Computer Networking in Academic Libraries in Malaysia*

by

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INTRODUCTION

Computer networking is currently the buzz word in information technology. With the sophistication of network technology and the rapid advancement in microcomputer power and the reliability of telecommunication facilities and infrastructures, the networking process has become a reality in many institutions. The Local Area Network (LAN) system which interlinks computers and peripherals for shared resources within the institution has become a norm in various types of applications in institutions. Extending beyond the Local Area Network is the Wide Area Network (WAN) which allows interactions among different computer hardware and software but maintaining a common protocol for communication purposes. Undoubtedly, the networking process has opened up a new vista in information processing and resource sharing and will minimise to some extend the costly expenses in the duplication of data gathering and generation of information for institutions with similar interests. With proper setup, information can now be accessed remotely from anywhere, even from the home, if the links are provided and accessibility is granted to the user.

LIBRARY SOFTWARE PACKAGES IN UNIVERSITY LIBRARIES

There are in all seven universities in Malaysia, not including a new university to be established soon in Sarawak and the Institut Teknologi MARA (ITM) . In the last few years, all the university libraries and ITM have instituted computerisation programmes for their

library operations. However, there is diversity in the library software packages chosen for implementation. A number of different library systems operating on different brands of computers have been selected by the institutions for installation. All the systems involved are integrated library systems which provide modules for online cataloguing, acquisitions, serials control, circulation control and Online Public Access Catalogue (OPAC). Of the library software packages in use, the libraries of the Universiti Sains Malaysia (USM), the Universiti Kebangsaan Malaysia (UKM) and the International Islamic University (IIU) have installed the DOBIS/LIBIS System, a third party software developed by the University of Dortmund, Germany in conjunction with the University of Leuven, Belgium and marketed and supported by IBM. In the case of USM, the DOBIS/LIBIS System runs on IBM mainframe computer system, IBM 4381 which is also shared by the Registry and the Bursary Office of the University while it is a operated on a dedicated IBM mainframe computer system in UKM. The DOBIS/LIBIS System in the International Islamic University Library runs on a IBM minicomputer. The software has a facility to provide for the integration of the Arabic script. The Library of the Universiti Pertanian Malaysia (UPM) has chosen the Virginia Tech Library System (VTLS) which runs on the Hewlard Packard (HP) minicomputer system. The same software has also been selected by the Perpustakaan Negara Malaysia (PNM) (National Library of Malaysia). At the Universiti Malaya (UM) Library, the library software package used is ATLAS which is operated on the Digital Equipment Corporation (DEC) minicomputer. The Universiti Teknologi Malaysia (UTM) Library has installed the DYNIX library software package on the IBM/RISC 6000 Series 5 minicomputer. The Universiti Utara Malaysia (UUM) Library and the Institut Teknologi MARA (ITM) Library are using a locally developed software package known as the SISPUKOM System. This software has both the microcomputer and minicomputer versions and can run under different platforms. In the case of UUM Library, the software has been customised to run under the NEC Corporation minicomputer system. It is observed that the divergence in the use of library application software has occurred due to the ready availability of computer resources and the marketing strategies of the computer software vendors. Various factors contribute to this divergence among which are cost consideration, availability of institutional computer

resources and the desire of the institution to have a unique system of its own. It is hoped that this trend would not pose an obstacle to the overall objective of achieving computer networking among all the academic libraries in Malaysia.

THE DOBIS/LIBIS INTEGRATED LIBRARY SOFTWARE PACKAGE

The DOBIS/LIBIS integrated library software package was initially implemented at the Universiti Sains Malaysia Library in the beginning of 1988 with the introduction of the online cataloguing module. Since the cataloguing process of materials provides the main source of information for the creation of the library bibliographic records which form the core around which the other library activities revolve, it was thought fit to be the first module to be implemented. By that time, the retrospective conversion of the library catalogue had been completed about a year earlier and all the records were already in machine-readable form. The retrospective conversion which was carried out on a part time basis had began in 1979 at the start of the MALMARC System, a batch processing shared cataloguing system which was participated over the years until its closure in 1990 by five of the six university libraries and the National Library of Malaysia. It also had a participating member from the then Nanyang Technological Institute in Singapore. In the case of the MALMARC System, it had outlived its existence and being a batch processing system the processing was tedious, requires a fairly long turnaround time and was labour intensive. In implementing the DOBIS/LIBIS System, since IBM could not provide much assistance in the installation procedure, the computerisation process was undertaken solely by the professional staff of the Library who had acquired the relevant expertise through their experience in operating the MALMARC System together with the System Analyst in the Library. The Circulation Control module, after the bar-coding of the entire library collection and the production of bar-coded library membership cards had been completed, was next implemented, followed by the phased-in implementation of the Acquisitions module. The Online Public Access Catalogue (OPAC) with the acronym of KRISALIS (meaning the Chrysalis which will eventually transform into a beautiful butterfly) was introduced in July 1990

with the last module of Serials Control in January 1991 marking the full computerisation of the USM Library. In the meantime, the Branch Libraries also phased-in their operations in the network. In the case of the the Universiti Kebangsaan Malaysia Library and the International Islamic University Library, the DOBIS/LIBIS system is at various stages of implementation, among which online cataloguing and Online Public Access Catalogue (OPAC) are now "live".

NETWORKING OF THE LIBRARY RESOURCES

The Universiti Sains Library system comprises of the Main Library and three Branch Libraries. Outside of the main campus in Penang which houses the Main Library and the Pusat Teknologi Pendidikan dan Media (PTPM) (Educational Technology and Media Centre) Library, the Medical Library is located in the sub-campus in Kubang Kerian in the state of Kelantan, some 300 kilometers on the East Coast of Peninsular Malaysia, and the Engineering Library in the sub-campus in Sri Iskandar, Perak, about 160 kilometers away to the south of Penang on the mainland. Both these sub-campuses are connected to the main campus by means of dedicated computer lines through the telecommunication network of the country to the Computer Centre of the University. One of the most important features of the DOBIS/LIBIS System is the availability of networking facility for libraries at different geographic locations. In this connection, the Medical Library and Engineering Library are networked to the Main Library and the university library resources are made accessible to all users at any location in the system. It also provides the facility for E-mail (Electronic Mail) transmission among the networked members which has assisted in facilitating the fast turnaround time for interlibrary loan transactions and other activities.

CD-ROM NETWORKING

In recent years, CD-ROM (Compact Disc - Read Only Memory) databases have become an important source for the provision of information services in the library. As online information retrieval to external databases overseas such as provided

by DIALOG Information Service proved to be expensive, the CD-ROM databases are now being widely used, such as ERIC, Life Sciences Collection, Readers' Guide to Periodical Literature, MEDLINE, POPLINE, COMPENDEX, etc. Although the subscription to CD-ROM databases costs more than the hard copy, the virtues and usefulness of the CD-ROM outweigh the lesser cost of subscriptions to the hard copy publications in the library environment. A study by USM lately indicated that the subscription of CD-ROM databases is higher when compared with the hard copy subscription from between 2% to 400% and the decision to subscribe to the CD-ROM version will depend on the discretion and need of the institution. For a multiuser access in a LAN environment, the subscription charges for CD-ROM databases are much higher depending upon the number of users in the network. Many university librtaries in Malaysia are currently providing quite extensive CD-ROM informatioin retrieval services and are also in the process of exploring and planning the installation of CD-ROM networking in order to facilitate the wider use and disseminatiion of the information in the CD-ROM databases subscribed. The CD-ROM database being compact is a space saver and greatly minimise the floor space requirement which is required to provide the rows of bookstacks for backrun of the publications for the same period of time. Accessibility to search the CD-ROM is simpler and user have multiple approaches to access the information in the database through author, title, keywords, etc. In addition, once the CD-ROM databases are mounted in a networking environment, the information can be accessed remotely through the Local Area Network (LAN) as well as the Wide Area Network (WAN). In this situation, the libraries can cooperatively share their CD-ROM resources and cut down multiple subscriptions to the same CD-ROM databases if the local need is not too extensive.

DEVELOPMENT OF LOCAL DATABASES

With the widespread use of the micro CDS/ISIS software package for information storage and retrieval provided by UNESCO, many libraries and information centres have embarked on the creation of local databases. In the universities, local databases have been generated to complement the computerised library systems. Besides using

micro CDS/ISIS to create institution specific data bases such as academic staff publications, the databases that are normally established are geared toward subject-oriented information covering specific local or regional geographic areas. The work is undertaken to gather information which are seldom found in the published indexes and abstracts, as exemplified by the <u>Science</u> <u>and</u> <u>Technology</u> database of the Universiti Pertanian Malaysia Library and the <u>Socio-economic</u> <u>information</u> of <u>Malaysia</u>, <u>Singapore</u> <u>and</u> <u>Brunei</u> of the Universiti Sains Malaysia Library. As the version 3.0 of the micro CDS/ISIS software which was released recently allows for local area networking, using LAN systems such as Novell Netware, BANYAN Vines and others. The local databases thus created can be shared and accessed readily within the institution. Further development on the UNIX-based version of the micro CDS/ISIS software which is scheduled to be released sometime in 1993 will enhance the possibility of the resources generated to be shared nationally.

REMOTE ACCESS TO THE LIBRARY RESOURCES

With the introduction of the Online Public Access Catalogue (OPAC) in the Universiti Sains Malaysia Library, accessibility to the library resources are available through remote terminals and microcomputers with emulation adapters in the premises of the Schools and Centres of Studies in the University. Members of the academic community and the administrative staff are able to query the library system and access their individual records and the status of their book and media loans without the need to step into the library. In addition, they are able to send messages, request for extension of loans, ordering of books, etc. through the E-mail provision of the DOSBIS/LIBIS system. The process has certainly minimise the need of the academic staff to visit the library more frequently.

Most of the universities in the country have set up Campus Wide Network, for example, Universiti Utara Malaysia (UUM), or are in the process of doing so. At Universiti Sains Malaysia, plans are already in place to establish the Campus Wide Network with a fibre optic backbone. The Campus Wide Network will link all the Schools and Centres of Studies, departments and the student hostels throughout the campus as well as providing direct links to the Local Area Networks at the

Branch campuses in Kubang Kerian, Kelantan and Sri Iskandar, Perak. It is envisaged that when the Campus Wide Network is completed, a user can access the Library Online Public Access Catalogue (OPAC) and information services, including CD-ROM databases and local databases created, from any location in the main and branch campuses. It will also connect up with the Wide Area Network (WAN) within the country and provide access to world-wide computer networks.

NETWORKING AMONG THE UNIVERSITY LIBRARIES

With the installation of the DOBIS/LIBIS System at the Universiti Kebangsaan Malaysia Library and the International Islamic University Library, initiative has been taken to interconnect the three systems together. As the Universiti Sains Malaysia Library has been providing assistance and consultancy services to IBM for the setting up of the DOBIS/LIBIS System at UKM and IIU, it is inevitable that the library resources of the three institutions will therefore be shared so as to minimise the level of duplication in collection development, especially in respect of costly periodical subscriptions. Efficiency in interlibrary loan facility can be vastly upgraded and improved by means of the E-mail provision in the library software system. This development will certainly augur well for all the participating institutions so that a more comprehensive and wider coverage of materials can be realised because of the ease in accessing the information sources of the institutions concerned. Although the universities in the country have proceeded to install disparate library systems, the networking of the national library resources is foremost in the mind. It is hoped that once the library systems in the various university libraries have been stablised, the interconnection of the computer systems should be made possible without much difficulty with the present telecommunication infrastructure available and the guidedlines on open system connectivity concept provided by the Malaysian Government.

OPEN SYSTEM CONCEPT

In an attempt to rationalize and integrate all computer resources in the country, the Malaysian Government through the Unit Pemodenan Tadbiran Malaysia (Malaysian

Administrative Modernization and Management Planning Unit) (MAMPU) of the Prime Minister's Department has advocated an open system concept to be adopted. It has provided basic guidelines on the technical specifications in terms of operating system, system protocols and telecommunication requirements in order to allow connectivity for all Governement agencies and institutions, including the universities. In this respect, the Malaysian Institute of Microelectronic System (MIMOS) has established a nation wide network called JARING (Joint Advanced Research Integrated Network) which will link all academic and research institutes in the country. The word JARING means 'net' in the Malay language will also provide gateways to access information in the other parts of the world through the INTERNET facility.

CONCLUSION

Although the academic libraries have yet to be properly networked, the prospect for such a implementation is imminent. It is a matter of time before all the university libraries are linked together which will provide and maximise the resource sharing aspect for the provision of an efficient library service in the country. In this way, it is possible to allocate the resources more rationally and meaningfully in view of the large funding required to support the university library operations in the light of scarcity of resources.