

Appendix H

Addis Ababa University

Addis Ababa University, formerly known as Haile Selassie I University, was established in 1949 with 9 academic staff and 71 students. The university currently has over 20 000 students.

Internet access was first established in 2002

1. Introduction

Addis Ababa University started in 1950 as University College of Addis Ababa. It was renamed Haile Selassie I University in 1962 and then Addis Ababa University in 1975. The university has a large continuing education programme, and therefore an interest in distance education. It has an academic staff of 802, and 23060 students

The university has seven campuses, six of which are in Addis Ababa within 8 Km of the main campus. The seventh campus, Debre Zeit is 45 Km from the main campus, and is where the Faculty of Veterinary Medicine is located.

The departments are located on the various campuses as follows:

- The main campus is called 6-Kilo, and houses the Central Administration, the College of Social Science, the Faculty of Education, the Faculty of Law, the Institute of Language Studies, the Institute of Ethiopian Studies, the Faculty of Business and Economics, the School of Information Studies for Africa (SISA), the Main (Kennedy) Library, the Institute of Developmental Research, and the University Press.
- 5-Kilo houses the Faculty of Technology (North), the School of Pharmacy, and the School of Graduate Studies and the School of Graduate Studies. (The school of graduate studies has been moved to the Main Campus.)
- 4-Kilo houses the Faculty of Science, the Geophysical Observatory, and the National Herbarium.
- Tikur Anbessa Campus, which houses the Faculty of Medicine
- Lideta, which houses the Faculty of Technology (Building College), and the Institute of Pathobiology;
- There is also the Addis Ababa Art School, and the Yared Music School.
- Debre Zeit: Faculty of Veterinary Medicine.

A report in the on-line newspaper allafrica.com, states that:

Study papers presented at a two-day consultative workshop organized by the World Bank (WB) and the Ministry of Capacity Building (MoCB) this week at the Ghion Hotel revealed that Ethiopia stood lowest among developing countries in the use of Information and Communication Technology (ICT).

This report is available at <http://allafrica.com/stories/200305090701.html>. It is therefore not surprising that the University has identified ICT as one of the three major areas identified for strengthening and expansion.

2. Details of network

Addis Ababa University has a fibre optics 100 Mbps backbone that links the three main campuses. Three Cisco routing switches (one for each campus) and 49 Cisco Access switches connect the campuses.

There is a dedicated 512 Kbps link to the Internet provided by Ethiopia Telecommunication Corporation (see <http://www.telecom.net.et>). This link can be upgraded to 2 Mbps, and is a leased line (cable), although the onward connection to the Internet is via VSAT.

The MRTG graphs show that the average bandwidth rate (all hours) is around 344 Kbps. Bandwidth usage is therefore about 106 GB per month.

Addis Ababa University is the largest Internet user in the country, and the county's first Internet hub is on the campus. The link to the ISP is via cable, and all Internet access in Ethiopia is ultimately via VSAT.

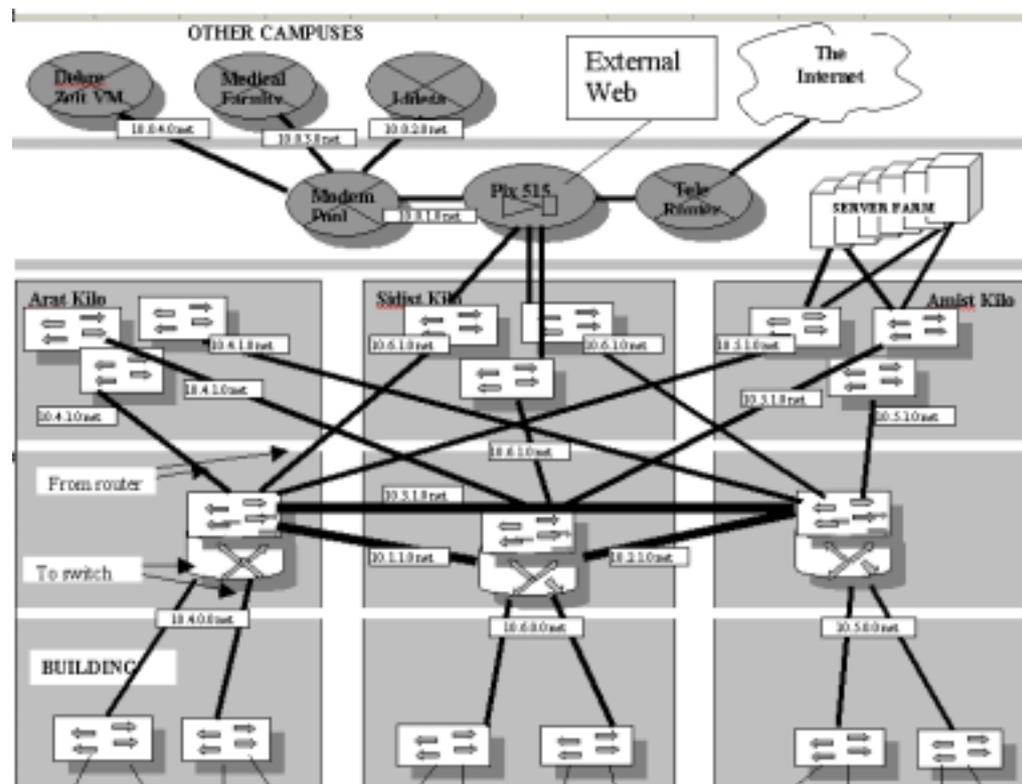
All laboratories, computer rooms, libraries and almost all offices within buildings in the various AAU campuses are connected to the campus backbone. Therefore, users have access to library services from around the campus. All postgraduate students (about 2000) and University staff (about 2000) are given access. However, only some undergraduates in IT related departments have access due to limited bandwidth on the International link.

The network was planned for implementation in two phases. The first phase connected the three campuses (6-kilo, 5-kilo and 4-kilo), while the second phase aims at extending the network to the more remote campuses at Lideta, Tikur Anbessa and Debre Zeit. Until the network for the remote campuses is in place, these users have a dial-up service.

2.1 Network layout

High capacity copper cables (Enhanced Unshielded Twisted Pair, Cat 5e) are used to connect individual rooms within buildings to nearby switches/Hubs. These, in turn, are connected via fibre optic cables. This infrastructure is expected to be resilient enough, and have sufficient capacity to last for many years.

The network also has a Pix firewall for security. A modem pool provides for a dial-up service. The network diagram below indicates the various parts of the network.



3. Servers and optimisation

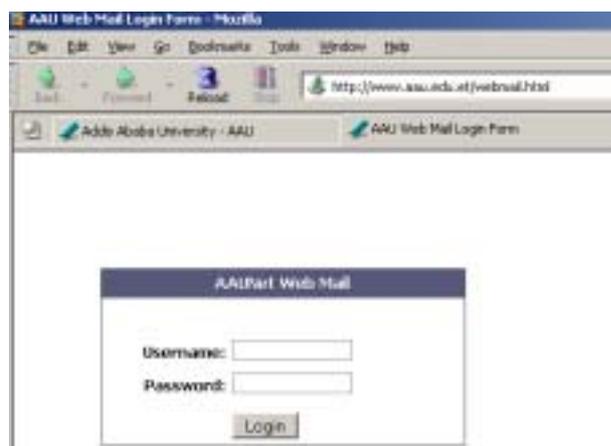
There are about 20 high capacity SUN UNIX servers that are used for web, proxy, ftp, mail, file serving, network admin, backup, DNS and DHCP. Four of the servers are proxy servers; some run Squid and others Iplanet (now called Sun ONE Web Proxy Server). The servers are supported by a local company called Micro Sun and Solutions. There is no peer caching between the 4 proxy servers, but there is a plan to do a central caching instead of peer. A quota system is also planned.

User PCs use MS Windows, and they log in to the Sun Solaris NIS directory. The Sun servers run Solaris PC NetLink (which is now free). PC Netlink is an all in one solution, enabling Windows users to authenticate to the Sun NIS directory. To Windows NT, 2000 and XP users, this is like using a Windows NT4 domain. The server also supplies file and print services. See www.sun.com/solutions/interoperability/netlink/pcnetlink1_2/index.html

3.1 Web based mail system

Software is kept on a file server to prevent several users from downloading the same software. There is a web based email system (see <http://www.aau.edu.et/webmail.html>), that allows users to get their email anywhere in the world, and dispenses with the need to use bandwidth hungry services like Hotmail.

The image below shows the clean interface of the AAUnet web mail service (no advertisements, etc)



4. Government proxy

An unique (in this study) point of interest about Internet access is that all access goes via a central government proxy. The government proxy is located at Ethiopia Telecom, which is also the ISP.

The purposes of the government proxy are:

- To block access to free internet telephony (Voice over IP). This is to protect the revenues of Ethiopia Telecom.
- Filtering some unwanted sites.
- Network address translation in order to use less public IP addresses

The disadvantages of the government proxy are

- It slows down the University's connection speed as the proxy does network translation of global IP to local and vice versa.
- It blocks some legitimate sites by mistake. If a site is blocked by mistake, users can ask for that site to be unblocked.

5. Usage policy

Users must fill in an application form, and adhere to a strict Network Use & Security Policy before they are given access to the Internet. Users also have to log on. The usage policy follows in full. There is also a library IT Related Policy (See Appendix C for both these policies)

6. Charging mechanisms

The University is planning a charging mechanism whereby departments are charged afterwards for the amount of bandwidth they have used. The university is also planning to charge by giving additional services (like disk space upgrades and personal web hosting)

7. Library-related

The library does not have a separate network or proxy servers, but form an integral part of the campus network.

Access is controlled to library services and journals by using a username and password. The library also assists people with accessing journals and on how to use the materials. The library helps researchers to find materials in journals and on the Internet. Online subscriptions are made available at the library.

The entry page for web based library services is <http://www.aau.edu.et/libraries/index.html>. A list of electronic journals and resources can be viewed at http://www.aau.edu.et/libraries/electronic_sources/electronic_sources.htm

8. Project management and history

In order to ensure successful installation of the network, AAU has set up a Project Steering Committee, and Technical Project Implementations Teams at both campus and central Levels. The Steering Committee is charged with advising AAU in project matters related to overall policy, budgetary proposals and financing. The technical teams are charged with two major activities:

- Working with vendor counterparts to install the network and support the network services for the initial period;
- Assisting AAU in establishing full-fledged centres at both campus and central levels to assume full responsibility of supporting the newly installed network.

A Network Implementation Office (AAUNet Service) at the central level was set up to coordinate activities. Agreements for funding was secured, and after consultation with Dr. Ian Ellery, Director of IT and Computing, University of East Anglia, SIDA/SAREC and Ethiopian Telecommunications Corporation, the network design was completed in 1998. ETHIOPIAID financed the core component of the project and the interconnection of the three campuses (6-kilo, 5-kilo and 4-kilo). SIDA/SAREC considers funding the extension of the network to the remaining campuses of AAU.

Ethiopian Telecommunications Corporation (ETC) undertook the procurement, installation, testing and commissioning of the fibre optic cables. At the same time, Sun Microsystems was contracted to supply and install the server equipment. Installation began in 2001, and Internet connectivity in July 2002.

9. Further reading

AAUNet web site:

<http://www.aau.edu.et/aaunet>

A discussion of Ethiopia Telecom's monopoly:

<http://www.balancingact-africa.com/news/back/balancing-act49a.html>

A discussion of Internet progress in Ethiopia, including at the University

http://www.ethiopians.com/Engineering/Internet_ET.htm

A follow-up to the previous article is at:

http://www.mediaethiopia.com/Engineering/internet_in_ethiopia_revisited.htm

10. Conclusion

ICT spending at Addis Ababa University took a different approach from the other universities in this study. Expensive Sun and Cisco equipment were installed, while only a small connection to the Internet is paid for. Furthermore, four proxy servers are in use while the connection to the Internet is as small as 512 Kbps.

However, this infrastructure leaves the university ready for increased international bandwidth.

The fibre network appears to be a good investment, that should be sufficient for a long time.

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