

openCRX Installation Guide for JBoss 4

Version 2.0



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1 About this Book

openCRX is the leading open source CRM tool. openCRX is based on the openMDX application framework, an open source application framework based on the OMG's model driven architecture (MDA) standards. This guarantees maximum openness, standards compliance and a state-of-the-art component-based architecture.

This book describes the installation of openCRX for the Jboss application server.

1.1 Who this book is for

The intended audience are openCRX administrators and application server system administrators.

1.2 What do you need to understand this book

This book describes the installation of openCRX for JBoss. The book assumes that you are familiar with JBoss deployment concepts and administration.

1.3 Tips, Warnings, etc.

We make use the following pictograms:



Information provided as a "Tip" might be helpful for various reasons: time savings, risk reduction, etc.



You should carefully read information marked with "Important". Ignoring such information is typically not a good idea.



Warnings should not be ignored (risk of data loss, etc.)

2 Prerequisites

As a first step select the openCRX version you want to install. Based on the published version compatibility information you can determine the appropriate versions of openMDX, JBoss, and Java JDK/JRE:

<http://www.opencrx.org/faq.htm#versioncompatibility>



Write down the version numbers of the software packages you have chosen to install – this may be helpful in the future in case you require support or want to file a bug report:

openCRX v _____
 openMDX v _____
 JBoss v _____
 JDK v _____

2.1 JDK 5.0

Install either the Sun Java JDK 5.0 or the BEA JRockit JDK 5.0 appropriate for your platform. The JDKs are available from the following sites:

Sun JDK 5.0:

http://java.sun.com/javase/downloads/index_jdk5.jsp

BEA JRockit JDK 5.0:

http://commerce.bea.com/products/weblogicjrockit/5.0/jr_50.jsp



It is not sufficient to have a Java Runtime Environment (JRE) only. The full-blown JDK is required to run openCRX (e.g. to compile JSPs).

2.2 JBoss

Download **JBoss** from <http://labs.jboss.com/portal/jbossas/download>

2.3 openmdx-kernel.jar

Download and install **openCRX SDK** – available from

<http://www.opencrx.org/sdk.htm>

Once installed, you will find the file **openmdx-kernel-jar** in the directory

<SDK_Install_Dir>\opencrx-2.0.0\opt\openmdx-2.0.0\jre-1.5\core\lib

2.4 openCRX EARs

Either you can build the EARs from scratch with the openCRX SDK, or you can get pre-built EARs as follows: Download and install **openCRX Server** – available from <http://www.opencrx.org/server.htm>

Once installed, you will find the pre-built openCRX EARs in the directory `<Server_Install_Dir>\apache-tomcat-6\deployment-units`

openCRX/core EAR:

opencrx-core-CRX.ear

openCRX/groupware EAR:

opencrx-groupware-CRX.ear

openCRX/store EAR:

opencrx-store-CRX.ear

Only opencrx-core-CRX.ear is required to run openCRX; the other EARs are optional and only required if you want to activate the contained functionality.

2.5 Database

Please note that you **must set up the openCRX database** as described in the respective openCRX database installation guide **before you continue**. For example, if you want to install openCRX for MySQL you must first install MySQL and the matching openCRX database definitions.

Database installation guides for the supported database management systems are available from <http://www.opencrx.org/documents.htm>

You will also need a **datasource configuration file**. Sample data source configurations for various database management systems are contained in the openCRX SDK in the directory

`<SDK_Install_Dir>\opencrx-2.0.0\core\src\connector\jboss-3`



Please remember that you will also need a **JDBC driver** appropriate for your database management system (please refer to the relevant DB installation guide for additional information).

Once you have successfully installed the database you are ready to continue with the JBoss setup.

3 Installing openCRX for JBoss

In a first step you must install JBoss by extracting the delivered JBoss distribution to your program directory, e.g. `d:\pgm\jboss-4.2.1.GA` on Windows or `/opt/jboss` on Linux.



Make sure that you add `JAVA_HOME` to your system environment variables as JBoss needs the JDK to compile JSPs, e.g. `JAVA_HOME=D:\pgm\j2sdk1.5` on Windows or `JAVA_HOME=/usr/java/j2sdk1.5` on Linux.

Next you must deploy openCRX to JBoss. You do this by copying several files to the JBoss deploy directory:

- Copy the file `openmdx-kernel.jar` to the directory `d:\pgm\jboss-4.2.1.GA\server\default\lib` on Windows or `/opt/jboss/server/default/lib` on Linux.
- Copy the appropriate database **JDBC driver** to the directory `d:\pgm\jboss-4.2.1.GA\server\default\lib`. The openCRX database installation manual describes how to download the drivers.
- Copy the file `opencrx-core-CRX.ear` to the JBoss deploy directory `d:\pgm\jboss-4.2.1.GA\server\default\deploy` on Windows or `/opt/jboss/server/default/deploy` on Linux.



Do NOT deploy any other openCRX EARs (e.g. groupware) before having completed the setup based on the openCRX QuickStart guide.

Optionally, you can also open `opencrx-core-CRX.ear` with a ZIP utility and extract the content to the directory

`d:\pgm\jboss-4.2.1.GA\server\default\deploy\opencrx-core-CRX-web.ear` or `/opt/jboss/server/default/deploy/opencrx-core-CRX-web-ear`

If you want to edit the content of the file `opencrx-core-CRX.war` without the zip/unzip roundtrip you can also extract the content with a ZIP utility.

- Install the **datasource configuration file** appropriate for your DB, e.g. copy the file `jdbc-opencrx-CRX-mysql-ds.xml` (if you use openCRX with MySQL) to the directory `d:\pgm\jboss-4.2.1.GA\server\default\deploy` on Windows or `/opt/jboss/server/default/deploy` on Linux.



Verify all the relevant information for correctness, e.g. ensure that the connection url – in particular the database name – the user name, and the password match with your installation.

A simple copy/paste of our sample files will typically not work, i.e. it is expected that you will have to adapt some of the parameters.

- Create the file **server.log.properties** with the following content in `d:\pgm\jboss-4.2.1.GA\server\default\` on Windows or `/opt/jboss/server/default/` on Linux

Listing 1: The file server.log.properties

```
ApplicationId = openCRX
LogFileExtension = log
LogFilePath = D:/pgm/jboss-4.2.1.GA/server/default/log/
LogLevel = warning
java.LoggingMechanism = SharedDatedFileLoggingMechanism
```



Adapt `D:/pgm/jboss-4.2.1.GA` to your environment!

Next you must set a few Java VM options which are required for the openMDX application framework.

On Windows add the following lines to `d:\pgm\jboss-4.2.1.GA\bin\run.bat` after the lines indicated below. Also uncomment and adapt the line

```
set JAVA_OPTS=%JAVA_OPTS% -Xms128m -Xmx800m
```

This gives more memory to the Java VM (and depending on your environment you may want to increase the value of the option Xmx).

Listing 2: Java VM options required for openMDX on Windows

```
rem Sun JVM memory allocation pool parameters. Uncomment and modify as appropriate.
set JAVA_OPTS=%JAVA_OPTS% -Xms128m -Xmx800m

rem Setup openMDX-specific properties
set JAVA_OPTS=%JAVA_OPTS% -Dorg.openmdx.compatibility.base.application.j2ee.domain=apps
set JAVA_OPTS=%JAVA_OPTS% -Dorg.openmdx.compatibility.base.application.j2ee.server=server1
set JAVA_OPTS=%JAVA_OPTS% -Djava.protocol.handler.pkgs=org.openmdx.kernel.url.protocol
set JAVA_OPTS=%JAVA_OPTS% -Dorg.openmdx.log.config.filename=D:/pgm/jboss-4.2.1.GA/server/default/server.log.properties
```



Adapt `D:\pgm\jboss-4.2.1.GA\server\default\server.log.properties` to your environment and make sure that there are no line breaks in the set commands. Each -D options is of the form `-Dname=value` and must be on a single line.

On Linux add the following lines to `/opt/jboss/bin/run.conf` towards the end of the file.

Listing 3: Java VM options required for openMDX on Linux

```
rem Setup openMDX-specific properties
JAVA_OPTS="$JAVA_OPTS -Xms128m -Xmx800m"
JAVA_OPTS="$JAVA_OPTS -Dorg.openmdx.compatibility.base.application.j2ee.domain=apps"
JAVA_OPTS="$JAVA_OPTS -Dorg.openmdx.compatibility.base.application.j2ee.server=server1"
JAVA_OPTS="$JAVA_OPTS -Djava.protocol.handler.pkgs=org.openmdx.kernel.url.protocol"
JAVA_OPTS="$JAVA_OPTS -Dorg.openmdx.log.config.filename=/opt/jboss/server/default/server.log.properties"
```



Adapt `/opt/jboss/server/default/server.log.properties` to your environment and make sure that there are no line breaks in the set commands. Each -D options is of the form `-Dname=value` and must be on a single line.

4 Configuring Security

As a final step you must activate security for the openCRX application. You can configure the file-based *UsersRolesLoginModule* and/or the database-based *DatabaseServerLoginModule*.

4.1 Configuring LoginModule



Tip

openCRX stores security information in the database tables **OOCSE1_***, i.e.

| | |
|-------------------------------------|--------------------------------------|
| OOCSE1_Authenticationcontext | OOCSE1_Authenticationcontext_ |
| OOCSE1_Credential | OOCSE1_Credential_ |
| OOCSE1_Permission | OOCSE1_Permission_ |
| OOCSE1_Policy | OOCSE1_Policy_ |
| OOCSE1_Principal | OOCSE1_Principal_ |
| OOCSE1_Privilege | OOCSE1_Privilege_ |
| OOCSE1_Realm | OOCSE1_Realm_ |
| OOCSE1_Role | OOCSE1_Role_ |
| OOCSE1_Segment | OOCSE1_Segment_ |
| OOCSE1_Subject | OOCSE1_Subject_ |

JBoss can be enabled to access these tables by configuring a database login module. This way users can be managed in openCRX and are immediately available as JBoss logins.



Important

It is strongly recommended that you stay with the file-based *UsersRolesLoginModule* for the user **admin-Root**. This simplifies the openCRX bootstrapping.



Tip

We recommend that you stay with the file-based authentication for all users until you have finished installing openCRX. You avoid situations where you have to trouble-shoot multiple issues at the same time...

Activate JAAS based authentication by adding the following configuration entries for the openCRX servlet to the JBoss configuration file

`d:\pgm\jboss-4.2.1.GA\server\default\conf\login_config.xml`
(`login-config.xml` on Unix platforms)

Listing 4: JBoss configuration for JAAS based authentication

```
<application-policy name="opencrx-core-CRX">
  <authentication>
    <login-module code="org.jboss.security.auth.spi.DatabaseServerLoginModule" flag="sufficient">
      <module-option name="dsJndiName">java://jdbc_opencrx_CRX</module-option>
      <module-option name="principalsQuery">SELECT c.passwd FROM OOCSE1_PRINCIPAL p, OOCSE1_CREDENTIAL c WHERE
(p.object_id LIKE 'principal/CRX/Root/Default/%') AND (p.credential = c.object_id) AND (p.name = ?)</module-
option>
      <module-option name="rolesQuery">SELECT r.name, 'Roles' FROM OOCSE1_PRINCIPAL pg, OOCSE1_PRINCIPAL p,
OOCSSE1_PRINCIPAL pn, OOCSE1_ROLE r WHERE (p.object_id = pn.object_id) AND (pn.is_member_of = pg.object_id) AND
(pg.granted_role = r.object_id) AND (p.object_id LIKE 'principal/CRX/Root/Default/%') AND (p.name = ?)</module-
option>
      <module-option name="ignorePasswordCase">>true</module-option>
      <module-option name="hashCharset">UTF-8</module-option>
      <module-option name="hashEncoding">base64</module-option>
      <module-option name="hashAlgorithm">MD5</module-option>
    </login-module>
    <login-module code="org.jboss.security.auth.spi.UsersRolesLoginModule" flag="sufficient" >
      <module-option name="usersProperties">users.properties</module-option>
      <module-option name="rolesProperties">roles.properties</module-option>
    </login-module>
  </authentication>
</application-policy>
```

The settings above enable both `file-based authentication` and `database-based authentication`.

Next you need to create the files `users.properties` and `roles.properties` in the directory `d:\pgm\jboss-4.2.1.GA\server\default\conf` (Windows) or `/opt/jboss/server/default/conf` (Linux).

Listing 5: File `users.properties` with syntax `user=password`

```
admin-Root=rootSecret
admin-Standard=adminSecret
guest=guest
```

Listing 6: File `roles.properties` with syntax `user.Roles=role1,role2`

```
admin-Root.Roles=OpenCrxRoot
admin-Standard.Roles=OpenCrxAdministrator
guest.Roles=OpenCrxUser
```



It is strongly recommended that you stay with the file-based `UsersRolesLoginModule` for the user **admin-Root**. This simplifies the openCRX bootstrapping.

5 Starting JBoss

You are now ready to start JBoss. Open a command shell and start `d:\pgm\jboss-4.2.1.GA\bin\run.bat`. You should verify whether the start options match the ones described earlier:

Listing 7: JBoss console output

```
=====
JBoss Bootstrap Environment
JBOSS_HOME: D:\jboss-4.2.1.GA
JAVA: D:\jdk1.5.0\bin\java
JAVA_OPTS: -Dprogram.name=run.bat -server -Xms128m -Xmx1024m -Dorg.openmdx.compatibility.base.application.j2ee.domain=apps -Dorg.
openmdx.compatibility.base.application.j2ee.server=server1 -Djava.protocol.handler.pkgs=org.openmdx.kernel.url.protocol -Dorg.
openmdx.log.config.filename=D:\jboss-4.2.
GA\server\default\server.log.properties -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000
CLASSPATH: D:\jdk1.5.0\lib\tools.jar;D:\jboss-4.2.1.GA\bin\run.jar
=====
13:32:04,568 INFO [Server] Starting JBoss (MX MicroKernel)...
13:32:04,568 INFO [Server] Release ID: JBoss [Trinity] 4.2.1.GA (build: SVNTag=JBoss_4_2_1_GA date=200707131605)
13:32:04,583 INFO [Server] Home Dir: D:\jboss-4.2.1.GA
13:32:04,583 INFO [Server] Home URL: file:/D:/jboss-4.2.1.GA/
13:32:04,583 INFO [Server] Patch URL: null
13:32:04,583 INFO [Server] Server Name: default
13:32:04,583 INFO [Server] Server Home Dir: D:\jboss-4.2.1.GA\server\default
13:32:04,583 INFO [Server] Server Home URL: file:/D:/jboss-4.2.1.GA/server/default/
...
...
13:33:15,294 INFO [Http11Protocol] Starting Coyote HTTP/1.1 on http-127.0.0.1-8080
13:33:15,309 INFO [AjpProtocol] Starting Coyote AJP/1.3 on ajp-127.0.0.1-8009
13:33:15,325 INFO [Server] JBoss (MX MicroKernel) [4.2.1.GA (build: SVNTag=JBoss_4_2_1_GA date=200707131605)] Started in 1m:10s:726ms
```

Now you are ready to continue with the openCRX QuickStart Guide or you can Install openCRX as Windows Service.

6 Additional JBoss Settings

6.1 Automatically delete the Directories tmp and work

To ensure a clean and consistent startup environment it is recommended to delete the directories

```
d:\pgm\jboss-4.2.1.GA\server\default\tmp and  
d:\pgm\jboss-4.2.1.GA\server\default\work (on Windows)
```

or

```
/opt/jboss/server/default/tmp and  
/opt/jboss/server/default/work (on Linux).
```

before you (re)start JBoss.



Add some statements to the file **run.bat** (Windows) or **run.sh** (Linux) to automatically delete these directories upon starting JBoss.

On Windows, for example, you could add something along the lines of

```
RMDIR /S /Q D:\jboss-4.2.1.GA\server\default\tmp  
RMDIR /S /Q D:\jboss-4.2.1.GA\server\default\work
```

to the beginning of **run.bat**

6.2 UTF-8 Support

For **full UTF-8 support** it is necessary to add/set the Tomcat option **URIEncoding="UTF-8"** in the file **server.xml** (details on the http connector reference page of the Apache-Jakarta-Project). Full UTF-8 support is for example required if you want to search for UTF-8 encoded characters.

6.3 Port Binding and Security

Newer versions of JBoss (4.2 and newer) bind to localhost only by default (it used to be global 0.0.0.0). You can get this same behavior by starting JBoss with **-b 0.0.0.0**.

If you look in the readme.html in your JBoss distribution there is a link with info on how to secure JBoss once you bind to 0.0.0.0. Alternatively, you can fiddle with the Tomcat options in the file **server.xml**.

7 openCRX as a Windows Service / Linux daemon

7.1 Install openCRX as a Windows Service

If you want to install JBoss / openCRX on a Windows platform as a Windows service you can do this by following instructions from the JBoss Wiki at <http://wiki.jboss.org/wiki/Wiki.jsp?page=RunJBossAsAServiceOnWindows>:

- Download JBoss Web Server 2.0.1.GA from <http://labs.jboss.com/jbossweb/downloads>
- Unzip `jboss-native-2.0.1xxx.zip` to your JBoss Directory `D:\pgm\jboss-4.2.1.GA\`
- Open a DOS shell, navigate to `D:\pgm\jboss-4.2.1.GA\bin` and then execute the command

```
service.bat install
```



Adapt `d:\pgm\jboss-4.2.1.GA` to your environment!

7.2 Install openCRX as daemon on Linux

This section (provided by Seah Hong Yee) is devoted to the automatic start up of jboss services during the startup phase of a server. It also simplifies manual jboss startup with the use of a System V init script. The following configuration has been tested on Mandrake Linux 10.1 and SuSe Linux Enterprise Server 9. Based on the particular distribution at hand there might be some minor differences in init scripts and configuration, but the following guide should work with RHEL, CentOS, WhiteBox and Fedora.

In the directory `$JBASS_HOME/bin` there should be two init scripts:

- `jboss_init_redhat.sh`
- `jboss_init_suse.sh`

If you are using **Mandrake/Mandriva, RHEL, CentOS, WhiteBox or Fedora**:

- Copy `jboss_init_redhat.sh` into `/etc/init.d` and rename it to `jboss`.
- Edit the script and adapt the parameters: `JBASS_HOME` and `JAVAPATH`
- Although not strictly necessary, you might want to include an entry like:

Listing 8: Declare location of jdk

```
export PATH=/usr/java/j2sdk1.5.0_06/bin
```

(/usr/java/j2sdk1.5.0_06/ being your jdk path, adapt it to your environment)

- At the top of the script there is an entry resembling the following one:

Listing 9: Declare startup sequence

```
# chkconfig: 3 87 20
```

The second set of digits represents the order sequence of the service startup. Make sure the number is larger than your database startup. Typically postgresql starts with the sequence number of 85, so I have my jboss startup with the sequence of 87

- Type the commands

Listing 10: Add JBoss to config

```
# chkconfig --add jboss  
# chkconfig jboss on
```

From now on jboss should startup automatically after reboot, or you can do it manually with *service jboss restart*.

If you are using **Suse** Linux:

- Copy the `jboss_init_suse.sh` script into `/etc/init.d` and rename it to `jboss`.
- Edit the script and adapt the following parameters: `JBOSS_HOME` and `JAVAPATH`
- Although not strictly necessary, you might want to include an entry near the top of the script like:

Listing 11: Declare location of jdk

```
export PATH=/usr/java/j2sdk1.5.0_06/bin
```

(/usr/java/j2sdk1.5.0_06/ being your jdk path, adapt it to your environment)

- Type the command `inserv jboss`
- Go into directory `/usr/sbin` and create a symbolic link with `ln -s /etc/init.d/jboss rcjboss`
- Execute the command `chkconfig jboss on`
- You should now be able to start jboss with the command `rcjboss start`

8 Next Steps

Now that you have successfully deployed openCRX on your application server you can continue with the openCRX QuickStart guide.