Currently, lecturers can post learning materials which students online. Approximately 334 courses are on the e-learning platforms. In future, E-learning intends to integrate with SMIS and HRMIS to facilitate students and staff access; revamp and strengthen e-learning labs and develop a studio for production of quality multimedia content and to convert all course materials in the University to e-learning mode.

3.7 Joint Admission Board System (JAB)

This system computerizes the admission processes for all Kenya's public universities. Successful applicants can access JAB results through the University of Nairobi Website <http://jab.uonbi.ac.ke/> or by sending an SMS to 5553. The job development team intends to incorporate the use of mobile technology to enhance application process by students.

3.8 Financial Management Information System (FIMS)

At an approximate cost of Kshs 18M, this system was implemented 2007/2008. It computerizes the financial/accounting function of the University. It has several modules including General Ledger, Inventory Control, Accounts Receivable and payable. It has enabled efficient, accurate and timely financial reporting by the University. The system will be extended to include Assets Management and Workflow modules.

3.9 Student Clearance System (SCS)

SCS was implemented in 2006/2007 at approximately Kshs 2M. The turn-around time and effort students take to clear from the University has been reduced, as the process of clearing students who have finalized or wish to suspend their studies has been computerized. Future enhancement is to make a provision for staff clearance.

3.10 Q-Pulse

This system was implemented in 2009/2010 to automate the Quality Management Systems of the University of Nairobi. It includes the following modules: Document Control, Audit/CAPA, Assets, Customers and Suppliers, and Training.

3.11 UHS Claims System

It was implemented in 2009/2010 at a cost of Kshs 1.5M. It has computerized the process of dental and optical claims at the University as per policy. It intends to extend the operation to include medical claims.

3.12 Online Job Application System (OJAS)

This system aims at computerizing the process of job application and short-listing at the University. This is intended to streamline the processing of job applications and to reduce turnaround time for processing of job applications. The development is complete; users have been trained and the system is being rolled out.

3.13 Performance Management Information System (PCMIS)

The system aims at computerizing the process of tracking and analyzing Performance Contracts. The development is complete, and testing is on progress.

3.14 University Performance Appraisal System (USPAS)

This project aims at computerizing the process of Staff Appraisal within the University and analysis of the data collected to reduce the turn-around time. Its development is complete and was successfully used to generate appraisal reports for all staff in central administration for the 2010 appraisal period. Currently the system is being tested for use in carrying out the entire appraisal process online.

4 NETWORK INFRASTRUCTURE MANAGEMENT SERVICES INCLUDING ICT SECURITY, E-MAIL AND INTERNET SERVICES (NIS)

4.1 Internet Bandwidth and Usage

UoN expects to achieve the recommended target of 5 Mbps shared bandwidth per 1,000 students. This translates to a minimum of 250 Mbps for the University where the current student population is approximately 54,000. In early 2011, UoN started consuming 176 Mbps of the submarine cable bandwidth at a quarterly bill of about USD 300 per Mbps per month. This is a significant improvement from the year 2005 where there was a satellite capacity of 4 Mbps downlink at approximately USD 2,452 per month. This is as a result of improved access capacity through landing of the submarine cables and the general drops in cost of International bandwidth.

Two key measures have been put in place to make sure UoN community fully utilises the current bandwidth. The inter-campus routing capacity was upgraded to ensure improved access to the shared internet bandwidth. Wireless internet access points (hotspots) were also put up in the JKML library and selected student halls of residences to maximize off peak hours utilization.

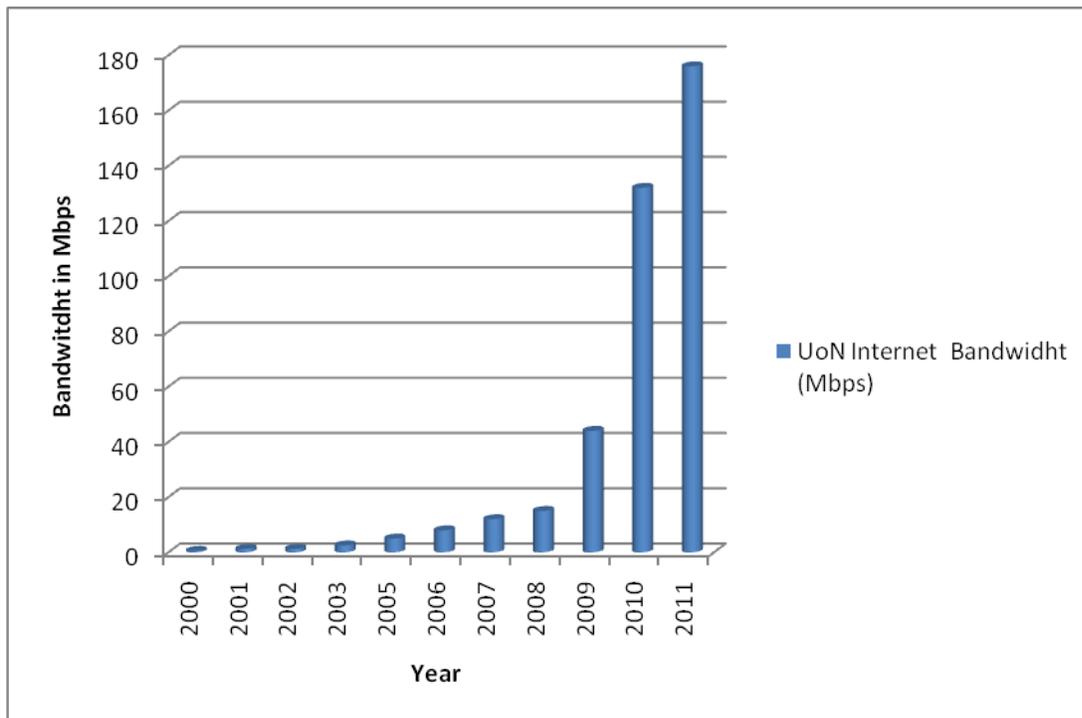


Figure 3 UoN bandwidth growth

4.2 Staff email services

Email communication has become an important tool in the University. The number of email accounts has grown from 880 in 2006 to the current 6,300 with an average of 400 web logins per day.

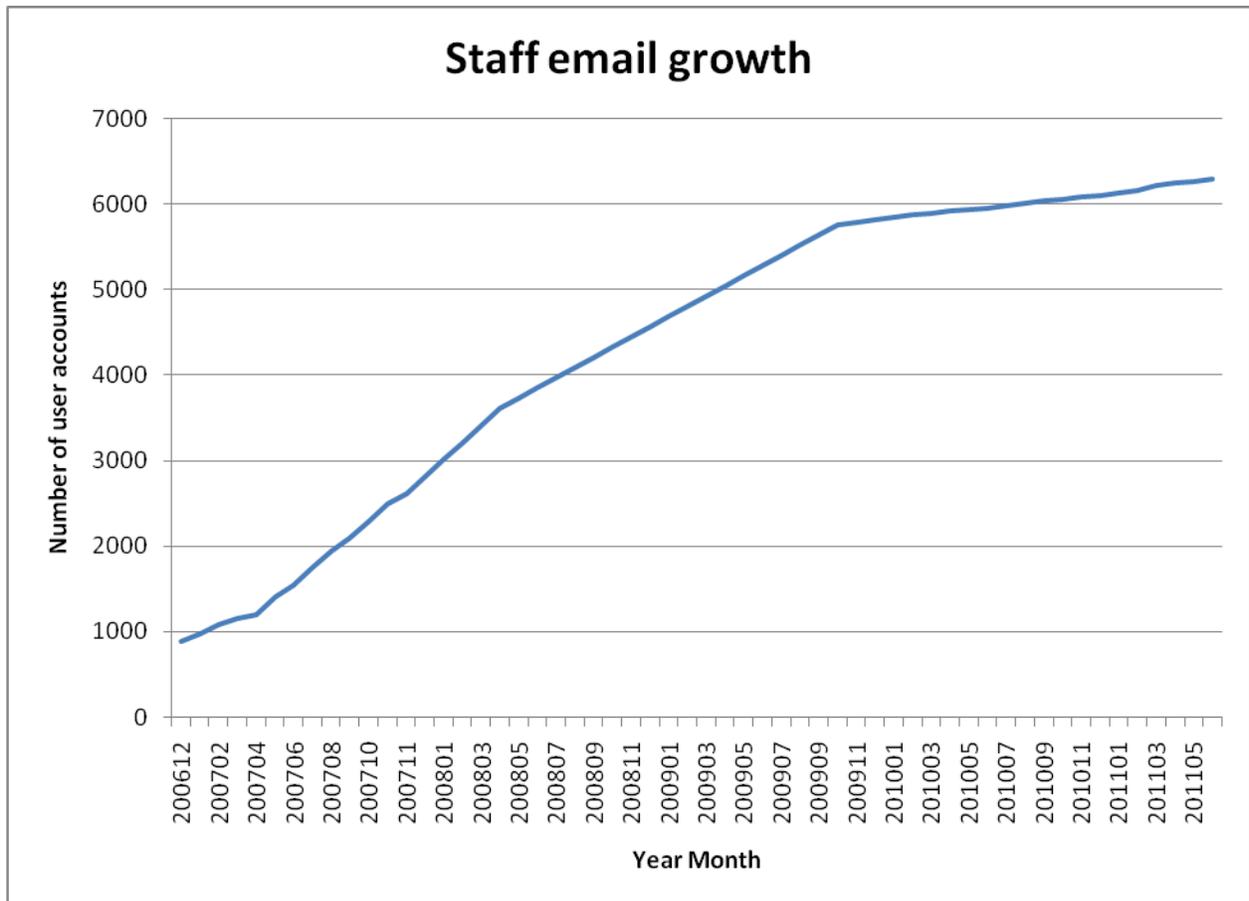


Figure 4 Staff email growth

4.3 Student email services

Through partnership with Google, the student email platform was re-launched in 2008. In 2009, the email was integrated with network access accounts service through self-provisioning. The service has become very popular with students and currently hosts 17,500 accounts. ICT is testing Single Sign On (SSO) capabilities where a student will only need to log in once to access all the online services of the University.

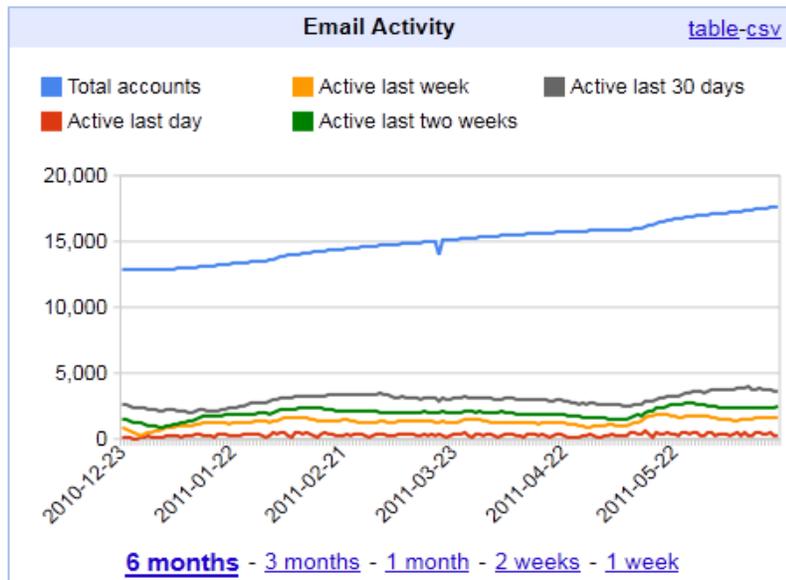


Figure 5 Student email usage

4.4 Wireless Fidelity (Wifi) Networks Project

Wireless internet provides access to the internet beyond normal computer lab hours. The objective of this project is to transform our campuses into truly digital environments. This has enabled our students to access the university online resources and the internet from the hotspots any time of the day. A wiki page has also been provided <http://wiki.uonbi.ac.ke> where staff and students can access information on how to configure their gadgets, self-provisioning, acceptable use policy, and usage tips of this great resource.

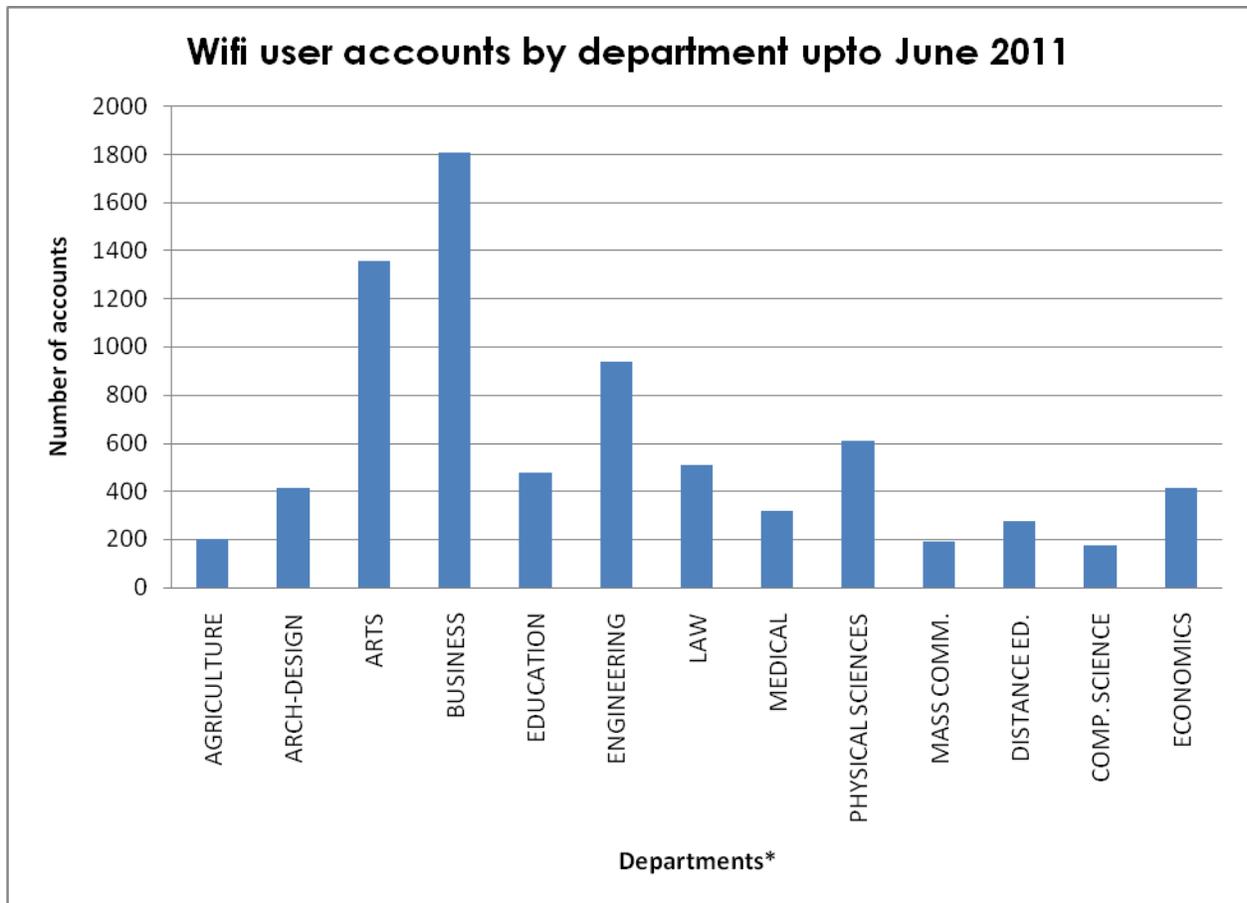


Figure 6 Wifi accounts by departments

4.4.1 Wifi network for Main Campus, SWA headquarters, ADD and adjacent student hostels

This project was completed in June 2010 at a cost of Kshs. 8M. There are 16 outdoor and 4 indoor Access Points (AP). Running to the period June 2011, post-implementation issues include reposition of outdoor APs, improving the user management module, and normal maintenance of the APs and core equipment. In the coming year, the focus will be improving the user access experience on the existing Service Set Identifiers (SSIDs) chemiweb and chemichemi.

4.4.2 Wifi Network for CBPS and School of Business (SoB)

This project is expected to end in the last week of June 2011 at a cost of about Ksh 20M. The hotspots will include the libraries, selected lecture halls, halls of residence and common open spaces in both campuses.

4.4.3 Wifi Network for CHS, CEES and CAVS

This will mark the final phase of the Wifi project at a cost of Ksh 36M, and is expected to be complete by June 2012.

4.5 Redundant fibre link

ICT plans to lay a redundant fibre link between main campus and Chiromo by December 2011 at a cost of Ksh 5M. This will create a redundancy between the two campuses and increase service reliability.

4.6 Campus LANs Logical segmentation (VLAN) and DHCP projects

The Initial design of the university of Nairobi local area networks in campuses had all network equipment's and services in one big network segment (one flat network). The assignment of private IP to individual users was manual. These scenarios lead to huge overheads in terms of network administration and prioritization of essential network services.

The objectives of the VLANS were

- Segmentation of campus LANs into smaller units (VLANs) for better management in line with best practices in the industry.
- Implementation of an automated private IP leasing system for better IP management (DHCP server services).
- Separation of data and voice into different VLANS
- Perform network reorganization and come up with better network documentation

The project led to numerous benefits that include easy network administration and scalability, Improved bandwidth performance for each network user, and improved network security

In the period up to June 2011, the project was successfully completed in Main campus, Chiromo, UHS, ADD and SWA. By June 2012, the network team targets to cover the remaining campuses.

5 USER SUPPORT AND MAINTENANCE SERVICES

ICT user support services within the university evolved from the need to devolve support services to all users utilizing University network services and products. The task is handled by user support section which acts as an interface between the users and the various network services, developed or acquired by University through ICT Center. The section ensures that users are able to productively, effectively and efficiently exploit available network services and resources.

The section largely deals with:-

- a) Provision of general User Support Service
- b) PC and User Peripheral Service
- c) Survey, design and development of Local Area Networks
- d) Network Support Service
- e) ICT User Training Service
- f) ICT Preventive & Maintenance Services

5.1 Personal computers

There are over 5,600 PCs in the University at present. The computers are distributed through ICT centre to Colleges for use by staff and students. The University through ICT centre procures computers every year in order to ensure staff and students access and productively exploit available network resources.

ICT aims at achieving the ratios of 1:1 for Teaching and Senior Administrative staff and 1:10 for students in general by the year 2012.

The graph below shows the trend of computer purchase for the last six years¹.

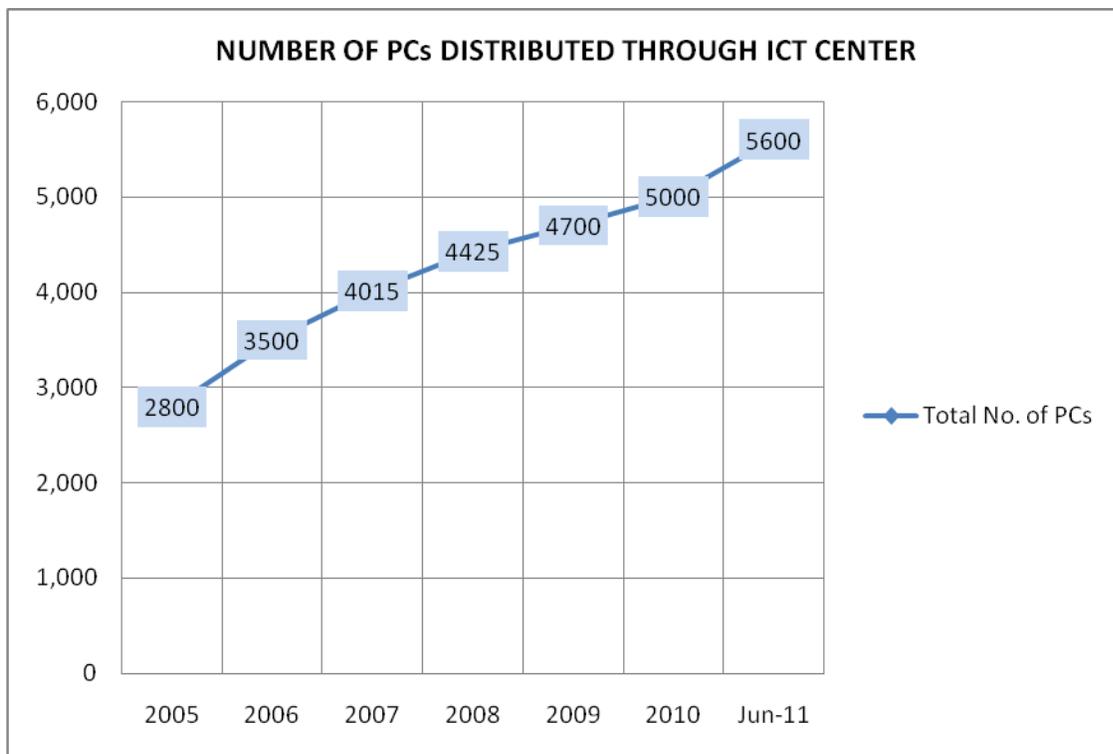


Figure 7 Number of PCs distributed through ICT centre

5.2 Data access points

Through the mandate of ICT Centre, the university has managed to implement and have installed approximate 6,666 operational data points in its network infrastructure. The latest additions are Parklands Phase II with 171 data points and Upper Kabete Phase II with 296 points and Kisumu Campus with 145 data points. In addition, 87 more data points were installed from different colleges. This is a remarkable improvement of an additional 709 data access points up to the period June 2011.

¹ The total number is higher as there are some departments that have PCs donated directly through grants and other programmes. University staff and students also have and use personally-owned PCs and Laptops on the University network.

By June 2012, the section projects an additional 693 data access points. The figure below depicts the growth of data access points over the past six years.

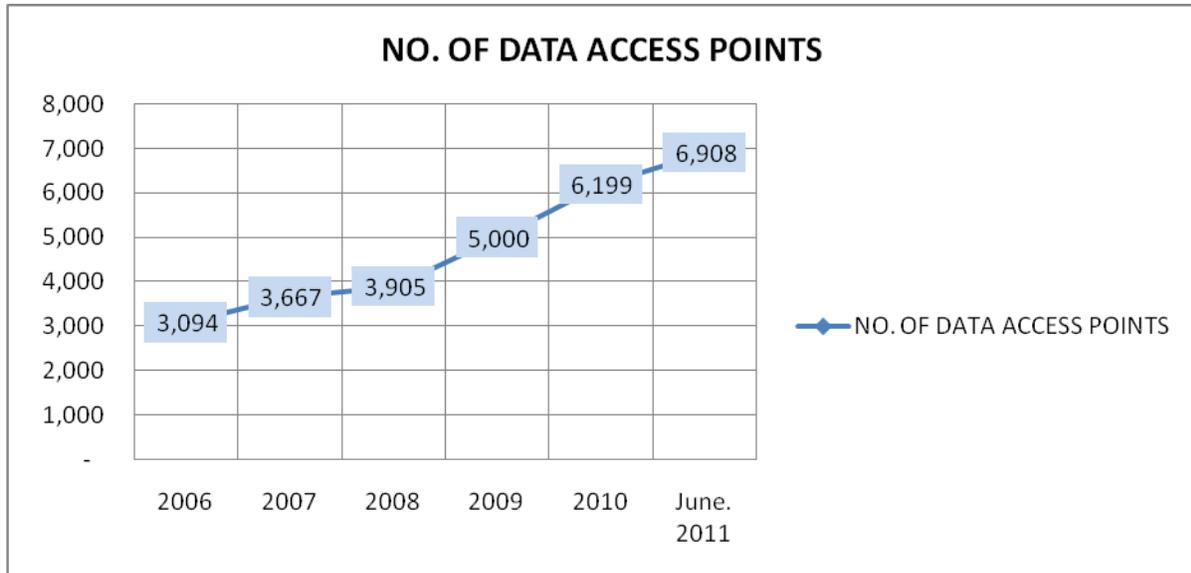


Figure 8 Number of data access points

5.3 Projects

In line with its strategic plan and commitment to provide quality services, ICT Centre has embarked on upgrading the university's old network infrastructure based on UTP Cat 5 cabling and low end switches to fibre optic and category 6 UTP cabling, in order to provide high data transmission speeds. This will ensure that the university aligns itself with modern IT technology demands that will cater for teaching and learning applications as well as service delivery systems that demand high bandwidth capacities.

The objectives of the section's projects are:

- To extend network infrastructure by increasing number of network access points
- To provide connectivity to remote campuses such Kisumu, Mombasa and extra mural centers
- To ensure that university network infrastructure adequately serves students and staff
- To provide seamless access to network based resources such as the internet, electronic resources, e-learning, and MIS systems among others.
- To support and provide preventive maintenance services to the network infrastructure and ICT equipment

The following LAN extension projects were completed in the year 2010/2011

- Parklands Phase II - 171 data access points at a cost of Ksh 7.6M.
- Upper Kabete Phase II - 296 data access points at a cost of Ksh 21.7M.
- Kisumu campus LAN extension – 145 data access points at a cost of Ksh 3.1 M.

In the year 2010/11, the following projects are ongoing;

- ADD network upgrade – Will activate 453 data access points at a cost of Ksh 13.5M.
- Kenya Science Lecture theatre network extension, with a total of 120 data access points and a WIFI network component at a cost of Ksh 6.8 M.

The following projects are at tender stage;

- Smartcard system for staff and student to be used in University business processes like identification, access control, library, health services, parking, etc.
- Examination halls IP Based CCTV Cameras system - This project aims to install a centralized CCTV system in major lecture halls across the campuses. The projected is expected to end by June 2012.
- Extra Mural Centers network in Garissa, Meru and Kisii. A total of 120 data access points at approximate cost of Ksh 8.5M.
- Data Centre Upgrade at a cost of about Ksh. 50M

The following projects are at the proposal writing stage;

- Fiber connectivity to extra mural centers in Nyeri, Nakuru, Kakamega, Meru, Garissa, and Kisii at approximate cost of Ksh 8.5M. The project will activate a total of 120 points and expected to end by December 2011.
- Connectivity to SWA SMU units and student common rooms in SWA headquarters, Mamlaka 1 and 2, Box Stella Awinja, and student center. Most of this will focus on extending the existing wireless coverage at a cost of Ksh 15M. This project is expected to be complete by June 2012.
- Help Desk system. The system will act as a support call centre to handle ICT user-related issues that will be captured and channeled to the appropriate section or staff for action. In addition to the various benefits the system will offer to the university community, it will also help in dealing with and handling user complains, raise the level of automation, as well as facilitating the management get ad hoc reports, asset management, staff productivity etc.
- A consolidated printing solution to provide students with printing services

6 COMMUNICATION AND DATA CENTRE SERVICES

6.1 Server farm upgrade

The Center is in the process of upgrading the Intranet Database Servers and Associated Storage at a cost of Kshs 50M. This project seeks to increase the University's computing capacity for automation of business process commensurate with the rising demand. The project includes the supply, installation and commissioning of two database servers, application servers, storage switches and storage arrays.

The project shall increase the current computing power and provide an agile, high availability database, application and storage platform for the University's MIS applications. This will ensure adequate capacity for the university's automated business processes, ease of growth and guarantee data security and integrity.

6.2 Voice over Internet Protocol (VOIP)

This project is in Phase II and seeks to upgrade and expand the current University's VoIP infrastructure and increase the VoIP phones at a cost of Kshs 40M. This shall increase the service capacity, tune-up the system; expand the service to cover new areas such as Kenya Science Campus and extramural centers. The project will also introduce a billing system.

Using a single infrastructure to carry all communication services across the campuses and centers, the University will save on high phone costs that have previously been observed. It will also provide a smooth migration from legacy voice system to the new platform of unified communication. The upgraded and expanded infrastructure shall be policy-managed and will provide a platform for future growth and introduction of new applications such as messaging and video conferencing.

7 ICT ADMINISTRATION

The merger between ICT and Telephone section created five positions of Deputy Directors and the following were appointed to those positions:

- Dr. Agnes Wausi - Deputy Director Research and Development
- Mr. Ibrahim Ofieno - Deputy Director, Management Information Systems
- Elijah Tenai – Deputy Director, Network Infrastructure Services
- Joseph Muchina – Deputy Director User Support & Maintenance Services
- Fredrick Adero – Deputy Director, Communication & Data Centre Services

Jedidah N. Kibuna was appointed to the position of Senior Assistant Registrar, Joram Kinuthia to Senior Assistant Systems Administrator, and Ms. Anne Murambi recruited as secretary.

The office of the director relocated to second floor SCI/ICT building. The new offices are spacious and well furnished, and ICT is grateful to the University management for the new facility. The Centre also acquired a new vehicle which has eased movement of officers across campuses.



Figure 9 New ICT offices on second floor of SCI/ICT building

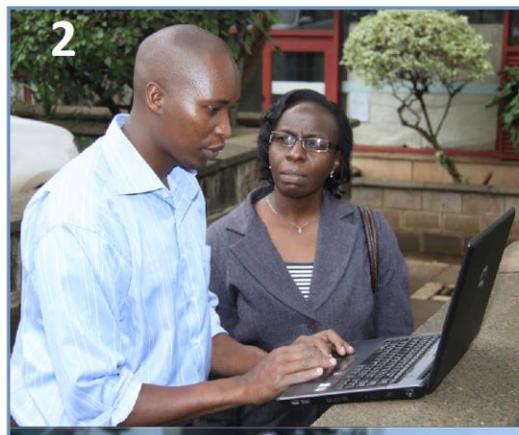
8 WEZESHA PROJECT INITIATIVE

The Kenya ICT Board through the Ministry of Information and Communications (MoIC) was provided with funds from World Bank, to carry out a project that would enable registered students in universities to obtain laptops. The project was launched on 3rd December 2010. At least 3000 students from the University of Nairobi have benefited in the first phase of this project, which is ongoing.

The purpose of the project which is under The Kenya Transparency & Communication Infrastructure Project (KTCIP) is to establish a computer-knowledgeable community. A financial incentive is given to students worth USD 120.00 of the cost of a laptop, and the remaining amount borne by the student.

With approval and provision of funds from the World Bank, students will benefit from the initiative in Phase II, in the year 2011.

9 ICT PICTORIAL



1. Students using the wifi connection outside JKML. 2. Mr. Ngigi, ICT Support Officer assisting a member of staff. 3. MIS training at the ICT corporate lab in Chiromo. 4. Mr. Masila and Mr. Onyari of the ICT core network team. 5. Mrs. Adura processing reports at the ICT data centre. 6. Open office concept at the new office floor.