CHAPTER 5

NETWORK OF PUBLIC LIBRARY SYSTEM IN ASSAM:
A PROPOSED MODEL

5.1 Introduction

Library network is an administrative as well as a technical entity. The administrative layer is the driving force and the technical layer is the cycling power of any library network. For the planning of a library network, it is required to understand the prime pillars of it based on which the network may stand. Therefore, to propose a network model for the public libraries of Assam, the researcher have studied some existing models of public as well as academic library network, so that the proposed model is less error some to implement. Library network models like network model on Public Libraries in India (Babu & Kumar 2007), Bharathidasan University Library network model (Prabhu, 2011), Kerela Public Library Network model (Jayakrishnan, 2013), Karnataka Management College Library Network (Krishnappa, 2014),Bihar and Jharkhand Library and Information Network model (Sinha. 2014)were studied and inspirations were taken from them to prepare the public library network model for Assam.

5.2 Assam Public Library Network (ASPLIBNET)

Assam Public Library Network (ASPLIBNET) is a proposed model of the network that tries to bring the public libraries of Assam under one umbrella of the communication network. It preferably aims to create a co-operative network among the public libraries with aim of improving resources sharing activities among them and also for better
optimization of resources. On a broad basis following are the aims that have been muted which the proposed public library network will try to fulfill-

i. The network will work as a model for resource sharing among the public libraries of Assam.

ii. Preparation of union catalogue for the public libraries of Assam as well as maintaining a standard of metadata for the bibliographic records of the public libraries of Assam. For this ASPLIBNET will encourage preparation catalogue of records using the Koha LMS in maintaining catalogue records in MARC format.

iii. To prepare an online union catalogue of collections in individual libraries or shared cataloguing will be a prime objective that the proposed ASPLIBNET will try to fulfil.

iv. Starting of bibliographic information services in the public libraries of Assam.

v. Social media marketing of resources and services of the public libraries for building awareness. Building a community over social media for the member libraries will help the ASPLIBNET member libraries to reach the unreached.

5.3 Justification of ASPLIBNET

On the basis of literature review and data analysis, the researcher justified an Assam Public Library Networking model with the following argument

I. ASPLIBNET will bring together all the entire collections of books, journals, magazines, reports in all the public libraries in Assam through union catalogue which is not yet done in any networking project in Assam (Refer Table 4.10 to 12).
II. All the survey Public libraries in Assam are not fully automated. A plan for networking will speed up the process of automation and it will provide a platform for sharing their resources among the public libraries (Refer Table 4.22).

III. 100% of librarians have agreed to join the network to develop library infrastructure facility in their libraries, 95% agreed to save the time of the users and staff and provide Document Delivery Service. 90% give the importance to access to Centralized Bibliographic Service, reduce Library Budget and Professional Communication among member Institution. Least importance has been given to inter-library lending services 85% (Refer Table 4.29).

IV. The network should be able to recommend for participating libraries the type of hardware they need for their in-house functions and for networking purpose. The Public libraries under-surveyed, all the 100% libraries have the Personal Computer, Server, and UPS. Followed by 90% have printers in the library, 35% of libraries have scanners (Refer Table 4.25 (a) and Table 4.25 (b).

V. All the surveyed public libraries follow a standard Machine Readable Catalogue(MARC) format through use koha open source software (Refer Table 4.21). A standard catalogue code AACR-2, Classification scheme and a standard thesaurus like Library of Congress Subject headings (LCSH) etc. uniformly (Refer Table 4.13).

VI. The surveyed public libraries have professionally qualified library staff and training on LMS packages and ICT skills (Refer Table 4.17, Table 4.18 and Table 4.19).
5.4 Structure of the ASPLIBNET

The public library system in Assam may be viewed as a centralized model so the far administration is concerned. So far financial support, manpower management, policy directives, the centralized mechanism is evident, while regarding status enjoyed by the libraries, the hierarchy system is prominent. Taking cognizance of the public library system a client-server network model may be a viable solution for ease of implementation of the project (Hazarika & Baishya, 2014)

A well-planned client-server model creates a powerful environment that offers for storing and managing data generated in the union database(s). A sketch of the client-server model is presented in Figure 5.1.

![Client Server Model Sketch](image)

*Figure 5.1: Sketch of a client-server model of network*

In a client-server model, the database query is sent from the client, but processed on the server and the results are sent across the network back to the client, which involves:

a) The request is translated into SQL.

b) The SQL request is sent over the network to the server.

c) The database server carries out a search on the computer where the data exists.

d) The requested records are returned to the client.

e) The data is presented to the user in the default interface or a customized one.
The structured request received server from the clients and processes them and again send the request data back over to the client through a network. This network is the most competent way to offer the following.

Database access and management for applications such as accounting, spreadsheets, communications and document management.

- Centralized Network management.
- Centralized file storage

So far administration of the network where the clients are highly distributed, a Client-Server model is the obvious solution, as in the model the servers are easier to secure and maintain in one location. In a client, Server environment data is more secure because it can be placed in a safe area away from users.

Figure: 5.2 giving a draft model of the libraries strained in the line of client-server Architecture where the State Central Library (SCL) is selected as the nodal agency and main network hub for ASPLIBNET. This nodal agency will be the principal headquarter for the whole ASPLIBNET. Role of the nodal agency is-

i. Act as the central hub of ASPLIBNET

ii. Formulation of guidelines and policies for ASPLIBNET

iii. Establishment of co-ordination amongst the participating libraries

iv. Establishment of co-ordination with Government and other funding agencies

v. Organization of training programs for ASPLIBNET member.
The District Libraries (DL), Sub-divisional Libraries (SDL), Rural Libraries (RL) and Branch Libraries (BL) outside the administration of the Directorate of Library Services, Assam as Client to the network.

**Figure 5.2: Network flow of ASPLIBNET**

### 5.5 Participating Libraries

ASPLIBNET could be carried out all the Public libraries in Assam like State Central Library, District Libraries, Sub-Divisional Libraries, Branch Libraries and Rural Libraries, (Annexure II) who wish to join.

### 5.6 Information Resources under ASPLIBNET

Library materials serve as an important resource the education, professional activities and recreation of the members of our society. The public library has to meet the needs and interest of the community. For this, it provides a wide range of materials in a
variety of formats and in sufficient quantity. The culture of the local community and society must be reflected in the documentary resources of the library. Variety of resources are available in the public library.

Books (for various categories of users like adults, students, children etc.)

Reference books

Periodicals

Magazines

Newspapers

Maps or Atlases

Reports

5.7 Meeting financial requirements

To run ASPLIBNET financial assistance will be required. Financial Assistance can be made available by the Central Government, State Government, and local bodies. Private donations help to sustain ASPLIBNET. The member libraries can increase the amount of registration and annual fees of library members.

5.8 Manpower

The success of ASPLIBNET is dependent to a large extent on the knowledge, expertise, skills and attitudes of the associating staff and also the participating public libraries professional. Hence the first and most important requirement for establishing ASPLIBNET is the availability of qualified and experienced staff. The survey shows that all the public libraries have qualified professional library staff (Table: 4.17 and 4.18). The advanced training of the staff should essential for operating the software
packages and also, installation, customization, configuration, personalization, and updating.

5.9 Newsletter

ASPLIBNET may publish a newsletter in order to spread the message and increase the awareness about the library networking in India. Through this Newsletter ASPLIBNET intends to communicate to its members the progress of ASPLIBNET. The Newsletter will server as a forum for communication on the advances achievements and needs of the libraries and their services.

5.10 Committees for the administration of ASPLIBNET

The administration and maintenance of a network of public libraries will require committees with specific powers in a hierarchical structure. The hierarchical structure of committees is shown in Figure 5.3.
The Executive council

It will act as the central advisory committee for the ASPLIBNET. The executive committee will have the following structure-

1. Chairman: Director of the library service
2. Members: The executive committee will have the following members
   i. The librarians of each district library
   ii. A representative from state govt., Ministry of culture.
   iii. Representative from state finance department.
   iv. A representative from RRRLF.

The committee will sit twice in a financial year for the smooth functioning of ASPLIBNET and oversee its functions.

Responsibilities of the Executive council:

The executive council will have the following responsibilities to perform:

i. The executive council will be the central committee of administration for ASPLIBNET.
ii. It will devise plans and policies for ASPLIBNET.
iii. Establishment of co-ordination with state and central Govt. policies for public libraries.
iv. The arrangement of fund and distribution of it will also be a central responsibility of the executive council.
v. Maintaining a smooth communication among the members of ASPLIBNET.
vi. Management of any dispute among the participating libraries.
vii. Establishment of co-ordination with RRRLF.
Central Network Committee

Structure:

Chairman: Librarian of State Central Library

Members: This committee will have the following members:

i. Librarians of each zonal headquarter libraries.

ii. Network expert.

iii. Expert in Koha LMS.

Responsibilities of Central Network Committee:

The central network committee will have the following roles and responsibilities to play:

i. The central committee that will be associated with the practical implementation of ASPLIBNET at ground level.

ii. This committee will oversee the management of the ASPLIBNET server.

iii. Implementation of the proposed services of ASPLIBNET.

iv. Providing necessary technical help to the zonal committees of ASPLIBNET.

v. Management of ASPLIBNET website.

Zonal Network Committee:

Structure: Zonal network committee will have the following structure:

Chairman: Librarian of Zonal headquarter

Members: Will have the following members:

i. Librarians of member district libraries of each zone.
ii. Librarians of member sub-divisional libraries of each zone.

iii. Chosen expert in networking

iv. Expert in Koha LMS.

**Responsibilities of Zonal network committee:**

i. Implementation of ASPLIBNET in their respective zone.

ii. Providing necessary technical help to zonal member libraries for ASPLIBNET.

iii. Implementation of ASPLIBNET proposed services at zonal level.

iv. Establishment of co-ordination among zonal libraries to central network committee and central executive committee when required.

### 5.11 Implementation of ASPLIBNET:

A three-phase policy of implementation has been cropped out for ASPLIBNET.

**Phase 1:**

i. Building a computer-friendly environment in public libraries by training the staffs at Nodal headquarter.

ii. Procurement of computers at libraries where not available.

iii. Completion of administrative procedures for setting up site inside libraries for the establishment of local servers and client PCs.

iv. Meeting of the executive council, central network committee, and zonal network committee.

**Phase 2:**

i. Establishment of LANs at each individual public library.

ii. Make payment for cloud hosted services
iii. Monitor the traffic load on cloud servers

iv. Continuation of a training program for staffs started in phase 1.

v. Giving advance training program to selected staffs of each library.

vi. Update and manage the Koha instance for union catalogue by uploading bibliographic records supplied by member libraries in MARC format

i. from their respective Koha instances

ii. Meeting of zonal network libraries at the local level.

iii. Designing various services.

Phase 3:

i. Final implementation of ASPLIBNET by establishing the connection of individual libraries to central ASPLIBNET server.

5.12 ICT infrastructure of ASPLIBNET

ASPLIBNET aims for the creation of an ICT based collaborative network among the public libraries of Assam. For smooth functioning and better service availability of the network, ASPLIBNET proposes a cloud based ICT infrastructure for its participating agencies. Cloud based approach would help ASPLIBNET in reducing the monetary cost of maintaining separate local servers at each participating library, as a central server will be available for the libraries to operate on. A central cloud server would also be helpful in network management perspective and an IP based access will make the process simple and more secure. Regular back-up of data would be taken, that would subsequently lessen the data loss threat. ASPLIBNET also proposes of running a multi-instance Koha environment for the participating libraries for preparation of the
bibliographic database of the participating libraries for speedy creation of bibliographic databases of the libraries.

Therefore, to support the proposed infrastructure a strong server is required and below mentioned configuration server is thought to be enough to support the network and its activities:

a) Server Configuration
   - ProLiant ML350 Gen10 Server,
   - E5-2609 v4 with 16GB RAM,
   - Hard Disk 1TB,
   - Server Processor: 2P Tower Intel® Xeon® E5-2609v4 (3.7GHz/8-core/20MB/85W),
   - Serial ATA 5400 RPM,
   - HPE iLO (Firmware: HPE iLO 4),
   - 4LFF(3.5inch) Hot Plug Drive,
   - 2 x HPE 900W AC 240VDC Power Module,
   - Open Bay - Upto 8 SFF (2.5inch) Hot Plug SAS/SATA,
   - 1x HP 800W/900w Gold Hot Power Supply

b) Client Configuration:
   - Intel Core i3 Fourth Generation
   - 2.33 GHz with 1333 MHz
   - 4 MB L2 cache
   - Intel G31 Chipset
   - 1 GB DDR-II RAM
   - 250/320 GB SATA HDD 7200 RPM
c) **Supporting Hardware Requirements**
- Printer
- Scanner
- Telephone
- Fax
- Modem
- Switch
- Router
- External Hard Disc
- UPS
- AC

d) **Software Requirements**

Directorate of Library Services, Assam took the initiative for installation of Koha Software all the public libraries in Assam a phased manner. At present 17 District Libraries and 3 Branch Libraries have installed koha for prepare the bibliographical database (Table 4.20). Koha has very strong features for managing multiple libraries. Koha library management system modules will be customized for online union catalogue model. Metadata will be created as to the MARC21 format and member libraries databases will be created. At present 226674 bibliographic
records entered in surveyed public libraries (Table 4.23 a). The following MARC tag has been used to describe the respective records

<table>
<thead>
<tr>
<th>Tag Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>082 $a</td>
<td>Call No</td>
</tr>
<tr>
<td>020 $a</td>
<td>ISBN No</td>
</tr>
<tr>
<td>100$a</td>
<td>Personal Author Name</td>
</tr>
<tr>
<td>245$a</td>
<td>Title of the Book</td>
</tr>
<tr>
<td>250$a</td>
<td>Edition Statement</td>
</tr>
<tr>
<td>260$a</td>
<td>Place and Publication</td>
</tr>
<tr>
<td>260$b</td>
<td>Name of Publisher</td>
</tr>
<tr>
<td>260$c</td>
<td>Date of Publication</td>
</tr>
<tr>
<td>850$c</td>
<td>Holding Institution</td>
</tr>
<tr>
<td>942$c</td>
<td>Item Number</td>
</tr>
<tr>
<td>952$a</td>
<td>Home Branch</td>
</tr>
<tr>
<td>952$b</td>
<td>Holding Branch</td>
</tr>
<tr>
<td>952$p</td>
<td>Accession No</td>
</tr>
<tr>
<td>952$0</td>
<td>Available</td>
</tr>
<tr>
<td>952$c</td>
<td>Shelving Location</td>
</tr>
<tr>
<td>952$g</td>
<td>Price</td>
</tr>
</tbody>
</table>

Koha the first open source LMS package has very strong features of managing multiple libraries and this is the reason for suggesting Koha as the platform for developing union catalogue. There are some reasons for selection of Koha. These are

- In use global, its development is steered by a growing community of users collaborating to attain their technology goals. Koha is developed using maximum library standards and protocols that ensure interpretability between koha and other systems and technologies.
- Koha will work for consortia of single and multi-brunch libraries.
• Koha has Z39.50 server setting facilities, hence the union catalogue developed in Koha may be used as a Z39.50 server

• Koha, as it is an open source software package there, will be no training from vendors’ side. But lots of academic institutions like colleges and universities, and Government agencies conduct Koha training programme.

5.13 Services to be provided by ASPLIBNET

ASPLIBNET wishes to be a one of its kind library network that caters to improve the current scenario of public library services and activities of Assam. In the networked environment, ASPLIBNET caters to bring a productive service environment in the public libraries where user satisfaction is the prime goal. For this purpose, the prime objective services have already been mentioned earlier. Following is a detailed plan to implement those services of ASPLIBNET.

a) Making a standard of bibliographic records of public libraries and preparation of a union catalogue: ASPLIBNET plans to implement Koha as a single software for maintaining the library bibliographic records among the public libraries as Koha fully complies with MARC 21 format of the library of congress. Participating libraries will be given separate access to separate instances of Koha to maintain their record. This will help to save the record of individual libraries in individual databases. Then a central database of those records will be prepared, which will serve as Union catalogue of ASPLIBNET.

b) Resource sharing among the libraries: For the resource sharing activity ASPLIBNET will follow the model of Developing Library Network (DELNET). As a union catalogue of ASPLIBNET will be prepared, this will give the necessary
holding records of the libraries, from which users will be able to locate their required document. The user will confer their query to their respective library, then the library will make arrangement for bringing that book from the available library. For this mass transfer of books/documents, ASPLIBNET will sign the necessary tendering process from Carrier Company to deliver the service at least possible cost. An email will also be used when documents are possible to be emailed. An annual fee from users for availing this service will be collected.

c) **Consortia based access to e-resources:** E-resources are the need of the hour of today’s modern library users. ASPLIBNET will form its own consortia for this purpose. Individual user password-based access to the users will be given by the proposed ASPLIBNET e-resources consortia. Online educational resources, which nowadays useful for competitive examination purposes will be a prime collection of ASPLIBNET consortia.

d) **Social media marketing of ASPLIBNET services:** Social media is the best marketing platform available in today’s modern world. Central ASPLIBNET platform will be created on social networking sites like Facebook, Twitter etc for marketing of the ASPLIBNET services. This social media pages will be used to announce services of ASPLIBNET available resources of the ASPLIBNET libraries, events and activities organized for users by ASPLIBNET. Central and zonal network committees will be responsible for management of social media pages of ASPLIBNET.

e) **Online discussion forum for ASPLIBNET member libraries:** Online discussion forum will be limited to the ASPLIBNET member libraries only, not the library
users. Here the member libraries will be able to share their problems, prospects and their respective ideas to improve the library network.

f) **Alerting service for the library users**: Alerting service will help library users to keep themselves updated about the library activities. Email and SMS alert is the modern day prospects of alerting services. Libraries will create separate user profiles based on their interest areas and will keep them updated about the available library resources in their interest. This will help libraries to attract more users towards them.

g) **Virtual reference service for the users**: Web2.0 instant messaging or chat services will be used to manage the virtual reference service of ASPLIBNET. Bibliographic information, resource availability, membership rule, event news etc will available to be queried by the users in virtual reference platform. Telephonic services will also be available for the users as and when required.

### 5.14 Model of ASPLIBNET Web Portal

A prototype ASPIBLNET Web Portal has been developed by the researcher by launching a Virtual Machine (Ubuntu Server 16.04) in the B2H2 cloud. Domain linking has been done with GoddayDomain account of B2H2. Here all linking have been done on the Public Domain (asplibnet-opac.b2h2.co.in) of the B2H2 Cloud Server. The following 2 ports have been added in /etc/apache2/ports.conf in Ubuntu Server 16.04.
Listen 80

Listen 8080

# Apache virtual hosts creation variables
DOMAIN=".myDNSname.org"
INTRAPORT="8080"     # use 8080 for an IP-based install.
INTRAPREFIX=""
INTRASUFFIX="-intra"
OPACPORT="80"
OPACPREFIX=""
OPACSUFFIX=""

# SQL file to load into new instances
DEFAULTSQL=""

# Zebra global configuration variables
ZEBRA_MARC_FORMAT="marc21"     # or normarc or unimarc.
5.15 Proposed Prototype of ASPLIBNET design

The output design of the prototype network of ASPLIBNET is shown in the following figures (Fig 5.5 to 5.12).

ASPLIBNET – Home Page

This below figure shows the main page of ASPLIBNET and it gives the information about the participated libraries, the types of resources available with their libraries and instruction to search the catalogue effectively.
ABOUT THE ASSAM PUBLIC LIBRARY NETWORK (ASPLIBNET)

Assam Public Library Network begins its tutoring by providing library at the door step of the users, who needs various types of information. Any user can have access to the network at any time with the help of a computer terminal. The State Central Library under the Directorate of Library Services, Department of Culture & Libraries is the apex Library in the network. The District Libraries are also part of the computerized network.

Total Library:-
- State Central Library: 01 Nos
- District Library: 36 Nos
- Sub-District Library: 17 Nos
- Branch Library: 04 Nos
- Rural Library: 198 Nos

(Source: Directorate of Library Service, Assam)

Figure 5.5 Proposed ASPLIBNET Home Page
Search / Browse interface

This user interface allows the users to search the bibliographic details of books, journals and other bibliographic records from ASPLIBNET server. There are eight search fields are given such as Keyword, Title, Author, Language, Publisher, Subject, ISBN, and Call Number.

![ASSAM PUBLIC LIBRARY NETWORK (ASPLIBNET)
ASPLIBNET Union Catalogue](image)

**Figure 5.6 Opening Screen of the ASPLIBNET advance search use interface**
Display of OPAC Output

OPAC and online catalogue of ASPLIBNET can be accessed and viewed by selecting field name then enter the search term and click on ‘search’ button. It will show all the bibliographic record of books on the basis of search term with respect to search field. Book jacket is also enabled for better visualization. As shown on below Figure 5.7

![Figure 5.7 OPAC interface for proposed ASPLIBNET Union Catalogue](image-url)
Figure 5.8 Search result in ASPLIBNET Member Library OPAC (Keyword)
Selection of Language and Type of Documents

Unicode system has been enabled in this networked model to search user respective language, also can select / search the resources by selecting the particular library database for a quick retrieval. As shown below Figure 5.9

**Figure. 5.9 Selection of Type of documents and Language - OPAC Search Screen**
Bibliographic Details and its Locations

The below figure displays the bibliographic details of a selected record with its available locations like institution name, status, call number and other relevant information.

*Figure 5.10 Bibliographic details and its locations*
Figure 5.11 Staff Client login for ASPLIBNET

Figure 5.12 Staff Client Interface for ASPLIBNET
5.16 Benefits of the proposed ASPLIBNET Model

- Resource sharing enhanced by providing participating libraries access to composite databases like union catalogues.

- For facilitate pooling, sharing and exchanging resources and facilities developing uniform and standard guidelines, in hardware and software, techniques, procedures, methods, services and support their adoption in actual practice by all libraries towards optimization becomes possible.

- Enables coordination with other regional, national and international networks for exchange of information and documents for the use of libraries and users. To facilitate exchange of duplicate publication.

- Through this network system, people can interact with all Public Libraries in Assam.

- All Public Libraries are networked under a single window. This window can help people to easily access of e-learning, e-reading and Online Public Access Catalogue through a Union Cataloguing System.

5.17 Conclusion

ICT implementation helps libraries to achieve better management of resources with service quality. But ICT implementation involves some cost which most libraries can’t bear. Library networking helps them to achieve it at a shared cost, which libraries can bear within their limited budget. Public libraries as a place for life-long learning can bring social change for the advancement of the society. But it requires the continuous involvement of the society with the public library system. Therefore, to attract the users to the public library system ICT enabled services are required where information
resources are available at a click or at a touch to the users. The proposed ASPLIBNET aims to prepare a bunch of user-targeted services that will be able to bring a change in perspective for the public libraries in mind of the general public. ASPLIBNET also proposes to build a co-operative network among the public libraries, where better management and optimum use of available resources is possible.

ASPLIBNET proposed model has incorporated a cloud-based approach for starting the networking among the public libraries. The proposed model has the facility to serve advance library services like union catalogue, Inter library loan at the click of a button. Moreover, the model also serves to build better co-operation among the libraries by the proposed model that will help to minimize cost, increase productivity. ASPLIBNET aspire to be network of libraries by the librarians for the common public.