



IBM Cúram Social Program Management

Cúram Third-Party Tools Installation Guide for Windows

Version 6.0.4

Note

Before using this information and the product it supports, read the information in Notices at the back of this guide.

This edition applies to version 6.0.4 of IBM Cúram Social Program Management and all subsequent releases and modifications unless otherwise indicated in new editions.

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Chapter 1

Introduction

1.1 Installation Overview

To be able to use the *IBM® Cúram Social Program Management* it is necessary it is necessary to install and configure software from third parties. This document describes how to install the third-party products and carry out the post-installation setup tasks.

To be able to use Cúram Portlets it is necessary to install and configure Portal Server Software. The installation of Portal Server Software is described in *Installing Third-Party Software Products* chapter

1.2 Third-Party Products Overview

The following document outlines the products that are needed and, for each product, whether post-installation configuration is required. A comprehensive list of supported versions is contained in a separate document, *Cúram Supported Prerequisites* document.

If you are absolutely happy that you have installed all of the third-party products correctly and performed the necessary post-installation tasks, perhaps because you are working in an environment where your computer has been ghosted, you can skip this document.

Chapter 2

Installing Third-Party Software Products

2.1 Overview

This chapter describes the software products you need to install before installing *IBM Cúram Social Program Management*.



Important

IBM Cúram Social Program Management will definitely not run unless you follow the instructions; also, in some cases there is information in this document about product configuration that you will not find anywhere else (including the product documentation).

For each product it tells you:

- Briefly what the product is and why it is used;
- Installation instructions (in most cases, this involves simply following the defaults provided by the product installer); and
- Any post-installation tasks required.

This document does not provide specific instructions for installing fix packs unless the fix pack installation has some product or application-specific steps involved.

2.2 Before Installing

To install all of the products for an installation based on *IBM® DB2®* you need disk space of approximately:

- 1 GB based on *IBM® WebSphere Application Server®*;
- 1 GB based on *WebSphere Application Server Network Deployment*;
- 1 GB based on *Oracle® WebLogic Server*.

Approximately 2.5 GB extra is required for an installation based on *Oracle® Database*.

Look out for products that install to your C: drive by default - you may need to change the default installation location. If you have the luxury of a free drive or partition, you may want to dedicate this to *IBM Cúram Social Program Management* installs.



Installation Sequence

The order in which you install the third-party products is not important. Also you can, if you wish, perform all the basic product installations and then do all of the post-installation tasks together.

2.3 Operating System Software

Please refer to the *Cúram Supported Prerequisites* document for a comprehensive list of supported versions of operating systems and third party software.

2.4 DBMS Installation

Both *DB2* and *Oracle* are supported as database servers. *DB2* is the name used on *Microsoft® Windows* and *UNIX* platforms; on *IBM® z/OS®* the name is *IBM® DB2® for z/OS®*. Both *DB2* and *Oracle* may be installed on a given machine but typically it is necessary to install only one of the databases.

The *H2* database is supported as a development database.

Please refer to the *Cúram Supported Prerequisites* document for a comprehensive list of supported versions of database management systems (DBMS).



Note

No particular character set is recommended for installation and setup of the DBMS. The character set configured should be appropriate for the character range that will be used in the application. Please refer to the product sections below for further details.

2.4.1 IBM DB2

This section outlines how to install *DB2* as a database server.



Note

It is possible to use *IBM Cúram Social Program Management* against a remote database via the *DB2 Universal Type 4 Driver* supplied with the *Server Development Environment for Java® (SDEJ)*.

Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *DB2* to be installed.

DB2 Database Encoding

This section provides important information about issues with *DB2* and *DB2 for z/OS* database encoding, related sizing information, and action you need to consider taking.

What is the Issue?

When using a multi-byte character set (MBCS) and/or encoding *DB2* processes columns with respect to their byte size, not their character length. This means that a CHAR, VARCHAR, or CLOB column, when using multi-byte characters, may store fewer characters, depending on the actual character length(s), than the column length specification indicates.

Consider the following illustration:

- A CHAR or VARCHAR column modeled with a length of 16.
- The sixteen-character string, "Marge says hello", (without accented characters) requires 16 bytes for storage in a single-byte character set (SBCS).
- A similar sixteen-character string, but with accented characters, "Márge says hélló", requires 18 bytes for storage in UTF-8, a multi-byte character set (MBCS).

In the case of the single-byte data the string will fit and processing will be successful; but, in the case of the multi-byte data the string will not fit, resulting in overflow errors at run time. That is, normally an *IBM Cúram Social Program Management* web client will capture and report field size errors in a user-friendly manner. But, in a case as above, because it checks the number of characters and not the byte length, the client will not capture this size mismatch, causing the user to receive an "un-handled server exception" error, which is an underlying SQL Code -302 error.

How Cúram Addresses the Issue

Cúram provides modeling and build-time capabilities to resize its database columns to address the issue above. These capabilities are described further in the *Cúram Modeling Reference Guide* and *Cúram Server Developer's Guide*.

Because *Cúram* provides support for multiple languages out-of-the-box its support for MBCS data is enabled by default with the maximum expansion set. These expansion settings are appropriate to ensure that new users, testing environments, etc. do not encounter any errors due to their language, en-

coding, and database sizing. Also, users may find they require MBCS data when they import or copy/paste data from other applications into their *Cúram* system. However, these defaults may not be appropriate for all environments. The following section describes some considerations for changing these expansion settings.

What You Need to Consider

It is very important to carefully consider your data encoding requirements with respect to *DB2* and *Cúram* in order to avoid unexpected behavior with how the database stores characters.

The preceding illustration represents a boundary case in that the data length matches the maximum column width. In many cases it's unlikely that even with MBCS characters that an overflow situation will occur since most data doesn't reach the maximum defined size; however, you do need to be prepared for the possibility of these error situations.

You should use the database character set encoding appropriate to your application and environment. If possible, you should consider using an SBCS and encoding that supports your requirements. For example, CP1252 supports most Western European characters. However, CP1252 (or other SBCS encodings) may not support characters coming from different or "broader" character sets/encodings (e.g. UTF-8) that users may be used to copying and pasting into their browser for *Cúram*.

At the point of installing your *DB2* (or *DB2 for z/OS*) database you only need to identify your requirement for SBCS or MBCS data and be prepared to take appropriate action before building your *Cúram* database:

- If you require characters that use multiple bytes then you need to consider whether the default *Cúram* settings are appropriate. The necessary database space is dependent on various factors including:
 - The specific character sizes - in *DB2* (and *DB2 for z/OS*) MBCS data can range from 1 to 4 bytes.
 - The frequency of MBCS characters, which can depend on the application, language, locale, column usage within the application, etc.
 - The information density of the language and locale. For instance, while some languages may require more bytes per character, each character may represent more information than, for instance, an alphabetic character and may fit into a field without any size adjustment.

See the *Cúram Server Developer's Guide* section, *Planning for DB2 MBCS Data*, for more information on MBCS data sizing considerations.

- If an SBCS is adequate then you should plan to disable database expansion as described in the *Cúram Server Developer's Guide* section: *Planning for DB2 MBCS Data*.

Installation

Ensure that your account has administrative privileges and then follow the installer's instructions to perform a default installation. Very few options are presented during a default installation apart from the following:

- *Name* and *Password* of the administrator account - *db2admin* should be used as the user name for the sake of simplicity, along with any chosen password not longer than eight characters. Any other user name can be chosen. If it is an existing user, that user should be a member of the *Administrator* group. The informational dialog about “*OLE DB support component*” can be safely ignored.
- Certain editions of the *DB2* installer support federated databases - If the installer presents an option which is defaulted to *This machine will be the instance-owning database partition server*, then change this to *This machine will be a single-partition database server*.

Post-installation

Creating and configuring a database

1. Go into the *General Administration Tools/Control Center*.
2. Select the *Databases* folder (*All Systems... <Hostname>... Instances... DB2... Databases*).
3. Right click the mouse.
4. Select “*Create Database... Standard*”.
5. There are six pages and a summary to the wizard:
6. On page one, fill in the database name (alias should be the same as the name);

After creating the database additional parameters need to be configured. There is no command line to perform this so the *Configuration Assistant* and the *Control Center* must be used:

1. Go into the *General Administration Tools/Control Center*.
2. Select the *Databases* folder (*All Systems... <Hostname>... Instances... DB2... Databases*).
3. Select the database that was created in the previous step.
4. Right click the mouse.
5. Select “*Configure Parameters*”.

6. Update the LOCKTIMEOUT - Set Lock timeout (in the Applications section) to at least 1 second, or any desired higher value.
7. Reboot the PC or cycle all *DB2* services. To cycle all *DB2* services, please do the following from within a *DB2* command prompt:
 - connect reset
 - force application all
 - db2stop
 - db2start

After configuring the database you must create the tablespaces required for the storage and running of the application.

This can be done using the provided *Apache Ant* scripts by invoking:

```
ant -f %CURAMSDEJ%\util\db2_postconfig.xml -Ddb2.dir=  
<DB2_directory>
```

where <DB2_directory> is the *DB2* installation path (e.g. <drive>:\IBM\SQLLIB). Otherwise, complete the following steps:

1. Start a *db2cmd* window by running the **db2cmd** command at the command prompt.
2. Enter the following at the command prompt:

```
db2 connect to <database_name> user <user_name> using  
<password>  
db2 CREATE BUFFERPOOL highmem SIZE 50 PAGESIZE 32K  
db2 connect reset
```
3. Reboot the PC or cycle all *DB2* services. Please see above for details on how to cycle all *DB2* services.
4. Start a **db2cmd** window.
5. Enter the following at the command prompt:

```
db2 connect to <database_name> user <user_name> using  
<password>  
db2 create tablespace Curam_L PAGESIZE 32K MANAGED BY  
SYSTEM using ('<dir_name_A>') BUFFERPOOL highmem  
db2 create temporary tablespace Curam_T PAGESIZE 32K  
MANAGED BY SYSTEM using ('<dir_name_B>') BUFFER-  
POOL highmem  
db2 connect reset
```
6. Reboot the PC or cycle all *DB2* services. Please see above for details

on how to cycle all *DB2* services.



NOTE

- <dir_name_A> and <dir_name_B> should be non-existent directories, i.e. directories that don't exist before the command is run - on a drive with a significant amount of space.

- All *DB2* commands above are one-line commands, i.e. no line breaks.

- If the username used to connect to the database when executing the commands is not the same as the username which will be used to access the database, the following command should also be executed, where <user_name> is the name of the user that will be used to access the database:

db2 grant use of tablespace Curam_L to user <user_name> with grant option

Providing a DB2 License File

This post-installation step is required for all users of *IBM DB2 for Linux, Unix and Windows* for the *IBM Cúram Social Program Management Platform* development or runtime environments.

An empty `db2jcc_license_cu.jar` file exists in the `%CURAMSDEJ%\drivers` directory to allow for *Eclipse* classpath dependencies in the *CuramSDEJ* project. This empty jar should be overwritten with a real license for accessing *IBM DB2 for Linux, Unix and Windows*.

The *IBM DB2* `db2jcc_license_cu.jar` file should be copied from `<DB2_directory>\java\db2jcc_license_cu.jar` (where `<DB2_directory>` is the *DB2* installation path; e.g. `C:\IBM\SQLLIB`) to `%CURAMSDEJ%\drivers` (where `%CURAMSDEJ%` points to the root *CuramSDEJ* location).

Please refer to the *Cúram Supported Prerequisites* document for further information regarding the supported versions of third party database software.

Replacing the Packaged DB2 Drivers

Usually the latest JDBC drivers available at the time of release are packaged with *IBM Cúram Social Program Management*. However, if you wish to replace the drivers shipped in `%CURAMSDEJ%\drivers`, copy the following files from `<DB2_directory>\java`.

(where `<DB2_directory>` is the *DB2* installation path e.g. `<drive>:\IBM\SQLLIB`)

- `db2jcc.jar`
- `db2jcc_license_cu.jar`

- sqlj4.zip

Replace the drivers `db2jcc.jar`, `db2jcc_license_cu.jar`, and `sqlj4.zip` in `%CURAMSDEJ%\drivers` directory.

Please refer to the *Cúram Supported Prerequisites* document for details of the supported versions of third party products.

2.4.2 Remote DB2 for z/OS Connectivity

Before the connection can be established to the remote database it must be configured. The full details of installation of *DB2 for z/OS* are beyond the scope of this document set. However the following are the main post-installation steps to note:

1. A database can be configured for EBCDIC, ASCII, or UNICODE mode for use by the application. This can be done when creating the database using the `CCSID` keyword. For ASCII or UNICODE databases see the *Cúram Server Developer's Guide* for information about required property `curam.db.zos.encoding`.

```
CREATE DATABASE <database_name> BUFFERPOOL BP0 INDEXBP BP0 STOGROUP <storage_group> CCSID <EBCDIC, ASCII or UNICODE>;
```

2. An environment variable called `DB2JCC_LICENSE_CISUZ_JAR` must be created that points to the installed *DB2 for z/OS* license jar file used for connectivity to the remote database server. This is normally named `db2jcc_license_cisuz.jar` and is provided with *DB2 for z/OS* or *DB2 Connect*.

2.4.3 Oracle

This section outlines how to install *Oracle* as a database server.



Note

It is possible to use a remote database via the *Oracle Type 4 Driver* supplied with the *SDEJ*.

Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Oracle* to be installed.

Installation

Assuming that there have been no previous versions of *Oracle* installed, the installer's instructions can be followed to perform a typical server installation.

Oracle Database Encoding

It is important to consider the character set for data that will be stored on your database when configuring your database for use with *IBM Cúram Social Program Management*. For *Oracle*, there are 2 parameters to consider: NLS_CHARACTERSET and NLS_LENGTH_SEMANTICS.

- The NLS_CHARACTERSET parameter details the allowable character set of any data loaded to the database, generally AL32UTF8 is recommended by *Oracle* here.
- The NLS_LENGTH_SEMANTICS determines how *Oracle* interprets length specifiers on CHAR and VARCHAR columns. To handle supplementary characters, e.g. ß in German, where the storage of the character would be two bytes and could overrun the length of a defined column; the NLS_LENGTH_SEMANTICS parameter should be set to CHAR as this directs the database to size columns with a character length rather than byte length.

Replacing the Packaged Oracle JDBC Drivers

Usually the latest JDBC drivers available at the time of release are packaged with *IBM Cúram Social Program Management*. However, if you wish to replace the drivers shipped in %CURAMSDEJ%\drivers, please follow the sample steps below:

- Copy
<ORA_directory>\product\11.1.x\db_1\jdbc\lib\ojdbc6.jar to a <temp> location.
where <ORA_directory> is the *Oracle* installation path (e.g. <drive>:\oracle11g1)
- Rename ojdbc6.jar to ojdbc.jar (to match the name of the driver shipped).
- Copy
<ORA_directory>\product\11.1.x\db_1\oc4j\sqlj\lib\translator.jar to a <temp>> location.
- Copy
<ORA_directory>\product\11.1.x\db_1\oc4j\sqlj\lib\runtime12.jar to a <temp> location.
- Replace the drivers ojdbc.jar, runtime12.jar, and translator.jar in %CURAMSDEJ%\drivers with the drivers in your temp location.

Please note, the renaming of the ojdbc6.jar is necessary due to the fact that the *SDEJ* expects the driver file to be named ojdbc.jar.

Please refer to the *Cúram Supported Prerequisites* document for details of

the supported versions of third party products.

Post-installation

There are a number of post-installation tasks which must be performed:

- Create an *Oracle* role for the application server(s).



NOTE

The post-installation tasks require connecting to *Oracle* as the privileged 'sys' user. Immediately after installing *Oracle*, the password for this user is '*change_on_install*'. *Oracle* requires that this be changed.

Create an Oracle role for Application Servers

The application needs certain privileges in order to use the *Oracle XA* interface. Later, when configuring the application, the username under which the server connects to *Oracle* is specified. The appropriate privileges must be assigned to this username for the server to work successfully.

An easy way to bundle together the various privileges required is to create an *Oracle Role*. Privileges can be granted to this role. Later this role can be granted to your users, thereby granting all the privileges associated with that role.

The following commands create a role called `CURAM_SERVER` and give it the necessary privileges. A user named `CURAM_USER` is then assigned that role and given the password `PASSWORD`. The commands should be run inside an *Oracle SQLPlus* window.



Note

To run the commands from *SQLPlus* type the following at a command prompt **sqlplus “?/? as SYSDBA”**.

```
CREATE ROLE "CURAM_SERVER";  
GRANT RESOURCE TO "CURAM_SERVER";  
@%ORACLE_HOME%\RDBMS\ADMIN\xaview.sql  
GRANT SELECT ON V$XATRANS$ TO PUBLIC;  
GRANT SELECT ON PENDING_TRANS$ TO PUBLIC;  
GRANT SELECT ON DBA_2PC_PENDING TO PUBLIC;  
GRANT SELECT ON DBA_PENDING_TRANSACTIONS TO PUBLIC;  
GRANT EXECUTE ON DBMS_SYSTEM TO CURAM_SERVER;  
CREATE USER <CURAM_USER> IDENTIFIED BY <PASSWORD>  
DEFAULT TABLESPACE "USERS" TEMPORARY TABLESPACE
```

"TEMP";

GRANT "CONNECT", "CURAM_SERVER", UNLIMITED TABLESPACE TO <CURAM_USER>;

Example 2.1 Oracle Configuration



Note

Replace <CURAM_USER> and <PASSWORD> in the CREATE USER command with the username and password you wish to use for the database user.

2.4.4 H2

Overview

H2 is an SQL database engine written in Java® that implements the JDBC API. A browser-based console application is included.

Limitations in the support of *H2*: ¹

- Usage of this database is only for development.
- It is not supported at runtime.
- EAR files cannot be built for this database.
- The **configure** target which automatically configures the application server cannot be run while this database is in use.

Installation

H2 does not require any specific installation steps. The database is self contained within the delivered file: %CURAMSDEJ%\drivers\h2.jar.

Configuration

To use an *H2* database you must set the `Bootstrap.properties`² file to specify the set of properties relevant to *H2* for obtaining a connection to the database; e.g.:

```
curam.db.type=h2
curam.db.name=curamdb
curam.db.username=curam
curam.db.password=qnscP4c4+s=
# H2 directory.
# Default is home directory
# (i.e. C:/Documents and Settings/<username>). (Optional)
curam.db.h2.directory=C:/H2
# Mode remote|embedded
curam.db.h2.mode=embedded
# For remote mode also specify:
curam.db.serverport=9092
curam.db.servername=localhost
```



```
# Lock Time Out in ms. Default is 1000, i.e. 1 second. (Optional)
curam.db.h2.locktimeout=20000
# Property to disable MVCC. Default: true. (Optional)
curam.db.h2.mvcc=true
```

Example 2.2 Bootstrap.properties

Once you have updated `Bootstrap.properties` and rebuilt the server and database you can develop in exactly the same way as you would with *Oracle* or *DB2*.

H2 Modes

The following *H2* modes are supported for application development:

- **Embedded** - in embedded mode, an application opens a database from within the same JVM using JDBC. This is the fastest and easiest connection mode. The disadvantage is that a database may only be open in one virtual machine (and class loader) at any time.
- **Remote** - in remote mode (sometimes called client/server mode), an application opens a database remotely using the JDBC or ODBC API. Many applications can connect to the same database at the same time. The remote mode is slower than the embedded mode, because all data is transferred over TCP/IP.

You can specify the required mode by using the following property in `Bootstrap.properties` file:

```
# Mode remote|embedded
curam.db.h2.mode=embedded
```

Multi-Version Concurrency Control (MVCC)

The MVCC feature allows higher concurrency than using exclusive table level or row level locks. When using MVCC in this database, delete, insert and update operations will only issue a shared lock on the table. An exclusive lock is still used when adding or removing columns, when dropping the table, and when using `SELECT . . . FOR UPDATE`. Connections only 'see' committed data, and their own changes. That means, if connection A updates a row but hasn't committed the change, connection B will see the old value. Only when the change from connection A is committed, the new value is visible to other connections (read committed). If multiple connections concurrently try to update the same row, the database waits until it can apply the change, but at most until the lock timeout expires.

By default, MVCC is set to `true`.

You can switch off MVCC by using the following property in `Bootstrap.properties` file:

```
# Property to disable MVCC. Default: true. (Optional)
curam.db.h2.mvcc=false
```

H2 Web Console

When you start *H2* by running the `org.h2.tools.Server` class in `h2.jar` its web console is started and can be accessed at the URL:

```
http://localhost:8082/
```

The JDBC connection URL you specify in the login screen is based on the `curam.db.name`, `curam.db.username`, and `curam.db.h2.directory` values in `Bootstrap.properties`, which define the database name, SCHEMA name, and the database location in the file system. So, if your database name is `curamdb`, your username is `curam` and `curam.db.h2.directory` is defaulting to your home directory, your JDBC string would look like this:

```
jd-
bc:h2:tcp://localhost/~ /curamdb;schema=curam;FILE_LOCK=SOCKET
```

Note, if, for example, `curam.db.h2.directory` is `C:/H2`, then your JDBC string would look like this:

```
jd-
bc:h2:tcp://localhost/file:C:/H2/curamdb;schema=curam;FILE_LOCK=SOCKET
```

Specify the values for *User Name* and *Password* as in your `Bootstrap.properties` and then click the *Connect* (or *Test Connect*) button. Once connected you'll have an SQL text control, etc. available.

Further Reading

Useful web-sites for information on *H2* are:

- *H2* manual: <http://www.h2database.com/h2.pdf/>.
- *H2*-specific error codes: <http://www.h2database.com/javadoc/org/h2/constant/ErrorCode.html/>.

2.5 Apache Ant

2.5.1 Overview

Apache Ant from the *Apache Jakarta project* is a *Java*-based build tool. For those familiar with tools used in other environments it can be viewed as being similar to the *make* tool.

2.5.2 Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Ant* to be installed.

2.5.3 Installation

The *Ant* zip file can be obtained from Apache and extracted to a folder on your machine. For example, unzip `apache-ant-<version>-bin.zip` into a location of your choice. When unzipping this file, it is worth remembering that it installs everything under `apache-ant-<version>`. There is no need to unzip into a directory named 'ant'.

Installation is now complete.

2.5.4 Post-installation

The following steps need to be followed:

1. Create a system environment variable, `ANT_HOME`, which points to the installation directory chosen above;
2. Add `%ANT_HOME%\bin` to the `PATH` environment variable.
3. Create a system environment variable, `ANT_OPTS`, which should be set to be `-Xmx756m`.

2.6 Rational Software Architect

2.6.1 Overview

IBM® Rational® Software Architect is an *Eclipse*-based UML modeling tool that is required to do server development. More details on the use of *Rational Software Architect* can be found in the *Working with the Cúram Model in Rational Software Architect* document and more information on modeling can be found in the *Cúram Modeling Reference Guide*.

2.6.2 Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Rational Software Architect* to be installed.

2.6.3 Installation

The exact installation steps may vary by the edition and/or version of your software and the relevant IBM documentation should be consulted in addi-

tion to the information in this guide.

The *IBM Installation Manager* must be installed before installing *Rational Software Architect* and can be installed taking the default options.

Install *Rational Software Architect*:

1. Start the *IBM Installation Manager* (*Start > Programs > IBM Installation Manager > IBM Installation Manager*);
2. From the *File* menu select *Preferences* and on the *Repositories* page add a new entry appropriate to your site that points to your *Rational Software Architect* installation location and initial installation file and make this the only selected repository;
3. Click *OK* to go back to the main screen;
4. Select *Install* and you should see the appropriate version as an available install package. Select this and click *Next*;
5. Accept licenses, which is dependent on your local license configuration;
6. Choose a location for the Shared Resources;
7. Choose a Package installation location;
8. Choose not to extend an *Eclipse* version; (If you wish to use *Rational Software Architect* in an existing *Eclipse* instance see the product documentation; i.e. <https://www.ibm.com/developerworks/wikis/display/rationalinstall/Install+into+an+existing+Eclipse+instance>);
9. On the "Install Packages - select features to install" panel, you need to additionally install: 'Rational Rose Model Import' in order to install the *IBM® Rational Rose®* profile required by migrated models in *Eclipse*;
10. Continue and choose the defaults for the rest of the installation.

2.6.4 Post-installation

You must install the shipped plugins to enable modeling support:

1. Create a `dropins` directory in your *Rational Software Architect* install location; e.g., `C:\Rational\SDP\dropins`;
2. Create an `rsa_plugin.link` file that has the contents referencing the location where the plugin for *Rational Software Architect* is delivered to (note: use forward slashes); e.g.:

```
path=C:/Curam/CuramSDEJ/rsa
```

3. Edit the shortcut that starts *Rational Software Architect* to pass the -

`clean` option so that the plugins are picked up e.g.

```
...\eclipse.exe -clean -product com.ibm.rational....
```

4. Start or restart *Rational Software Architect*.

The configuration of your *Rational Software Architect* license is dependent on your local site configuration.

2.7 Application Server

The supported application servers on *Windows* are *WebSphere Application Server* and *WebLogic Server*. An application server must be installed on a machine that builds applications for deployment as well as on machines which host the deployed application.



Note

None of the application servers should be installed on a machine which has an underscore in the machine name.

2.7.1 WebSphere Application Server

Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *WebSphere Application Server* to be installed.

Installation

Install *WebSphere Application Server* from the *IBM* installation media. The default installation is used, without any configuration changes.

If installing *WebSphere Application Server* as a service, a user account should be created in advance so that it can be used as the credentials for the service. This user account must have administrator privileges.

You should *not* install *WebSphere Application Server* to a directory that contains spaces in the name, in other words do not use the default 'Program Files' directory.



Note

Please avoid installing the *WebSphere Application Server* sample applications. This is because the sample application *Apache Derby DataSource* will result in a classpath conflict with the application web client's use of *Derby*.

Post-installation

The WAS_HOME environment variable must be setup. It should be set to the server directory of the *WebSphere Application Server* installation (e.g. <drive>:\WebSphere\AppServer).

2.7.2 WebSphere Application Server Network Deployment

Overview

IBM's WebSphere Application Server Network Deployment is an optional component that manages one or many *IBM WebSphere Application Server* editions and offers advanced deployment services, including clustering, edge services and high availability for distributed configurations.

Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *WebSphere Application Server Network Deployment* to be installed.

Installation

Install *WebSphere Application Server Network Deployment* from the installation media. The default installation is used, without any configuration changes.

If installing the *Deployment Manager* as a service a user account should be created in advance so that it can be used as the credentials for the service. This user account must have administrator privileges.

You should *not* install *WebSphere Application Server Network Deployment* to a directory that contains spaces in the name, in other words do not use the default 'Program Files' directory.



Note

Please avoid installing the *WebSphere Application Server* sample applications. This is because the sample application *Apache Derby* DataSource will result in a classpath conflict with the application web client's use of *Derby*.

Post-installation

The WAS_HOME environment variable must be setup. It should be set to the server directory of the *WebSphere Application Server Network Deployment* installation (e.g. <drive>:\WebSphere\AppServer).

2.7.3 WebLogic Server

Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Oracle® WebLogic Server* to be installed.

Installation

When installing *WebLogic Server*:

1. Click *Next* on the initial welcome screen.
2. Specify the home directory where you wish to install *WebLogic Server* and click *Next*.
3. Choose a custom installation and click *Next*.
4. De-select all options except the *WebLogic Server* branch and click *Next*;
5. Select the JDK(s) you require and click *Next*;
6. Specify the Product Directory based on the *WebLogic Server* home directory you specified above and click *Next*;
7. Accept the default to not install as a *Windows* service and click *Next*;
8. Choose the shortcut location and click *Next*;
9. Review the installation summary and click *Next*;

Once the installation is complete uncheck *Run Quickstart* and click *Done* to exit the installer.

Post-installation

The `WLS_HOME` environment variable must be setup. It should be set to the server directory of the *WebLogic Server* installation (e.g. `<drive>:\wls\weblogic<version>\server` or `<drive>:\wls\weblogic<version>\wlserver_10.3`).

2.8 Portal Server

The supported portal server is *IBM® WebSphere® Portal Server*. A portal server must be installed on a machine which will host the deployed Cúram Portlets.



Note

None of the portal servers should be installed on a machine which has an underscore in the machine name.

2.8.1 WebSphere Portal Server

Supported Versions

Please refer to the *Cúram v6 Supported Prerequisites* document for the exact version of *WebSphere Portal Server* to be installed.

Installation

Install *WebSphere Portal Server* from the *IBM* installation media. The default installation is used, without any configuration changes. There is a link to the *WebSphere Portal Server* documentation on the first screen of the installer, follow that link to find out more information about installation requirements and instructions.



Note

Cúram Portlets are not yet supported within a clustered environment so the Portal Server should be installed as a stand alone server.

On one of the installation screens there is an option to enable services to stop, start, and perform recovery actions for your server. This is an optional step but is not recommended as this has not been tested.

You should *not* install *WebSphere Portal Server* to a directory that contains spaces in the name, i.e. the 'Program Files' directory.

2.9 Java SE/Java EE

2.9.1 Overview

Both a *Java SE* and a *Java EE* are necessary.

2.9.2 Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Java SE* and *Java EE* to be installed.

2.9.3 Installation

Specific installation instructions are not provided for the *Java SE* or *Java EE* as each application server ships with a *Java SE* and *Java EE* which can be used.



Note

Irrespective of which *Java SE* and *Java EE* are used the post-installation steps listed below must be followed.

2.9.4 Post-installation

1. An environment variable called `JAVA_HOME` must be created that

points to the installed *Java SE*. `%JAVA_HOME%\bin` should be placed at the beginning of the `PATH` environment variable. On a number of sites, it may be necessary to have multiple *Java SE*'s installed on any given machine. For this reason, the choice of scope for these environment variables (system wide, through a script file or symbolic links) is left up to you.

2. An environment variable called `J2EE_JAR` must be created that points to the installed *Java EE* jar file. For *WebSphere Application Server* this should point at `%WAS_HOME%\lib\j2ee.jar`. For *WebLogic Server* this should point at `%WLS_HOME%\lib\weblogic.jar`; however, note the specific post-install step for using *WebLogic Server* with *Eclipse* in Section 2.10.4.4, *Using a Server Project in Eclipse*.

On a number of sites, it may be necessary to have multiple *Java EE*'s installed on any given machine. For this reason, the choice of scope for these environment variables (system wide, through a script file or symbolic links) is left up to you.

2.10 Eclipse & Tomcat

2.10.1 Overview

This section describes the steps necessary to setup a machine for development of an application in *Eclipse* and *Apache Tomcat*.

2.10.2 Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Tomcat* and *Eclipse* to be installed.

2.10.3 Installation

To run in an *Eclipse*-based development environment the following software is required which can be found on the development installation CD in a folder called TPS (Third Party Software).

- *Eclipse*: The IDE used to develop an application.
- *Tomcat*: The servlet container used to run the client web application. Note a read-me file is provided with details of customizations that have been made to the *Tomcat* configuration for the development environment.
- *Sysdeo Eclipse Tomcat Launcher*: An open source *Eclipse* plug-in which integrates with a *Tomcat* installation. Install the plug-in by extracting the plug-in zip file to the *Eclipse* plugins directory. The default `eclipse/plugins` directory is assumed.

- *Java SE/Java EE*: Oracle's *Java SE* and *Java EE* are used when running in *Eclipse*.

2.10.4 Post-installation

Eclipse - Default Java SE

Eclipse should be launched with the *Java SE* installed from the product installation CD. Because many products are *Java*-based, multiple *Java SE* installations may already exist on your system. The following steps ensure the correct *Java SE* is used.

1. *Eclipse* is launched from the `eclipse.exe` executable. Ensure the *Java SE* installed from the development CD is the first one on the *Windows* system path when launching *Eclipse*.³
2. Once *Eclipse* is launched, select *Window*→*Preferences*.
3. On the preferences dialog select *Java, Installed JREs* from the tree. The correct *Java SE* should be selected as the default.
4. Click the *Edit* button.
5. In *Default VM Arguments* enter `-Xmx512M`.



Update Boot Class Path When Using the IBM WebSphere Java SDK

The following XML API jar files (shipped with the *SDEJ*) should be added to the boot class path if the *IBM WebSphere Java SDK* is being used.

- `%CURAMSDEJ%\lib\xalan-2.7.1.jar`
- `%CURAMSDEJ%\lib\serializer-2.7.1.jar`
- `%CURAMSDEJ%\lib\xerces-2.9.1.jar`

The boot class path can be set as a JVM parameter. For example:

```
-Xbootclasspath/p:  
%CURAMSDEJ%\lib\xalan-2.7.1.jar;  
%CURAMSDEJ%\lib\serializer-2.7.1.jar;%CURAMSD  
EJ%\lib\xerces-2.9.1.jar
```

Tomcat

Tomcat with the default configuration incorrectly assumes requests are encoded using ISO-8859-1 instead of UTF-8. This would break string handling in *IBM Cúram Social Program Management* if request parameters contained UTF-8 extended characters. To avoid this add the `useBodyEncodingForURI="true"` parameter to the `<Connector>` element of the

server.xml configuration file.



Alter POST limit when using Rules Sets

By default *Tomcat* limits POST data to 2 MB. This can cause an issue when using Rules Sets, which need to POST data greater than this limit. Although this step is optional, it is recommended for users intending to use Rules Sets functionality. To disable the POST limit in *Tomcat* add the `maxPostSize="0"` attribute to the `<Connector>` element of the `server.xml` configuration file. For example:

```
<Connector port="9080" maxThreads="150" min-
SpareThreads="25" maxSpareThreads="75" en-
ableLookups="false" redirectPort="8443" ac-
ceptCount="100" connectionTimeout="20000"
disableUploadTimeout="true" useBodyEncoding-
ForURI="true" maxPostSize="0" />
```

Tomcat Plug-in

To use *Tomcat* from *Eclipse* the *Sysdeo Eclipse Tomcat Launcher* requires some configuration:

1. From the menu, select *Window* → *Preferences*.
2. On the preferences dialog select *Tomcat* from the tree.
3. Set the *Tomcat version* to *6.x*.
4. Set *Tomcat home* to the location of the tomcat installation.
5. Under *Tomcat* select *JVM Settings*.
6. In *Append to JVM Parameters* enter `-Xmx512m`.

Using a Server Project in Eclipse

The server project needs to be imported and configured for use in *Eclipse*.

1. Import the project (`.project`) located in the `CuramSDEJ` folder in the development installation.
2. Import the project (`.project`) located in the `EJBServer` folder in the development installation.
3. Once the projects are imported there are a number of Classpath variables errors. To resolve these navigate to *Windows* → *Preferences*, then *Java* → *Build Path* → *Classpath Variables* and set the following variables.
 - `J2EE_JAR` - jar file of your *Java EE* implementation. In the case of *WebLogic Server* you can generate the `wlfullclient.jar` and set `J2EE_JAR` to point to it: Run the *WebLogic Server Jar-*

Builder tool, by going to the `server\lib` directory (e.g. `cd %WLS_HOME%\lib`) and use the `java` command to create the `wlfullclient.jar` (e.g. `java -jar wljarbuilder.jar`); see the *WebLogic Server* product documentation for more information on the *WebLogic Server JarBuilder* tool.

- `JAVAMAIL_HOME` - this should point at the folder containing `mail.jar` and `activation.jar` of your *Java EE* implementation.

The server is launched as a *Java* process which launches three threads:

- `tnameserv`: the Transient Name (tname) Server. This facilitates a JNDI look up service for finding resources such as *Java* classes;
- RMI Server: Server application process;
- JMSLite: JMS Message Engine. See the *Workflow Reference Guide* for more information on *JMSLite*.

From the `components/core/source` default package in your project, select the `StartServer` class and select the *Run as Application* option from the *Run* button.



VM Arguments

The *Run Configuration* option can be used to manage VM arguments to the process e.g. to pass a higher heap size setting - `Xmx756M`.

Using a Client Project in Eclipse

The client project needs to be imported and configured to run on *Tomcat*.

1. Import the project (`.project`) located in the `CuramCDEJ` folder in the development installation.
2. Import the project (`.project`) located in the `webclient` folder in the development installation.
3. Once the projects are imported right-click the project and select *Properties*, then *Tomcat* on the next dialog. Set the following properties:
 - `Context Name`: Should be set to “/Curam”
 - `Can update server.xml file`: Selected
 - `Mark this context as reloadable`: Selected
 - `Redirect context logger to Eclipse console`: Selected
 - `Subdirectory to set as application root`: Should be set to “WebContent”

4. Right-click the project again and select *Tomcat Project, Update Context Definition*. This updates *Tomcat's* `server.xml` with an entry for the client application.

The Sysdeo plug-in adds a toolbar to *Eclipse* for starting and stopping *Tomcat*. Once it is started, the client application is available at the following URL: `http://localhost:9080/Curam/AppController.do`

Using the Cúram Business Intelligence and Analytics Viewer project in Eclipse

This section will guide you through the process of configuring the *Eclipse* environment to view *Cúram Business Intelligence and Analytics™* content. If you have further questions please see the *BIRT Developers Guide* for more details.

1. Import the project into *Eclipse* by going to *File→Import...* Select *General→Existing Projects into Workspace* and click *Next*. Select the root directory to be `%CURAM_DIR%\BIApp\CuramBIRTViewer` and click *Finish*.
2. Select the *CuramBIRTViewer* project in *Eclipse*, then open the preferences dialog by selecting *Window→Preferences* and expand *Java→Compiler* and set *Compiler compliance level:* to `1.5`.
3. Select the *CuramBIRTViewer* project in *Eclipse*, right-click and select *Tomcat Project→Update context definition*.
4. Open the preferences dialog by selecting *Window→Preferences* and expand *Tomcat→JVM Settings* and for the *Classpath* text box select the *Directory* button and add in the full path to the `%CURAM_DIR%\EJBServer\project\properties`.
5. If you are viewing licensed content via the *Reports* tab (ignore this section if you do not have a *Reports* tab), then Open the preferences dialog by selecting *Window→Preferences* and expand *Tomcat→JVM Settings* and for the *Classpath* text box select the *Directory* button and add in the full path to the `%CURAM_DIR%\Reporting\project\properties`. See the *BIRT Developers Guide* for more details.
6. You must now publish all *Cúram Business Intelligence and Analytics* content to the BIRT Viewer. From the directory `%CURAM_DIR%\BIContent` execute the command **build client.birt**.
7. Start *Tomcat*, to verify your viewer is open for business, check `http://localhost:9080/CuramBIRTViewer`.

If you are developing new *Cúram Business Intelligence and Analytics* content, please see the *BIRT Developers Guide* for more details on how to set up a development environment.

Using Eclipse to Validate the Tabbed Configuration Artifacts

To setup Eclipse to validate the tabbed configuration files with the correct schema open the Eclipse *Preferences* dialog by selecting *Window*→*Preferences* and do the following:

- Select *XML*→*XML Catalog*;
- Click *Add...* to add a new entry;
- For the *Location*, point at the schema file (e.g. `tab.xsd`) in the `%CURAMSDEJ%\lib` directory;
- Leave the rest as defaults and click *OK*;
- Repeat for each of the schema files for the tabbed configuration artifacts. Please refer to the *Cúram Client Developer's Guide* for the full list of schema files. Click *OK* to exit the *XML Catalog* dialog.
- Select *General*→*Editors*→*File Associations*;
- Click *Add...* to add a new entry: `*.tab`;
- Select the new `*.tab` entry and use the *Add...* button to add the XML Editor as the *Associated Editor*;
- Repeat for all the tabbed configuration artifact file extensions. Please refer to the *Cúram Client Developer's Guide* for the full list of extensions.
- Select *General*→*Content Types*;
- Expand *Text* and select *XML*;
- Click *Add...* to enter a file association for XML content and click *OK*. Do this for each of the file extensions.
- Click *OK* to save the preference changes.

Default Text File Encoding

Eclipse allows you to set the default text file encoding at the project level. Changing this from the default is currently *unsupported* for *IBM Cúram Social Program Management* projects within *Eclipse*. This does not effect your ability to save files in various encodings on a file by file basis. Consult the *Cúram Server Developer's Guide* and the *Cúram Web Client Reference Manual* for details on file encoding.

2.11 Rational Application Developer

2.11.1 Overview

This section describes the steps necessary to setup a machine for development of an application in *IBM® Rational® Application Developer*.

2.11.2 Supported Versions

Please refer to the *Cúram Supported Prerequisites* document for the exact version of *Rational Application Developer* to be installed.

2.11.3 Installation

Perform a standard installation of *Rational Application Developer*.

2.11.4 Post-Installation

Configuration

The following post installation steps are required to ensure that *Rational Application Developer* will work with the application.

Set the following *Rational Application Developer* preferences:

- Switch off build automatically: *Project -> Build Automatically*, and clicking on it, ensuring it is no longer ticked.
- Switch off validation: *Go to Window -> Preferences -> Validation*, and hit the Disable All button and click Ok.
- Select *Windows -> Preferences* and then *Java -> Installed JREs* and set the installed JRE to be “Websphere v7.0 JRE”.
- Set the following file associations via *Windows -> Preferences -> Workbench -> File Associations*:
 - Add *.uim to the file types
 - Add the XML Editor as the associated editor for *.uim.
- Add the schema to the XML catalog. In *Windows -> Preferences*, select *Web and Xml -> Xml Catalog* and then select “User Specified Entries”. Click *Add* and set the following values:
 - Location: <CuramCDEJ>/lib/curam/xml/schema/uim.xsd
 - Key Type: Schema Location
 - Key: file://Curam/UIMSchema.xsd



Update to Boot Class Path

The following XML API jar files (shipped with the *SDEJ*) should be added to the boot class path if the *IBM Websphere Java SDK* is being used.

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- %CURAMSDEJ%\lib\xalan-2.7.1.jar
- %CURAMSDEJ%\lib\serializer-2.7.1.jar
- %CURAMSDEJ%\lib\xerces-2.9.1.jar

The boot class path can be set as a JVM parameter. For example:

```
-Xbootclasspath/p:  
%CURAMSDEJ%\lib\xalan-2.7.1.jar;  
%CURAMSDEJ%\lib\serializer-2.7.1.jar;%CURAMSD  
EJ%\lib\xerces-2.9.1.jar
```

Using a Server Project in Rational Application Developer

The *EJBServer* server project and *CuramSDEJ* project needs to be imported and configured for use in *Rational Application Developer*.

1. Import the project (.project) located in the CuramSDEJ folder in the development installation.
2. Import the project (.project) located in the EJBServer folder in the development installation.
 - Create a EJBServer\patch directory to match the required source directory in the project classpath, if it is not present already.

Using a Client Project in Rational Application Developer

The *webclient* client project needs to be imported and configured to run the embedded *WebSphere* server.

1. Unzip the %CURAM_DIR%\CURAMCDEJ\doc\RAD\RAD.zip file into the %CURAM_DIR% directory; i.e., project base directory. Overwrite the existing files if requested. These default files are for use with *Rational Application Developer* only.
2. Add the following to the %CURAM_DIR%\webclient\.classpath file.

```
<classpathentry kind="con"  
path="org.eclipse.jst.server.core.container/  
com.ibm.ws.ast.st.runtime.runtimeTarget.v70/was.base.v7">  
<attributes>  
<attribute name="owner.project.facets" value="jst.web"/>  
</attributes>  
</classpathentry>  
<classpathentry kind="con"  
path="org.eclipse.jst.j2ee.internal.web.container"/>  
<classpathentry kind="con"  
path="org.eclipse.jst.j2ee.internal.module.container"/>
```

3. Add the following to the %CURAM_DIR%\webclient\.project file to replace the current buildSpec and natures nodes:

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```
<buildSpec>
<buildCommand>
<name>org.eclipse.wst.jsdt.core.javascriptValidator</name>
<arguments>
</arguments>
</buildCommand>
<buildCommand>
<name>org.eclipse.jdt.core.javabuilder</name>
<arguments>
</arguments>
</buildCommand>
<buildCommand>
<name>org.eclipse.wst.common.project.facet.core.builder</name>
<arguments>
</arguments>
</buildCommand>
<buildCommand>
<name>org.eclipse.wst.validation.validationbuilder</name>
<arguments>
</arguments>
</buildCommand>
</buildSpec>
<natures>
<nature>
  org.eclipse.jem.workbench.JavaEMFNature
</nature>
<nature>
  org.eclipse.wst.common.modulecore.ModuleCoreNature
</nature>
<nature>
  org.eclipse.wst.common.project.facet.core.nature
</nature>
<nature>org.eclipse.jdt.core.javanature</nature>
<nature>org.eclipse.wst.jsdt.core.jsNature</nature>
</natures>
```

4. Import the project (.project) located in the CuramCDEJ folder in the development installation.
5. Import the project (.project) located in the webclient folder in the development installation.
 - Create a webclient\work directory to match the required source directory in the project classpath, if it is not present already.
6. Import the project (.project) located in the CuramEAR folder in the development installation.

Running the Application in Rational Application Developer

To run *IBM Cúram Social Program Management* on *Rational Application Developer*, the relevant servers must be started. Complete the following steps in Rational Application Developer:

1. The server is launched as an RMI Application by executing StartServer class. Select the StartServer class by navigating to components/core/source default package in your project. Then select the *Run as Application* option from the *Run* button.

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2. Enable the server view, by navigating to *Window -> Show View -> Other -> Server -> Servers*.
3. Add *CuramEAR* to the *WebSphere Application Server* and start the server. To do this right click on the *WebSphere Server v7.0* and click *Add and Remove Projects*. Select *CuramEAR* from Available Projects into Configured Projects and click Finish. Both *WebSphere v7.0 Server* and *CuramEAR* should now have a status of started and *WebSphere v7.0 Server* should have state synchronized.
4. From the `components/core/source` default package in your project, select the `RMILoginClient` class and then select the Run as Application option from the Run button.
5. The application is now ready for use. Login using the URL: `http://localhost:9081/Curam/AppController.do`

Notes

¹For more information on build files and their targets consult the *Cúram Server Developers Guide*.

²For more information on `Bootstrap.properties` consult the *Cúram Server Developers Guide*.

³An alternative is to use the `-vm` command line argument to the `ec-lipse.exe` executable. Consult the *Eclipse* documentation for further details on its command line arguments.

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