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# Installing Koha 2.2 on Fedora Core (1, 2, 3)

Joshua Ferraro

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jmf

Add information on SELinux to Apache section

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## 1. Using this document

### 1.1. Copyright and License

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## 2. Introduction

### 2.1. Prior Knowledge and Assumptions

In this document I assume that you are running a standard installation of Fedora Core (1, 2, or 3). If you need help setting up Fedora Core on your machine please see the Fedora installation manual available from <http://fedora.redhat.com>. I would highly recommend using the latest release of Fedora Core as the shelf-life of these distributions is only about 12 months. If you need a longer shelf life for your Koha machines I recommend either Red Hat Enterprise Linux (AS or ES) or a distro like Debian which does not charge for a subscription service and has a much longer shelf life. If, like me, you expect that you will be upgrading your Koha installation every 6 months or so the Fedora Core series are a good choice.

For more information about Fedora Core see the release notes for the distro you have chosen:

Core 1: [ht-tp://download.fedora.redhat.com/pub/fedora/linux/core/1/i386/os/RELEASE-NOTES-en.html](http://download.fedora.redhat.com/pub/fedora/linux/core/1/i386/os/RELEASE-NOTES-en.html)

Core 2: [ht-tp://download.fedora.redhat.com/pub/fedora/linux/core/2/i386/os/RELEASE-NOTES-en.html](http://download.fedora.redhat.com/pub/fedora/linux/core/2/i386/os/RELEASE-NOTES-en.html)

Core 3: [ht-tp://download.fedora.redhat.com/pub/fedora/linux/core/3/i386/os/RELEASE-NOTES-en.html](http://download.fedora.redhat.com/pub/fedora/linux/core/3/i386/os/RELEASE-NOTES-en.html)

If you already have some knowledge about Linux or other Unices it will be easier to understand this manual, however, no intermediate steps are necessary subsequent to the installation of Fedora Core before beginning the Koha installation. This guide is a "cookbook" for installing dependencies for Koha on Fedora Core.

### 2.2. Internet Connection

This guide assumes that the Koha server has a dedicated Internet connection -- a high-speed connection is best. It is possible to install Koha without a dedicated Internet connection, but this guide does not go into how to do that.

## 2.3. Package Group Selections

During a CD installation of Fedora Core you have the option of selecting "Package Groups" for installation -- you can also access this utility after installation.

### Tip

It can be found from the "hat" menu under **System Settings --> Add/Remove Applications**

You'll want to install the following package groups:

- Web Server
- MySQL Database

### Note

Careful, Core 1 and 2 hide this option ... use the **Details** button to select MySQL and de-select PostgreSQL

- Development Tools
- Administration Tools (optional but a good idea)
- System Tools (optional but a good idea)

I don't generally recommend installing "Everything". Mainly this is because the more applications you have installed and running on your system the more complex the maintenance becomes. Running unused applications may also open up your system to attacks that would otherwise not be an issue.

## 2.4. Firewall Configuration

I would highly recommend utilizing the default firewall features that come with Fedora Core. However, you'll want to allow access to **http/https** (port 80 and 8080) as well as **ssh** (port 22). You can configure the firewall during the initial install or subsequently using the "Security Level" utility in the "hat" menu.

## 2.5. A Note On The Graphical User Interface (GUI)

Fedora Core will always default to installing and loading your GUI (by default this is X.org and Gnome). In the past I have always disabled installation of the GUI on a production server, but lately I've taken to installing it and then tweaking the startup procedures so that the GUI does not load by default but must be started manually (so during normal operations the GUI does not waste precious resources). This is mainly because I find some of the GUI tools to be quite useful when I'm physically on-location and working on a server. To disable the GUI subsequent to installation simply edit `/etc/inittab` and make the default runlevel 3 instead of 5. To start the GUI afterwards type **startx** at the command prompt.

If the machine on which you will install Koha is nearby you can log in locally to perform the Koha install. But most folks find it more convenient to log in remotely using an **SSH** or a **Telnet** client. If you are running Windows you can start **Telnet** by clicking **Start->Run** from the start menu and typing **telnet**. Or you can download the free **SSH** program **PuTTY** from <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>. **SSH** is a more secure and robust terminal emulator standard and is a better choice.

For many of the commands it will be necessary to have superuser privileges on the Koha server. However, it's generally not a good idea to log into your server directly as the root user. It's better to use the **su** utility to allow your regular user to obtain superuser privileges. For example,

```
jmf@koha:~$ su
password:
koha:/home/jmf#
```

The # tells you that you have root privileges. If you want to return to your regular user type **exit**.

## 2.6. Update Your System

Fedora Core has a rapid development pace. There are usually daily updates or bugfixes to applications in the system. Be sure your installation is up-to-date. You can install updates either using the **up2date** application (or it's GUI equivalent) or by using the new tool **yum**. To install updates using **yum** type:

```
[root@koha]# yum update
```

You can also use **yum** to install programs that have been packaged for Fedora Core. See the **yum man** page for more information.

## 3. Dependencies

Koha is built with a number of related open source web-based technologies which are sometimes designated with the acronym L.A.M.P. L.A.M.P. refers to Linux (the GNU/Linux operating system), Apache (a robust web server application), MySQL (a Relational Database Management System using the SQL standard) and Perl/Python/PHP (three common scripting languages). Koha was originally designed for a GNU/Linux system running Apache and MySQL and is written almost entirely in Perl. In order to install and use Koha it is necessary first to install and configure these dependencies.

### 3.1. Perl

The majority of Koha is written in Perl -- a high-level programming or scripting language. Perl's functionality and usefulness has been extended and enhanced through the development and free distribution of modules (programming libraries) within the Perl community. The vast majority of these modules are available through the Perl Network **CPAN**. Others are available for download from the module developer's website or **ftp** server. Some of these modules have also been packaged directly into Fedora Core's packaging system.

Koha relies on several of these extended module libraries for its functions and getting all of these modules set up can be the most challenging part of the Koha installation. Perl itself is installed by default on a Fedora Core system so you needn't install it. The extended Perl modules that are not available via Fedora Core's packaging system are available on the Perl Network **CPAN**. Perl has a utility that can be run to automatically install modules from **CPAN** and it's pretty good about keeping track of dependencies within Perl itself, but it cannot handle dependencies outside the Perl base. So before we can install these modules we need to install their dependencies which are outside of Perl.

#### 3.1.1. Configuring Perl's CPAN utility while installing MARC::Record

The first time you use Perl's **CPAN** utility it will configure itself. So we can start that process by telling Perl to install the **MARC::Record** module from the **CPAN** network:

```
koha:/# perl -MCPAN -e 'install "MARC::Record"'
```

You should get the following message:

```
/usr/share/perl/5.6.1/CPAN/Config.pm initialized.
```

CPAN is the world-wide archive of perl resources. It consists of about 100 sites that all replicate the same contents all around the globe. Many countries have at least one CPAN site already. The resources found on CPAN are easily accessible with the CPAN.pm module. If you want to use CPAN.pm, you have to configure it properly.

If you do not want to enter a dialog now, you can answer 'no' to this question and I'll try to autoconfigure. (Note: you can revisit this dialog anytime later by typing 'o conf init' at the cpan prompt.)

```
Are you ready for manual configuration? [yes]
```

The setup process will take a while. It should be safe to answer all the questions with the default answers. You can safely ignore the utilities' attempts to get you to upgrade or install other Perl modules but you should allow it to prepend prerequisites. You can also set it to automatically build Perl prerequisites without asking by typing **follow** at the following prompt:

The CPAN module can detect when a module that which you are trying to build depends on prerequisites. If this happens, it can build the prerequisites for you automatically ('follow'), ask you for confirmation ('ask'), or just ignore them ('ignore'). Please set your policy to one of the three values.

```
Policy on building prerequisites (follow, ask or ignore)?  
[ask]
```

Eventually you may get the following message:

Now we need to know where your favorite CPAN sites are located. Push a few sites onto the array (just in case the first on the array won't work). If you are mirroring CPAN to your local workstation, specify a file: URL.

First, pick a nearby continent and country (you can pick several of each, separated by spaces, or none if you just want to keep your existing selections). Then, you will be presented with a list of URLs of CPAN mirrors in the countries you selected, along with previously selected URLs. Select some of those URLs, or just keep the old list. Finally, you will be prompted for any extra URLs -- file:, ftp:, or http: -- that host a CPAN mirror.

```
(1) Africa  
(2) Asia  
(3) Central America  
(4) Europe  
(5) North America  
(6) Oceania  
(7) South America  
Select your continent (or several nearby continents) []
```

Proceed by selecting the numeric value for your location. You may be prompted for a more specific location and finally you will be able to select several URLs for **CPAN** to use to download your modules

from. It's a good idea to select a few just in case some of them are not operational or are slow.

### 3.1.2. The Yaz Toolkit

As long as everything went smoothly with the **CPAN** installation, Perl should finish the install and return you to the command prompt. We're almost ready to install the remaining Perl modules but one of them, namely `Net::Z3950`, has a non-Perl dependency that we need to install first called **Yaz**.

As of this writing Indexdata, who wrote and maintains the Yaz toolkit has made packages available for Fedora Core 2 and 3. These can be downloaded from their **ftp** site: <http://ftp.indexdata.dk/pub/yaz/redhat/>. You'll need the `yaz`, `libyaz` and `libyaz-devel` packages (the latest version should be fine and if you don't find a package for your specific version of Fedora Core a previous version should work). Navigate to a convenient spot and type:

```
[root@koha]# wget http://ftp.indexdata.dk/pub/yaz/redhat/fc2/libyaz-2.0.28-1.i386.rpm
[root@koha]# wget http://ftp.indexdata.dk/pub/yaz/redhat/fc2/yaz-2.0.28-1.i386.rpm
[root@koha]# wget http://ftp.indexdata.dk/pub/yaz/redhat/fc2/libyaz-devel-2.0.28-1.i386.rpm
```

Now you should have three rpms that can be installed with the **rpm** utility thusly:

```
[root@koha]# rpm -i yaz*
[root@koha]# rpm -i libyaz*
```

(the `*` is a wildcard).

### 3.1.3. Installing the Remaining Perl Modules

At this point we can install the other Perl modules:

```
[root@koha]# perl -MCPAN -e 'install Event'
[root@koha]# perl -MCPAN -e 'install Net::Z3950'
[root@koha]# perl -MCPAN -e 'install Digest::MD5'
[root@koha]# perl -MCPAN -e 'install "HTML::Template"'
[root@koha]# perl -MCPAN -e 'install "Mail::Sendmail"'
[root@koha]# perl -MCPAN -e 'install "PDF::API2"'
```

That should take care of the Perl installation and configuration as well as all the modules. If we left any Perl modules out Koha will warn us when we run the install script and will give instructions on how to install them.

## 3.2. MySQL

For a database Koha uses MySQL — a free SQL-query-based Relational Database Management System. The installation and basic configuration of MySQL on a Debian system is quite simple. More advanced topics such as database optimization and MySQL administration are documented online at <http://www.mysql.com/doc/en/index.html>. It would be well worth your while to familiarize yourself with the basic functionality and behaviour that you can expect from MySQL. Chapter 5, *Database Administration*, is especially relevant for using Koha.

To install the MySQL server on your Fedora Core machine type:

```
[root@koha]# yum install mysql-server
```

After installing MySQL you will need to start it by typing:

```
[root@koha]# /etc/init.d/mysqld start
```

Note that If MySQL fails to start you may need to adjust SELinux. To do that type the following:

```
[root@koha ~]# setenforce 0
[root@koha ~]# mysql_install_db
Preparing db table
Preparing host table
Preparing user table
Preparing func table
Preparing tables_priv table
Preparing columns_priv table
Installing all prepared tables
041201 17:07:25 /usr/libexec/mysqld: Shutdown Complete

To start mysqld at boot time you have to copy support-files/mysql.server
to the right place for your system

PLEASE REMEMBER TO SET A PASSWORD FOR THE MySQL root USER !
This is done with:
/usr/bin/mysqladmin -u root password 'new-password'
/usr/bin/mysqladmin -u root -h koha.athenscounty.lib.oh.us password 'new-password'
See the manual for more instructions.

You can start the MySQL daemon with:
cd /usr ; /usr/bin/safe_mysqld &

You can test the MySQL daemon with the benchmarks in the 'sql-bench' directory:
cd sql-bench ; run-all-tests

Please report any problems with the /usr/bin/mysqlbug script!

The latest information about MySQL is available on the web at
http://www.mysql.com
Support MySQL by buying support/licenses at https://order.mysql.com

[root@koha ~]# setenforce 1
```

Then start up MySQL again and you should be good to go.

It's a good idea to set the MySQL administrator password right away. You will need to have this password handy later in the installation so make sure you write it down. You can set the password from the command line thusly:

```
[root@koha]# mysqladmin password [type your new password here]
```

but leave out the brackets.

### 3.3. Apache

According to the Apache website, Apache has been the most popular web server on the Internet since April of 1996. Additionally, the October 2003 *Netcraft Web Server Survey* found that over 64% of websites on the Internet use Apache, making it more popular than all other web servers combined. You can see the survey at <http://news.netcraft.com/>. Additionally, you can find out more about the Apache Software Foundation on their website at <http://www.apache.org/>.

We will have to configure Apache for Koha later on in the install, but for now you should know that Apache's configuration files are kept in `/etc/httpd/conf/httpd.conf` and Apache's log files are in `/var/log/httpd`.

As with MySQL, there is an issue with SELinux on Fedora Core 3 and the Apache web server that prevents execution of the CGI scripts. Instead of disabling SELinux for httpd, just change the context for the Koha directories. The utility for doing this is called '**chcon**.' Here's a brief description of how to use it:

First, check the context for the directories that you know work for httpd:

```
[root@koha]# ls -Z /var/www/
drwxr-xr-x root root system_u:object_r:httpd_sys_script_exec_t cgi-bin
drwxr-xr-x root root system_u:object_r:httpd_sys_content_t error
drwxr-xr-x root root system_u:object_r:httpd_sys_content_t html
drwxr-xr-x root root system_u:object_r:httpd_sys_content_t icons
drwxr-xr-x root root system_u:object_r:httpd_sys_content_t manual
drwxr-xr-x webalizer root system_u:object_r:httpd_sys_content_t usage
```

Then, use the **chcon** utility to label the Koha subdirectories as for their counterparts in `/var/www`. Here's the syntax:

```
chcon <context> /usr/local/koha/<subdirectory>
```

For more info on SELinux check out the Fedora Core 3 FAQ: <http://fedora.redhat.com/docs/selinux-faq-fc3/>

## 3.4. Conclusion

Well, that's it, we've installed all the dependencies for Koha on Fedora Core. Now you are ready to download Koha from <http://www.koha.org> and install it following the directions in the `INSTALL` file.