Koha: How Open it is?
Kanchan Kamila

Abstract
This paper discusses about the history, definition, and features of open source software (OSS); some FLOSS (Free / Libre /Open Source Software) and their companion software; installation procedure of Koha on windows, setting of system preferences and operating parameters of Koha and concludes with the openness of Koha.

Keywords: Open Source, Z39.50, ISO 2709, MARC 21, FRBR

1. Open Source Software
1.1 History
Open Source Software (OSS) is not a new idea. The traditions go back to the beginnings of the Internet, twenty-nine years ago (i.e., ARPANET [Advance Research Projects Agency Networks] project of US Government in 1969) but the term “open source” itself has been a relatively latecomer. Christine Peterson of the Foresight Institute proposed the term “open source” in late 1997 during a meeting of small group of open source movement key persons (Raymond, 2001). This group registered the domain name opensource.org, defined “open source,” developed Open Source Initiative (OSI) group, designed OSI certification and created a list of licenses that meet the standards for open source certification. Recently, technical and market forces joined together to draw a niche role of open source movement.

1.2 Definition
In the open source software development model, the source code of a software is made freely available along with the binary version so that anyone can see, change and distribute it subject to the condition he/she abide by the accompanying license. According to OSI (2003a), “Open source promotes software reliability and quality by supporting independent peer review and rapid evaluation of source code. To be certified as open source, the license of a program must guarantee the right to read, redistribute, modify, and use it freely”.

1.3 Features
OSI set aside ten criteria (OSI, 2003b) for a software product to be called as open source software. OSI provides OSI certified License to a software product if it satisfies following ten criteria:

i. **Free distribution**: The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources.
ii. **Source code:** The program must include source code and must allow distribution in source code as well as compiled form.

iii. **Derived works:** The license must allow modifications and derived works and must allow them to be distributed under the same terms as the license of the original software.

iv. **Integrity of the author's source code:** The license may restrict source code from being distributed in modified form only if the license allows the distribution of patch files with the source code for the purpose of modifying the program at build time.

v. **No discrimination against persons or groups:** The license must not discriminate against any person or group of persons.

vi. **No discrimination against fields of endeavour:** The license must not restrict anyone from making use of the program in a specific field of endeavour.

vii. **Distribution of license:** The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

viii. **License must not be specific to a product:** The license must not be specific to a product.

ix. **The license must not restrict other software:** The license must not contaminate other software by placing restrictions on any software distributed along with the licensed software.

x. **The license must be technology-neutral:** The license should not be framed on the basis of any individual technology or style of interface.

2. **Free Library Open Source Software (FLOSS) and their Companion Software**

There are many open source software available through web. Some of the software are given below:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>FLOSS</th>
<th>Companion Software</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Avanti</td>
<td>FLOSS based dependencies: Java Run Time Environment (JRE), Any Web server, PicoDB</td>
<td><a href="http://home.earthlink.net/~schlumpf/avanti/index.html">http://home.earthlink.net/~schlumpf/avanti/index.html</a></td>
</tr>
<tr>
<td>2</td>
<td>Emilda</td>
<td>FLOSS based dependencies: Apache, Perl, MySQL, PHP, Zebra server, Yaz toolkit</td>
<td><a href="http://www.emilda.org/">http://www.emilda.org/</a></td>
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<tr>
<td>5</td>
<td>GNUTeCa</td>
<td>FLOSS based dependencies: Apache, PostgreSQL, PHP</td>
<td><a href="http://gnuteca.codigolivre.org.br/">http://gnuteca.codigolivre.org.br/</a></td>
</tr>
<tr>
<td>7</td>
<td>Koha</td>
<td>FLOSS based dependencies: Apache, MySQL, Perl</td>
<td><a href="http://www.koha.org/">http://www.koha.org/</a></td>
</tr>
<tr>
<td>8</td>
<td>Learning Access ILS</td>
<td>FLOSS based dependencies: Apache, MySQL, PHP, Yaz</td>
<td><a href="http://www.learningaccess.org/">http://www.learningaccess.org/</a></td>
</tr>
<tr>
<td>9</td>
<td>OpenBiblio</td>
<td>FLOSS based dependencies: Apache/Any Web server, MySQL, PHP</td>
<td><a href="http://obiblio.sourceforge.net/">http://obiblio.sourceforge.net/</a></td>
</tr>
<tr>
<td>12</td>
<td>PHPMyLibrary</td>
<td>FLOSS based dependencies: Apache, MySQL, PHP</td>
<td><a href="http://phpmylibrary.sourceforge.net/">http://phpmylibrary.sourceforge.net/</a></td>
</tr>
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</table>

3. **Koha and its Features**

In New Zealand and Africa, there is a community called “Maori”. “Koha” is a term of that community means “unconditional gift”. Koha is an integrated library management system that was originally developed by Katipo Communications Limited of Wellington, New Zealand for Horowhenua Library Trust (HLT), a regional library system located in Levin near Wellington. In 1999, Katipo proposed
developing a new system for HLT using open source tools (Apache, MySQL, and Perl) and open source web browser Mozilla Firefox that would run under Linux and use Telnet to communicate with the branches. The software was in production on 3 January 2000, and released under the GNU General Public License (GPL) for other people to use in January 2000. Koha is based on LAMP architecture (Linux OS, Apache, MySQL, and Perl). It is also available in XAMP architecture (Unix/Windows OS, Apache, MySQL, and Perl). Most of these LMSs are in their infancy. The mature LMS block includes Koha, Emilda, Weblis and PHPMyLibrary. There is a high level of interest in Koha internationally, and it is currently being used in New Zealand, Australia, Canada, United States, India, Thailand, United Kingdom, and France. Many small and medium sized school, public and special libraries presently using Koha. The Koha project has attracted developers in a number of different countries, with release 1.2.2 being coordinated from Canada and the current stable release, 2.3.0 (available both for Linux and Windows) in July 2008. The major features of Koha are as follows:

3.1 Technical

- Available for both Unices (Unix-like operating systems) and Windows platform
- Fully Web-centric in architecture
- Supports Unicode for processing multiscipt bibliographic records
- Uses MySQL as backend RDBMS, PERL as programming environment and Apache as Web server (all these dependency software are also open source)
- Supports two separate interfaces – one for librarian and another for end users
- Inbuilt Web-OPAC
- Supports ISO-2709, EDIFACT, Z39.50 standards

3.2 Generic

- Free to download, no license fees, and fully customizable
- Environmentally friendly (one can recycle those old PCs)
- Establishing an international community of users and developers giving libraries the freedom to do it themselves or work directly with the system builders
- Generating an international spirit of co-operation and collaboration
- Easy staff training, supports
- Supported by IRC, Discussion forum, Mailing list etc.

3.3 Bibliographic standards

- MARC 21 and UNI MARC bibliographic format
- MARC 21 Authority format
- Supports pickup list for control, number and code fields of MARC 21 bibliographic format
- Includes Z39.50 client for distributed cataloging
- Includes thesaurus support
Supports different bibliographic framework for different library materials
Easy editing of MARC 21 tags and subfields
Supports linking of authority files (export of standard authority records)

3.4 Functional Modules

• Acquisition
  ♦ Multiple book budgets
  ♦ Suppliers database support
  ♦ Real time budget information
  ♦ Vendor-specific orders
  ♦ Fund utilization information
  ♦ Real time accounting
  ♦ E-mail based order

• Catalogue
  ♦ Updates fast and slick
  ♦ Support for MARC 21 and UNIMARC
  ♦ Z39.50 copy cataloguing
  ♦ ISO-2709 based export/import
  ♦ Can be linked with vocabulary control device
  ♦ Supports FRBR (Functional Requirements for Bibliographic Records) partially
  ♦ Supports designing different bibliographic frameworks
  ♦ Supports Yaz toolkit

• Circulation
  ♦ Issues (including rentals), renewals, returns and fines
  ♦ Uses barcode scanners or keyboard
  ♦ Can generate a list of overdues for a phone reminder system
  ♦ Borrower photo display in circulation panel
  ♦ Flexible circulation rules
  ♦ Overdue notice generation (in one click)
Other Features

- Searching by keyword, author, title, subject, class number or combinations, customize to suit need of individual library
- Memberships – one-stop-shop with all member information on one page
- User driven reservation facility from OPAC interface (Do-it-yourself reserves, in the Library or via the Internet)
- OPAC in the Library or via the Internet and stock rotation through branch libraries
- Work in progress: Z39.50 searching, Virtual Bookshelves, French and German versions, NLP self checking, Port to other operating systems so that it will run natively, New themes, Additional book information (e.g. covers), Web based reports, Mozilla chromed OPAC integrated with Greenstone digital library system, Integration with Internet “gateway” system and bill to patron card, printing spine labels etc.

4. Installation of Koha on Windows

The installation process of Koha on windows may be described under three steps – a) Installation of Apache, My SQL (RDBMS) and PERL (Programming Language) companion software b) Installation of Koha c) Installation of support software.

4.1 Installation of Companion Software

a) Apache Web Server (version 2.0 and above can be used): The Apache httpd server is a powerful, flexible, HTTP/1.1 compliant open source web server, which implements the latest protocols, including HTTP/1.1 (RFC2616). Apache is highly configurable and extensible with third party modules. It can be customized by writing ‘modules’ using the Apache module API. The software suite provides full source code and comes with an unrestrictive license. It runs on Windows 9x/NT, Netware 5.x and above, OS/2, and most versions of Unix, as well as several other operating systems. The software is available from http://httpd.apache.org/ against GNU General Public License. Presently almost 90% of Internet host computers use Apache Web server. It has to install first. Installation path of Apache Server is C:/Program files/Apache Group. For this purpose, installers have to choose custom option to change the path.

b) MySQL (version 4.0 and above can be used): MySQL, the most popular Open Source SQL database, is developed, distributed and supported by MySQL, AB. MySQL server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Though under constant development, MySQL server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL server highly suited for accessing databases on the internet. It is available.
from http://www.mysql.com/ against GNU General Public License. It has to install after Apache installation. By clicking change option, installation path will have to rectify from C:\Program Files\MySQL\MySQL Server 5.0 to C:\MySQL. Installers have to put the domain name, server name and e-mail id (any) and skip sign up to login or create new MySQL.com account. Configuration will be standard and root password will be given.

c) PERL (Practical Extraction Report Language) (version 5.8.7.820 and above can be used): It was originally created to extract information from text files and then use that information to prepare reports. It is open source scripting language, which means that the programmer does not have to compile and link a PERL script. Instead, a PERL interpreter executes the PERL script. It is widely used for system administration and programming on the web. It is originated in the UNIX community and has a strong UNIX slant, but usage on windows has grown rapidly. It is available from http://www.activestate.com/ against GNU General Public License and PERL modules are available from http://www.cpan.org/. By clicking browse option, copy the files in the destination path C:/usr.

4.2 Installation of Koha

Koha (version 2.2.4 and above can be used): Full installation of Koha should be done after installation of all the required companion software is over. It is a two step process – first install Koha and then install PERL modules (bundle as a package). Then Installation of two support software are Mozilla Firefox Web browser and SQL Yog ront-end for MySQL but these are not compulsory because Internet explorer can be worked as web browser and SQL Yog ront-end is not necessary. After installation of all these software, we can enter the OPAC (Library catalogue search) interface by entering http://opac (full address: http://opac/cgi-bin/koha/opac-main.pl) or http://localhost (full address: http://localhost/cgi-bin/koha/opac-main.pl) in the address bar of the web browser. The librarian interface can be accessed by entering http://intranet (full address: http://intranet/cgi-bin/koha/mainpage.pl). Super user login and password are koha/koha.

5. Starting with Koha

![Figure 1. First appearing window after Koha installation entering http://opac or http://localhost or http://intranet](image)
Figure 2. Second window after entering http://opac or http://localhost (OPAC interface)

Figure 3. Main window of Koha after login super user and password koha/koha (Librarian interface)

Figure 4. Modification of intranet template value from npl to default for default koha window (see Fig. 5)
5.1 Admin

Setting up of date format and security option, dateformat (US - mm/dd/yyyy; Metric – dd/mm/yyyy; iso – yyyy/mm/dd). You can set metric date format as it is a familiar style of India and Security option (insecure: no, because if koha used by a library, you want to have security turned on). This window will come after clicking system preferences (See Fig.6)
5.2 Acquisitions

**Acquisitions** value: normal or simple. Normal sets the system to track orders and update budgeting and vendor information as you add materials to your collection. Simple tells Koha that you are going to add materials to the collection without tracking orders. The ‘gist’ is GST (Good and Sales Tax) rate, just like out Value Added Tax. If there is any provision of paying VAT then set the gist value e.g., ‘.040’ for 4% VAT.

![Acquisitions System Preferences](image)

5.3 Authorities

**AuthDisplayHierarchy**: 1 or 0. Display hierarchies in details for Authorities. Set it 0. **Authoritysep**: —. Koha is asking what symbol is used in your language to separate the levels of your subject headings.

![Authorities System Preferences](image)
5.4 Intranet

It is the librarian interface setting of Koha. Enter following values:

Intranetnav:
   (Use HTML tabs to add navigational links to the left-hand navigational bar in Int)
TemplateEncoding: utf-8
   (Specify the encoding to use in templates)
Intranetcolorstylesheet:
   (Enter the name of the color style sheet to use the intranet)
Intranetstylesheet:
   (Enter a complete URL to use an alternative layout style sheet in Intranet)
Template: default
   (Preferences order for intranet interface templates)

5.5 Catalogue

Set the following parameters with the given values for cataloguing activities:

ISBD
   (Enter ISBD display format code here)
IntranetBiblioDefaultView: marc
   (Define the default view of a biblio in the intranet. Can be either normal, marc)
LabelMARCView: standard
   (Define how a MARC record will display)
MARCOrgCode: 0
   (Your MARC Organization Code – http://www.loc.gov/marc/organizations/orgshome.htm)
ReceiveBackIssues: 5
   (How many previous serials to display when receiving serials)
advancedMARCeditor: 0
   (If set, the MARC editor won’t show you tag/subfields description)
autoBarcode: 0
   (Barcode is auto-calculated)
hide_marc: 0
   (hide marc specific datas like subfield code & indicators to library)
itemcalnumber: 676a
   (The MARC field/subfield that is used to calculate the itemcalnumber (in UNMARC)
marc: yes
   (Turn on MARC support)
marcflavour: MARC21
   (Your MARC flavor (MARC21 or UNIMARC) used for character encoding)
serialsadditems: 1
    (If set, a new item will be automatically added when receiving an issue)
Sortbynonfiling: no
    (Sort search results by MARC nonfiling characters)
Z3950 AuthorAuthFields: 701, 702, 700
    (contains the MARC biblio tags of person authorities to fill biblio.author with w)
Z3950NormalizeAuthor: 0
    (If set, Personal Authorities will replace authors authors in biblio.author)

5.6 Circulation
Set the following parameters with the given values for circulation activities:
ReturnBeforeExpiry: 1
    (If yes, Returndate on issuing can't be after borrower card expiry)
maxoutstanding: 5
    (maximum amount withstand to be able make reserves)
maxreserves: 5
    (maximum number of reserves a member can make)
noissuescharge: 5
    (maximum amount withstand to be able to check out an item)
Patronimages: jpg
    (Turn on/off display of patron images in Intranet and specify a file extension format)
Printcirculationslips: 1
    (If set to 1, print circulation slips. If set to 0, don't)

5.7 Members
Set the following parameters with the given values for membership management:
NotifyBorrowerDeparture: 10
    (Delay before expiry where a notice is sent when issuing)
autoMemberNum: 0
    (Member number is auto-calculated)
Checksdigit: none
    (Validity checks on membership number: none or “Katipo” style checks)

5.8 OPAC
Set the following parameters with the given values for your OPAC interface:
AmazonAssocTag:
    (See associates.amazon.com/gp/flex/associates/apply-login.html)
AmazonContentView: 0
(Turn on Amazon Content – you MUST set AmazonDevKey and AmazonAssocTag if enabled)

AmazonDevKey:
(see: aws-portal.amazon.com/gp/aws/developer/registration/index.html)

AnonSuggestions: 1
(Set to anonymous borrowernumber to enable Anonymous suggestions)

BiblioDefaultView: normal
(Define the default view of a biblio. Can be either normal, marc or isbd)

Disable_Dictionary: 0
(Disables Dictionary buttons if set to yes)

LibraryName: &lt;i&gt;&lt;b&gt;Central Library&lt;br/&gt;&lt;b&gt;The University of Burdwan&lt;br/&gt;&lt;br/&gt;&lt;b&gt;&lt;i&gt;... (Library name as shown on main opac page)

OpacNav:
(Use HTML tabs to add navigational links to the left-hand navigational bar in OPA)

OpacPasswordChange: 1
(Enable/Disable password change in OPAC (disable it when using LDAP auth)

SubscriptionHistory: full
(Define the information level for serials history of OPAC)

hidelostitems: No
(show or hide “lost” items in OPAC)

opacbookbag: 1
(Enable or disable display of biblio basket (book bag))

opaccolorstylesheet:
(Enter the name of the color stylesheet to use in the OPAC)

opaccredits:
(Put any HTML Credits at the bottom of the OPAC page)

opacheader:
(Enter HTML to be included as a custom header in the OPAC)

opaquelanguages: en
(Set the preferred order for translations. The top language will be tried first.)

opaquelanguagesdisplay 1
(Turn on/off display of Change Language feature on OPAC)

opaqueimage:
(Enter a complete URL to an image, will be on the main page, instead of the Koha)

opaclayoutstylesheet:
(Enter the name of the layout stylesheet to use in the OPAC)

opacreadinghistory: 1
(Turn on/off display of Patron Reading History in OPAC)
Set the following parameters with the given values for miscellaneous preferences –

- **Delimiter:** ;
  - (Define the default separator character for report exportations into files)
- **Independent Branches:** 0
  - (Turn Branch independency management On and Off)
- **KohaAdminEmailAddress:** kanchan_lis@yahoo.co.in
  - (the email address where borrowers modifs are sent)
- **MIME:** EXCEL
  - (Define the default application for report exportations into files)
- **MinPasswordLength:** 5
  - (Minimum length for patron passwords)
- **Timeout:** 3600
  - (Inactivity timeout for cookies authentication (in seconds))

### 6. Setting Operating Parameters

From parameter menus set the following values for your library (see Fig. 6):

#### 6.1 Library Branches

The parameter tells Koha about your library’s public service outlets. Even if you have only one outlet, you need to give Koha some information about it. You may find that some information about your primary outlet, you need to give Koha some information about it. You may find that some information about your primary outlet already exists. Begin by defining your branch categories. If, for example, you have one main library and several branch libraries, you might set up as M/MAIN(Main) category...
and a B/BR (Branch) category, with descriptions Main Library” and “Branch Library”. Now add the names and addresses, phone numbers, etc. of your libraries in the “Branches” section.

![Figure 10. Library branch setting](image)

### 6.2 Book Funds

If you have set your “acquisitions” system preferences to “normal”, you now need to give Koha some information about your materials acquisition budget. (If you chose “simple” acquisitions, ignore this parameter.) “Book Funds” are accounts that you establish to keep track of your expenditures for library materials. They may be used for any kind of materials (not just books) and should match the line items in your materials budget. For instance, if your library establishes a budget line for books, another for Journals, a third line for e-journals, a fourth budget line for CD-ROM databases and a fifth line for manuscripts, then you would have five Book Funds. The process of setting up the funds involves two steps: naming the funds, and setting the budget.

![Figure 11. Book funds for respective branch](image)
6. 3  Currencies

Define the currencies you deal with here. You should at least define your local currency here, giving it a name (like US Dollar, UK Pound, Australian Dollar, Indian Rupee) and setting the rate at 1. If you do business with vendors who charge in a different currency, enter a name for that currency (e.g. Euro) and set the approximate exchange rate compared to your currency.

![Figure 12. Currency setting](image1)

6. 4  Item Types

Item types are the “categories” into which your library items are divided. Defining item types must be done before Koha can function, and it should be done carefully and with a great deal of thought because issuing rules, statistics, OPAC searches, and many other Koha functions will be based on these categories. You can define as many item types as you want e.g., Text books, Story books, Thesis, Journals, Magazines, Reference Books (See Fig. 13)

![Figure 13. Library resource items](image2)
6. 5 Borrower Categories

Here is where you define the types of users of your library and how they will be handled. The borrower category administration page warns that you need a “C” (child) and “I” (institution) category. Koha will not fail if you do not have these category codes, but there are some features of Koha that expect these codes. The borrowing records of a “C,” for example, will automatically be linked to the record of the child’s parent. An “I” code allows the librarian to save information about the institutional borrower that is slightly different from the institution saved about regular borrowers. If you do not want to have children’s records attached to their parents records, and/or do not have institutional borrowers, you may ignore the warnings about these two special borrowers categories and set as per your nature of borrowers e.g. students, scholars, teachers, officers, staff, other than institution.

6. 6 Issuing Rules

Here is yet another important parameter to set before using Koha, since it controls many aspects related to the circulation of library materials. Item Types and Borrower Categories, however, must be defined before defining Issuing Rules. (The branch should be defined, too, if issuing rules will varies from branch to branch). If one try to define issuing rules before item types and borrower categories are set, the grid at the bottom of the screen will be empty and one cannot proceed.

6. 7 Authorized Values Admin

This table is used in MARC definition. One can define as many categories as one wants, and as many authorised values as you want in each category. When MARC subfield structure is defined, one can link a subfield to an authorised value category. When the user adds or modifies a biblio, that subfield is not entered through a free field, but though a list of authorized values.

6. 8 Auth type Admin

Define authority types, then authority MARC structure in the same way item types & biblio MARC tag structure were defined. Authority values are managed through plugins.

6. 9 Biblo Framework

Add your framework name, and then go to MARC biblio to set MARC editor parameters.

6. 10 MARC link

Don’t set anything here.

6. 11 MARC Check

Check your MARC setting facility here
6.12 Printers

If you are going to be using a printer (or several printers) that is attached to your Koha server for producing statistical and operations reports, then you need to give each printer a name and tell Koha how to access it. You do this by telling Koha which print queue to use.

6.13 Stop Words

Here you should list all of the words you wish Koha to ignore when performing catalogue searches or building the keyword index. Normally, you will not want Koha to save keyword references to articles like “The” and “A” and other very common words. Saving keyword references to these words does not help to limit a search and will make the keyword index very large and “cluttered” with words that are not really useful. You must define at least one stop word, or Koha searches will crash.

6.14 Z39.50 Servers

This parameter defines the Z39.50 servers you want Koha to search. In this area, you can define servers for searching. Be sure the servers you choose support the MARC format you have chosen in your system preferences. To add servers, you will need to know the domain name or IP address of the server, the port number to use, and the name of the database to access. Be sure to choose servers which deliver records in the proper MARC format for your Koha installation. You should have a login name and password for Z39.50 servers that do not accept anonymous connections, for anonymous servers, leave the userid and password fields blank.

7. Conclusions

In respect of commercial software, it is better to use because of its many useful features (e.g. data import directly from Library of Congress and other large databases which minimizes the processing work of library; main library and branch library automation facilities, MARC21, Z39.50 etc.) as well as freedom to change the source code as and when necessary which can solve the local problems of every institution.

Good News: The Government of Kerala has decided to make Koha as its official software for computerization of libraries under Government control. This project initiated by the Directorate of Technical Education, Govt. of Kerala. Mr Saji T Nair (saji969@yahoo.com) is the Project Director. This news appeared in Koha website on August 19, 2008, one can read from here – http://koha.org/about-koha/news/nr1219098567.html. Another good news from Delhi Public Library, they implemented Koha for its OPAC. OPAC is accessible from http://59.176.17.111/. DPL is the first library in South Asia using latest version of Koha (version-3). The persons behind this effort are Mr. Amit and Mr. Sudhir (Indserve infotech Pvt. Ltd). Contact email of Amit is amitddng135@gmail.com
References


About Author

Dr. Kanchan Kamila, Asstt. Librarian, University of Burdwan, Burdwan.