NETWORKING THE NIGERIAN UNIVERSITY SYSTEM: THE UNN EXPERIENCE

A PAPER PRESENTED

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INTRODUCTION

The effective management of our universities depends, to a large extent, on how university mangers have utilized available human and material resources. A lot of data on students, staff and finance abound in our universities. The organisation and processing of these volumes of data to generate valuable information for dissemination to all who might need it has become a very serious issue in our universities. Access to vital information which is available outside our own environments is even a nightmare in most of our universities. Information and Communications Technology (ICT) facilities are helping to provide means of solving these problems. But how have our universities embraced this rendition that is charging the way we perform our functions. This paper will attempt to review situations in our universities in general while presenting the experiences of an attempt at the university of Nigeria to set up computer networks to provide intranet and internet services.

The Trend

The initiative to organise things in the Nigerian university sector started with the MIS project, which was sponsored by the National Universities Commission (NUC) about ten years ago.

Poor infrastructural facilities in our universities was a major constraint in the realisation of the dream of that project. How could one single personal computer be used for entering the students data in a university with a population of over 10,000 students? Creating and storing information on one system is to lock up the database with only one person having access to it at a time. This is far from the ideal in a university environment where administrators require timely

and accurate information for planning purposes and academics require information for research and teaching.

The need for information sharing is more felt in a university environment. The development of local area networks to link up systems that will enable various users to share a common database became imperative. Many Nigerian universities today have local area networks in their libraries, finance departments, MIS Units, some faculties/departments, etc.

The need to link up these and be able to link up to the NUC's network gave rise to another project initiated by the NUC, the NUNet project.

The NUNet in every university was to provide the backbone for networking the campuses and be able to have a dial-up access to the NUC server for uploading and downloading e-mail messages. Many universities were able to use one system to have this dial-up connection, to the NUC, but others could not due to lack of reliable telephone lines (mostly analog) as well as other factors.

With the provision of digital telephone exchanges in most parts of the country now, some these problems seem to have been solved. Even in universities where LANs and WANs have been established, there is still no access to global information on the internet. The systems are limited to intranet services and sending and receiving mails through a dial-up connection to the NUC server.

An unfolding scenario is that every university now needs to have a direct access to the internet. A few universities have now succeeded in establishing a direct internet connectivity by installing a VSAT. This is a very welcome development but access is not yet universal because of lack of a campus-wide area network in most universities.

Constraints to Network Development

A number of factors can be deduced as responsible for the slow development of computer networks in our universities. These may include:

* **Lack of Funds**

    Computer networking, especially for large campuses, could be very expensive. Universities do not receive grants regularly and when they do, what they receive is hardly enough to pay salaries not to talk of investing in networking.

* **Lack of Commitment by University Administrators**

    Many university administrators may have their priorities placed elsewhere and not an ICT development.

* **Lack of Professional Staff to give Direction**

    It has been difficult to employ and retain professionally qualified IT personnel who should give a sense of direction for ICT development in the university environment.

* **Lack of Infrastructure**

    Most universities may lack adequate infrastructural facilities for establishing computer networks (e.g. buildings, telephones, etc).

* Disruptions in academic programmes due to strikes and closures of universities also affect any development projects.

The UNN Experience

The University of Nigeria, Nsukka has for many years been grappling with one problem or the other which have seriously affected most projects embarked upon by the university. But most important is the lack of funds for executing projects.

The NUNet Project

Initially, the NUNet project could not function in the university due to poor telephone facilities within Nsukka area. The analog telephone exchange at Nsukka made it impossible for people to make telephone calls to Nsukka. A digital exchange was activated at Nsukka only in January, 2001. Other factors including problematic modems contributed to the frustration of having the NUNet project succeed at Nsukka. Even the NUC's directive that universities could commit up to 20 percent of the Teaching and Research Equipment fund to the NUNet project, did not work at Nsukka. This was because whatever funds that were released to the university was not enough to pay staff salaries, as the administration would every month take a bank loan to supplement.

A Master Plan

However, the need to have the university connected to the internet became more pressing. A technical committee was set up to produce a master plan for networking the university. Visits to other universities were made to ascertain how they had achieved this objective. Specifically, UNIJOS becaused a pilgrimage ground for UNN, OAU, Ile-Ife was also visited.

UNN staff have always participated in most IT workshops organised by UNIJOS. These have help us to fashion our own IT programme.

Fig. 1 shows the master plan for connecting major buildings in the university via fibre optic cabling. Cybe cafes were expected to be provided in each of the buildings so that staff and students within the building could use the cyber cafes closest to them. the total estimated cost of the project was ₦132 million. The plan was adopted but could not be implemented because of funds.

Adopting the Building Block Approach

In order to start something at all, it was decided to adopt the `building block' approach. The master plan was then broken into phases. Already, a LAN exists at the MIS Unit purely for running the NUMIS. The Bursary has a LAN using the TETRA2000 package. The LAN at the library was for the TINLIB which has now been abandoned. The ETF recently provided a small grant for library development. This has been committed to re-establishing the library LAN. The Central Bank of Nigeria (CBN) also gave a grant of ₦25 million to the University as part of its Capacity Building Programme. The University immediately decided to utilize the grant for establishing direct internet connectivity.

This has now been committed to the first phase of the Master Networking Plan. In this phase, a VSAT is being established to provide direct access. A cyber cafe housing up to 50 workstations has been set up. Because of the huge cost of using fibre optic cabling, it was decided to use wireless radio bridges to link up the buildings. Meanwhile, the administrative centre housing the USAT hub while the Library LAN is also being linked.

The plan now is to add each of the buildings on the master plan to the network at a time, providing, a cyber cafe within. The cost of doing this is packaged and a sponsor is solicited. Already, a bank has promised to sponsor one of these. We hope to continue this way until the entire campus is networked. Linking the existing LANs to the network will ensure that library access is available to all on the network while the information on finance, students and staff records will be available to authorised users via the network. Our earlier efforts had been very frustrating due mainly to lack of funds but we are encouraged that there is a light at the end of the tunnel and we hope to eventually have a wired campus within the next two to three months.

In order to harmonise ICT practise and policies within the university, we have set up an ICT Board with the Vice-Chancellor as the chairman and the Dean of Physical Sciences faculty as the Vice-Chairman. The Directors of MIS Unit, Computer Centre and Computer Communications Centre (which is the NUNet Secretariat) are members amongst others. This board is to ensure that the various ICT centres in the university operate in a co-operative manner to avoid conflicts and duplication of efforts. This will ensure that ICT development in the university is well designed and implemented without divergent views.

The university has also registered as a corporate member of the Nigerian Internet Group (NIG).

Some Learning Points

* Our approach to campus networking has been influenced greatly by borrowing from other peoples initiatives and attendance to seminars and workshops (e.g. Wider-Net).

* Planning for campus networks should be an ongoing exercise because requirements and technologies do change.

* While designing networks, efforts should be made to ensure standardisation so that adding more blocks to the network will not be difficult.

* The building block approach helps to cut costs especially where the funds are very scarcely available, so that the network can grow grace fully.

* There is the need to review the plans periodically in the light of technological development.

*   Training and retraining of personnel is a very vital component of successful network management. University Administrators should be made to ensure that they sponsor such regular training of IT staff if their investments in network are to yield the expected dividends.

Internet Project
Fibre Optics Cabling Layout for University of Nigeria, Nsukka

RADIO LINK TO ENUGU CAMPUS

NSUKKA CAMPUS

BACKBONE

SEG H

Education

Institute of Education

Social

450m

250m

450m

SEG D

SGS

SP

Faculty of Arts [A]

200m

300m

K

Agric

J

Carver

Food &

SEG E

Pub

Personnel

Bank / Bookshop
MIS Proposed

Faculty of Arts

F
200m

Admi

Botany

MIS

Acade

Physical

L

G

Computi

150m

Library

I

300m

Solar Energy

M

800

400m

150m

Veterinary Medicine

650m

Concrete Slabs

Abuja

Agbebi Eng'g

Computer Communicatio

N

SEG C

SEG B

SEG