

LIBRARY INFORMATION NETWORKS

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INTRODUCTION:

The invention of computers is one of the marvels of this century. They have created a revolution by changing people's way of life -all the way from technologists to the common man - with developments in various phases and generations since 1940. These developments include microprocessors and the parallel success of system and application software developments that have paved the way for the integration of hardware and software leading to multifarious applications. Another achievement during the last 15 years is that of computer communication networking and information which is at the heart of this transformation. The Advanced Research Projects Network's (ARPANET) Transmission Control Protocol/Internet Protocol (TCP/IP) and the International Standards Organization's (ISO's) Open Systems Interconnection (OSI) made the possibility of connecting computers with different operating systems, word lengths and manufacturers. Computer networks have become backbones for the transfer of files and remote access to information that is available in databases, through terrestrial and satellite connections.

Definitions:

- (a) A library network is broadly described as, a group of libraries coming together with some agreement of understanding to help each other with a view to satisfying information needs of their clientele.
- (b) UNISIST II working document defines Information Network as "a set of inter-related information systems associated with communication facilities, which are cooperating through more or less formal agreements in order to implement information handling operations to offer better services to the users.
- (c) The national commission on libraries & information science in its National Programme Document (1975) defines a Network as " Two or more libraries engaged in a common pattern of information exchange, through communications for some functional purpose."

Network Development:

- (a) The Report of the working group of the planning commission on modernization of library services and informatics for the 7 th five year plan 1985-90
- (b) The National Policy on Library & Information system document (1986) accepted by the Ministry of HRD, Govt, of India.
- (c) The report of National policy on university libraries prepared by the Association of Indian Universities (1987).
- (d) The UGC report on information system for Science & Technology under the Department of science & industrial research (DSIR), Government of India has been vigorously promoting on integrated Approach to library Automation and Networking

Types of Networks :

Presently, there exist three types of computer networks : (I) LAN; (II) MAN ; (III) WAN.

(I) Local Area Network (LAN):

LAN is a number of related computers and electronic devices that share information over a transmission media.

A typical use of LAN is to tie together personal computers in an office so that they can all use a single printer and a file server. The LAN can be within a building or a campus wide network.

(II) Metropolitan Area Network (MAN):

Attempts are made to develop this type of network (MAN) in all the metropolitan cities like Delhi, Calcutta, Bangalore, Madras etc in the country.

(III) Wide Area Network (WAN):

A similar network on a large scale involving offices over different cities and countries is referred to as WAN, which is specially designed to interconnect data transmission devices over wide geographical areas.

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Categories of Network:

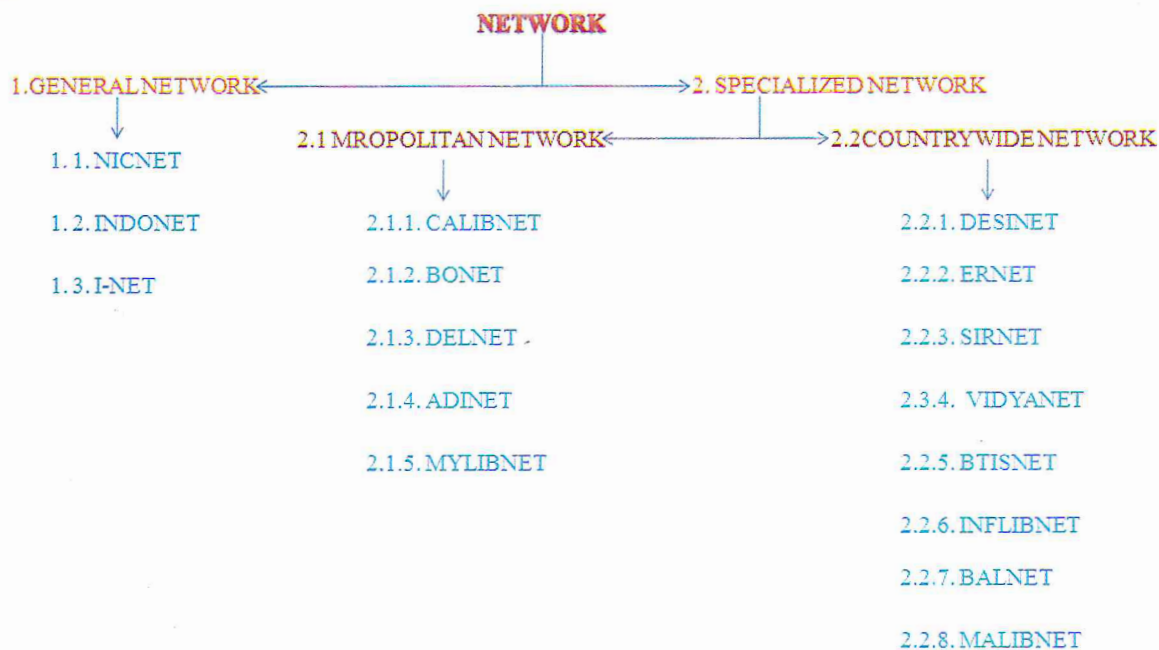
Library Network has been categorically divided into two. They are viz.

1. General Network

2. Specialized Network (the later can further be divided into two viz)

2.1 Metropolitan Network

2.2 Countrywide Network



1. General Network:

1.1 NICNET: National Informatics Network

NICNET is one of the nationwide networks that is mainly dependent on the satellite-based data communication of the National Informatics Centre, Planning Commission, Government of India, exclusively for government organizations and in operation since 1988. The primary objective of the network is to provide computing and communication infrastructure to aid planning and monitoring of schemes and decision-making activities of government. It consists of a master earth station connected to a host computer at New Delhi. The micro earth stations - around 700 - are being located at all regional, state, district centres and selected commercial centres, that in turn communicate to the master earth station, hence providing the widest reach in the country.

NICNET maintains its leading edge with the incorporation of a powerful Ku-band-based national information highway as an overlay network on the existing SSMA/ CDMA architecture (comprising VSAT links operating at 1,200bps to 9,600bps). This overlay network was established in 14 cities and is being extended to 70 cities with the central hub at New Delhi. This information highway supports high-speed communications up to 2Mbps. It is being connected to over 200 international networks in 160 countries.

1.2. INDONET: INDONET data Network

The first Indian commercial computer communication network promoted by the Computer Maintenance Corporation Limited (CMC), Hyderabad, has been in operation since 1986. The objectives of INDONET are: distributed data processing facility, computer service bureau consultancy, promotion of advanced networking technologies, providing computer power to users across the country, public database services and software export. In its first phase, the network had three IBM 4361 computers at Calcutta, Mumbai and Chennai, PDP 11/44 at Delhi and ROB 1055 at Hyderabad as the backbone of the network with access points at Bangalore, Ahmedabad and Pune. INDONET has adopted IBM's Systems Network Architecture and uses dedicated lines of 2,400/4,800bps. The intra-city communications between CMC customers and INDONET nodes are through leased lines, dial-up access using telephone lines and digital packet radio techniques.

In its second phase, the number of INDONET centres planned to grow to 100. It would operate as a STAR network with a control point at Delhi, using rooftop 3m earth stations and packet switching technology for routing of data from the central station to other INDONET centres. The Mumbai node of INDONET has been connected to the international Gateway Packet Switching System (GPSS) of VSNL, thereby facilitating entry of public data networks of other countries.

The facilities offered by INDONET are; ACME (store and forward messaging techniques), file transfer, distributed data processing expertise, special purpose software (FOCUS - a fourth generation hierarchical database package, MPSX - to handle linear programming problems, CICS - for developing TP applications, etc.), international gateway for international trade/business information and scientific/technical databases and database access hosted on itself. The databases were Centre for Monitoring Indian Economy's financial performance of more than 2,000 organizations in India, TOUR-NET - tourism information and NICRYS - on crystallography, experimentally.

1.3. I-NET: National Packet Switching Network

I-NET was commissioned by DOT during October 1991, paving the way for a highly reliable, cost effective and flexible way of data transfer and accessing information nationally. In the first phase, it was planned with eight nodes at New Delhi, Mumbai, Calcutta, Chennai, Bangalore, Hyderabad, Pune and Ahmedabad; and connected through 9.6 and 64 kbps links. In subsequent phases, this facility was extended to other cities to cover the country. I-NET supports CCITT standard interfaces/protocols X.25, X.28, X.29, X.3 and X.75. Access is through dedicated leased lines for asynchronous (X.28) or synchronous (X.25) and dial-up mode (X.28).

I-NET offers facilities for interlinking terminals and computers through packet switches and users could make international data calls to other networks through the GPSS at Mumbai. It also offers other facilities, including reverse charging, closed user group, permanent virtual circuit and fast select.

2. Socialized Network:

2.1. Metropolitan Network

2.1.1. CALIBNET : Calcutta Library Network

The CALIBNET was envisaged as a metropolitan network in 1993, linking 38 libraries in Calcutta with financial support from NISSAT. The prime objective was to institute systematic interlibrary co-operation and document delivery among the networked libraries for effective resource sharing. The applications to be supported are electronic mail, file transfer, remote logging to databases and document access.

The participating libraries computerized their in-house functions such as cataloguing, serials control, acquisition and fund accounting, circulation and user services. These have been interconnected through X.25 protocol. The Network Services Centre provides global information services for all the users of the participating libraries. The services include current awareness, union catalogues, database, access to national and international networks.

2.1.2. BONET: Bombay Library Network

Title Sponsor: Bombay Library Network

Aim Services: NISSAT&NCST(1994). To Promote Cooperation among libraries in Bombay.

2.1.3. DELNET: Developing Library Network

The DELNET was initiated in 1988 at the India International Centre, New Delhi, with the support of the National Information System for Science and Technology (NISSAT), Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, and began its operations in 1991. DELNET consists of 28 libraries as participating members. The objectives of DELNET include: to promote sharing of resources among the participating libraries, to co-ordinate efforts for suitable collection development, to assist member libraries to process collections, to develop specialist bibliographic databases, project specialists and institutions, to possess and maintain electronic communications, to co-ordinate with other regional, national and international networks for exchange of information, to publish a newsletter devoted to networking and sharing of resources and human resources development in library automation

2.1.4. ADINET: Ahmedabad Library Network

ADINET is an Information Network of Libraries in and around Ahmedabad. ADINET was registered as a Society in October 1994. Initially it was sponsored by National Information System for Science and Technology (NISSAT), Department of Scientific and Industrial Research, Government of India.

2.1.5. MYLIBNET: Mysore Library Network

MYLIBNET was set up during May 1995 in the city of Mysore with financial support from NISSAT, and is housed at the Central Food Technological Research Institute. About 116 colleges/institutions are affiliated to the University of Mysore; of these 34 college libraries are located within Mysore. These were networked in the first phase. The objectives of the MYLIBNET are: to share resources of the libraries, to provide e-mail, to develop software tools for better library management, to create awareness in the field of information technology, to set up an information base in collaboration with industry, to conduct surveys and disseminate information about new arrivals of books/ journals and events like seminars/workshops/ training programmes.

MALIBNET offers such services as assistance to automate library in-house operations, e-mail under ERNET, access to various databases, training of trainers in information technology, and hosting of member library information on the server for the participating libraries.

2.2. Countrywide Area Network

2.2.1. DESINET: Defence Science Information Network

DEINET is a proposed bibliographic information network for defence covering only unclassified scientific and technical information. The Defence Science Information Documentation Centre, New Delhi, would take the initiative in planning and implementing the network. The users of DESINET would be scientific, research and defence personnel from the Department of Defence, Department of Defence R&D, and the Department of Defence Production & Supplies. The defence bibliographic information network will also have close links with other similar networks like NICNET for exchange of information on mutually agreed terms.

2.2.2. ERNET: Education and Research Network

The ERNET was initiated in November 1986, to reach hundreds of academic/research institutions covering a number of science and engineering disciplines in the country. It was established with the assistance of the Government of India and the United Nations Development Programme, involving eight premier institutions in the country as

participating agencies: the five Indian Institute of Technology, the Indian Institutes of Science, Bangalore, National Centre for Software Technology, Mumbai, and the Department of Electronics, New Delhi. It provides services through these eight backbone nodes at geographically spread locations. The main sites are connected through terrestrial links. With the successful commissioning of Sat-WAN hub, ERNET sites are being progressively connected through the VSAT network.

The network provides the services of electronic mail, file transfer, remote logging, database access, bulletin board and access to about 120 networks in other countries. Access protocol for WAN is X.25 and with other networks through X.75 protocol.

2.2.3. SIRNET: Scientific and Industrial Research Network

The Council of Scientific and Industrial Research set up a computer communication network (SIRNET) for the exchange of information among its 40 or more laboratories during 1990. SIRNET uses the infrastructure of ERNET. The main objective of SIRNET is to help organizing indigenous online database services on leather technology, food technology, natural products, chemistry, radio physics and medicinal plants. It planned to provide a bulletin board service and set up teleconferencing facilities through the network apart from facilitating the flow of routine administrative and financial information and the exchange of library resources.

2.2.4. VIDYANET:

VIDYANET is a proposed dedicated communication/computer network to meet the needs of scientists and research workers in laboratories/institutions of excellence in the country. The major objective of the network is to stimulate co-operative research, day-to-day exchange of research information and to execute joint projects and publications. In the first phase VIDYANET would link up ten institutions: the All India Institute of Medical Sciences (New Delhi), the Indian Agricultural Research Institute (New Delhi), the five IITs, the Indian Statistical Institute (Calcutta), the National Physical Laboratory (New Delhi), the Bhabha Atomic Research Centre (Mumbai), the Indian Institute of Geomagnetism (Calcutta), the National Centre for Software Technology (Mumbai) and the Tata Institute of Fundamental Research (Mumbai). Subsequent phases of networking would cover leading institutions in Ahmedabad, Bangalore, Bhopal, Calcutta and Chennai. It aims to link up institutional computers (Cyber, VAX, DEC, etc) via telecommunication lines and provide facilities like transfer of files of any type - data, programs and documents, electronic mail, exchange of immediate messages, access to remote applications, databases and libraries.

It intends to allow users to develop databases on specialized areas like biotechnology, super-conductivity and supernova research. It also aims at providing rapid means of communication by linking computers at various institutions in India and abroad with similar networks like EARN (European Academic Research Network, Geneva) and BITNET through a gateway.

2.2.5. BTISNET: Biotechnology Information System Network

The Department of Biotechnology, Government of India, during the seventh plan (1985-90), set up ten specialized information centres in genetic engineering, animal cell culture and virology, plant tissue culture, photosynthesis and plant molecular biology, oncogenes, reproduction physiology, cell transformation, nucleic acid and protein sequences, immunology and bio-process engineering. The micro VAX-II computers of these ten centres are linked through micro earth stations using X.25 protocol. The identified user centres have PC/AT systems linked to the principal nodes. The entire system was piggybacked on NICNET to take advantage of its communication facilities and computing power.

2.2.6. INFLIBNET: Information Library Network

INFLIBNET is a major national effort to improve information access and transfer, as a support to scholarship and learning. The University Grants Commission initiated INFLIBNET during April 1988 as a computer communication network to link libraries, academics and research communities across the country. It covers all disciplines, R&D institutions and national organizations like the Council of Scientific and Industrial Research, the Indian Council of Agricultural Research, the Defence Research and Development Organization, the Indian Council of medical research, & the Indian Council of social science Research, etc.

2.2.7. BALNET: Bangalore Library Network

Title: Bangalore Library Network

Sponsor: JRD Tata Memorir,. Librr,./ (1995)

Member: 100 Libraries

2.2.8. MALIBNET: Madras Library Network

Academicians and scientists initiated the MALIBNET in 1991, to form a network of libraries in Madras city. It came into operation as a registered society in 1993 to share resources among libraries and information centres. Around 50 libraries are participating in the network. The resources are shared and made available to libraries with the aid of information technology. The main objectives of MALIBNET are: to foster growth of knowledge and undertake scientific research in the fields of library, documentation, information sciences and technologies; evolve a network of libraries and information centres in and around Madras initially and in other parts of the state later; establish appropriate linkages with other regional, national and international libraries, information and documentation centres and networks; and organize conferences, lectures, workshops and seminars.

The services from MALIBNET include: access to a list of current serials of the member libraries, specialized databases, and development and communication-based services.

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