Chapter-7

Findings and Suggestion

7.1 Introduction:

The driving force in observing the creation and use of information in the current millennium is the integration of Internet / World Wide Web and standards of all computer application in the networked environment. The rapid advancement of resources available in electronic form combined with immediately access is an essential component in the work environment for students and scholars in all discipline at all levels. Academic libraries are facing increasing pressures from multiple sources. Libraries can no longer be expected to support research and development from their own resources due to the information explosion, increasing cost of library materials, shrinking library budget etc. The level of collection development is declining at a faster rate and is restricted to core collection to serve the immediate needs of the user’s community.

This situation calls for co-operation in developing collections to make maximum use of their existing resources. The libraries have to come together and more towards resource sharing to reduce the common costs and continue to be dynamic provider of all information through college library networking to offer users an extended service.

Science and Engineering college libraries should be connected with each other. So optimum utilization of their resources can be possible with minimum cost.
7.2 Finding:

1. Out of 66 science and engineering colleges, 16(23.88%) are affiliated to Gujarat University and out of 16 colleges 5 are situated in Ahmedabad region.

2. 22(33.33%) colleges are established during 1955-1964.

3. 42(63.64%) colleges are managed by educational trusts.

4. 58(87.88%) colleges run their library for 5 to 8 hours. The highest working hours 13 to 16 hours found in one library.

5. The study reveals that the 51(77.27%) libraries have library and information science professional heading the library but it is also true that many college libraries do not have regular full-fledged librarian to head the library. Many of them are adhoc librarian which affects the decision making in the college library system. It is noted from the study that only 7(10.61%) libraries have qualified librarians having M. Phil and Ph. D. in library and Information Science.

6. Regarding manpower in these college libraries are categorized under two broad categories, namely professional staff and non-professional staff. 48(72.73%) libraries have only 1 to 2 professional staff and 29(43.94%) libraries have only 1 to 2 Non-Professional staff. It is found from the study that Science and Engineering college libraries have inadequate professional and non-professional staff.

7. Library Users:

(a) Most of the college libraries reported large increase in students’ population.

(b) Members of Teachers also increase in all colleges.

(c) Library services have also offered to administrative staff.
8. **Library Budget:**

On perusal of the replies received more than 33(50%) libraries have less than Rs. 1,00,000 budget for books and periodicals in year 2004-05, 2005-06, 2006-07. Very few have provision of budget for non-books material and IT equipments on regular basis.

It is also found that the 2(3.03%) libraries have highest budget for book, it is up to 16 Lakhs in the academic year 2004-05, 2005-06 and 2006-07.

It is also found that the 1(1.52%) library has highest budget for journal subscription it is in range of 8 to 12 Lakhs in the academic year 2004-05 and it was more than 25 Lakhs in the academic year 2005-06. While 9 to 12 Lakhs budget for the journals subscription in the academic year 2006-07.

9. **Expenditure:**

On perusal of the replies received it is found that 33(50%) college libraries have expenditure of less than Rs. 1 Lakh for books and periodical. Only 2(3.03%) libraries have expenditure for E-product on regular basis.

It also found that the 3(4.55%) college libraries have expenditure for books in the range of 16 to 25 Lakhs in Academic year 2004-05. 2(3.03%) libraries have expenditure for books in the range of 12 to 25 Lakhs on Academic year 2005-06 and 1(1.52%) library has expenditure for books in the range of 12 to 16 Lakhs in Academic year 2006-07.

It is also found that the 2(3.03%) libraries have expenditure for E-Product in the range of 3 to 3.5 Lakhs in Academic year 2004-05 and 2(3.03%) libraries have expenditure for E-Product in range of 3.50 to 4 Lakhs in Academic year 2006-07.

It is also found that library expenditure for resources is increased year by year.
10. **Collection:**

A collection of college library consists of both print materials and non-print materials. The study has made clear that the most of college libraries are rich in print materials as compared to non-print materials for their respective libraries. Most of the college libraries have good collection of book whereas many of the colleges have building their library collection. Libraries provide open access to their library collections except manuscripts and rare books and other reference materials which are otherwise essential for cultural posterity and future use, besides providing invaluable collection for historical research.

Through mere numerical value of the collection is not the decisive factor to judge the standard of college libraries, but the efficiency and effectiveness of a library depends largely both on quantity and quality of its collection print materials and non-print materials

11. In the year 2006-07 subject and language wise books were added in 64(96.97%) college libraries, out of that 46(69.70%) libraries added maximum books on chemistry, 38(57.58%) libraries on Physics and 37(56.06%) libraries on Biology.

12. In 2006-07, 64(96.97%) college libraries were purchased total 25,173 books, worth Rs. 1,16,88,580 out of that 24,648 books in English language and 525 in Gujarati language.

13. 66 Science and Engineering college libraries have total book collection 11,99,278, out of that 11,39,603 in English language, 58 in Hindi language and 59,617 in Gujarati language.

14. **Indian and Foreign Periodical:**

The numbers of periodicals subscribed and received are also not in consonance with the number of users and research activity offered. It is also observed that majority of Science and Engineering college libraries receive less than 40 journals. As the faculty member and students depend on Indian and Foreign periodicals for latest information and development the low submission of periodicals would definitely effect the teaching and research and develop of the faculty and students.
It is also observed that 3(4.55%) libraries have expenditure for Indian periodicals in range of 3,00,000 to 6,00,000 and 2(3.03%) libraries have expenditure for foreign journal up to 8 Lakhs in academic year 2004-05, 2005-06 and 2006-07 respectively.

15. **E-Journals:**

Only 6(24.24%) college libraries were subscribed E-Journals, out of that 4(6.06%) libraries were subscribed ASCE, ASME, Springer, Taylor & Frances, ICE, IEL, ASTP, ACM publisher E-Journals i.e. 328 E-Journals.

16. **Library Services:**

Most of the libraries provides all most all library services such as lending of book and loose issues of periodicals, Reference Services, Referral Service, Bibliography Services, Photocopy Services, News clipping, Inter library loan, Current Awareness Services (CAS), Selective Dissemination Information Services but only 8% libraries offer Indexing, Abstracting, Translation, Access to Local and National Database and Access to International data services.

17. **IT Infrastructure:**

**Hardware**

The data with regard to available infrastructure shows that many college libraries have purchased the computer system. But they do not have provision to update the computer configuration. It is opined that the infrastructure becomes obsolete in less than 5 years and libraries need to change the system.

It is also to note that some college libraries introduced IT recently, have the sophisticated computer systems as compared to these college libraries implemented the computer system early.
Almost all the libraries have procured the Laser printers or Desk-Jet printers. Few college libraries use Barcode scanner, GIST Card, ISM packages to deal with multilingual collection, Scanner (OCR), UPS and CVT Stabilizers.

**Software**

53(80.30%) Science and Engineering college libraries have windows XP operating system with MS-SQL database management system.

**Network Tools**

Library should have network connectivity using the available data network viz, NICNET, VSNL, ERNET, private ISP’s etc. But most of the libraries have dial up access.

It is also observed that 22(33.33%) college libraries have network environment using the fiber optic cable, manageable and unmanageable Hub, enhanced CAT-5, LAN bridge network, CISCO Router and Switches.

18. **Membership:**

13(19.70%) College libraries are connected to INFLIBNET availing the service of the centre and found it useful. However they felt need for a strong network connecting all libraries. It is observed that INFLIBNET provides access to various databases but the databases is not as comprehensive as it should be for Science and Engineering college libraries. There are few Science and Engineering libraries having connectivity to local, regional networks and getting fee-based services.

19. **Database Development:**

42(63.64%) college libraries have developed their databases. Most of all type of resources are converted in Machine Readable form.
20. **Standards :**

42(63.64%) college libraries have used CCF Standards to input the data and MARC 21 format for rendering the entries.

21. **Software for Database Creation and in- house operation:**

34(51.52%) college libraries have using SOUL for data creation. Libraries use the same software for both data entry and in-house operations. Findings of the study show that the software is being used in most of the college libraries for housekeeping functions. Viz, in house developed software, SOUL, LIBSYS, and LIBRARIAN etc. It is also observed that 24(36.36%) libraries have proposed to automate their libraries within one year.

22. **Factors that have influence the Computerization:**

Most of the libraries strongly agreed that management is the main factor for introducing computerizes in the library. After that grant to increase efficiency and new services, Library computerize, special provision of grant from UGC/INFLIBNET, to be a part of INFLIBNET and other network are subsequently important factor for introduction computerize in their library.

23. **IT based Service:**

42(63.64%) college libraries have completely computerized their activities and they desire to provide automation based service like access to library, OPAC service, Recent addition list, Individual alert services, Contents page service, Reference Service and online access to database service based on external resources like CD-ROM Database, Indexing and Abstracting service and Contents page service and service based on Internet, such as E-mail services, www services OPAC services, electronic journals services etc.
24. **Basic Requirement for Cost Effective Network Model for College Libraries:**

Following are the pre-requisites for establishing Cost-Effective Network

25. Finance to a library is as a blood to a human body. Most of the college libraries were found anemic. The free flow of funds can make the automation and networking possible in these libraries. Most of the libraries have no specific budget for their automation, even though computerization seems to be the most talked subject among the library authorities and the government in this cyber age. It is also found from the study that availability of grants is only found the Government of Gujarat.

26. The most of the college libraries are willing to participate in the proposed networking of libraries and willing to share the resources and expense.

All the College libraries, except one have started automation and are facing problems of one or the other kind and are expecting problems in future also. It was found that Science and Engineering College libraries in Gujarat face the problems such as lack of skill attitude towards automation. Most of the Science and Engineering College libraries are interested to install house developed software but due to lacking of staff process of automating their library is going on very slow rate. A prospect of automation and networking is vision of library functionaries and how true it proves to be is a matter of time to come. The college librarians being more aware of that networking will reduce the retrieval time of the users considerably and consider as a Cost-Effective proposition and feels that it will help in resources sharing and in house the status of library.

The college librarians also feel that networking of their libraries will help in expanding the library services. It takes time to perceive the actual result of automation and networking.

Networking of Science and Engineering College libraries of Gujarat is a dream and the present state is in a bitter reality. If the dream is to be realize
and goals are to be achieved, the hurdles like shortage of funds and staff, lack of compatible environment, awareness and attitude have to be overcome at the earliest with the positive approach that glass is half-full.

7.3 **Hypotheses Testing:**

**H-1** Library automation and computerization have been implemented in all science and engineering college libraries.

On the basis of collected data, 42(63.64%) science and engineering college libraries have implemented automation and computerization of their resources but 24(36.36%) college libraries have not yet started library automation and computerization so this hypothesis one is rejected.

**H-2** Till the advent of information technology, most libraries are remained like islands except minimum configuration in interlibrary loan service.

Out of 66 science and engineering college libraries not a single library is connect to each other except only inter library loan is possible so this hypothesis is true.

**H-3** All the science and engineering college libraries are facing the problem of finance, so it is impossible to acquire and store all documents.

This hypothesis is true because all science and engineering college libraries have facing the problem of finance and they are not able to provide all documents as per their library users needs.
7.4 Suggestions

From the entire study and analysis following Suggestions are made.

1. In the light of the present study it is essential on the part of the state government and UGC to make an effort to ensure and appoint qualified college librarian and library staff to achieve the highest degree of success, particularly college librarian should be clear the National Eligibility Test NET Exam and these should be NCETL (National Computer Eligibility Test of Librarians) for fresh appointed of college librarians.

2. Library Professionals must be deputed for hands on computer training not only for the computer application but also for basic hardware and software training. So that most of the technical problems can be solved including the minor technical problems of daily routine which can no longer be a hardware on the part of the library administration thereby, making the library independent in such tiny troubles.

3. Action should be taken by the college library to start computerized information processing and retrieval service. It is also recommended that all Science and Engineering College libraries should take an action to participate in library networks immediately.

4. A common mechanism devises to produce the library materials avoiding the duplication in the procurement.

5. A separate budget for automation and network environment with the provision of computer trained library professionals at least for an initial period of 3 to 5 years should be released annually by the funding agencies.

6. It is suggested that Science and Engineering College libraries uniformly in the use of operating housekeeping software etc should be maintained.

7. Each Science and Engineering College libraries must have LAN networks facility connecting all the departments.

8. All Science and Engineering Libraries must be connected to other library network. So these library network facility can be utilized for the benefit of academic users and provide better access to electronic resources.

9. Science and Engineering College libraries should have special provision in library budget for the acquisition of non print material as well as E-product,
such as CDs, DVDs, E-Books, E-Journals, CD-ROM Databases, Online databases etc.

10. Variety of high quality product should be made available in college library and new products and services should be launched tailored to users need as a prime responsibility.

11. The manpower working at college libraries need proper orientation from time to time to get accustomed to latest development in technology.

12. For the convenience of users, distribution channels such as mail, messenger, telephone, online, E-mail etc should be used for delivery of information.

13. All Science and Engineering college libraries should support to proposed network model in all respect.

14. A well established college library must take the relative responsibility to maintain the search engine and proposed model network.

15. All Science and Engineering College libraries must use uniform standards and provide data to national agency in a uniform format. Viz. MARC-21 Format, Irrespective of the software being used for different activities libraries must ensure the data compatible with the MARC 21 standards for data exchange and must provide access to such collection.

16. In order to take care of the multilingual collections, the study suggests that solution equivalent to UNICODE is needed. And this is very essential in the Gujarat context.

17. The users’ education programme in new information technology must be under taken by the library in a systematic way every year.

18. There is an urgent need to develop next generation, web enterprise management solution.

19. There is an urgent need to develop cost effective network model for optimum utilization of resources in Science and Engineering College libraries in Gujarat.

After the study of the Science and Engineering College libraries in Gujarat, the researcher founded possibility to link the college libraries with each other for resource sharing and networking, after providing all the basic requirements for college libraries network.
7.5 **Cost Effective Network Model:**

It will be Cost-Effective Network Model because:

1. Those science and Engineering College libraries do not have Library automation and networking infrastructures they have to expense one time for these facilities.

2. 66 science and engineering college libraries have total budget of Rs. 4 Crores, each and every college would be using 4 crores rupees through the library networking and it will be reduce minimum duplication of resources.

3. Out of 66 science and engineering colleges, 42 college libraries have library automation facility only, 22 college libraries have library automation and networking facilities. So that 22 colleges will be connected through network with the minimum expenses and taking minimum time.

4. 66 science and engineering college libraries will be getting 12,95,000 books, 1,54,000 reference books, 34,950 bound volumes, 700 theses, 640 dissertation, approximately 4210 Non print materials like E-Books, Audiovisual aids and cassettes, film, video cassettes, Gramophone Records, Micro film, compact disk, multimedia etc. for their use.

5. Participating libraries will be using 1565 current Indian journals and 235 current foreign journals through library network.

6. If participating libraries are making one centralized agreement for E-journals subscription with the publishers for multiuser purpose, so that each and every libraries can access E-journals with the minimum cost and reduce the duplication.

7. If centralized acquisition of books and periodicals will be done by participating libraries than it will cost-effective.

8. Documents, skilled library staff and costly instruments sharing will be possible through library network by the 66 science and engineering libraries, so it will be cost effective network.
7.6 Proposed Cost-Effective Network Model for Science and Engineering College Libraries.

7.6.1 Objective

The reasons for participating in the network are exploit resources, optimum utilization of resources, minimization of duplication, providing types of services to their users, saving of costs especially foreign exchange and overcoming financial constraints, etc.

The following objectives are therefore proposed for the Gujarat Science and Engineering College Library Network (GUJSCIENGLIBNET) at Ahmedabad

1. To evolve a network of Gujarat Science and Engineering College for optimum utilization of Information resources.
2. To optimize the utilization of funds by minimizing duplication in all spheres.
3. To promote and improve co-operative activities like acquisition, exchange, storage, binding, training, reference and documentation service, Inter library loans etc among the science and engineering college libraries.
4. To standardize library services and activities in all the GUJSCIENGLIBNET.
5. To minimize the cost of function and service of all the science and engineering college libraries in the Gujarat state.
6. To provide access to other Regional/ national/ international networks.
7. To participate with all regional/ national/international Networks.
8. To enhance the value of the different libraries to the technical, science community as such a network can truly participant in the teaching, research, climate activities and research activities of the participant college more effectively.
The following would be the salient feature of GUJSCIENGLIBNET.

1. This network would be able to provide document needed by its users on inter-library loan from other participating libraries.
2. It would be able to identify books and other document available on a subject in order to facilitate development of proper collection.
3. It would be possible to share cataloguing of reading materials, by using the descriptive information and thus maintaining standard and reduce costs.
4. This network would be able to know information in the field of science and engineering in the world and to disseminate speedily at the grass root level.
5. It would be possible to avoid duplication of costly information sources by some mutual agreements and the same can be shared through the network.

As regards objectives of the study researcher suggests an action plan for:

1. To computerize the resources of all the science and engineering college libraries of Gujarat state and to offer online facility for the benefits of the users. The work to be completed on a project mode basis and in a time bound period i.e. one year.
2. Through procurement of hardware and software, networking environment will be created in Science and Engineering College Libraries.
3. To develop a model to offer networking facilities to all Science and Engineering college libraries in the Gujarat state thus to create GUJSCIENGLIBNET a state level network. Under this programme the resources of the all Science and Engineering College libraries will be made available and accessible not only to academic user of the state but also researcher, scientist, academic community in the state and extended to other information seekers. It will help in ultimately creating national level academic information network of Science and Engineering Network. This has become an immediate necessity to help our country to maximize the social and economic benefits.
4. It is also planned to include Research and Development Centers of Science and Engineering industry in the proposed network to get the benefits of industries about current-scenario. This will be helpful to the academic users and social communities to aware with the present research and development.

7.6.4 Infrastructural Facilities

Computerization of all the activities of all science and engineering college libraries within Gujarat on priority basis will be competed on the specific time duration of one year. All libraries house-keeping jobs, viz, acquisition of resources, classification of documents, circulation control, serial control, reference and information services, etc. to be computerized. From a definite date all new acquisitions would be done in machine-readable form. As for retrospective conversion, the work should be started simultaneously. They also responsible for actual conversion of records and creation of databases and for editing the databases created. All the created databases will be sent to central library for editing and merging into databases.

To complete the above mentioned work for creating college library’s databases, it is proposed that one time provision to meet the expenses to covert the records in a time bound period be made as a special case.

The researcher divided all science and engineering college libraries in five zones such as like Ahemedabad, Vadodara, Mahesana, Rajkot and Surat Zones. Each zone will work as a zone Hub centre and Ahemedabad zone Hub centre will perform zone Hub centre as well as main Hub centre for GUJSCIENGLIBNET.

Gandhinagar, Toani College of Science, Kutchh, Shri R.R.Lalan College of Science, Kutchh and Government Engineering College, Kutchh-Bhuj, College libraries will be connect with Ahmedabad zone Hub centre.


Shri M.N.Virani Science College, Rajkot will perform as a Rajkot zone Hub centre. Matrushri Virbaima Mahila Science College, Rajkot, H and H.B.Kotak Institute of Science Rajkot, Government Engineering College, Rajkot, Bahuddin Science College, Junagadh, Shri M.P.Shah Science College Sur, Shri M.P.Shah Science College Surendra Nagar, Lukhdhirji Engineering College, Morbi, Shree Parekh Science College, Mahuva, M.D. Science College Porbander, Shantilal Shah Engineering College, Vartej, Bhavnagar, Government Engineering College, Bhavnagar and Sir, P.P.Institute of science, Bhavnagar college libraries will be connected with Rajkot zone Hub centre.
S.V. Institute of Technology, Surat will perform as a Surat zone Hub centre. Navyug Science College, Surat, Shri, P.T.Sarvajanik College of Science, Surat, Government Engineering College, Surat, Government Science College, Daman, B.K.M. Science College, Valsad, Government Engineering College, Valsad, Government Science College, Chikhli, Shri V.S. Patel Science College, Bilimora, B.P. Baria Science Institute, Navsari, Patidar Gin Science College, Bardoli, Shri A.N. Shah Science College, Kamrej Char Rasta, Surat, Shri Maharaja Rajendra Sinhji Science College, Rajpipla, Government Science College, Valod, Shri Jayendra Puri Science College, Bharuch, Government Engineering College, Bharuch college libraries will be connected with Rajkot zone Hub centre.

In the above proposed network, researcher has assumed that each zone will act as a hub center for their area college library. Then each hub center will be connected with main HUB center L.D. Engineering College which is located at Ahmedabad. Thus zone-wise five hub centers will be formed.

All the database created by all participate college libraries will be sent to their related zone hub center then each zone hub center will send it to main hub center at Ahmedabad. The main centre will provide all the data to individual colleges directly or through hub center. All the hub centers will be connected with each other. So far as L.D. Engineering College, Ahmedabad library will be main Hub centre.
Initial Budget Estimate

If any library having about 35000 books, they must need infrastructure facilities as per under:

(A) One time Cost:

(1) 30 Computers × Rs 27000/- = Rs. 8,10,000/-
(2) Networking cost with necessary equipments = Rs. 6,00,000/-
(3) Database entry (RS. 2/- Per Book) = Rs. 70,000/-

Total Cost……… = Rs.14, 80,000/-

(B) Recurring Cost

(1) Annual Maintenance Contract (AMC) after three years approx 5 % of the Computer cost.
(2) Network maintenance charge.
(3) Updating of zone wise HUB Centre and Main Hub Centre

7.6.5 First Level

First of all Science and Engineering College libraries of Gujarat state will be fully computerized. Library management software will be used for housekeeping operations and other operations. There will be switches to connect the computer in different sections and UTP (CAT-5) cables will be used. It will run on Sco UNIX platform and also all nodes at different sections will have attested configuration and operating system installed in it, to run the client server of library management software. One network will be started for the library operations and services which will connect various sections in the library

Another network will be established to connect different machines used for internal services in the library. It will run under latest network operating system platform and it will facilities internet connection to all departments, administration office within the campus. The connection to the departments will be made possible through main switch within library using
proxy server. For this purpose college library have to purchase software of proxy servers. The necessary computer system for internet connectivity will be provided by the concerned departments. This campus network will work as a whole system.

Network for library resource sharing can also be established. The objective of a computer and communication network can be attained without much expense. By establishing such network all the participating libraries will be able to browse the catalogues of the college library without visiting the college library and vice versa. If all the libraries participating in the network prepare their catalogue in machine readable form and make a collective databases like union catalogue, then by establishing a network all members of each library will be able to know what is available in other libraries. This will further help to reduce the unnecessary duplication of reading material in different libraries.

7.6.6 Second Level

After the development of all Science and Engineering College library campus network, zone network will be developed jointly. The developed network will be act as part of proposed GUJSCIENGLIBNET. It will be supported by UGC, AIECT and State Government.

Science and Engineering college library, will act as the coordinating centre. All the departments, administrative section and Science and Engineering Research and Development centers etc. in campus as well as in adjoining areas will be connected with the main hub provided at L. D. Engineering college library, Ahemedabad. This main hub will be connected each zone wise HUB centre of science and engineering college library. Thus college campus network and zone network will be developed as a part of GUJSCIENGLIBNET.

The network would be extension of original information network. However, it will cover both the Science and Engineering college library as well as Research and Development centers in the city and adjoining areas. In
this way the college library network will really became network covering both academics as well as Research and Development centers in among science and engineering college. It will be more effective, cost-effective and comprehensive college library network.

### 7.6.7 Phase wise Implementation

It is to be kept in mind that before the actual implementation of the proposed GUJSCIENGLIBNET, a detailed system analysis will be done. GUJSCIENGLIBNET will be a model for other state. The success of this project depends upon the following factors.

1. Having adequate computer facilities.
2. Appointing efficient library personnel and training for development and maintenance of the system.
3. Collection, context and methods of entering bibliographical data.
4. Existence of an efficient and reliable communication system.

Considering the existing infrastructure facilities, financial resources, manpower and technological aspects, the implementation of the GUJSCIENGLIBNET in three successive phases.

The phase wise implementation tasks to be undertaken as follows:

#### 7.6.7.1 Phase-1

In the first phase there is basic requirement to be drawn a technical plan. The plan will be prepared with the help of library science, computer and networking experts.

1. Introduction of computer culture in the Science and Engineering college libraries and Research and Development centers.
2. Computerization of each Science and Engineering college libraries participating under GUJSCIENGLIBNET.
3. Setting up networking infrastructure.
4. Selection of proper location of the computer laboratory.
5. The laboratory should consist of required hardware. It should also contain layout of hardware, software, printers, nodes and also electric installation plan, switches and earthling, wiring, stabilizer to take care of electric fluctuation etc.
6. Software installation- The authorized integrated library management software.
7. During the phase – I, researcher is also proposed to connect various Research and Development center around the science and engineering college libraries to share their various resources.
8. All the departments within colleges will be connected with library.
9. Internet connection will be terminate on the switches in the library and it will extend to the all the nodes of library and various departments.
10. To get better bandwidths of the internet connectivity. It is proposed that leased line should be requiring with high and type of modem..
11. After completing the phase I, one fiber optic link will be connected with related zone hub center during phase-II.
12. Nodes
   - Laboratory will have a latest configure computer.
   - All the nodes will be easily accessible for the users.

Each section likes acquisition, serial control, circulation, cataloguing, and reference services will be provide at least with one node. But circulation section should have two nodes for charging and discharging activities. For internal use, there should be separate nodes.

13. Air conditioners as per requirement.
14. Providing training to the exiting staff.
15. House keeping work.
Phase 1 - College Library Internal Network (LAN) for Science College Libraries

- Mathematics
- Statistics
- Environment Studies
- English
- Zoology
- Internet Connection
- From R & D Center
- To Zone
- Computer Department
- Sports
- NSS and NSC
- Microbiology
- Chemistry
- Physics
- Biology
- Botany
- Administrative Science

Legend:
- 24 port switch
- UTP Cable
- Computer
- Fiber Cable
- Modern for internet access
Phase I – College Library Internal Network (LAN) for Engineering College Libraries

- 24 port switch
- UTP Cable
- Computer
- Fiber Cable
- Modern for internet access
First of all the housekeeping functions e.g. acquisition control, serial control, circulation control, fine system, user records, cataloguing etc. should be started with the database creation activities both the work should be completed within one year, of which six months for automation of science and engineering college libraries and six month for editing of the entered data. Then the data will be merging with zone hub center record.

7.6.7.2 Phase-II


Sabarkantha, Sheth Motilal Naylorchand Science College, Patan, Pramukh Swami Science College, Kadi, Smt. M.G. Panchal Science College, Pilvai and Urban Bank Science College, Mehasana college libraries will be connect Mehasana zone Hub centre with fiber backbone.


5. Navyug Science College, Surat, Shri, P.T. Sarvajanik College of Science, Surat, Government Engineering College, Surat, Government Science College, Daman, B.K.M. Science College, Valsad, Government Engineering College, Valsad, Government Science College, Chikhli, Shri V.S. Patel Science College, Bilimora, B.P. Baria Science Institute, Navsari, Patidar Gin Science College, Bardoli, Shri A.N. Shah Science College, Kamrej Char Rasta, Surat, Shri Maharaja Rajendra Sinhji Science College, Rajpipla, Government Science College, Valod, Shri Jayendra Puri Science College, Bharuch, Government Engineering College, Bharuch college libraries will be connect Rajkot zone Hub centre with fiber backbone.

6. Setting up the network

7. Linking of the participating libraries and information centers.

8. Introduction of various user services through network.
Phase II - A: To connect the various College Libraries with Ahmedabad zone with Fiber Backbone
Central Hub,  
L.D. Engineering College,  
AHMEDABAD ZONE & 
Main Central HUB  
GUJSCIENLIBNET
Phase II – B: To Connect the Various College Libraries with Vadodara Zone with Fiber Backbone
Phase II – B To Connect the Various Science and Engineering College Libraries with Vadodara Zone with Fiber Backbone

Central Hub
Prof. T.K. Gujjar Library Faculty of Technology Engineering VADODARA ZONE

- Patel J.P. Davolarala Science College, Borsad
- R.A. Patel Science College, Borsad
- B.C.J. College of Science Khambhat
- M.B. Patel Science College of Anand
- V.P. and R.P.T.P. Science College, V.V.Nagar
- Brila Vishvakarma Mahavidyalay V.V.Nagar
- Faculty of Technology Dharam Sinh Desai Nadiad
- J & J College of Science, Nadiad
- Parekh Brother Science College, Dakor
- Navjivan Science College, Dahod
- Govt. Engineering College, Godhara
- Sheth P.T. Science College, Godhara
- D.N. Science College, Dabhoi
- Govt. Eng. College, Dahod
Phase II – C: To connect the various College Libraries with Mahesana zone with Fiber Backbone.
Phase II – C To Connect the Various Science and Engineering College Libraries with Mahesana Zone with Fiber Backbone

Govt. Engineering College, Modasa
MEHESANA ZONE

- H.N.S.B.Ltd. Science College, Sabarkantha
- P.H.G. Muni. Sci. College, Kalol
- P.T. Science College, Modasa
- Urban Bank Science College, Mahesana
- Sheth Motilal NayaChand Science College, Patan
- Govt. Eng. College, Khanpur
- M. G. Panchal Science College, Pilvai
- Pramukh Swami Sci. College, Kadi
Phase II – D: To Connect the Various College Libraries with Rajkot Zone with Fiber Backbone
Phase II – D To Connect the Various Science and Engineering College Libraries with Rajkot Zone with Fiber Backbone

Shri M.N. Virani Science College, HUB Centre Rajkot Zone

- Sir. P.P. Institute of Science, Bhavnagar
- Matrushri Virbaima Mahila Science College, Rajkot
- H & H. B. Kotak Institute of Science, Rajkot
- Govt. Engineering College, Rajkot
- Lakhadirji Engineering College, Morbi
- Shri M.P. Shah Science College Surendra Nagar
- Govt. Engineering College, Bhavnagar
- Shantishah Engineering College Vartej, Bhavnagar
- M.D. Science College Porbandar
- Shree Parekh Science College, Mahuva
- Bahauddin Science College, Junagadh
Phase II – E: To Connect the Various College Libraries with Surat Zone with Fiber Backbone
Phase II – E To Connect the Various Science and Engineering College Libraries with Surat Zone with Fiber Backbone

Central Hub
S.V. Institute of Technology
Surat Zone

- Narmada Science College, Bharuch
- Shri Jayendra Puri Science College, Bharuch
- Govt. Engineering College, Bharuch
- Govt. College of Science, Valod
- Govt. Science College, Daman
- B.K.M. Science College, Valsad
- Govt. Engineering College, Valsad
- Govt. Science College Chikhli
- Shri. V.S. Patel Science College, Bilimora
- Shri. P.T. Sarvajanik College of Science, Surat
- Govt. Engineering College, Surat
- Shri A.N. Science College, Kamrej Char rasta
- Patidar Gin Science College, Bardoli
- B.P. Baria Science Institute, Navsari
7.6.7.3 Phase - III

Phase III: Proposed Network of Science and Engineering College, Libraries of Gujarat State

Central HUB
Shri M.N. Virani
Science College
Rajkot Zone

Central HUB
L.D. Engineering
College Hub Main Centre
Ahmedabad Zone

Central HUB
Govt. Engineering
College Modasa,
Mehsana zone

Central HUB
S.V. Institute of
Technology,
Surat Zone

Central HUB
Prof. T.K. Gujjar
Library faculty of
Technology and
Engineering
Vaodara Zone
1. Bringing the entire zone Gujarat, Science and Engineering College libraries and Research and Development centers into the network.

2. Join hands with local, regional, national and international network like ADINET, DELNET, INFLIBNET and OCLC.

3. User’s training should start for a successive library network. The use of information product and services should be started.
Conclusion

1. All the Science and Engineering college libraries and Research and Development center will connect to the related zone center during phase – II, while each library Local Area Network will be established during phase – I.
2. Each zone center will act as a hub for their area colleges and it will be connected with main state wide hub at L.D.Engineering College, Ahmadabad during phase – III.
3. As a result of phase – I, II and III, proposed GUJSCIENGLIBNET will be developed.
7.6.8 Hardware Configuration (for College level)

Suggested minimum computer hardware configuration:

A. Configuration:

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Terminals</td>
<td>Dual Core - 30 Nos.</td>
</tr>
<tr>
<td>Cock speed</td>
<td>2.93 GHz</td>
</tr>
<tr>
<td>RAM</td>
<td>4 GB</td>
</tr>
<tr>
<td>Storage requirement</td>
<td>160 GB</td>
</tr>
<tr>
<td>Disk I/O</td>
<td>Minimum 5 Mega Bytes/hr.</td>
</tr>
<tr>
<td>Printing Load</td>
<td>2000 pages / day</td>
</tr>
<tr>
<td>Communication Load</td>
<td>Minimum 5 Mega bytes/day</td>
</tr>
<tr>
<td>Fax</td>
<td>3000 bytes/day</td>
</tr>
<tr>
<td>Monitor</td>
<td>17” VGA</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>Combo Drive with writer</td>
</tr>
<tr>
<td>NIC Card</td>
<td>10/100 Mbps supported</td>
</tr>
<tr>
<td>Keyboard, mouse, modem</td>
<td>(as per requirements)</td>
</tr>
</tbody>
</table>

B. Technical Specification

1. 64 bit main frame computer with 2.93 GHz clock speed, main memory 1 GB and disk space 160 GB.
2. At least 30 terminals with latest configuration and preloaded latest operating system and antivirus software.
3. 10/100 Mbps network supported card.
4. One each of lesser printer, dot-metrics and one letter quality with 300/pm, 30 cps speed.
5. One each of back up and I/O processor.
6. Two streamers – tape drives, two cartridge tape drives.
7. Desk top publishing, two CD-ROM drives and two fax machine.
8. To run under UNIX or an equivalent multi-user operating system.
9. Availability of communication software.
10. UPS as per requirement.
7.6.8.1 Suggested Network Hardware Configuration

Switches:

**10/100/1000Base T – Layer – 2 Switches (24 Port)**

- **Standard** IEEE 802.3, 802.3u, 802.3x, 802.3ab
- **Ports** 24 No. of RJ-45 10/100/1000
- Copper Cabling Type Category 5e or Gigabit supported
- LEDs system, 1 through 24
- Certifications FCC Class B, CE
- Operating Temperature – 32°F to 122°F (0°C to 50°C)
- Storage Temperature – 40°F to 158°F (-40°C to 70°C)
- Operating Humidity 20 % to 95 % Non-Condensing
- Storage Humidity 5 % to 95 % Non-Condensing

Modems:

Modern should be have with following features

- Providing high-speed internet access via a common telephone cable.
- Supporting multiple line modes (self-adaptive lines)
- Providing a 10/100 Base – T Ethernet facilities
- Providing a USB 1.1 interface
- Move highly reliable, simpler operation and less power consumption
- Supporting the bridge or Router mode.
- Supporting the built-in PPPoE dialup function
- Supporting the Network Address Translation (NAT) function
- Supporting the DHCP server function
- Supporting the quick configuration function
- Environmental requirements
- Environmental temperature: 0°C-40°C (32°F-104°F)
- Humidity: 20 % - 90 % (non-condensing)
- Power specification
- Power adapter: Input: AC 100-240V to 50/60Hz 0.3 Amax
  Output: DC 5.2V DC 1A
7.6.8.2  Suggested Network – Software Requirements

- The computer can not work without software, hence the basic software i.e. operating system is a must. It may be UNIX, Windows. Antivirus software should be installed.

- To connect computer with the main switch plug the UTP cable with RJ-45 connector at the both end of the cable.

- Proper bandwidth management software like cyberoam software is required which will provide the facility for the login and manage the bandwidth of each user on the IP address.

- For connecting website it needs Java computer and for searching website.

- For library operations it needs to have Library management software.

- Library Management Software (Window based package)
IBM Blade Center S Chassis (For Zone)

Specifications

<table>
<thead>
<tr>
<th>IBM Blade Center S at glance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form factor</td>
<td>Rack/7U, high-availability midplane</td>
</tr>
<tr>
<td>Blade bays</td>
<td>Up to six 1- or 2-processor and up to three 4-processor</td>
</tr>
<tr>
<td>Disk bays</td>
<td>Up to 12 SAS, 12 Near line SAS, or 12 SATA, or an intermix of the disks</td>
</tr>
<tr>
<td>Media</td>
<td>Optional DVD multi-burner accessible from each blade server</td>
</tr>
<tr>
<td>Switch Model</td>
<td>SAS, Gigabyte Ethernet, Fiber Channel switch models available</td>
</tr>
<tr>
<td>Power supply Model</td>
<td>Up to four (hot-swap, auto-sensing and redundant 950 W/1450 W with load-balancing and failover capabilities)</td>
</tr>
<tr>
<td>Cooling Models</td>
<td>4 hot-swap and redundant blowers standard</td>
</tr>
<tr>
<td>Systems management software</td>
<td>1 management module standard</td>
</tr>
<tr>
<td>I/O ports</td>
<td>Keyboard, video, mouse, Ethernet, USB</td>
</tr>
<tr>
<td>Systems management software</td>
<td>Open and easy systems management and trail deployment tools</td>
</tr>
<tr>
<td>Predictive Failure Analysis</td>
<td>Hard disk drives, processors, blowers, memory</td>
</tr>
<tr>
<td>Light path diagnostic</td>
<td>Blade server, processor, memory, power supplies, blowers, switch module, management module, hard disk drives and expansion card</td>
</tr>
<tr>
<td>Limited Warranty</td>
<td>3-year customer replaceable unit and onsite limited warranty</td>
</tr>
<tr>
<td>External storage</td>
<td>Support for IBM system storage solutions (including DS and NAS family of products) and many widely adopted non-IBM storage offerings</td>
</tr>
</tbody>
</table>
**Highlights**

- Integrates servers, SAN storage, networking, I/o and applications into a single chassis.
- Uses standard office power plugs with 100 – 240 V, so you do not need a data center to take command of your data.
- **Featuring** the Blade Center Start Now Advisor, making it easy to set up servers, SAN storage, network switches and SAN switches, all from a single console.
- Flexible model technology integrates Intel, AMD Opteron™, or POWER™ processor-based blade servers supporting a wide range of operating system.
- Comes with management tools that are open and easily integrated, allowing you to focus on your business, not your IT.
- Helps built greener IT infrastructure with powerful IBM Cool Blue™ technology and a portfolio of products and tools to help customers plan, manage and control power and cooling.
- **Features**

<table>
<thead>
<tr>
<th>Easy to use, space saving 7U chassis that incorporates hot-swap disks.</th>
<th>Blade center S can meet your IT needs with six server bays and up to 5.4 TB of SAS, 12.0 TB of Nearline SAS or 12.0TB of SATA or an intermix of the disks.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highly integrated IT infrastructure helps simplify the deployment, of servers and storage.</td>
</tr>
<tr>
<td></td>
<td>Comes with an easy setup flyer and the Blade Center Start Now Advisor tool to get you up and running quickly.</td>
</tr>
<tr>
<td></td>
<td>Blade Center S uses standard office power supplies, enabling you to build your IT outside of the data center.</td>
</tr>
<tr>
<td></td>
<td>Support for common Blade Center blade families including Intel servers, AMD Opteron servers, new workstation blades, and POWER-based blades. Allows you to select the blades based on what best fits the application workloads.</td>
</tr>
<tr>
<td></td>
<td>Virtualization capability allows you to “Virtualize everything” for a more flexible, better utilize and</td>
</tr>
</tbody>
</table>
potentially lower cost IT infrastructure with a common management construct.

- Innovative design reduces cables by up to 80% compared to rack servers, helping save you installation time and on cable costs.
- Extensive compatibility with the family of Blade Center blades, switches and ecosystem products.

| Energy-efficient design | • Blade Center S supports a very broad portfolio of low-voltage processor option, helping enable customers to lower their power usage without sacrificing performance.
  • Because Blade Center S uses power supplies that are as much a 90% efficient, much less power is wasted as heat and more power is available for the chassis and servers to use.
  • Blower/fan models in the chassis adjust to compensate for changing thermal characteristics. At the lower speeds they draw less power.
  • The use of fewer and lower-power components helps enable power and cooling savings. |

| IBM Open Fabric | • Delivers a flexible, open, connected infrastructure to help optimize application performance.
  • Blade Center supports a wide array of fabrics including SAS, Ethernet, Fiber Channel and iSCSI.
  • Helps centralize storage, including boot capability, which can help reduce the effect of a disk outage on an application.
  • New Barcode and Q Logic NPIV Fiber Channel switches help simplify SAN deployment and management. |

| Powerful solution management | • Provides intelligent systems management for rock-solid reliability.
  • Exploits hardware capabilities by surfing pertinent information about your blade server.
  • Easy-to-use Deployment Wizard provides step-by-step installation instruction with automated deployment capabilities.
  • Advanced Management Model provides more robust hardware running Linux® and supporting many |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
</table>
| **High-availability midplane** | • Provides a fault-tolerant connection from the blade server to all modular components.  
• Innovative midplane design provides support for you to upgrade to new technologies and helps preserve your original investment. |
| **Hot-swap, management, switch, power supply and blower model** | • Provides single point of control for managing the entire solution helping to increase system reliability and availability.  
• Blade Center S comes standard with one Advanced Management Model.  
• IBM smart management capabilities can help boost administrator productivity.  
• Uniquely designed Calibrated Vectored Cooling technology helps protect critical system components to help drive toward On Forever™ reliability.  
• Supports a wide selection of integrated switching components from industry-leading ecosystem companies such as Cico, Norte, Barcode, Q Logic and McDATA.  
• Optional Fiber Channel switch Models deliver highly available cost-effective storage network, including support for IBM System Storage™ SAN.  
• Supports up to four 950 W/1450 W power supplies with load-balancing and failover capabilities, providing additional reliability and protection.  
• Each power supply includes a customer replaceable fan pack to help keep the power supplies running at peak performance. |
| **Advanced server management** | • Support system available to accurately measure planned vs. unplanned outage.  
• Supports capacity manager to help monitor critical server resources, identify and predict bottlenecks and recommend preventing diminished network performance.  
• Supports rack manager to conveniently configure and monitor rack components and provide health information.  
• Supports software rejuvenation (PFA for software) to monitor performance trends of software over time, predict software aging issues and schedule servicing when required. |
| **IBM Remote Deployment Manager** | • Simplifies and automates deployment for efficient installation and setup of your blade servers.  
• Perform deployment tasks via the network that previously may have required a visit to each system, helping save your administrator valuable time.  
• Supports all Wake on LAN® and Pre-boot execution (PXE) enabled products. |
| **Light path diagnostics self-diagnosis panel** | • LEDs located on the front and rear of the system provide quick and easy guide to troubleshoot your server to help provide more availability and faster system uptime. |
| **Predictive Failure Analysis** | • Helps save you time and money by decreasing unplanned downtime.  
• Helps increase uptime by allowing you to receive proactive alerts and take corrective action, in some cases as much as 24-48 hours in advance. |
| **3-year customer replaceable unit and onsite limited warranty** | • IBM Global Services organization provides reliable, dedicated and skilled assistance when you need it.  
• Provides peace of mind for an extended period of time. |
IBM Blade Center HX5 (For Main hub Centre)

Specifications

<table>
<thead>
<tr>
<th>Form factor/height</th>
<th>Singlewide (30 mm) – quadwide (120 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor (max)</td>
<td>Intel® Xeon® 7500 and 6500 processors; 4/6/8 cores, up to 2.66 GHz</td>
</tr>
<tr>
<td></td>
<td>Up to 2 processors per singlewide HX5; scalable to 4 processors</td>
</tr>
<tr>
<td>Number of processors (std/max)</td>
<td>1/2 (scalable to 4)</td>
</tr>
<tr>
<td>Cache (max)</td>
<td>Up to 24 MB per processor (8 core)</td>
</tr>
<tr>
<td>Memory (max)</td>
<td>16 DDR-3 VLP DIMM slots, capacity up to 128 GB, per singlewide HX5 (scalable up to 640 GB max, at speeds up to 1067 MHz, via 80 DIMM slots, using 2 MAX5 expansion blades)</td>
</tr>
<tr>
<td>Expansion slots</td>
<td>1 CIOv slot (standard PCIe daughter card) and 1 CFFh slot (high-speed PCIe daughter card) for total of 8 ports of I/O to each blade, including 4 ports of high-speed I/O scalable up to 16 ports of I/O in 4-socket, doublewide form factor.</td>
</tr>
<tr>
<td>Disk bays (total/hot swap)</td>
<td>2 non-hot-swap bays supporting solid-state drives per singlewide HX5</td>
</tr>
<tr>
<td>Maximum internal storage</td>
<td>Up to 100 GB of solid-state storage per singlewide HX5</td>
</tr>
<tr>
<td>Network interface</td>
<td>Broadcom 5709S inboard NIC with dual Gigabyte Ethernet ports with TOE</td>
</tr>
<tr>
<td>RAID support</td>
<td>Optional RAID-0,-1,-1E</td>
</tr>
<tr>
<td>Systems management</td>
<td>Integrated systems management processor</td>
</tr>
<tr>
<td>Operating systems supported</td>
<td>Microsoft® Windows Server, Red Hat Linux, SUSE Linux®, VMware, Sun Solaris</td>
</tr>
<tr>
<td>Limited warranty</td>
<td>3-year customer replaceable unit on-site limited warranty</td>
</tr>
<tr>
<td>Feature</td>
<td>Benefits</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Fifth generation of IBM® X-Architecture® technology                    | • The broadcast portfolio of system optimize of your most demanding workloads  
• Flexible portfolio and systems to implement hat you need  
• Maximized memory bandwidth and capacity for unprecedented performance  
• Optimized for enterprise workloads for faster time to value  
• Easy to acquire, own and manage  
• On Forever™ reliability using high-end technology for maximum availability  |
| Up to 32 processor cores with a 4-processor blade in a 1.25U equivalent space | • High-density computing capacity with maximum performance and productivity at reduced cost per workload  
• Performance per watt enables energy-efficiency advantage  
• Greater number of database transaction per minute  |
| MAX5 memory model                                                      | • Ability to add memory without additional processors or software license costs  
• Additional DIMM slot to mix and match smaller, cheaper DIMMs to help reduce system costs  
• Maximum memory bandwidth and capacity for unprecedented performance  
• Leadership virtualization performance  
• Large memory footprint for reduced I/O requirement, significantly reducing total system TPC-C costs  |
| Up to 640 GB maximum memory capacity                                  | • Allows optimum utilization for memory-rich applications  
• Fits more VMs per blade to keep costs down  |
| Flexible systems that can independently scale for processor and memory | • Ability to get up and running up to four times faster by standardizing on a single platform for 2- and 4- socket server needs  
• Faster time to value using scalable system  
• Adds capacity on demand as your requirements change  
• Helps eliminate headroom costs at time of purchase  |
| Flexible logical node partitioning                                      | • No-touch partitioning of a 4-socket blade to two 2-socket blades without any physical system reconfiguration  
• 2- in-1 systems let you run interactive apps by day on a2-processors system and batch jobs by night on a 4-processor system  
• Turn off underutilized nodes for power savings  
• Flexible partitions to accommodate workload and licensing requirements |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server infrastructure that can change with your roadmap</td>
<td>Runs Windows® and Linux® on the same box without virtualization software costs or overhead</td>
</tr>
<tr>
<td>Virtualization support</td>
<td>Optional embedded hyper visor USB key</td>
</tr>
<tr>
<td>Automatic node failure</td>
<td>Greater uptime of multimode configurations without administrative intervention</td>
</tr>
<tr>
<td>Predictive Failure Analysis</td>
<td>Helps minimize interruptions from planned and unplanned downtime</td>
</tr>
<tr>
<td>Machine check architecture</td>
<td>Enables faster recovery with more efficient error checking and correction</td>
</tr>
<tr>
<td>Trusted platform model (TPM)</td>
<td>Integrated hardware chip enabling advanced security features</td>
</tr>
<tr>
<td>Light path diagnostics standard</td>
<td>Provides a lighted path to the failing component inside the system</td>
</tr>
<tr>
<td></td>
<td>Helps expedite hardware repairs to reduce service time</td>
</tr>
<tr>
<td>Dual and redundant power and I/O connection</td>
<td>No single point of failure, resulting in increased uptime</td>
</tr>
<tr>
<td>IBM Systems Director Active Energy Manager™</td>
<td>Comprehensive systems management tools</td>
</tr>
<tr>
<td></td>
<td>Allows continuous real-time monitoring, measuring and management of power consumption</td>
</tr>
</tbody>
</table>

**Product features**

- Built on the latest IBM X-Architecture technology with fifth-generation eX5 innovation
- Model design, enabling standardization on same platform for 2- and 4-socket server needs to deliver faster time to value
- Greater memory capacity, enabling more or larger VMs per server
- Enhanced computing capacity facilities more transactions per minute in a blade
- Optional memory expansion separates memory capacity from processors, enabling full utilization of license-constrained, memory-rich applications
- High-density, high-utilization computing allows superior price performance as well as performance per watt
- Flexible node participating and pay-as-you-grow expansion offer great investment protection
- Mainframe-inspired reliability and automatic node failover for optimal system uptime
- Remote management from a single graphical console with IBM System Director

**Hardware summary**

- Computer capacity of up to 16 processor cores in little more than 5U space
- Scalable memory expansion model for up to 640 GB capacity in a 2.5U equivalent space
- Expansion capabilities from 2-processor system to a 4-processor system
- Partitions a 4-processors blade to two 2-processors blades without requiring physical system reconfiguration
- Optional embedded hyper visor

7.7 **Services by GUJCIENTGLIBNET**

The following services will be offered by GUJCIENTGLIBNET.

1. **OPAC**

   An On-line Public Access Catalogue to the entire holding of science and engineering college libraries enables users from different college in the campus to have on-line access to the library database from their terminal. User can search a particular topic from journal; book databases etc. and get a print-out of the list of reference, on the search topic. Users need not come to the particular college library to enquire or search a book or to get a list of reference on a given topic.

2. **Reservation**

   User can search and reserve a particular book from their own terminal.
3. **Reserved Books**

    User can also view the list of reserved books. If a particular book has been reserved by a number of users, the order of reservation as well as date and time.

4. **User status**

    User can find out the books issued to them and when it due for return. Reminders can be sent to the borrowers in an advance. However the cumulative reminder for overdue books, Back volumes will be available on the network till the document will be returned.

5. **Current Awareness Services**

    List of latest additions of books, journals, CD-ROMs and other documents to the library can be displayed virtually on the LAN/WAN for users attention.

6. **Selective Dissemination of Information (SDI)**

    Users e-mail request may be collected and matched against the latest documents and matched ones can be sent back to the required user.

7. **CD-ROM Network Service**

    CD-ROM Network services can be provided through LAN or WAN so that a large number of users will be benefited at a time. They can retrieve information relevant to their needs within a reasonable time from any CD-ROM Tower.

8. **E-mail Services**

    E-mail services can be provided by the science and engineering college libraries and also through Internet.

    A message can be easily posted to all the science and engineering college libraries using common mail ID-Sernet. The science and engineering college
libraries will use this e-mail ID send / post any message to the science and engineering, a number of electronic newsletters and user-group discussion can be subscribed by the main hub centre library via. E-mail and can be forwarded to all participate libraries users in the network, if the information is found to be useful.


A Bulletin Board is a public discussion area where people can post message without sending them to anyone’s E-mail address – that can be view by any one who enters the areas. On campus serve a Bulletin is called a Forum. On the Internet, the equivalent areas are called News groups.

Separate Notice Board option can be created through e-mail facilities and the latest information of the daily news, job opportunities, admission notices, entrance examinations, scholarships and fellowships, new courses etc. can be posted and made available for the through this bulletin board service.

10. Indexing and Abstracting Services

For the benefit of research scholars, indexing and abstracting services for the latest electronic texts and journals can be provided through LAN/WAN/WEB.

11. Content page service content page service of the electronic publishing as well as important Research and Development oriented books and journals can be provided through LAN/WAN/WEB.

12. Internet Services

Internet has become a boon to the users groups. It is a world wide web of interconnected colleges, universities, R & D centers, Business and science network and is a network of computer networks. It is made up of Local Area Network (LANs), Citywide Metropolitan Area Network (MANs), and huge Wide Area Network (WANs) connecting computers of organizations all over the world. These Networks are hooked together with everything from regular dial-up phone line to high speed dedicated based lines, satellite. The three basic internet application or functions are Electronic Mail, Remote Log-on and the File Transfer Services such as mailing lists, directory, enquiry,
Usenet news and tools such as Archie, Gophers, WAIS, Vernica, WWW, etc. go beyond the three basic internet functions to bring people closer on the Internet and make information on the network easier to locate and use. Internet has two main uses one is person-to-person communication and other is finding information.

13. Bibliographic Service

Bibliographic services includes – the creation of bibliographic records and the compilation of bibliographies, catalogues, indexes or any other form of bibliographic database. Access to the databases created by the individual libraries and also the union databases access provides the bibliographic details of an item held by the libraries. Bibliographic information services, provides the patrons with access to databases from a variety of databases. This also includes the access to the database subscribed at the network center.

This network helps the librarians to provide these services in a much better way to maximize the information services of the library and the network as well. Individuals affiliated to network have access to the databases developed at national and international level provides access to bibliographical detail of the sources available with them. Libraries make effective use of the databases and provide better services ti its users full text access to publications. The exiting collection to many of our libraries is not enough to meet the actual requirements of the academicians and researchers. To supplement the collection and to provide an access to large number of journals, and full text databases in electronic form at an economical rate. A Network centre can play a major role in providing access to full text of publications to the member libraries.

14. Organization of Internet resources and Provide Access

Information on the internet is growing every day. Lot of it is not found useful for academic and research work. Filtering the useful information, organizing it and providing easy access to the same will be Herculean task. In the network based environment it is possible to venture into initiate the work
of organizing the internet resources to buildup virtual library particularly for Indian resources and access to tend users.

15. Providing access to information of Indian Origin

Internet has provided an opportunity for access to ocean of information published on the web. But this data is mostly of data from other countries, An emphasis on the data relating to Indian origin need to be given access to such data of Indian origin. All those individuals and libraries using the network based information services in India agree that, Indian content is very limited. There are various reasons of not many databases are being created through efforts are on to add new databases to the network or available in India made accessible through the net. In recent years some of not efforts are being made and developed the databases and web / home to hook up over the Internet to provide access to data of Indian origin. There is a need for creation of indigenous databases of various types in different subjects, and the areas of importance to users in India. If these databases are once put on the web, rest of the users can access such data. An effort needs to be made to provide access to such data of Indian origin.

16. Promoting the Discussion forum in different subjects

In the network environment, it is quite possible to create discussion forum in different subjects to help individuals to impact with their own group of users working in their area of interest for problem solving and discussion among the users to enhance their skills by participating in the discussion forum. To facilitate exchange of ideas and promote communication among faculty members, engineers and academicians electronic discussion forum will help to interact each other. The kind of services can be coordinated at national level by the national network agency in the subject concerned.

17. Consortia based service

Libraries in India have been affected by an uncertain financial environment in which resource buying has been restricted, causing them to look at ways of extending their purchasing capabilities to compensate for reduce budget. Library consortium is the one of the emerging tool kit for the survival of libraries.
7.8 Conclusion

It can be concluded that in a developing country like India, steps are being taken to disseminate information about Science and engineering to its user’s community. With the explosion of information and constraints on the financial resources, the resource sharing network has emerged as an important alternative. Information technology with computer and telecommunication facilitated the resource sharing among the institutions located in different geographical area.

It also necessary to prepare the library staff through appropriate training. The great libraries of the future will not be those with great collections, but with good staff because knowledge must be discussed in the library before it is used. Rediscovery may be as important as the creation of knowledge itself in view of the developments in IT that are taking place continuously.

There is no alternative for the institutions that are engaged in research and training as well as generating information on Science and Engineering development, but to come together under a formalized network in order to develop strategies for effective communication, resource sharing and information dissemination. The Engineering scientist, students, teachers and researchers require relevant information from wherever it can found.

Therefore, for the development of our state and country to provide the needed information to the Science and Engineering community. There is need of resource sharing and networking among the Science and Engineering college libraries and R & D centers in Gujarat. For this, the participating libraries should co-operate fully to make this programme a success.
Reference:


