

IBM Cúram Social Program Management
Version 7.0.10

*Cúram Third-Party Tools Installation
Guide for Windows*



Note

Before using this information and the product it supports, read the information in [“Notices” on page 12](#)

Edition

This edition applies to IBM® Cúram Social Program Management v7.0.10 and to all subsequent releases unless otherwise indicated in new editions.

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Contents

- Figures..... iv**

- Chapter 1. Installing Third-Party Tools for Windows..... 1**
 - Apache Ant..... 1
 - DBMS Installation..... 1
 - Installing IBM DB2 for Linux, UNIX, and Windows..... 1
 - Remote DB2 for z/OS Connectivity..... 6
 - Oracle database..... 6
 - H2 database..... 8
 - Java SE/Java EE..... 8
 - Installation..... 9
 - Post-installation..... 9
 - Application Server..... 9
 - IBM WebSphere Application Server..... 9
 - IBM WebSphere Application Server Network Deployment..... 10
 - WebLogic Server..... 10
 - Eclipse and Tomcat..... 10
 - Rational Application Developer..... 11
 - Rational Software Architect Designer..... 11

- Notices..... 12**
 - Privacy Policy considerations..... 13
 - Trademarks..... 13

Figures

1. Oracle Configuration.....8

Chapter 1. Installing Third-Party Tools for Windows

You must install and configure software from third parties to use IBM Cúram Social Program Management. Installation and postinstallation instructions are provided for the various supported third-party products for a Windows installation.

Important: IBM Cúram Social Program Management will 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 you get the installation instructions, which typically are the defaults provided by the product installer, and any post-installation tasks required.

Specific instructions for installing fix packs are not included unless the fix pack installation has some product or application-specific steps involved.

Apache Ant

You need Apache Ant to develop and run IBM Cúram Social Program Management applications.

For information about installing and configuring Apache Ant, see [Installing Apache Ant](#).

DBMS Installation

A database is required for IBM Cúram Social Program Management.

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.

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.

Installing IBM DB2 for Linux, UNIX, and Windows

Ensure that your account has administrative privileges and then follow the DB2 installer instructions to complete a default installation. You do not need to manually create a DB2 database. The platform software provides Ant scripts that you can run as a postinstallation step to create a basic test database.

Note the following options that are presented during a default installation:

- The *Name* and *Password* of the administrator account. Use an account and password as per the standards and requirements of your site and DB2. If it is an existing user, that user must be a member of the Administrator group. The informational message about OLE DB support component can be safely ignored.
- Certain editions of the DB2 installer support federated databases. If the installer presents an option that is defaulted to **This machine will be the instance-owning database partition server**, then change this option to **This machine will be a single-partition database server**.
- You must choose MBCS or SBCS, depending on your requirements. If you are unsure of what database encoding option to select, see the related information about data encoding.

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 identify 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, encoding, 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 "Planning for MBCS Data" topic in the *Cúram Server Developer's Guide*.

Post-installation

Later versions of DB2 do not include tooling such as Control Center. If your DB2 version includes Control Center you can follow the steps in the Creating and configuring a database using Control Center section below. Otherwise, convenience scripts are provided for creating a basic test database and you can follow the steps in the Creating and configuring a database using scripts section, also below.

Creating and configuring a database using Control Center

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>) BUFFERPOOL 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
```

Creating and configuring a database using scripts

Ant scripts are provided for creating and configuring a basic test database. To create a database, invoke the following commands, which use the database properties from your `Bootstrap.properties` file:

- **ant -f %CURAMSDEJ%\util\db2_createdb.xml**
- **ant -f %CURAMSDEJ%\util\db2_postconfig.xml -Ddb2.dir=<DB2_directory>**

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

- **ant -f %CURAMSDEJ%\util\db2_createdb.xml restart.db2**

Note: this script restarts your DB2 system.

- **ant -f %CURAMSDEJ%\util\db2_optimizedbrecreation.xml**

The following script invocation can be used to drop the database to rerun the process above:

```
ant -f %CURAMSDEJ%\util\db2_createdb.xml dropdb
```

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 CuramsSDEJ 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 CuramsSDEJ location).

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
- sqlj.zip

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

Using DB2 pureScale

When using DB2 pureScale® with Cúram you will need to perform the following steps to set the necessary data source property or properties when using DB2 from the command line (e.g. with Cúram batch processing). See the relevant Information Centers for DB2 and WebSphere for their specific pureScale settings.

You must generate a .bindings file based on your Bootstrap.properties file database settings, which specify the DB2 pureScale connect member. To do this:

1. In your Bootstrap.properties file set property
curam.db.enable.bindings.generation=true and specify a valid location value for property
curam.environment.bindings.location; e.g.,
curam.environment.bindings.location=C:/Temp;
2. Run the Ant **configtest** target, which will cause the .bindings file to be generated in the specified location;
3. In your Bootstrap.properties file remove curam.db.enable.bindings.generation=true or set it to false and set curam.db.disable.bindings.generation=true;
4. Set the Content value for the relevant pureScale data source properties in the .bindings file (much easier if you sort it first); for example, set enableSysplexWLB to 'true'. Save the changes.

From this point forward the Cúram DB2 data source, when used from the command line, will use these properties and changes to the database properties in Bootstrap.properties would need to be reflected in .bindings or by rerunning the procedure above. However, Ant scripts using the **<sql>** task will not use these pureScale settings. These Ant scripts (e.g. **database** target) are typically not run frequently nor have a processing profile that would require pureScale settings; but, you can modify scripts as needed to specify these properties using the Ant **<connectionProperty>** nested element.

Configuring for circular transaction logging

When you use a database with circular transaction logging enabled, certain transactions can exceed the available log file space and fail. To avoid this issue, either use archive logging or set the available log size and quantity appropriately until it meets the needs of the transaction.

About this task

A common point for this failure is when the prepare.application.data Ant target is running, as this target publishes all the CER rule sets on the system. This Ant target is typically run after a clean database build. If the log is too small, it can result in an SQLCODE -964 error.

You can use the following example to help you to increase the DB2 log file size and quantity. The exact amount of log file storage that is required varies from system to system. For more information about increasing the number and size of the log files available, see the specific documentation for your database.

Procedure

1. Open a command prompt and enter db2cmd.
2. Enter the following command:

```
db2 connect to db_name user db_user_name using db_password
```

Where *db_name*, *db_user_name*, *db_password* are the credentials of the database.

3. Enter the following commands:

```
db2 update db cfg for db_name using logfilsiz log_file_size
```

```
db2 update db cfg for db_name using logprimary primary_log_files
```

```
db2 update db cfg for db_name using logsecond secondary_log_files
```

Where the temporary values are as follows:

- The log file size. Set *log_file_size* to 1024.
 - The number of primary log files. Set *primary_log_files* to 50.
 - The number of secondary log files. Set *secondary_log_files* to 100.
4. Restart the database by entering the following commands:

```
db2stop  
db2start
```

Remote DB2 for z/OS Connectivity

About this task

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:

Procedure

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.

Oracle database

Oracle database is supported as a database server.

Note: It is possible to use a remote database by using the Oracle Type 4 Driver that is supplied with the SDEJ.

Installing the Oracle database

Assuming that no previous versions of Oracle are installed, you can complete a typical Oracle database 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\12.1.x\dbhome_1\jdbc\lib\ojdbc6.jar to a <temp> location.
where <ORA_directory> is the Oracle installation path (e.g. <drive>:\oracle121)
- Rename ojdbc6.jar to ojdbc.jar (to match the name of the driver shipped).
- Copy <ORA_directory>\product\12.1.x\dbhome_1\oc4j\sqlj\lib\translator.jar to a <temp> location.
- Copy <ORA_directory>\product\12.1.x\dbhome_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.

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>;
ALTER SYSTEM SET "_optimizer_ansi_join_lateral_enhance"=false;
```

Figure 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.

Redo Log

Certain IBM Cúram Social Program Management transactions perform significant insert activity and could be impacted by available redo log space. The most likely situation for this would be during invocation of the Ant **prepare.application.data** target, generally run after a clean database build, as this is publishing all the CER Rule Sets for Cúram. Refer to the Oracle documentation on allocating the appropriate size for the redo logs. The exact amount of activity and required redo log space will vary from system to system.

Configuring for circular transaction logging

When you use a database with circular transaction logging enabled, certain transactions can exceed the available log file space and fail. To avoid this issue, either use archive logging or set the available log size and quantity appropriately until it meets the needs of the transaction.

A common point for this failure is when the `prepare.application.data` Ant target is running, as this target publishes all the CER rule sets on the system. This Ant target is typically run after a clean database build.

For information about increasing the number and size of the log files available, see the specific documentation for your database. The exact amount of log file storage that is required varies from system to system.

H2 database

The H2 database is supported as a development database only.

For information about configuring H2, see [H2 database](#).

Java SE/Java EE

Both a Java SE and a Java EE are required for IBM Cúram Social Program Management.

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.

Post-installation

Procedure

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\ wlfullclient.jar.

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.

Application Server

An application server must be installed on a machine that builds applications for deployment as well as on machines that host the deployed application.

WebSphere Application Server and WebLogic Server are the supported application servers on Microsoft Windows.

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

IBM WebSphere Application Server

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.

Setting the WebSphere Application Server environment variable

Set the WAS_HOME environment variable to the server directory of the WebSphere Application Server installation, for example C:\WebSphere\AppServer

IBM WebSphere Application Server Network Deployment

IBM 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.

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.

Setting the WebSphere Application Server environment variable

Set the `WAS_HOME` environment variable to the server directory of the WebSphere Application Server installation. For example, `C:\WebSphere\AppServer`

WebLogic Server

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>:\wls121\wlserver\server`).

Eclipse and Tomcat

You can use Eclipse and Tomcat for your integrated development environment (IDE) to develop IBM Cúram Social Program Management applications.

For information about installing and configuring Eclipse, Tomcat, and the Eclipse Tomcat Plugin, see [Installing an Eclipse and Tomcat IDE](#).

Rational Application Developer

You can use Rational Application Developer as your IDE to develop IBM Cúram Social Program Management applications.

For information about installing and configuring Rational Application Developer, see [Installing a Rational Application Developer IDE](#).

Rational Software Architect Designer

Rational Software Architect Designer is an Eclipse-based UML modeling tool that is required to do IBM Cúram Social Program Management server development.

For information about installing and configuring Rational Software Architect Designer, see [Installing the modeling tool](#).

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