



FileNet Business Activity Monitor

Installing and Configuring FileNet Business Activity Monitor

Release 3.5.0

December 2005

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Notices

For notices regarding this documentation, refer to [Help Directory > Notices](#) in the FileNet P8 online documentation.

Typographical Conventions

This document uses the conventions in the following table to distinguish elements of text.

Convention	Usage
UPPERCASE	Environment variables, status codes, utility names.
Bold	Paths and file names, program names, clickable user-interface elements (such as buttons), and selected terms such as command parameters or environment variables that require emphasis.
<i>Italic</i>	User-supplied variables and new terms introduced in text.
<i><italic></i>	User-supplied variables that replace everything between and including the angle bracket delimiters (< and >).
Monospace	Code samples, examples, display text, and error messages.

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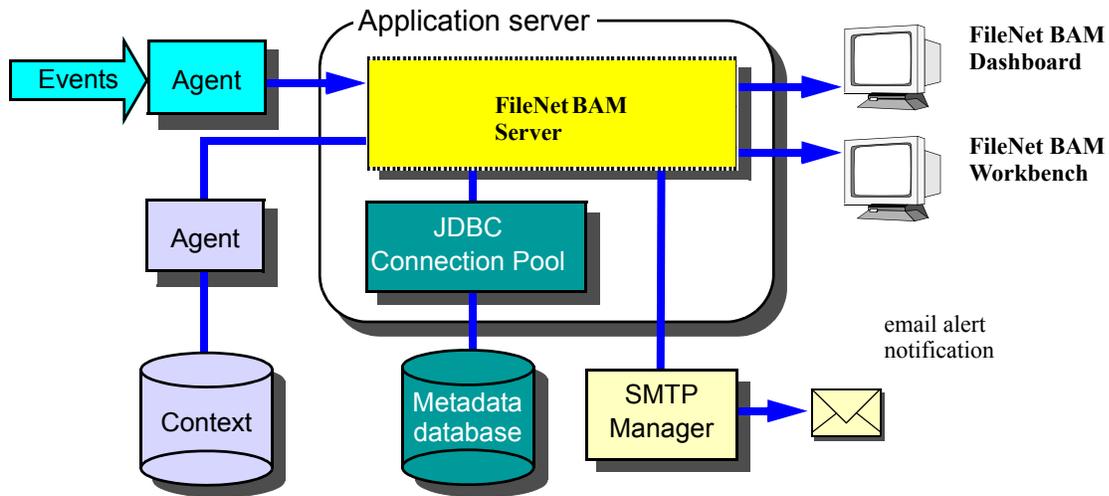
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Preface

FileNet Business Activity Monitor (BAM) runs in an application server environment. It stores information about the runtime objects in a metadata database, sends email alert notifications through an SMTP mail manager, and receives and retrieves event and context data through agents: processes that know how to take external data and put it into a FileNet Business Activity Monitor format. Agents may run in the application server environment, or may be external to it, as shown in this diagram.



What's in this guide?

This guide shows system administrators how to install, set up, and configure FileNet Business Activity Monitor, as described in the following chapters:

- [“Setting Up” on page 8](#) explains the system requirements and the steps necessary to set up the environment and the metadata DBMS.
- [“Installing and Deploying on BEA WebLogic” on page 19](#) describes how to install and deploy the application on BEA® WebLogic®.
- [“Installing and Deploying on JBoss” on page 27](#) describes how to install and deploy the application on JBoss®.
- [“Installing and Deploying on IBM WebSphere” on page 50](#) describes how to install and deploy the application on IBM® Websphere®.
- [“Configuring the FileNet Business Activity Monitor” on page 73](#) details how to set up the application for users and how to run a test program that verifies your configuration.
- [“Uninstall the FileNet Business Activity Monitor” on page 87](#) provides the steps for removing the application from the installation.
- [“FileNet Business Activity Monitor Database Settings” on page 92](#) enumerates the settings necessary for connecting to the DBMS that manages the metadata database.
- [“Tools and Utilities” on page 94](#) describes the tools and utility applications used during the installation and configuration process.

Running the application

When FileNet BAM Server is running, you can administer the application from the Administration Console in the FileNet BAM Workbench. To access the interface, point your browser to the application running on the application server, similar to this:

```
http://filenetbam_host:7001/filenetbam
```

Setting Up

This chapter describes how to prepare for installing.

In this Chapter:

[“Requirements” on page 9](#)

[“Setting up the environment” on page 10](#)

[“Configuring the metadata DBMS” on page 13](#)

[“Modifying the local DB2 connections” on page 14](#)

Requirements

To install, deploy, and run FileNet Business Activity Monitor, you need the following:

- Browser
Microsoft Internet Explorer 6.0 (with patch 828750), or higher, browser for accessing FileNet BAM Workbench.
- Application server
One of these application servers installed and runnable on the server host:
 - BEA WebLogic 8.1 (with any service pack)
 - JBoss 3.2.6 (available from <http://prdownloads.sourceforge.net/jboss/>) also requires Java JDK 1.4.x.

NOTE: You must use the *JDK*; the *JRE* is insufficient.

- Disk space
Free disk space allocated for FileNet Business Activity Monitor installation:
 - BEA WebLogic — at least 96 MB, with an additional 60 MB of temporary space allocated to the installation process.
 - JBoss — at least 115 MB.
- DBMS
A DBMS installed and running to manage FileNet Business Activity Monitor metadata database. See the *Release Notes* for RDBMS version details. See “[Configuring the metadata DBMS](#)” on page 13 for configuration details.
 - BEA WebLogic — Oracle, SQLServer, and DB2® DBMS
 - JBoss — Oracle, SQLServer, and DB2® DBMS
 - IBM Websphere — Oracle, SQLServer, and DB2® DBMS
- JDBC driver

A JDBC driver that supports your DBMS. Most vendors provide drivers with their software, and some application servers provide drivers. For an extensive list of drivers, see Sun’s Java web site at:

<http://servlet.java.sun.com/products/jdbc/drivers>

Here are links to some of the DBMS vendor web sites that provide drivers:

<http://www.microsoft.com/sql/downloads/>

http://otn.oracle.com/software/tech/java/sqlj_jdbc/index.html

<http://www.sybase.com/downloads>

- Mail server

A running SMTP (simple mail transfer protocol) email server for delivering email notifications. The server is external to FileNet Business Activity Monitor and is managed by your email system administrator. Contact that administrator to set up an account for FileNet Business Activity Monitor. The application will need an account and password for sending mail, an address to use in the From address field, and the name of the email server host.

- Access permissions (UNIX only)

The account used to install FileNet Business Activity Monitor must have read and write privileges to the directory where the application will be installed, and must have read and write privilege to `/opt/bam`, which must exist before beginning the installation.

Setting up the environment

Complete these activities before you begin the installation:

1. Create an application directory to contain the application EAR file and to contain supplemental application files. The recommended location is:

- (Windows) C:\FileNetBAM
- (UNIX) ~/filenetbam

2. (JBoss only) Java JDK 1.4.x must be installed and available to the host environment to run JBoss.

The Java JDK is available from <http://java.sun.com>. Once installed, set the `JAVA_HOME` environment variable to point to the installed location of the JDK.

NOTE: You must use the *JDK*; the *JRE* is insufficient.

3. (BEA WebLogic on UNIX only) Create the directory `/opt/bam` with read and write privileges for use by the Installer.
4. (BEA WebLogic only) Create a domain in BEA WebLogic to administer FileNet Business Activity Monitor.

This is the name you will need in “[Creating the JDBC metadata connection pool](#)” on page 20, when identifying the BEA WebLogic Domain Location. Make note of this location for use in that step. See the BEA WebLogic documentation for details about creating the domain.

5. (DB2 only) The DB2 driver must be installed on the host supporting FileNet Business Activity Monitor.

Further, these environment variables must be set:

- `DB2INSTANCE` identifies the name of the instance to use.
- The library path environment variable specifies the directory that contains the DB2 shared libraries, the location of which depends on where DB2 is installed. As shown below, the command varies for different platforms.

Platform	Sample environment variable settings
Windows	<pre>DB2INSTANCE DB2 PATH C:\SQLLIB\BIN;%PATH%</pre>
Solaris	<pre>setenv DB2INSTANCE db2fs setenv LD_LIBRARY_PATH /opt/IBM/db2/V8.1/lib:\${LD_LIBRARY_PATH}</pre> <p>Note: The string “/opt/IBM/db2/V8.1” indicates the DB2 installation directory.</p>
AIX	<pre>setenv DB2INSTANCE db2fs setenv LIBPATH /opt/IBM/db2/V8.1/lib:\${LIBPATH}</pre> <p>Note: The string “/opt/IBM/db2/V8.1” indicates the DB2 installation directory.</p>
HP/UX	<pre>setenv DB2INSTANCE db2fs setenv SHLIBPATH /opt/IBM/db2/V8.1/lib:\${SHLIBPATH}</pre> <p>Note: The string “/opt/IBM/db2/V8.1” indicates the DB2 installation directory.</p>

6. (Oracle on JBoss) Configure Oracle’s thick JDBC driver:

- Install the Oracle client software provided by Oracle.
- Install the Oracle’s OCI driver. (You can download the driver from <http://otn.oracle.com>.)
- Set the environment variables to include Oracle’s OCI driver in the appropriate paths.

Platform	Sample environment variable settings
Windows	<pre>ORACLE_HOME C:\Oracle\Product\9.2.0.1 Path %Path%;%ORACLE_HOME%\bin</pre>
Solaris	<pre>setenv ORACLE_HOME /opt/oracle/product/9.2.0.1 setenv LD_LIBRARY_PATH \$ORACLE_HOME/jdbc/lib:\$ORACLE_HOME/ lib32: setenv CLASSPATH /opt/oracle/product/9.2.0.1/jdbc/lib/ classes12.jar setenv path \$ORACLE_HOME:\$PATH</pre>
AIX	<pre>setenv ORACLE_HOME /opt/oracle/product/9.2.0.1 setenv LIBPATH \$ORACLE_HOME/jdbc/lib:\$ORACLE_HOME/lib32: setenv CLASSPATH /opt/oracle/product/9.2.0.1/jdbc/lib/ classes12.jar setenv path \$ORACLE_HOME:\$PATH</pre>
HP/UX	<pre>setenv ORACLE_HOME /opt/oracle/product/9.2.0.1 setenv SHLIBPATH \$ORACLE_HOME/jdbc/lib:\$ORACLE_HOME/lib32: setenv CLASSPATH /opt/oracle/product/9.2.0.1/jdbc/lib/ classes12.jar setenv path \$ORACLE_HOME:\$PATH</pre>

NOTE: For both Solaris and AIX, the OCI driver is located in the lib32 directory.
You can now configure the metadata DBMS.

Configuring the metadata DBMS

The metadata database contains the definitions of all objects in FileNet Business Activity Monitor installation. It also contains the details of alerts and of object runtime data persisted to disk.

NOTE: Because the persisted data can grow quite large, it is important to allocate at least 50 MB for the metadata database. For production deployments, allocate at least 200 MB for table space.

Running DB2 on the same host as the application server requires additional settings as specified in [“Modifying the local DB2 connections” on page 14](#).

Each database requires an account in the DBMS that the application can use to connect to it. That account must have create, modify, and update privileges on the database.

To configure the metadata database, use the `cqinitmetadata.jar` utility. This utility requires Java and a JDBC driver appropriate to the target DBMS.

NOTE: For more information, see [“cqinitmetadata.jar” on page 95](#).

To configure the database:

1. Locate the appropriate JDBC driver for your DBMS.

If necessary, download one from an appropriate web site. (For a list of sites see [“Requirements” on page 9](#).) You will use the driver when initializing the metadata database (next) and when configuring some application servers later.

2. Locate the `cqinitmetadata.jar` utility on the product CD-ROM.

`/FilenetBAM/CQInitMetadata/cqinitmetadata.jar`

3. Initialize the metadata database.

Run `cqinitmetadata.jar` and include the arguments appropriate for your DBMS (see [“cqinitmetadata.jar” on page 95](#) for complete details about this utility). These examples show enough to complete this task, after replacing the arguments with the values for your installation:

- These examples have line breaks to fit on this page; do not break them in practice.
- The class path arguments (-cp) need to be separated with either a colon (:) for UNIX or a semi-colon (;) for Windows.

Sample configurations

Sample Oracle Configuration:

```
java -cp <classpath> com.celequest.metadata.upgrade.Upgrade ORACLE jdbc:oracle:oci:<dbuser>/<dbpassword>@SERVICE
```

The following example initializes Oracle using `classes12.zip` as the JDBC driver on UNIX:

```
java -cp cqinitmetadata.jar:  
/opt/oracle/product/9.2.0.1/jdbc/lib/classes12.zip  
com.celequest.metadata.upgrade.Upgrade ORACLE  
jdbc:oracle:oci:skyleer/teacup@orcl_puck
```

Sample MS SQLServer Configuration:

```
java -cp <classpath> com.celequest.metadata.upgrade.Upgrade
```

```
SQLSERVER "jdbc:microsoft:sqlserver://<host>:<port>;
SelectMethod=cursor;databaseName=<dbname>;
user=<dbuser>;password=<dbpassword>"
```

The following example initializes an MS SQLServer detectable using mssqlserver.jar in the current directory as the JDBC driver on Windows:

```
java -cp cqinitmetadata.jar;msutil.jar;msbase.jar;mssqlserver.jar
com.celequest.metadata.upgrade.Upgrade SQLSERVER "jdbc:microsoft:sqlserver://
puck:1433;SelectMethod=cursor;
databaseName=cqstmeta;user=skyleer;password=teacup"
```

Sample DB2 Configuration:

```
java -cp <classpath> com.celequest.metadata.upgrade.Upgrade DB2
jdbc:db2:<dbname> -u <dbuser> -p <dbpassword>
```

The following example initializes a DB2 detectable using DB2Driver.jar in db2jcc.zip as the JDBC driver on UNIX:

```
java -cp cqinitmetadata.jar:/opt/usr1/db2admin/java12/db2jcc.zip
com.celequest.metadata.upgrade.Upgrade DB2
jdbc:db2://snug:5000/cqmetadb -u skyler -p teacup
```

NOTE: If you are planning to run DB2 on the same host as FileNet Business Activity Monitor, proceed to the next section, [“Modifying the local DB2 connections” on page 14](#).

You can now proceed to install and deploy FileNet Business Activity Monitor as described in the following sections:

- [“Installing and Deploying on BEA WebLogic” on page 19](#)
- [“Installing and Deploying on JBoss” on page 27](#)
- [“Installing and Deploying on IBM WebSphere” on page 50](#)

Modifying the local DB2 connections

DB2 handles local connections different from remote connections. When running the DB2 7.x server on the same host as the application server, you need to change the DB2 configuration to use *remote TCP/IP connections*.

To modify the local DB2 connection (optional):

1. If the host has multiple processors, you can increase the count of processors that DB2 uses.

To use multiple processors (where # is the count of processors to use):

```
su - db2inst1
db2licm -n db2udbee #
```

2. Change the server configuration.

These steps create a database named rmtwas and a service named db2cdb2inst1, which is the service port (5000) defined in /etc/services:

```
su - db2inst1
db2 create database rmtwas
db2 update db cfg for rmtwas using applheapsz 256
db2set DB2COMM=TCPIP
db2set DB2CLIENTCOMM=TCPIP
```

```
db2 update dbm cfg using svcename db2cdb2inst1
db2 terminate
db2stop
db2start
```

3. On the client host when the application server is running, make these catalog changes:

- Start by running db2inst1:

```
su - db2inst1
```

- Define a tcpip node:

```
db2 catalog tcpip node NNNN remote HHHHH server DDDD
```

Where NNNN is the new node name, HHHH is the remote server IP address or hostname, and DDDD is the svcename used to configure port 50000, as described in Step 2 above.

- Define the database on the TCP/IP node:

```
db2 catalog database RRRR as AAAA at node NNNN
```

Where RRRR is real database name on the server, AAAA is the alias database name on the client, and NNNN is the TCP/IP node.

- Stop and restart the client:

```
db2stop
db2start
```

4. Test the connection from the client to the remote database:

```
su - db2inst1
db2 connect to was user db2inst1 using db2inst1
db2 terminate
```

You can now proceed to install and deploy FileNet Business Activity Monitor.

Installing BAM documentation

NOTES

- You must install the documentation on an application server if you intend to configure it for online help functionality in the FileNet P8 software.
- The application server must be Java-enabled to use the Help's Search functionality (e.g., IBM WebSphere or BEA WebLogic).
- Users must have Java Script support enabled on their web browsers to use some of the features in the help (such as Search and the tables of contents). The help files are contained in a folder called "ecm_help."
- Updates to the documentation are provided periodically. Please check the FileNet Worldwide Customer Support web site for updates.

To refresh the documentation on the application server

1. Ensure that you have the latest version of the FileNet P8 Platform 3.5.1 documentation installed on your application server. See the *FileNet P8 Platform Installation and Upgrade Guide* for more information.
2. Refer to your server documentation. Complete any initial steps that might be necessary before updating the ecm_help files. For example, on a WebLogic server, you must undeploy the ecm_help application.
3. Copy the **ecm_help** folder on the FileNet BAM Documentation CD to the application server where the FileNet P8 documentation is installed. Here's an example on a WebLogic server:
bealuser_projects\myDomain\ecm_help.

NOTES

- If you downloaded updated BAM documentation from the [FileNet Customer Service and Support web site \(http://www.css.filenet.com\)](http://www.css.filenet.com), install the updated version instead of the version on the BAM CD.
 - During the copy, some FileNet BAM documentation files will overwrite existing files.
 - If you later install a version of the FileNet P8 Platform documentation that is newer than **3.5.0**, you must refresh the BAM documentation on the application server.
4. After you copy the BAM documentation, download and replace the installation PDF files under the Installation directory with the latest files from [FileNet Customer Service and Support web site \(http://www.css.filenet.com\)](http://www.css.filenet.com).
 5. Refer to your application server documentation. Complete any additional steps that might be necessary after updating the ecm_help files. For example, on a WebLogic server, you must redeploy the ecm_help application.

Update the Search Index

Once you've installed the BAM Help, you should update the search index files. Unless you complete this step, the documentation search function will not find the BAM content.

NOTES

- If you're installing more than one FileNet P8 functional expansion, update the search after all the functional expansions have been installed. If you install another functional expansion later, update the search index again by following the procedure below.
- To update the Help Search index, you must specify the path to the JRE installation on the application server where you intend to install the FileNet P8 Help.
- When you update the Search Help index, a backup of the files in the existing **ecm_help/search/index/core** subdirectory will be copied automatically to an **ecm_help/search/index/indexOld** subdirectory. To return to the previous indexed state, reapply these backed-up files to the **core** subdirectory (after first removing the new files created there).

To update the Help Search index

indexFiles.bat is a script that launches the Java-based indexer (indexFiles.sh for UNIX-based systems).

The script is located in this directory: **ecm_help/search**.

If you have already deployed or installed this FileNet P8 help as a web application, undeploy or uninstall it before proceeding.

NOTE For WebSphere you must deploy the original ecm_help.war file, execute it, then stop WebSphere. Next, copy the files to the deployed location, update the search, and then restart WebSphere.

1. Ensure that you have copied the FileNet P8 Platform help and all your functional expansions to a designated application server.

The FileNet P8 Platform help includes placeholder files for functional expansions that are released on different schedules. As a result, when you install the documentation for the various components in the prescribed order, you might see warning messages about overwriting newer files. Ignore the messages and allow the overwrites to occur. By doing so the actual functional expansion help files will replace the placeholder files.

2. Open a command prompt on the application server.
3. From the command line, navigate to the **search** subdirectory under your **ecm_help** root directory.
4. Using a text editor, open the search-indexing script file that is appropriate to your application server operating system:

indexFiles.bat (Windows)

indexFiles.sh (UNIX)

5. Modify the JAVA_HOME variable in the script file with the path to your JRE installation (version 1.3 or later). The defaults are:

SET JAVA_HOME=c:/j2sdk1.4.2 (Windows)

JAVA_HOME="/usr/java/j2sdk1.4.1_02" (UNIX)

6. Save your changes and close the text editor.
7. Run the updated search-indexing script file.
8. By default, the script backs up the existing index files to **indexOld**, and then re-indexes all the help files starting from the root **ecm_help** directory, and writes the index to this directory:

ecm_help/search/index/core.

To deploy and verify the documentation web site

1. Deploy or install the copied FileNet P8 documentation as a web application. Use the appropriate instructions provided with your application server.
2. Verify that the application server and the new **ecm_help** documentation web site are running, as follows:
 - a. From your web browser, access the **_start_here.htm** page in the top-level **ecm_help** directory.
 - b. The documentation Help Directory should open.
 - c. Click the **Search** link on the Help Directory toolbar. The documentation Search page should open.

NOTE Use the following URL to configure the online help location for the various FileNet P8 components either while running Setup programs or later via site preferences settings:

```
http://<docserver:port#>/<ecm_help>/
```

where:

docserver is the name of the Java web server.

port# is the port number.

<ecm_help> is the root folder of the documentation website. You can use multi-part root folders (e.g., / docs/ ecm_help) if your application server supports them.

Installing and Deploying on BEA WebLogic

This chapter shows you how to install and deploy FileNet Business Activity Monitor using BEA WebLogic.

NOTE: For installation on JBoss, see [“Installing and Deploying on JBoss” on page 27](#).

In this Chapter:

[“Before you start” on page 20](#)

[“Creating the JDBC metadata connection pool” on page 20](#)

[“Creating the metadata data source” on page 23](#)

[“Modifying the Weblogic JVM” on page 25](#)

[“Deploying” on page 26](#)

Before you start

Before you begin, check the *Prerequisites* and *Procedural overview* below to help ensure a successful installation and deployment.

Prerequisites

To successfully install and deploy FileNet Business Activity Monitor on Weblogic, you must have the following:

- A new domain available on the BEA Weblogic 8.1 server.
- FNBAM_3.x_weblogic.ear or FNBAM_3.x_weblogic_oracle.ear (provided on the FileNet Business Activity Monitor installation CD).
- JAAS.JAR (provided on the FileNet Business Activity Monitor installation CD).

Procedural overview

Installing and deploying FileNet Business Activity Monitor on a Weblogic application server involves the following procedures:

- [“Creating the JDBC metadata connection pool” on page 20](#)
This section describes how to create the required JDBC connection pool in the BEA Weblogic Console.
- [“Creating the Process Analyzer connection pool” on page 22](#)
This section describes how to create the JDBC connection pool for the Process Analyzer .
- [“Creating the metadata data source” on page 23](#)
This section describes how to create the data source in the Weblogic Server Console.
- [“Modifying the Weblogic JVM” on page 25](#)
This section describes how to modify the Weblogic JVM by editing the start scripts.
- [“Deploying” on page 26](#)
This section describes the process of deploying FileNet Business Activity Monitor on the Weblogic application server.

Creating the JDBC metadata connection pool

This section describes how to create the required JDBC metadata connection pool in the BEA Weblogic Console.

To create the JDBC connection pool:

1. Start the BEA Weblogic server if needed.
 - [Domain]\startWLS.cmd (Windows)

- [Domain]/startWLS.sh (UNIX)
2. Open the BEA Weblogic Server Console in a web browser and log in.
 The URL should be `http://host:port/console`. For example `http://localhost:7001/console`.
 3. In the panel on the left, open **Services>JDBC>Connection Pools**.
 The right frame redisplay to show the JDBC Connection Pools page.
 4. Click **Configure a New JDBC Connection Pool**.
 The Choose database page displays.
 5. Specify one of the databases supported by FileNet Business Activity Monitor.
 - DB2
 - MS SQL Server
 - Oracle

When you select a database type, the database driver field dynamically displays the driver options for the selected database.
 6. From the database driver field, select the driver to be used:
 - For DB2, select *IBM's DB2 Driver (Type 2)*
 - For MS SQL Server, select *Microsoft's MS SQL Server Driver (Type 4)*
 - For Oracle, select *Oracle's Driver (Thin) versions 9.x, 10*
 7. Click **Continue**.
 The Define Connection Properties page displays.
 8. Complete the **Connection Property** fields as follows:
 - Name: Enter a name for the pool, such as `metadataPool`.
 - Database Name: Specify the name of the database (MS SQL Server) or database instance (Oracle).
 - Host Name: Network ID or IP address of the database host machine.
 - User Name: Name of user with sufficient permissions.
 - Password/Confirm Password: User password.
 9. Click **Continue**.
 You can now test the new connection pool or deploy it directly. After deployment, you must modify the connection configuration, as described in the following steps.

To modify the connection configuration:

1. Access the connection configuration:
 - In the panel on the left, open **Services>JDBC>Connection Pools**.
 - In the resulting page in the right panel, click the name of the pool created in the previous step (e.g., `metadataPool`). The Connections page for the specified connection pool displays.
2. Select the Configuration tab. On the Connections tab, change the Maximum Capacity setting to 200.

NOTE: You can accept the defaults for the remaining settings.

3. Click **Apply**.

4. Select the **Target and Deploy** tab.

This tab pane lists the servers or clusters on which the JDBC connection pool can be deployed.

5. Select the desired server, and click **Apply**.

The JDBC connection pool has now been successfully completed.

Creating the Process Analyzer connection pool

This section describes how to create the required JDBC Process Analyzer connection pool.

To create the JDBC connection pool:

1. Start the BEA Weblogic server if needed.

- [Domain]\startWLS.cmd (Windows)
- [Domain]/startWLS.sh (UNIX)

2. Open the BEA Weblogic Server Console in a web browser and log in.

The URL should be `http://host:port/console`. For example `http://localhost:7001/console`.

3. In the panel on the left, open **Services>JDBC>Connection Pools**.

The right frame redisplay to show the JDBC Connection Pools page.

4. Click **Configure a New JDBC Connection Pool**.

The Choose database page displays.

5. Specify the database type.

- MS SQL Server

When you select a database type, the database driver field dynamically displays the driver options for the selected database.

6. From the database driver field, select the driver to be used:

- For MS SQL Server, select *Microsoft's MS SQL Server Driver (Type 4)*

7. Click **Continue**.

The Define Connection Properties page displays.

8. Complete the **Connection Property** fields as follows:

- Name: Enter a name for the pool, such as PAPool.
- Database Name: Specify the name of the database (MS SQL Server).
- Host Name: Network ID or IP address of the database host machine.
- User Name: Name of user with sufficient permissions.
- Password/Confirm Password: User password.

9. Click **Continue**.

You can now test the new connection pool or deploy it directly. After deployment, you must modify the connection configuration, as described in the following steps.

To modify the connection configuration:

1. Access the connection configuration:
 - In the panel on the left, open **Services>JDBC>Connection Pools**.
 - In the resulting page in the right panel, click the name of the pool created in the previous step (e.g., PAPool). The Connections page for the specified connection pool displays.
2. Select the Configuration tab. On the Connections tab, change the Maximum Capacity setting to 200.

NOTE: You can accept the defaults for the remaining settings.

3. Click **Apply**.
4. Select the **Target and Deploy** tab.

This tab pane lists the servers or clusters on which the JDBC connection pool can be deployed.
5. Select the desired server, and click **Apply**.

The JDBC connection pool has now been successfully completed. You can now create the database source, as described in the next section.

Creating the metadata data source

This section describes how to create the metadata data source in the Weblogic Server Console.

To create the data source in the Weblogic Server Console:

1. In the panel on the left, open **Services>JDBC>Data Sources**.

The right frame redisplay to show the JDBC Data Sources page.
2. Click **Configure a new JDBC Data Source**.

The Configure the Data Source page displays.
3. Enter the following settings:
 - For the Name value, enter `com.celequest.metadata.metaDatasource`.
 - For the JNDI Name, enter `com.celequest.metadata.metaDatasource`.
 - Check the **Honor Global Transactions** checkbox.
4. Click **Continue**.

The Connect to connection pool page displays.
5. For Pool Name, select the name of the connection pool created for the metadata.
6. Click **Continue**.

The Target the data source page displays.
7. Select the same server as in Step 5 in the preceding section.

8. Click **Create**.

The JDBC Data Sources page displays again, now listing the new data source.

Creating the Process Analyzer data source

This section describes how to create the Process Analyzer data source in the Weblogic Server Console.

To create the data source in the Weblogic Server Console:

1. In the panel on the left, open **Services>JDBC>Data Sources**.

The right frame redisplay to show the JDBC Data Sources page.

2. Click **Configure a new JDBC Data Source**.

The Configure the Data Source page displays.

3. Enter the following settings:

- For the Name value, enter com.celequest.context.
- For the JNDI Name, enter com.celequest.context.
- Uncheck the **Honor Global Transactions** checkbox.

4. Click **Continue**.

The Connect to connection pool page displays.

5. For Pool Name, select the name of the connection pool created for the Process Analyzer.

6. Click **Continue**.

The Target the data source page displays.

7. Select the same server as in Step 5 in the preceding section.

8. Click **Create**.

The JDBC Data Sources page displays again, now listing the new data source.

Modifying the Weblogic JVM

This section describes how to modify the Weblogic JVM by editing the start scripts.

To modify the Weblogic JVM:

1. If running, shut down the Weblogic server:
 - In the Weblogic Server Console, open **Servers**.
 - Select the server in the right panel. This should be the same server domain created for this installation and deployment.
 - In the resulting page, select the **Control** tab.
 - Click **Graceful shutdown of this server**.
2. From the FileNet Business Activity Monitor/Server directory on the installation disk, copy the jaas.jar file to a location on the Weblogic server machine.

NOTE: In a subsequent step, you will point to this file from the start script.

3. Locate the Weblogic start script and open in a text editor.

NOTE: This is the same start script described in Step 1 of [“Creating the JDBC metadata connection pool” on page 20](#) of this document.

4. Locate and modify the JAVA_HOME setting:

```
set JAVA_HOME=C:\bea\jdk142_04
```

The modified version should point to the current Sun JDK location, for example:

```
set JAVA_HOME=C:\jdk1.4.2_08
```

5. Add the following lines to set the memory parameters and invoke the JAAS.JAR:

- Windows:

```
set MEM_ARGS=-XX:MaxPermSize=128M -Xms96m -Xmx512m
set JAAS=[Location from previous step]\jaas.jar
set PRE_CLASSPATH=%JAAS%
```

- Solaris:

```
MEM_ARGS=-XX:MaxPermSize=128M -Xms96m -Xmx512m
JAAS=[Location from previous step]/jaas.jar
PRE_CLASSPATH=$JAAS
```

NOTE: The above memory settings show recommended minimum values. If the capacity is available, you may set them higher.

6. **(Optional - For UTF-8 support only)** Add the following line to the JAVA_OPTIONS environment variable:

```
-Dfile.encoding=utf8
```

7. Save and close the start script file.

Deploying

This section describes the process of deploying FileNet Business Activity Monitor on the Weblogic application server.

To deploy FileNet Business Activity Monitor:

1. Restart the BEA Weblogic server.
 - [Domain]\startWLS.cmd (Windows)
 - [Domain]/startWLS.sh (Solaris)
2. Open the BEA Weblogic Server Console in a web browser and log in.
The URL should be `http://host:port/console`. For example, `http://localhost:7001/console`.
3. In the panel on the left, open **Deployments>Applications**.
The right frame redisplay to show the Applications page.
4. Click **Deploy a new Application**.
5. In the resulting page, find and click the **upload your file(s)** link.
The Upload and Install an Application or Module page displays.
6. Browse to the FNBAM_3.x_weblogic.ear or FNBAM_3.x_weblogic_oracle.ear (depending on the database you selected) on the FileNet Business Activity Monitor installation CD and click **Upload**.
After the file uploads, the Deploy an Application page redisplay.
7. If more than one valid file path displays, select the most appropriate (e.g., FNBAM_3.x_weblogic.ear).
8. Click **Continue**.
A pre-deploy review page displays, enabling you to confirm the choices you made.
9. Click **Deploy to Finish**.
FileNet Business Activity Monitor is now running on the Weblogic appserver.
10. To confirm, open a web browser and go to URL `http://host:port/filenetbam/workbench`.
For example `http://localhost:7001/filenetbam/workbench`.

Installing and Deploying on JBoss

This section describes how to install and deploy FileNet Business Activity Monitor on JBoss.

NOTE: For installation on BEA Weblogic, see [“Installing and Deploying on BEA WebLogic”](#) on page 19.

In this Chapter:

[“Setting Up”](#) on page 8

[“Installing for JBoss”](#) on page 28

[“Configuring JBoss”](#) on page 29

[“To create the Process Analyzer context database source descriptor:”](#) on page 44

[“Shutting down on JBoss”](#) on page 46

[“Directories and files on JBoss installation”](#) on page 46

[“JBoss logging”](#) on page 47

[“JBoss ports and multiple installations on a host”](#) on page 48

Installing for JBoss

This section takes you through the JBoss installation process specific to FileNet Business Activity Monitor.

NOTE: Before proceeding, be sure to complete the setup steps listed in [“Setting Up” on page 8](#).

Install FileNet Business Activity Monitor for JBoss as follows:

1. Install JBoss 3.2.6.

You can download jboss-3.2.6.zip from <http://prdownloads.sourceforge.net/jboss/>.

2. Copy FileNet Business Activity Monitor EAR file from the CD-ROM to the JBoss server/default/deploy directory.

The application EAR file is located on the CD-ROM at:

```
<cd-rom>/BAM/Server/jboss/FNBAM_3.x.0_jboss3.2.x.ear
```

The JBoss deploy directory location is:

```
.../jboss-3.2.6/server/default/deploy
```

3. (Optional) Copy the sample JBoss configuration files from the CD-ROM to the application directory.

You can use these templates later as you configure JBoss.

```
<cd-rom>/samples/jboss/*
```

4. (Optional) Install FileNet Business Activity Monitor test demonstration files:

Copy the Demo directory from the CD-ROM to the application directory you created in Step 1 of [“Setting up the environment” on page 10](#).

Windows: Drag the folder from the CD-ROM to the folder on the server.

UNIX: `cp -r <cd-rom>/samples/installer ~/filenetbam`

You can now configure JBoss for FileNet Business Activity Monitor.

Configuring JBoss

This section provides separate instructions for:

- *Configuring JBoss for Oracle*
- *Configuring JBoss for MS SQLSERVER*
- *Configuring JBoss for DB2*
- *Configuring JBoss for Derby*

Configuring JBoss for Oracle

This section will require you to create and/or modify the following configuration files:

File	Location (.../jboss-3.2.6/.)
celequest_metadata-ds.xml	.../server/default/deploy This file is created from a template provided in the product CD-ROM, and is used to configure a data source for the metadata.
standardjbosscomp-jdbc.xml	.../server/default/conf You will insert new elements to this file. The new elements are provided in the FileNet Business Activity Monitor directory.
transaction-service.xml	.../server/default/deploy
jboss-service.xml	.../server/default/conf
jboss-service.xml (optional)	.../server/default/deploy/jbossweb-tomcatxx.sar/META-INF
jboss-service.xml (optional)	.../server/default/deploy/http-invoker.sar/META-INF
run.bat (Windows) OR run.sh (UNIX)	.../bin

To configure the JBoss application server for Oracle:

1. Create a metadata source descriptor in the JBoss deploy directory:

.../jboss-3.2.6/server/default/deploy/celequest_metadata-ds.xml

You can find a template of this file in the /samples/jboss directory on the product CD-ROM.

NOTE: This descriptor must be a <local-tx-datasource> datasource.

2. Set the following parameters:

- <connection-url>: This should look like the following:

```
jdbc:oracle:oci:<dbuser>/<dbpassword>@<netService_name>
```

- <driver-class>: This should look like the following:

```
oracle.jdbc.driver.OracleDriver
```

You must also specify a user name and password for the database in the corresponding elements.

3. Save and close the celequest_metadata-ds.xml file.

You can now modify the standardjbosscomp-jdbc.xml file.

To modify the standardjbosscomp-jdbc.xml file:

1. In the JBoss .../jboss-3.2.6/server/default/conf directory, locate and open the standardjbosscomp-jdbc.xml file.
2. In the <defaults> section near the top, change these parameters as follows:

```
<datasource>java:/com.celequest.metadata.metaDataSource</datasource>
<datasource-mapping>Oracle9i</datasource-mapping>
<create-table>false</create-table>
...
<list-cache-max>10000</list-cache-max>
```

3. In the <type-mappings> section, locate the block for your DBMS and insert the additional mappings below the <function-mapping> elements.

The additional elements can be copied and pasted from the following file on the product CD-ROM: .../samples/jboss/typemappings_oracle.xml. A sample is also provided in ["typemappings_oracle.xml"](#) on [page 103](#).

4. Save and close the standardjbosscomp-jdbc.xml file.

You can now modify the transaction-service.xml file.

To modify the transaction-service.xml file:

1. In the JBoss server/default/deploy directory, locate and open the transaction-service.xml file.
2. Change the *Debug* attribute to *false*, as follows:

```
<!-- Enable connection close debug monitoring -->
<attribute name="Debug">false</attribute>
```

3. Save and close the transaction-service.xml file.

You can now modify the jboss-service.xml file.

To modify the jboss-service.xml file

1. In the JBoss server/default/conf directory, locate and open the jboss-service.xml file.
2. Locate the TransactionTimeout attribute in the Transactions section and increase the value to at least 600 seconds.

```
<mbean code="org.jboss.tm.TransactionManagerService"
  name="jboss:service=TransactionManager"
  ...>
  <attribute name="TransactionTimeout">600</attribute>
  ...
</mbean>
```

3. Save and close the jboss-service.xml file.

You now have the option of modifying the port setting. By default, JBoss uses port 8080 for HTTP connections (the port that you will use to connect to the FileNet BAM Workbench). However, if this causes a port conflict with other running applications, you can change the port configuration by modifying two other and distinct jboss-service.xml files in other directories, as shown below.

To modify the port configuration:

1. In the server/default/deploy/jbossweb-tomcatx.sar/META-INF directory, locate and open the jboss-service.xml file.
2. Modify the HTTP port setting, which located in the **HTTP/1.1 Connector** block:

```
<!-- A HTTP/1.1 Connector on port 8080 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="{jboss.bind.address}" port="8080" ...
  enableLookups="true" acceptCount="10" debug="0"
  connectionTimeout="20000" useURIVValidationHack="false"/>
```

3. Save and close the file.
4. In the server/default/deploy/http-invoker.sar/META-INF directory, locate and open the jboss-service.xml file.
5. Update each of the FOUR occurrences of the InvokerURLSuffix attribute.

```
...
<attribute name="InvokerURLSuffix">:8080/invoker/...
...
```

6. Save and close the file.

You can now copy the database driver files.

To copy the database driver files:

1. Copy the database driver files (i.e., classes12.zip) to the /server/default/lib directory.
2. Locate and open the run script that starts JBoss.

This file is located at:

...\\jboss-3.2.6\\bin\\run.bat (Windows)
 .../jboss-3.2.6/bin/run.sh (UNIX)

3. Change the JAVA_OPTS memory settings to 128M minimum and 512M maximum, and include -server to improve performance.

NOTE: For large data loads, consider increasing the maximum memory to -Xmax1536m (1.5 GB).

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	set JAVA_OPTS=%JAVA_OPTS% -server -Xms128m -Xmx512m
run.sh (UNIX)	JAVA_OPTS="\$JAVA_OPTS -server -Xms128m -Xmx512m"

4. Add a JAVA_OPTS setting to disable double logging of system output.

NOTE: This is a work-around to JBoss bug 877974.

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	set JAVA_OPTS=%JAVA_OPTS% -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false
run.sh (UNIX)	JAVA_OPTS="\$JAVA_OPTS -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false

5. **(Optional - For UTF-8 support only)** Add the following line to the JAVA_OPTS setting:

-Dfile.encoding=utf8

6. Save and close the run script file.

Configuring JBoss for MS SQLSERVER

This section will require you to create and/or modify the following configuration files:

File	Location (.../jboss-3.2.6/..)
celequest_metadata-ds.xml	.../server/default/deploy This file is created from a template provided in the product CD-ROM, and is used to configure a data source for the metadata.
standardjbosscomp-jdbc.xml	.../server/default/conf You will insert new elements to this file. The new elements are provided in the FileNet Business Activity Monitor directory.
transaction-service.xml	.../server/default/deploy
jboss-service.xml	.../server/default/conf
jboss-service.xml (optional)	.../server/default/deploy/jbossweb-tomcatxx.sar/META-INF
jboss-service.xml (optional)	.../server/default/deploy/http-invoker.sar/META-INF
run.bat (Windows)	.../bin
OR	
run.sh (UNIX)	

To configure the JBoss application server for MS SQLSERVER:

1. Create a metadata source descriptor in the JBoss deploy directory:

.../jboss-3.2.6/server/default/deploy/celequest_metadata-ds.xml

You can find a template of this file in the /samples/jboss directory on the product CD-ROM.

NOTE: This descriptor must be a <local-tx-datasource> datasource.

2. Set the following parameters:

- <connection-url>: This should look like the following:

```
jdbc:microsoft:sqlserver://<host>:<port (probably 1433)>;
SelectMethod=cursor;databaseName=<dbname>;
user=<dbuser>;password=<dbpassword>
```

- <driver-class> :This should look like the following:

```
com.microsoft.jdbc.sqlserver.SQLServerDriver
```

You must also specify a user name and password for the database in the corresponding elements.

3. Save and close the celequest_metadata-ds.xml file.

You can now modify the standardjbosscomp-jdbc.xml file.

To modify the standardjbosscomp-jdbc.xml file:

4. In the JBoss .../jboss-3.2.6/server/default/conf directory, locate and open the standardjbosscomp-jdbc.xml file.
5. In the <defaults> section near the top, change these parameters as follows:

```
<datasource>java:/com.celequest.metadata.metaDatasource</datasource>
<datasource-mapping>MS SQLSERVER</datasource-mapping>
<create-table>false</create-table>
...
<list-cache-max>10000</list-cache-max>
```

6. In the *<type-mappings>* section, locate the block for your DBMS and insert the additional mappings below the *<function-mapping>* elements.

The additional mappings can be copied and pasted from the following file on the product CD-ROM: .../samples/jboss/typemappings_mssqlserver.xml. A sample is also provided in ["typemappings_mssqlserver.xml" on page 102.](#)

7. Save and close the standardjbosscomp-jdbc.xml file.

You can now modify the transaction-service.xml file.

To modify the transaction-service.xml file:

1. In the JBoss server/default/deploy directory, locate and open the transaction-service.xml file.
2. Change the *Debug* attribute to *false*, as follows:

```
<!-- Enable connection close debug monitoring -->
<attribute name="Debug">false</attribute>
```

3. Save and close the transaction-service.xml file.

You can now modify the jboss-service.xml file.

To modify the jboss-service.xml file

1. In the JBoss server/default/conf directory, locate and open the jboss-service.xml file.
2. Locate the *TransactionTimeout* attribute in the *Transactions* section and increase the value to at least 600 seconds.

```
<mbean code="org.jboss.tm.TransactionManagerService"
  name="jboss:service=TransactionManager"
  ...>
  <attribute name="TransactionTimeout">600</attribute>
  ...
</mbean>
```

3. Save and close the jboss-service.xml file.

You now have the option of modifying the port setting. By default, JBoss uses port 8080 for HTTP connections (the port that you will use to connect to the FileNet BAM Workbench). However, if this causes a port conflict with other running applications, you can change the port configuration by modifying two other and distinct jboss-service.xml files in other directories, as shown below.

To modify the port configuration:

1. In the server/default/deploy/jbossweb-tomcatx.sar/META-INF directory, locate and open the jboss-service.xml file.
2. Modify the HTTP port setting, which located in the *HTTP/1.1 Connector* block:

```
<!-- A HTTP/1.1 Connector on port 8080 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="{jboss.bind.address}" port="8080" ...
  enableLookups="true" acceptCount="10" debug="0"
  connectionTimeout="20000" useURIVValidationHack="false"/>
```

3. Save and close the file.
4. In the server/default/deploy/http-invoker.sar/META-INF directory, locate and open the jboss-service.xml file.
5. Update each of the FOUR occurrences of the InvokerURLSuffix attribute.

```
...
<attribute name="InvokerURLSuffix">:8080/invoker/...
...
```

6. Save and close the file.

You can now copy the database driver files.

To copy the database driver files:

1. Copy the database driver files (msbase.jar, mssqlserver.jar, msutil.jar) to the /server/default/lib directory.
2. Locate and open the run script that starts JBoss.

This file is located at:

...\\jboss-3.2.6\\bin\\run.bat (Windows)

.../jboss-3.2.6/bin/run.sh (UNIX)

3. Change the JAVA_OPTS memory settings to 128M minimum and 512M maximum, and include -server to improve performance.

NOTE: For large data loads, consider increasing the maximum memory to -Xmax1536m (1.5 GB).

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	set JAVA_OPTS=%JAVA_OPTS% -server -Xms128m -Xmx512m
run.sh (UNIX)	JAVA_OPTS="\$JAVA_OPTS -server -Xms128m -Xmx512m"

4. Add a JAVA_OPTS setting to disable double logging of system output.

NOTE: This is a work-around to JBoss bug 877974.

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	<pre>set JAVA_OPTS=%JAVA_OPTS% -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false</pre>
run.sh (UNIX)	<pre>JAVA_OPTS="\$JAVA_OPTS -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false</pre>

5. **(Optional - For UTF-8 support only)** Add the following line to the JAVA_OPTS setting:

```
-Dfile.encoding=utf8
```

6. Save and close the run script file.

You can now deploy the JBoss application server for the FileNet Business Activity Monitor, as described in [“To create the Process Analyzer context database source descriptor:”](#) on page 44.

Configuring JBoss for DB2

This section will require you to create and/or modify the following configuration files:

File	Location (.../jboss-3.2.6/..)
celequest_metadata-ds.xml	.../server/default/deploy This file is created from a template provided in the product CD-ROM, and is used to configure a data source for the metadata.
standardjbosscomp-jdbc.xml	.../server/default/conf You will insert new elements to this file. The new elements are provided in the FileNet Business Activity Monitor directory.
transaction-service.xml	.../server/default/deploy
jboss-service.xml	.../server/default/conf
jboss-service.xml (optional)	.../server/default/deploy/jbossweb-tomcatxx.sar/META-INF
jboss-service.xml (optional)	.../server/default/deploy/http-invoker.sar/META-INF
run.bat (Windows)	.../bin
OR	
run.sh (UNIX)	

To configure the JBoss application server for DB2:

1. Create a metadata source descriptor in the JBoss deploy directory:

.../jboss-3.2.6/server/default/deploy/celequest_metadata-ds.xml

You can find a template of this file in the /samples/jboss directory on the product CD-ROM. A sample is also provided in “[celequest_metadata-ds.xml](#)” on [page 101](#).

NOTE: This descriptor must be a <local-tx-datasource> datasource.

2. Set the following parameters:

- <connection-url>: This should look like the following:

```
jdbc:db2://[host]:[port]/[database name]
```

- <driver-class> : This should look like the following:

```
com.ibm.db2.jcc.Db2Driver
```

You must also specify a user name and password for the database in the corresponding elements.

3. Save and close the celequest_metadata-ds.xml file.

You can now modify the standardjbosscomp-jdbc.xml file.

To modify the standardjbosscomp-jdbc.xml file:

1. In the JBoss .../jboss-3.2.6/server/default/conf directory, locate and open the standardjbosscomp-jdbc.xml file.

2. In the <defaults> section near the top, change these parameters as follows:

```
<datasource>java:/com.celequest.metadata.metaDataSource</datasource>
<datasource-mapping>DB2</datasource-mapping>
<create-table>false</create-table>
...
<list-cache-max>10000</list-cache-max>
```

3. In the <type-mappings> section, locate the block for your DBMS and insert the additional mappings below the <function-mapping> elements.

The additional mappings can be copied and pasted from the following file on the product CD-ROM: .../samples/jboss/typemappings_db2.xml. A sample is also provided in “[typemappings_db2.xml](#)” on [page 104](#).

4. Save and close the standardjbosscomp-jdbc.xml file.

You can now modify the transaction-service.xml file.

To modify the transaction-service.xml file:

1. In the JBoss server/default/deploy directory, locate and open the transaction-service.xml file.

2. Change the *Debug* attribute to *false*, as follows:

```
<!-- Enable connection close debug monitoring -->
<attribute name="Debug">false</attribute>
```

3. Save and close the transaction-service.xml file.

4. In the JBoss server/default/conf directory, locate and open the jboss-service.xml file.

5. Locate the *TransactionTimeout* attribute in the *Transactions* section and increase the value to at least 600 seconds.

```
<mbean code="org.jboss.tm.TransactionManagerService"
name="jboss:service=TransactionManager"
...>
```

```

    <attribute name="TransactionTimeout">600</attribute>
    ...
</mbean>

```

6. Save and close the jboss-service.xml file.

You now have the option of modifying the port setting. By default, JBoss uses port 8080 for HTTP connections (the port that you will use to connect to the FileNet BAM Workbench). However, if this causes a port conflict with other running applications, you can change the port configuration by modifying two other and distinct jboss-service.xml files in other directories, as shown below.

To modify the port configuration:

1. In the server/default/deploy/jbossweb-tomcatx.sar/META-INF directory, locate and open the jboss-service.xml file.
2. Modify the HTTP port setting, which located in the *HTTP/1.1 Connector* block:

```

<!-- A HTTP/1.1 Connector on port 8080 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="{jboss.bind.address}" port="8080" ...
  enableLookups="true" acceptCount="10" debug="0"
  connectionTimeout="20000" useURIVValidationHack="false"/>

```

3. Save and close the file.
4. In the server/default/deploy/http-invoker.sar/META-INF directory, locate and open the jboss-service.xml file.
5. Update each of the FOUR occurrences of the InvokerURLSuffix attribute.

```

...
<attribute name="InvokerURLSuffix">:8080/invoker/...
...

```

6. Save and close the file.

You can now copy the database driver files.

To copy the database driver files:

1. Copy the database driver files (i.e., db2jcc.zip) to the /server/default/lib directory.
2. Locate and open the run script that starts JBoss.

This file is located at:

...\\jboss-3.2.6\\bin\\run.bat (Windows)

...-3.2.6/bin/run.sh (UNIX)

3. Change the JAVA_OPTS memory settings to 128M minimum and 512M maximum, and include -server to improve performance.

NOTE: For large data loads, consider increasing the maximum memory to -Xmax1536m (1.5 GB).

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	<code>set JAVA_OPTS=%JAVA_OPTS% -server -Xms128m -Xmx512m</code>
run.sh (UNIX)	<code>JAVA_OPTS="\$JAVA_OPTS -server -Xms128m -Xmx512m"</code>

4. Add a JAVA_OPTS setting to disable double logging of system output.

NOTE: This is a work-around to JBoss bug 877974.

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	<code>set JAVA_OPTS=%JAVA_OPTS% -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false</code>
run.sh (UNIX)	<code>JAVA_OPTS="\$JAVA_OPTS -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false</code>

5. **(Optional - For UTF-8 support only)** Add the following line to the JAVA_OPT environment variable:

```
-Dfile.encoding=utf8
```

6. Save and close the run script file.

You can now deploy the JBoss application server for the FileNet Business Activity Monitor, as described in ["To create the Process Analyzer context database source descriptor:"](#) on page 44.

Configuring JBoss for Derby

This section will require you to create and/or modify the following configuration files:

File	Location (.../jboss-3.2.6/..)
celequest_metadata-ds.xml	.../server/default/deploy This file is created from a template provided in the product CD-ROM, and is used to configure a data source for the metadata.
standardjbosscomp-jdbc.xml	.../server/default/conf You will insert new elements to this file. The new elements are provided in the FileNet Business Activity Monitor directory.
transaction-service.xml	.../server/default/deploy
jboss-service.xml	.../server/default/conf
jboss-service.xml (optional)	.../server/default/deploy/jbossweb-tomcatxx.sar/META-INF
jboss-service.xml (optional)	.../server/default/deploy/http-invoker.sar/META-INF
run.bat (Windows)	.../bin
OR	
run.sh (UNIX)	

To configure the JBoss application server for Derby:

1. Run the following command to generate the Derby database embedded in the FileNet Business Activity Monitor installation package:

```
java -jar [FILE PATH]\filenetbam\CQInitMetadata\cqinitmetadata.jar [TARGET DIRECTORY] -l [LOG DIRECTORY]
```

Where the TARGET DIRECTORY does not exist and the LOG DIRECTORY is an existing directory.

2. Create a metadata source descriptor in the JBoss deploy directory:

```
.../jboss-3.2.6/server/default/deploy/celequest_metadata-ds.xml
```

You can find a template of this file in the /samples/jboss directory on the product CD-ROM. A sample is also provided in “celequest_metadata-ds.xml” on page 101.

NOTE: This descriptor must be a <local-tx-datasource> datasource.

3. Set the following parameters:

- <connection-url>: This should look like the following:

```
jdbc:derby:///metadata
```

- <driver-class> : This should look like the following:

```
org.apache.derby.jdbc.EmbeddedDriver
```

4. Save and close the celequest_metadata-ds.xml file.

You can now modify the standardjbosscomp-jdbc.xml file.

To modify the standardjbosscmp-jdbc.xml file:

1. In the JBoss .../jboss-3.2.6/server/default/conf directory, locate and open the standardjbosscmp-jdbc.xml file.
2. In the <defaults> section near the top, change these parameters as follows:

```
<datasource>java:/com.celequest.metadata.metaDataSource</datasource>
<datasource-mapping>Derby</datasource-mapping>
<create-table>false</create-table>
...
<list-cache-max>10000</list-cache-max>
```

3. In the <type-mappings> section, locate the block for your DBMS and insert the additional mappings below the <function-mapping> elements.

The additional mappings can be copied and pasted from the following file on the product CD-ROM: .../samples/jboss/typemappings_derby.xml. A sample is also provided in [“typemappings_derby.xml” on page 105.](#)

4. Save and close the standardjbosscmp-jdbc.xml file.

You can now modify the transaction-service.xml file.

To modify the transaction-service.xml file:

1. In the JBoss server/default/deploy directory, locate and open the transaction-service.xml file.
2. Change the Debug attribute to *false*, as follows:

```
<!-- Enable connection close debug monitoring -->
<attribute name="Debug">false</attribute>
```

3. Save and close the transaction-service.xml file.
4. In the JBoss server/default/conf directory, locate and open the jboss-service.xml file.
5. Locate the *TransactionTimeout* attribute in the Transactions section and increase the value to at least 600 seconds.

```
<mbean code="org.jboss.tm.TransactionManagerService"
  name="jboss:service=TransactionManager"
  ...>
  <attribute name="TransactionTimeout">600</attribute>
  ...
</mbean>
```

6. Save and close the jboss-service.xml file.

You now have the option of modifying the port setting. By default, JBoss uses port 8080 for HTTP connections (the port that you will use to connect to the FileNet BAM Workbench). However, if this causes a port conflict with other running applications, you can change the port configuration by modifying two other and distinct jboss-service.xml files in other directories, as shown below.

To modify the port configuration:

1. In the server/default/deploy/jbossweb-tomcatx.sar/META-INF directory, locate and open the jboss-service.xml file.
2. Modify the HTTP port setting, which located in the *HTTP/1.1 Connector* block:

```
<!-- A HTTP/1.1 Connector on port 8080 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="{jboss.bind.address}" port="8080" ...
  enableLookups="true" acceptCount="10" debug="0"
  connectionTimeout="20000" useURIVValidationHack="false"/>
```

3. Save and close the file.
4. In the server/default/deploy/http-invoker.sar/META-INF directory, locate and open the jboss-service.xml file.
5. Update each of the FOUR occurrences of the InvokerURLSuffix attribute.

```
...
<attribute name="InvokerURLSuffix">:8080/invoker/...
...
```

6. Save and close the file.

You can now modify the run script file.

To modify the run script file:

1. Locate and open the run script that starts JBoss.

This file is located at:

...\\jboss-3.2.6\\bin\\run.bat (Windows)

.../jboss-3.2.6/bin/run.sh (UNIX)

2. Change the JAVA_OPTS memory settings to 128M minimum and 512M maximum, and include -server to improve performance.

NOTE: For large data loads, consider increasing the maximum memory to -Xmax1536m (1.5 GB).

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	set JAVA_OPTS=%JAVA_OPTS% -server -Xms128m -Xmx512m
run.sh (UNIX)	JAVA_OPTS="\$JAVA_OPTS -server -Xms128m -Xmx512m"

3. Add a JAVA_OPTS setting to disable double logging of system output.

NOTE: This is a work-around to JBoss bug 877974.

The following table shows examples for each operating system:

Operating System	Example
run.bat (Windows)	set JAVA_OPTS=%JAVA_OPTS% -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false
run.sh (UNIX)	JAVA_OPTS="\$JAVA_OPTS -Dorg.jboss.logging.Log4jService.catchSystemOut=false -Dorg.jboss.logging.Log4jService.catchSystemErr=false

4. **(Optional - For UTF-8 support only)** Add the following line to the JAVA_OPTS setting:

-Dfile.encoding=utf8

5. Save and close the run script file.

You now have the option of creating a context database source descriptor.

You can now deploy the JBoss application server for the FileNet Business Activity Monitor, as described in [“To create the Process Analyzer context database source descriptor:”](#) on page 44.

Configuring the Process Analyzer context database source descriptor

This section will require you to create and/or modify the following configuration file:

File	Location (.../jboss-3.2.6/.)
celequest_context-ds.xml	.../server/default/deploy This file is created from a template provided in the product CD-ROM, and is used to configure a data source for the Process Analyzer.

To create the Process Analyzer context database source descriptor:

1. Create a context database source descriptor in the JBoss deploy directory:

.../jboss-3.2.6/server/default/deploy/celequest_context-ds.xml

You can find a template of this file in the /samples/jboss directory on the product CD-ROM.

NOTE: The descriptor must be a <no-tx-datasource> datasource.

2. Configure as follows:

```
<jndi-name><!--Insert jndiName --></jndi-name>
<connection-url><!--Insert jdbcURL --></connection-url>
<driver-class><!--Insert jdbcDriver --></driver-class>
<!-- The login and password -->
<user-name><!--Insert dbUsername --></user-name>
<password><!--Insert dbPassword --></password>
```

- jndiName is a unique string that you provide. This is the same name that will be specified in the FileNet BAM Workbench when configuring a context data source.

- jdbcURL is usually:

```
jdbc:microsoft:sqlserver://<host>:<port (probably 1433)>;
SelectMethod=cursor;databaseName=<dbname>;
user=<dbuser>;password=<dbpassword>
```

- jdbcDriver is usually:

```
com.microsoft.jdbc.sqlserver.SQLServerDriver
```

3. Save and close the descriptor file.
4. Copy the database driver files (msbase.jar, mssqlserver.jar, msutil.jar) to the /server/default/lib directory.

Deploying

This section describes how to deploy on JBoss.

To deploy the FileNet Business Activity Monitor on JBoss:

1. Log in to the machine that will host the FileNet Business Activity Monitor.

NOTE: You must be root on UNIX.

2. Start the FileNet Business Activity Monitor by running the JBoss “run” script:

- ...\\jboss-3.2.6\\bin\\run.bat (Windows)
- .../jboss-3.2.6/bin/run.sh (UNIX)

3. The JBoss application server is running when it displays its version number in the log messages.

Before users can use the FileNet Business Activity Monitor, you need to set up and configure several settings. For detailed instructions, see [“Configuring the FileNet Business Activity Monitor” on page 73](#).

Shutting down on JBoss

Shut down the FileNet Business Activity Monitor from the FileNet BAM Workbench; do not shut down JBoss first.

To shutdown FileNet Business Activity Monitor on JBoss:

1. Log into the FileNet BAM Workbench as a system administrator.
2. (Optional) Perform a system checkpoint. by selecting **System Settings dialog> Checkpoint Configuration** tab, **Run Now** option.

A snapshot saves the state of the system. When the **Recover Checkpointed State on Restart** option of the System controls tab is on, the servers restore the last checkpoint data when they restart.

3. Stop the servers by selecting the **Administration Console> System Settings dialog> System Control tab> Shutdown Now** command.
4. (Optional) Shut down the JBoss application server.

Directories and files on JBoss installation

The FileNet Business Activity Monitor application EAR file is in the JBoss deploy directory, per Step 2 of [“Installing for JBoss” on page 28](#).

```
.../jboss-3.2.6/server/default/deploy/FNBAM_<version>_jboss3.2.x.ear
```

Further, you created an application directory in Step 1 on page 10. The recommended location is:

- C:\FileNetBAM (Windows)
- ~/filenetbam (Solaris)

Further, if you installed the optional Test-Demo files in Step 4 of [“Installing for JBoss” on page 28](#), the directory will include:

- ../installer/Demo
- /README.txt
- /export.jar
- /orderStatusData_fixed.txt

JBoss logging

On JBoss installations, any message sent to any FileNet Business Activity Monitor log may also be recorded in the JBoss server.log file. By default, JBoss logs all messages published by the FileNet Business Activity Monitor servers, in addition to its own messages and those of any other applications running on it. You can turn off the file-logging of FileNet Business Activity Monitor messages with the JBoss log4j.xml configuration file.

NOTE: By default, FileNet Business Activity Monitor servers publish messages of Info severity or greater. You can change which messages they publish with the Administration Console of the FileNet BAM Workbench. See Understanding logging for details.

To restrict JBoss from recording FileNet Business Activity Monitor messages:

1. Edit the log4j.xml configuration file located in the JBoss server/default/conf/ directory. In that file, scroll down to the following section:

```
<root>
  <appender-ref ref="CONSOLE"/>
  <appender-ref ref="FILE"/>
</root>
```

2. Change the <root> definition, and in the “Categories” section, add a new category as follows:

```
<root>
  <appender-ref ref="CONSOLE"/>
</root>
...
<category name="org">
  <appender-ref ref="FILE"/>
</category>
```

This tells JBoss to send all messages from “org” categories to the console, such as those published by JBoss. Messages from “com” categories (such as com.celequest) are not logged to file.

3. Save the changed log4j.xml file and restart the JBoss server to effect the change.

Do not do this as a “hot” change to the log configuration because doing so will duplicate messages to both console and file.

JBoss ports and multiple installations on a host

To run multiple installations of JBoss on a single host, you need to configure each to use unique ports for the various services. Do so by making the changes noted **bold** face font in the following files:

- server\default\conf\jboss-service.xml

This file defines five port settings.

```
<!-- Class Loading -->
<mbean code="org.jboss.web.WebService"
      name="jboss:service=WebService">
  <attribute name="Port">8083</attribute>
  ...

<!-- JNDI -->
<mbean code="org.jboss.naming.NamingService"
      name="jboss:service=Naming">
  <attribute name="Port">1099</attribute>
  <attribute name="BindAddress">${jboss.bind.address}</attribute>
  <!-- The port of the RMI naming service, 0 == anonymous -->
  <attribute name="RmiPort">1098</attribute>
  ...

<!-- RMI/JRMP invoker -->
<mbean code="org.jboss.invocation.jrmp.server.JRMPInvoker"
      name="jboss:service=invoker,type=jrmp">
  <attribute name="RMIObjectPort">4444</attribute>
  ...

<mbean code="org.jboss.invocation.pooled.server.PooledInvoker"
      name="jboss:service=invoker,type=pooled">
  ...
  <attribute name="ServerBindPort">4445</attribute>
  ...
```

- server\default\deploy\jbossweb-tomcat41.sar\META-INF\jboss-service.xml

This file has two port settings.

```
<!-- A HTTP/1.1 Connector on port 8080 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="${jboss.bind.address}" port="appserver.8080"
  ...

<!-- A AJP 1.3 Connector on port 8009 -->
<Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
  address="${jboss.bind.address}" port="8009" minProcessors="5"
  ...
```

- server\default\deploy\http-invoker.sar\META-INF\jboss-service.xml

This file has four references to the HTTP port you defined above:

```
<mbean code="org.jboss.invocation.http.server.HttpInvoker"...>
...
<attribute name="InvokerURLSuffix">:8080 /invoker/EJBInvokerServlet</attribute>
```

```

...

<mbean code="org.jboss.invocation.http.server.HttpInvokerHA"...>
...
<attribute name="InvokerURLSuffix">:8080 /invoker/EJBInvokerHAServlet</attribute>
...

<mbean code="org.jboss.invocation.http.server.HttpProxyFactory"...>
<attribute name="InvokerURLSuffix">:8080 /invoker/JMXInvokerServlet</attribute>
...

<mbean code="org.jboss.invocation.http.server.HttpProxyFactory"...>
<attribute name="InvokerURLSuffix">:8080 /invoker/readonly/JMXInvokerServlet</attribute>
...

```

- server\default\deploy\snmp-adaptor.sar\managers.xml

This file has one port specification:

```

<manager>
  <address>localhost</address>
  <port>1162</port>
  <local-port>0</local-port>
  <version>1</version>
</manager>

```

- server\default\deploy\snmp-adaptor.sar\META-INF\jboss-service.xml

This file has one port specification, and is the same port specified in managers.xml above:

```

<service>
  <mbean code="org.jboss.jmx.adaptor.snmp.trapd.TrapdService"
    name="jboss.jmx:name=SnmpAgent,service=trapd,type=logger">
    <attribute name="Port">1162</attribute>
  </mbean>
...

```

After changing the application server name instance and port numbers, restart the JBoss application server to effect the changes.

Installing and Deploying on IBM WebSphere

This chapter describes how to install and deploy FileNet Business Activity Monitor on IBM WebSphere Application Server (version 5.1.1.5).

In this Chapter:

[“Prerequisites” on page 51](#)

[“Creating a JAAS authentication alias \(DB2 only\)” on page 52](#)

[“Configuring IBM WebSphere for FileNet Business Activity Monitor” on page 53](#)

[“Removing the WebSphere default JDBC driver” on page 67](#)

[“Deploying FileNet Business Activity Monitor on IBM WebSphere” on page 67](#)

[“Additional post-installation configuration \(Solaris & AIX only\)” on page 70](#)

[“Running FileNet Business Activity Monitor on IBM WebSphere” on page 71](#)

[“Creating a context data source for the Process Analyzer” on page 72](#)

Prerequisites

This section describes the technical prerequisites for installing and deploying FileNet Business Activity Monitor on IBM WebSphere.

Component	Versions/Libraries	Comments
DB2	db2jcc.jar db2jcc_license_cu.jar	These libraries should be available in your DB2 installation.
IBM WebSphere	5.1.1.5	Version 5.1.1.5 is version 5.1 upgraded with the following fixpacks: <ul style="list-style-type: none"> • JDK SR2 • 511_fpl • 511_cf5
MS SQL Server Drivers	msutil.jar msbase.jar mssqlserver.jar	These libraries should be available in your MS SQL Server installation.
MS SQL Server extension	sqljdbc.dll	This application extension must be loaded in your MS SQL Server installation.
Oracle Driver	ojdbc14.jar	Use the thin client. This driver has been tested with 10g.

Additional database configuration

You must create a dedicated database for the FileNet Business Activity Monitor metadata. Because the database name and user name are hard-coded into the application, this database must conform to the following:

Database	Additional configuration
DB2	Database name must be cqstmeta (all lowercase).
MS SQLSERVER	Database name must be cqstmeta (all lowercase). User name must be cqstmeta (all lowercase).
Oracle	SID must be orcl (all lowercase). Schema name must be cqstmeta (all lowercase). Note: There is no restriction on service name, database name, or global database name.

Creating a JAAS authentication alias (DB2 only)

If you are using DB2 as metadata database, you must first create an authentication alias which conforms to a valid user on the database. This alias will be referenced in the configuration.

To create a JAAS authentication alias:

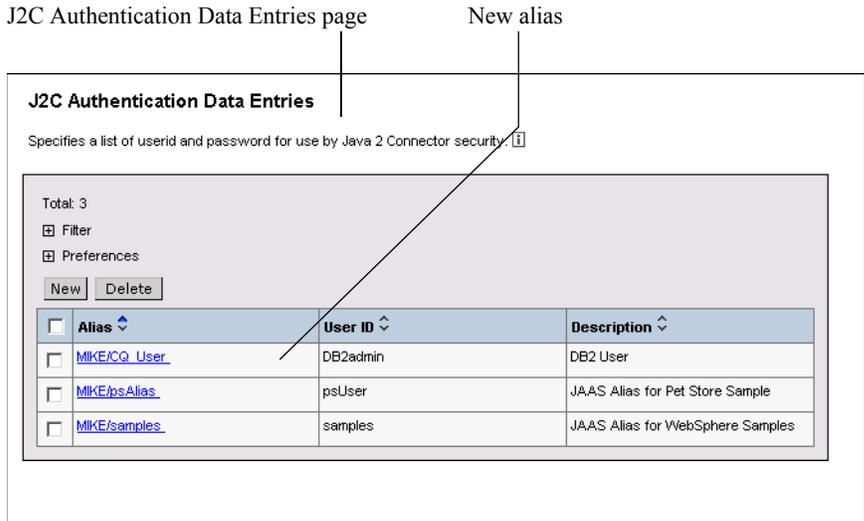
1. Start the WebSphere server and open the IBM WebSphere Administrative Console.
2. In the left panel, expand the **Security** node
3. Select **Security>JAAS Configuration>J2C Authentication Data**
This displays the J2C Authentication Data Entries page.
4. Click **New**.

In the resulting page, enter values for the following fields;

Alias	Any value. This will be used to reference the authentication parameters below.
User ID	Valid user ID for the DB2 database.
Password	Valid password for above user.
Description	Optional text description.

5. Click **OK**.

The new alias now displays in the list. You can now proceed to install and deploy FileNet Business Activity Monitor on the WebSphere Application Server.



Configuring IBM WebSphere for FileNet Business Activity Monitor

This section describes how to configure IBM WebSphere prior to deploying FileNet Business Activity Monitor. This process is divided into the following four procedures:

- *Configuring a new JDBC provider*
- *Defining the WebSphere data source*
- *Testing the new JDBC provider connection*
- *Setting Application Server parameters*

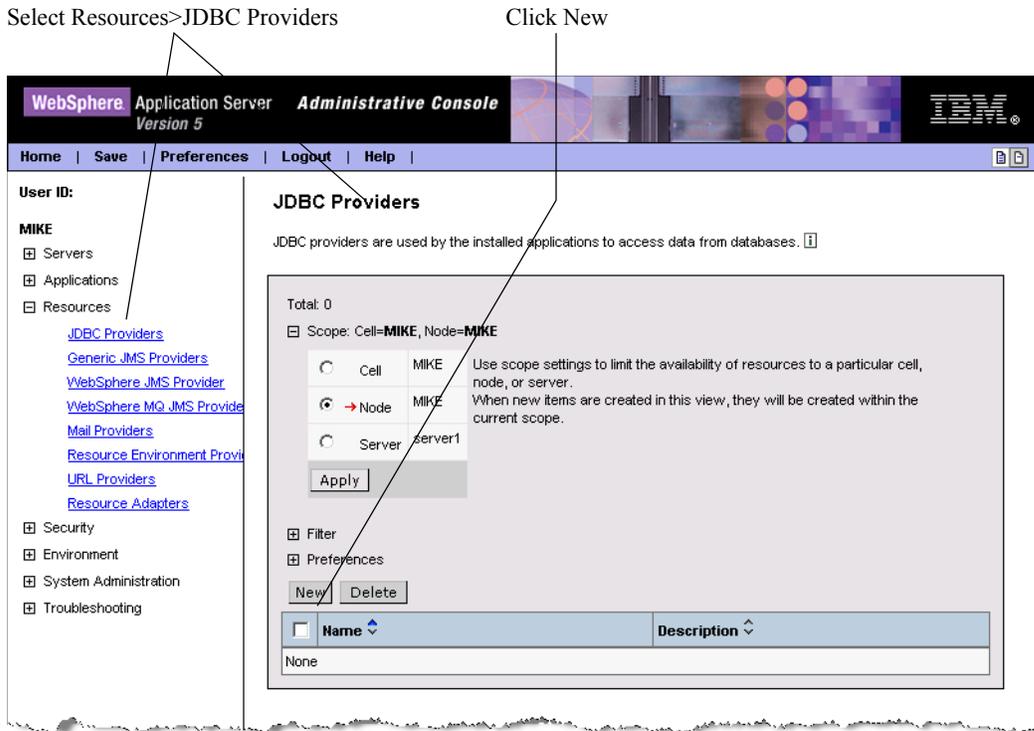
Configuring a new JDBC provider

In this section, you create a new JDBC provider directly in the IBM WebSphere Administrative Console.

To configure a new JDBC provider:

1. Start the WebSphere server and open the IBM WebSphere Administrative Console.
2. (Recommended) Shut down all enterprise applications except adminconsole:
 - In the left panel, expand the **Applications** node and click **Enterprise Applications**.
 - In the resulting page, check all applications except adminconsole and click **Stop**.
3. In the left panel, expand the **Resources** node and click **JDBC Providers**.

This action displays the JDBC Providers page.



4. In the JDBC Providers page, click the **New** button.

The New JDBC Providers page displays.

5. In the Configuration tab, open the **JDBC Provider** pull-down list and select the option appropriate to the database:

Database	JDBC Provider
DB2	DB2 Universal JDBC Driver Provider (XA)
MS SQLServer	WebSphere embedded ConnectJDBC driver for MS SQL Server (XA)
Oracle	Oracle JDBC Driver

6. Click the **Apply** button at the bottom of the tab pane.

The New JDBC Providers page redisplay to show the General Properties settings for the selected JDBC provider.

7. Complete the Classpath setting as follows:

Database	Add to Classpath setting
DB2	[FILE_PATH]/db2jcc.jar [FILE_PATH]/db2jcc_license_cu.jar [FILE_PATH]/mssqlserver.jar [FILE_PATH]/msbase.jar [FILE_PATH]/msutil.jar
MS SQLServer	[FILE_PATH]/mssqlserver.jar [FILE_PATH]/msbase.jar [FILE_PATH]/msutil.jar
Oracle	[FILE_PATH]/ojdbc14.jar [FILE_PATH]/mssqlserver.jar [FILE_PATH]/msbase.jar [FILE_PATH]/msutil.jar

NOTE The SQL Server JDBC driver files must be added to classpath in all cases for access to the Process Analyzer SQL Server database.

8. Click the **OK** button at the bottom of the tab pane.

The main JDBC Providers page displays.

9. Save the new provider configuration:

- Click the **Save** link posted in the Messages box. The Save page displays.
- Click the **Save** button. The default WebSphere page displays.

You can now configure the data source, as described in the next section.

Defining the WebSphere data source

In this section, you define the data source for the new JDBC provider configuration.

To define the WebSphere data source:

1. In the Administrative Console, select the **Resources>JDBC Providers**, as described in “[Configuring a new JDBC provider](#)” on page 53.

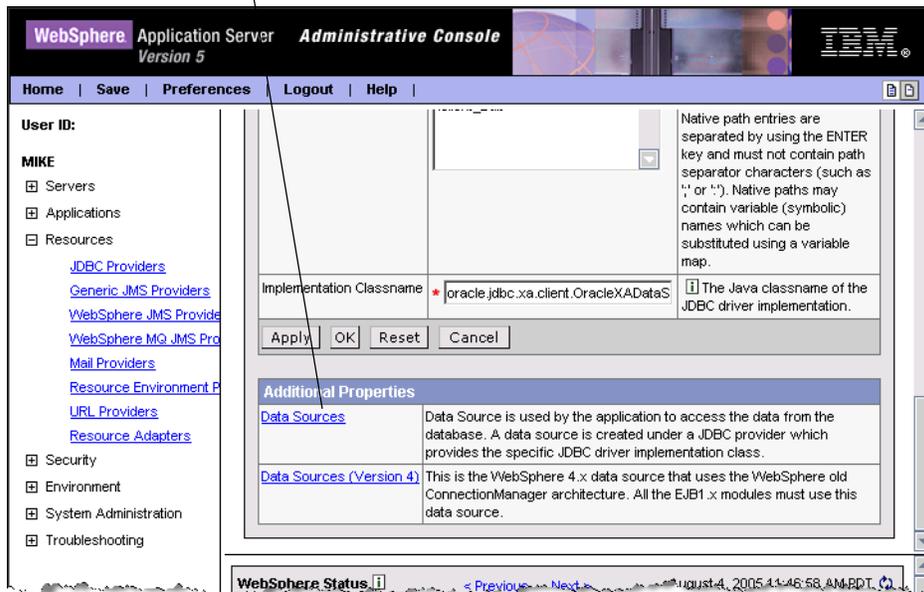
The JDBC Providers page lists the provider you configured.

2. Click on the desired provider link in the list of providers.

The JDBC Providers>[Provider] page displays.

3. Scroll down to the Additional Properties table and click the **Data Sources** link.

Select the Data Sources link



The JDBC Providers > [Provider] > Data Sources page displays.

4. Click the **New** button.

The New Data Sources page displays.

5. Complete the specified settings as follows:

Setting	Value
Name	com.celequest.metadata.metaDatasource
JNDI Name	jdbc/com.celequest.metadata.metaDatasource
Container managed persistence	Select check box
(Oracle 10g only) Datasource Helper Class Name	com.ibm.websphere.rsadapter.Oracle10gDataStoreHelper
(DB2 only) Component-managed Authentication Alias	Select the value you created in “Creating a JAAS authentication alias (DB2 only)” on page 52.
(DB2 only) Container-managed Authentication Alias	Select the value you created in “Creating a JAAS authentication alias (DB2 only)” on page 52.

6. Click the **OK** button at the bottom of the page.

The main JDBC Providers > [Provider] Data Sources page displays, listing the new data source (com.celequest.metadata.metaDatasource) configuration.

You can now set the connection URL and create the user and password properties.

7. Still on the Data Sources page, click the com.celequest.metadata.metaDatasource link in the table.

8. Click the **Custom Properties** link at the bottom of the page.

The Custom Properties page redisplay.

The next step depends on your type of database:

- Step 9 is dedicated to DB2 configuration.
- Step 10 is dedicated to MS SQLServer.
- Step 11 is dedicated to Oracle configuration.

9. To set the custom properties for DB2:

- Set the following properties as indicated:

Custom property	Value
serverName	Enter the host name or IP address of the machine running the database
portNumber	Port number DB2 is running from. (Typically 50000, though your configuration might differ.)
databaseName	Enter the database name. This should be the value "cqstmeta" as indicated in "Additional database configuration" on page 52.

This action completes the DB2 provider configuration and returns you to the Custom Properties page. You can go directory to step 12.

10. To set the custom properties for the MS SQL Server data source:

- Set the following properties as indicated:

Custom property	Value
serverName	Enter the host name or IP address of the machine running the database
portNumber	Port number MS SQLServer is running from. (Typically 1433, though your configuration might differ.)
databaseName	Enter the database name. This should be the value "cqstmeta" as indicated in "Additional database configuration" on page 52.

- Still in the Custom Properties page, create the user property:
 - Click the **New** button.

- In the resulting configuration page, complete the specified settings as follows:

Setting	Description
Name	This setting must be set to “user”. Note: This setting is case-sensitive and must be in lower case.
Value	You must specify a user named “cqstmeta” as indicated in “Additional database configuration” on page 52 .
Description	Optional

- Still in the Custom Properties page, create the password property:
 - Click the **New** button.
 - In the resulting configuration page, complete the specified settings as follows:

Setting	Description
Name	This setting must be set to “password”. Note: This setting is case-sensitive and must be in lower case.
Value	Enter the password for the “cqstmeta” user.
Description	Optional

This action completes the MS SQLServer provider configuration and returns you to the Custom Properties page. You can go directory to step 12.

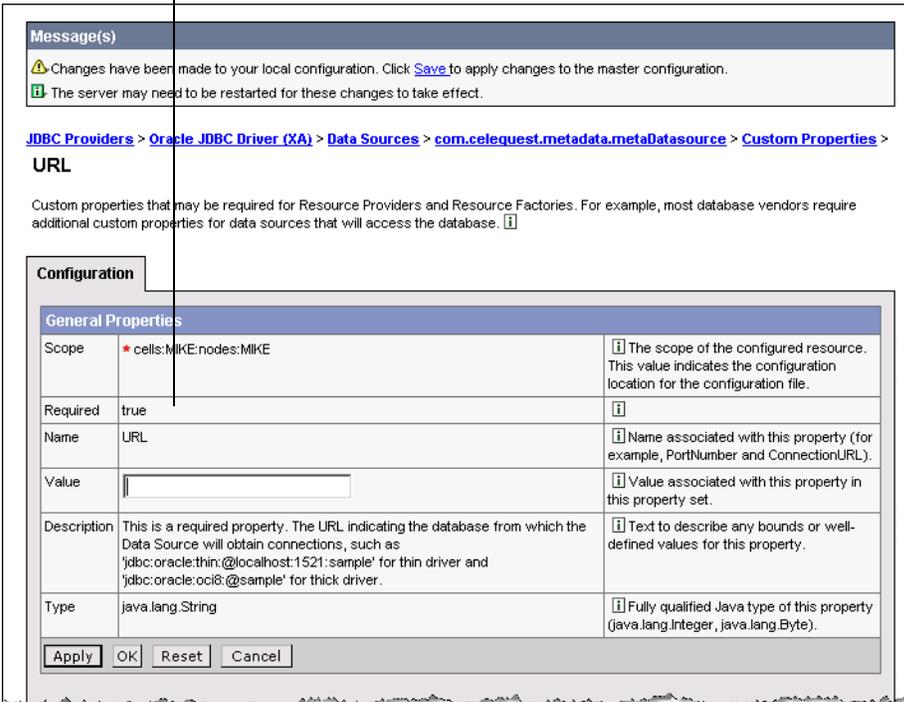
11. To set the custom properties for the Oracle data source:

- Configure the URL property:
 - Click the **URL** link in the table.
 - In the resulting configuration page, set the following value for URL:
`jdbc:oracle:thin:cqstmeta/[password]@[host name]:[port]:orcl`
 For example: `jdbc:oracle:thin:cqstmeta/sagud@orclhost:1521:orcl`
- Click **OK**.

NOTE: The schema name (“cqstmeta”) and SID (“orcl”) values in th URL are fixed, as as indicated in [“Additional database configuration” on page 52](#).

This action returns you to the Custom Properties page.

URL property definition



- Still in the Custom Properties page, create the user property:
 - Click the **New** button.
 - In the resulting configuration page, complete the specified settings as follows:

Setting	Description
Name	This setting must be set to "user". Note: This setting is case-sensitive and must be in lower case.
Value	Enter a valid database user name.
Description	Optional

- Click **OK**.

This action returns you to the Custom Properties page.

- Still in the Custom Properties page, create the password property:
 - Click the **New** button.

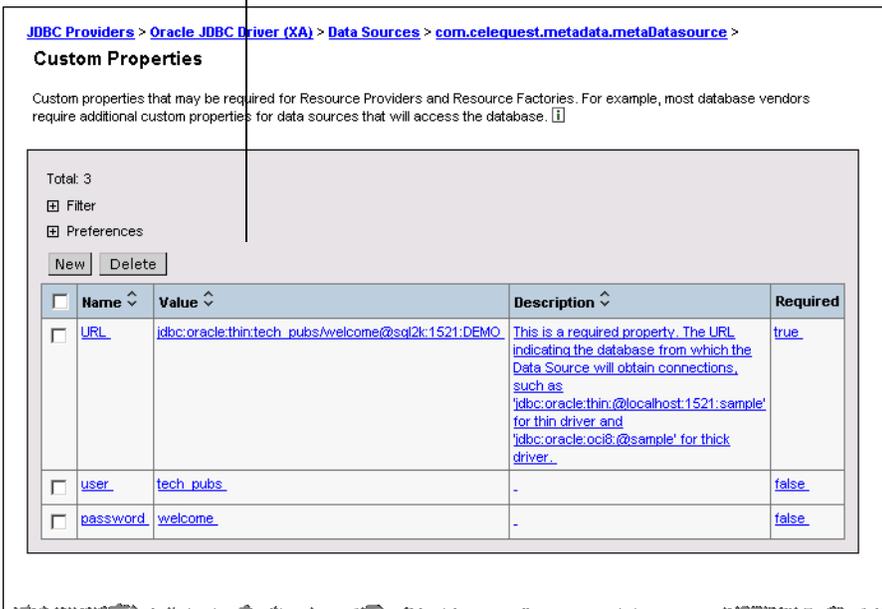
- In the resulting configuration page, complete the specified settings as follows:

Setting	Description
Name	This setting must be set to “password”. Note: This setting is case-sensitive and must be in lower case.
Value	Enter the password for the previously configured database user.
Description	Optional

- Click **OK**.

This action completes the Oracle provider configuration and returns you to the Custom Properties page, which should list URL, user, and password as properties, as shown below.

URL, user, and password in Custom Properties page



12. Save the new provider configuration:

- Click the **Save** link posted in the Messages box. The Save page displays.
- Click the **Save** button. The default WebSphere page displays.

You can now test the connection, as described in the next section.

Testing the new JDBC provider connection

In this section, you will test the JDBC provider configuration using the test connection feature in WebSphere.

To test the JDBC provider connection:

1. Return to the Data Sources page (**JDBC Providers > [Provider] > Data Sources**).
2. Select the `com.celequest.metadata.dataSource` provider.
3. Click the **Test Connection** button.

The Message box at the top of the page displays the results of the test.

NOTE: You may need to repeat the test to obtain a positive result.

4. If the test fails, use the WebSphere error reporting features to locate the cause.

Select data source and click Test Connection Message box displays test results

The screenshot shows the WebSphere Admin Console interface. At the top, a message box displays the following text: "Test Connection for datasource com.celequest.metadata.metaDataSource on server server1 at node MIKE was successful." Below the message box, the breadcrumb navigation is "JDBC Providers > Oracle JDBC Driver (XA) > Data Sources". The "Data Sources" section includes a description: "Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class." Below this, there are buttons for "New", "Delete", and "Test Connection". A table lists the data sources:

Name	JNDI Name	Description	Category
com.celequest.metadata.metaDataSource	jdbc/com.celequest.metadata.metaDataSource	New JDBC Datasource	

Setting Application Server parameters

This section describes how to set the server parameters. Specifically, this procedure will pass environmental variables to the JVM so it can access the FileNet Business Activity Monitor metadata. You will also set heap size limits.

To set the server parameters:

1. Start the WebSphere server and open the IBM WebSphere Administrative Console.
2. In the left panel of the IBM WebSphere Administrative Console, expand the **Servers** node and click **Application Servers**.
 This action displays the Application Servers page.
3. In the table, click the name of the application server on which FileNet Business Activity Monitor will run.
 The server page displays.
4. Select the Configuration tab (if is not selected already).
5. Select the **Process Definition** link located in the Additional Properties section.

The screenshot shows the configuration page for an application server named 'server1'. The 'Configuration' tab is selected, and the 'Process Definition' link in the 'Additional Properties' section is highlighted. Labels 'Server configuration' and 'Process Definition' point to the 'Configuration' tab and the 'Process Definition' link respectively.

General Properties	
Name	server1 <small>The display name for the server.</small>
Application classloader policy	Multiple <small>Specifies whether there is a single classloader for all applications ("Single") or a classloader per application ("Multiple").</small>
Application class loading mode	Parent first <small>Specifies the class loading mode when the application classloader policy is "Single"</small>

Buttons: Apply, OK, Reset, Cancel

Additional Properties	
Transaction Service	Specify settings for the Transaction Service, as well as manage...
Custom Services	Define custom service classes that will run within this server and their configuration properties.
Server Components	Additional runtime components which are configurable.
Process Definition	A process definition defines the command line information necessary to start/initialize a process.
Performance Monitoring Service	specify settings for performance monitoring, including enabling performance monitoring, selecting the PML module and setting monitoring levels.
End Points	Configure important TCPMP ports which this server uses for connections.
Classloader	Classloader configuration
Web Services: Default bindings for Web Services Security	Specifies a list of default bindings for Web Services Security. You can override these default bindings in the binding files for a specific Web service.
Runtime Performance Advisor Configuration	Configuration for performance advice that are applied to the runtime environment.

6. In the resulting Process Definition page, scroll to the bottom and click the **Java Virtual Machine** link in the Additional Properties section.
7. In the resulting Java Virtual Machine page, set the Initial Heap and Maximum Heap settings.
 The setting you choose depend on your system capabilities, and you should set them as high as possible. The minimum recommended values are 128 and 512.
8. Also in the Java Virtual Machine page, enable UTF-8 support (required) by configuring the Generic JVM arguments setting as follows:

```
-Dfile.encoding=utf8
```
9. Still in the Java Virtual Machine page, scroll to the bottom and click the **Custom Properties** link in the Additional Properties section.
10. In the resulting Custom Properties page, create the `com.celequest.metadata.jdbcDriver` property:
 - Click the **New** button.
 - In the resulting configuration page, complete the specified settings as follows:

Setting	Value
Name	<code>com.celequest.metadata.jdbcDriver</code>
Value	<ul style="list-style-type: none"> • DB2: <code>com.ibm.db2.jcc.DB2Driver</code> • MS SQLServer: <code>com.microsoft.jdbc.sqlserver.SQLServerDriver</code> • Oracle: <code>oracle.jdbc.driver.OracleDriver</code>
Description	(Optional)

- Click **OK**.

This action returns you to the Custom Properties page.

11. Remaining in the Custom Properties page, create the `com.celequest.metadata.jdbcURL` property:

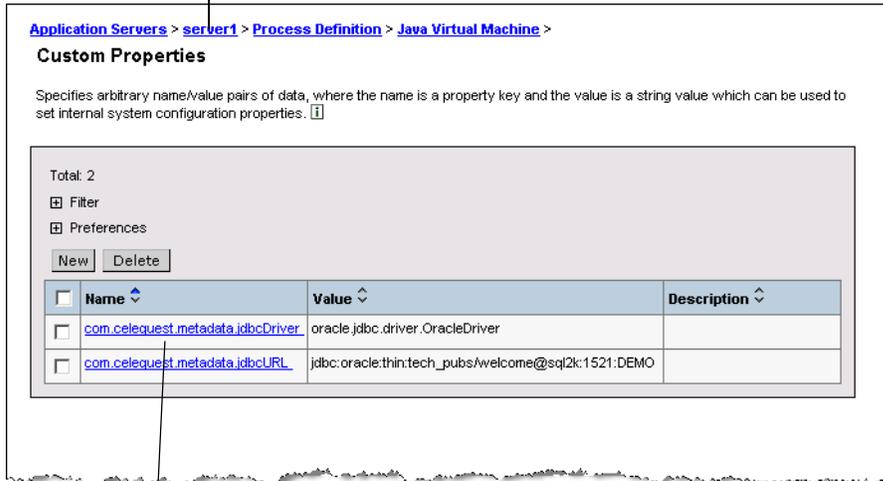
- Click the **New** button.
- In the resulting configuration page, complete the specified settings as follows:

Setting	Value
Name	<code>com.celequest.metadata.jdbcURL</code>
Value	<p>DB2:</p> <p><code>jdbc:db2://[server_name]:[port]/cqstmeta:user=[username];password=[password];</code></p> <p>For example:</p> <p><i><code>jdbc:db2://DB2server:50000/cqstmeta:user=werdna;password=sagud62;</code></i></p> <hr/> <p>MS SQLServer:</p> <p><code>jdbc:microsoft:sqlserver://[hostname]:[port];databaseName=cqstmeta;selectMethod=Cursor;user=[username];password=[password]</code></p> <p>For example:</p> <p><i><code>jdbc:microsoft:sqlserver://hostname:1433:databaseName=cqstmeta;SelectMethod=Cursor;user=tjones;password=j0nesv1ll3</code></i></p> <p>Note: The parameters in the above URL must match the values you set in Step 10 in “Defining the WebSphere data source” on page 56.</p> <hr/> <p>Oracle:</p> <p><code>jdbc:oracle:thin:[user]/[password]@[host name]:[port]:[SID]</code></p> <p>For example:</p> <p><i><code>jdbc:oracle:thin:werdna/sagud@orclhost:1521:orcl</code></i></p> <p>Note: This value must match the same URL configuration you created in Step 11 in “Defining the WebSphere data source” on page 56.</p>
Description	(Optional)

12. Click **OK**.

This action returns you to the Custom Properties page, which should now list the two new properties, as shown below.

Navigational link back to main server page



New properties

13. Return to the main server properties page by clicking the server name in the navigational links at the top of the page.
14. Modify the Transaction Service parameters:
 - Select the **Transaction Service** link located in the Additional Properties section.
 - In the resulting Transaction Service page, increase the **Total transaction lifetime timeout** value to 600.
 - Click **OK**.

This action returns you to the Custom Properties page.

15. Save the new configuration:
 - Click the **Save** link posted in the Messages box. The Save page displays.
 - Click the **Save** button. The default WebSphere page displays.
16. Shut down and restart the IBM WebSphere application server.

Restarting allows the changes to the JVM properties to take effect.

You can now deploy FileNet Business Activity Monitor on the IBM WebSphere Application server, as described in the following section.

Removing the WebSphere default JDBC driver

Before deploying the FileNet Business Activity Monitor on the WebSphere application server, remove the following file (if present):

[`$WEBSHERE_HOME`]/appserver/lib/ojdbc14.jar

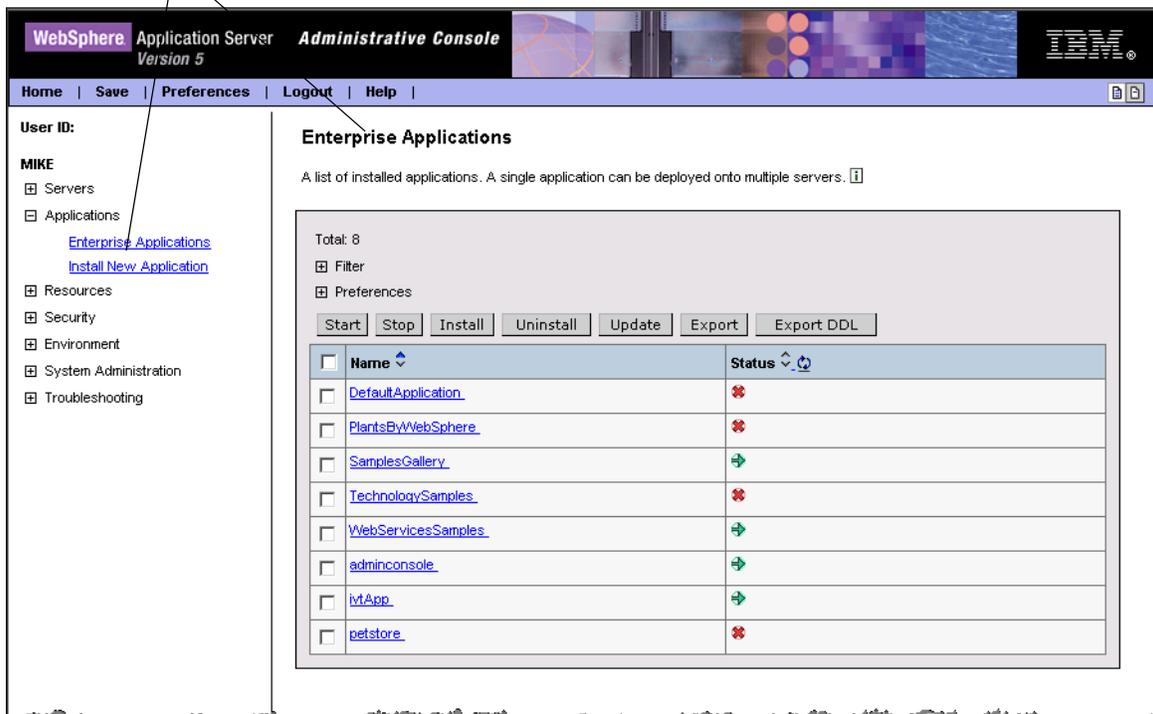
NOTE: This driver file is version 9.2 and will conflict with the required 10g driver, as described in “Configuring the metadata DBMS” on page 13

Deploying FileNet Business Activity Monitor on IBM WebSphere

1. Start the IBM WebSphere application server, if it is not currently running.
2. Open the IBM WebSphere Administrative Console.
3. In the left panel, expand the **Applications** node and click **Enterprise Applications**.

This action displays the Enterprise Applications page.

Select Applications>Enterprise Applications



4. Click the **Install** button.
5. In the resulting page, specify the path to the FileNet Business Activity Monitor EAR file, and click **Next**.
 This action displays the first of a series of configuration pages.
6. Accept the defaults on this page, and click **Next**.
 The Install New Application: Step 1 page displays.
7. Complete the Directory to Install Application field.

NOTE: This value should point to a server-side directory path.

Directory to Install Application field

Install New Application
 Allows installation of Enterprise Applications and Module

→ **Step 1: Provide options to perform the installation**
 Specify the various options available to prepare and install your application.

AppDeployment Options	Enable
Pre-compile JSP	<input type="checkbox"/>
Directory to Install Application	<input type="text"/>
Distribute Application	<input checked="" type="checkbox"/>
Use Binary Configuration	<input type="checkbox"/>
Deploy EJBs	<input checked="" type="checkbox"/>
Application Name	Celequest BAM
Create MBeans for Resources	<input checked="" type="checkbox"/>
Enable Class Reloading	<input type="checkbox"/>
Reload Interval in Seconds	<input type="text"/>
Deploy WebServices	<input type="checkbox"/>

[Step 2](#) Provide options to perform the EJB Deploy
[Step 3](#) Select current backend ID

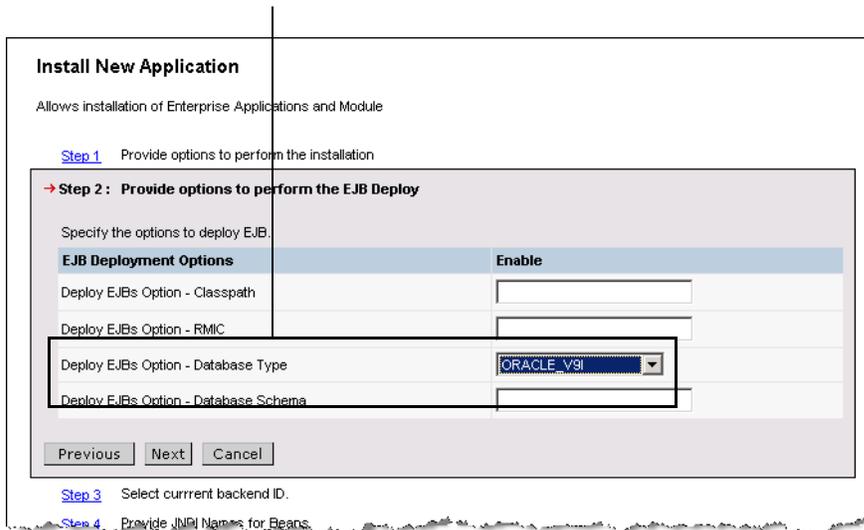
No other settings need to be modified in Step 1 for FileNet Business Activity Monitor deployment.

8. Click **Next**.
 The Install New Application: Step 2 page displays.

- For the Deploy EJBs Option - Database Type setting, select the appropriate database from the dropdown menu.

Database	Database type setting
DB2	DB2UDB_V81
MS SQLServer	MSSQLSERVER_2000
Oracle	ORACLE_V9I

Deploy EJBs Option - Database Type setting



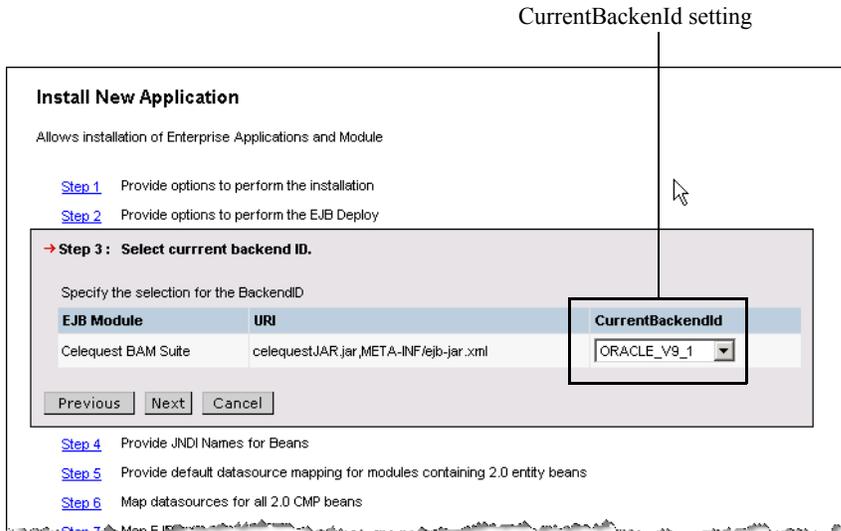
No other settings need to be modified in Step 2 for FileNet Business Activity Monitor deployment.

- Click **Next**.

The Install New Application: Step 3 page displays.

- Ensure that the CurrentBackendId setting corresponds to the setting in Step 2.

Specifically, the setting should show DB2UDBNT_V8_1, MSSQLSERVER_2000, or ORACLE_V9_1.



12. Click through the remaining steps: no further configuration is required for FileNet Business Activity Monitor deployment.

13. At Step 12, click **Finish**.

IBM WebSphere installs FileNet Business Activity Monitor.

Additional post-installation configuration (Solaris & AIX only)

Before starting FileNet Business Activity Monitor on Solaris or AIX, there is an additional step in which you replace the *xml.jar* file in the WebSphere installation with three updated files.

To replace the *xml.jar* file:

1. In the installation directory of the WebSphere application server, open the following directory:

`/AppServer/java/jre/lib/endorsed`

This directory contains the *xml.jar* file.

2. Delete the *xml.jar*.

3. Into the same folder, copy the following files:

- `dom3-xercesImpl-2.4.0.jar`
- `xalan-2.4.1.jar`
- `dom3-xml-apis-2.4.0.jar`

All three files can be copied from the following directory on the installation CD:

`\FileNetBAM/Server/WebSphere`

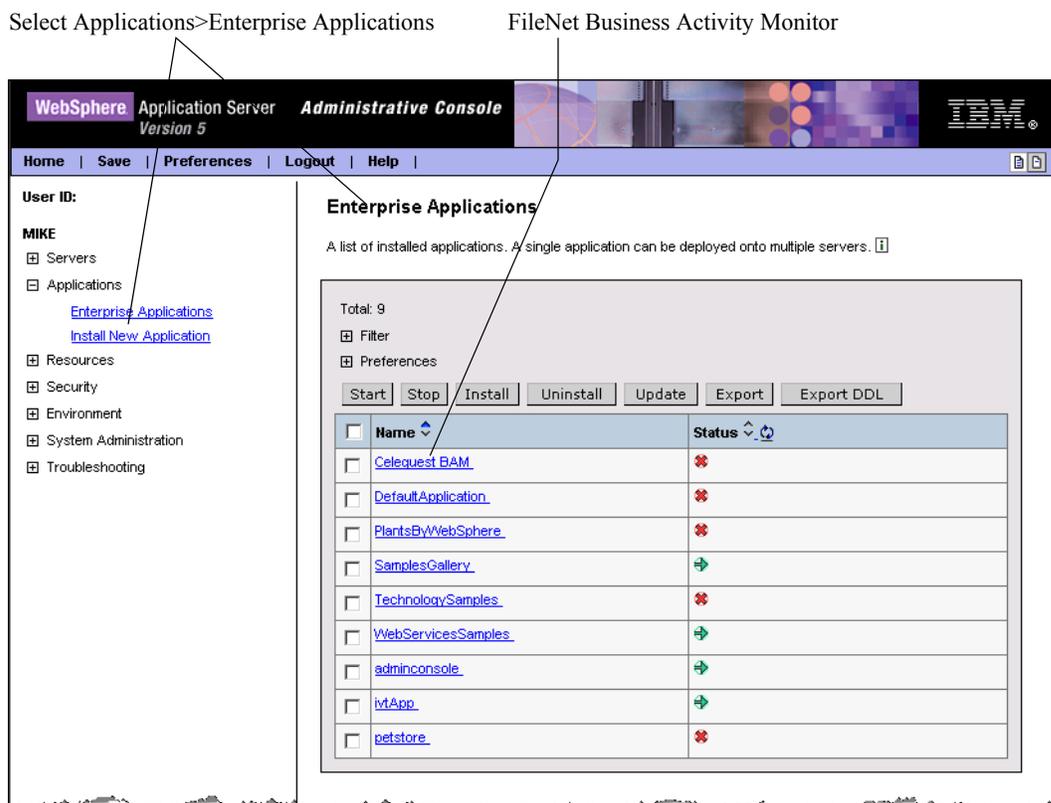
Running FileNet Business Activity Monitor on IBM WebSphere

After configuring IBM WebSphere and deploying FileNet Business Activity Monitor, you can start FileNet Business Activity Monitor directly in the application server.

To start FileNet Business Activity Monitor:

1. Start the WebSphere server and open the IBM WebSphere Administrative Console.
2. In the left panel, expand the **Applications** node and click **Enterprise Applications**.

This action displays the Enterprise Applications page, which lists the FileNet Business Activity Monitor.



3. Select the FileNet Business Activity Monitor by checking the check box.
4. Click the **Start** button.

Creating a context data source for the Process Analyzer

You must configure a context data source to access data from the Process Analyzer. For IBM WebSphere, you must configure a JDBC connection using the URL-based method described in the JDBC chapter in the Server Reference documentation.

If you import the pre-configured BAM project files, you must:

- Modify the provided JDBC agent and set the Type of JDBC Connection to URL-based.
- Enter the JDBC URL:

```
jdbc:microsoft:sqlserver://[Process Analyzer database server]:[Process Analyzer database server port];databaseName=VMAEDM;user=[Process Analyzer database username];password=[Process Analyzer database password]
```

For example:

```
jdbc:microsoft:sqlserver://hqdaaffodil:1433;databaseName=VMAEDM;user=sa;password=sa
```

- Enter the JDBC Driver Class:

```
com.microsoft.jdbc.sqlserver.SQLserverDriver
```

Configuring the FileNet Business Activity Monitor

This chapter describes how to configure the FileNet Business Activity Monitor, including the following topics

In this Chapter:

[“Configuring the FileNet Business Activity Monitor in FileNet BAM Workbench” on page 74](#)

[“Setting up LDAP settings” on page 76](#)

[“Running the test-demo” on page 85](#)

Configuring the FileNet Business Activity Monitor in FileNet BAM Workbench

Most configuration settings for the FileNet Business Activity Monitor are performed from the Administration Console in the FileNet BAM Workbench.

After installing and deploying the FileNet Business Activity Monitor, you need to define a few settings before users can use the product. Specifically, you need to:

- Change the system manager password.
- Identify a directory for log files.
- Enable email by configuring the SMTP (simple mail transfer protocol) connection.
- Create an account for each user.

All four settings are described below.

To connect to and administer the FileNet Business Activity Monitor:

1. Log into the FileNet BAM Workbench:

Using a browser compatible with Microsoft Internet Explorer 6.0 or newer, connect to the FileNet BAM Workbench from the application server running the FileNet Business Activity Monitor:

`http://filenetbam_host:port/filenetbam/workbench`

2. On the login page, enter the system manager username and password.

For your installation for this release, the values are:

- Username: system
- Password: manager

NOTE: The first time you log in after installation, an alert will prompt you to complete the several required system settings.

3. Open the **Account Settings** and change the default password in User Details, and the e-mail address in the default Delivery Profile.



4. Open the Administration Console and click **System Settings**.
5. On the System Settings dialog, open the Logging tab and identify the location where the servers can write log files in the Logging Directory field.

This directory must be writable by the account used to run the FileNet Business Activity Monitor servers.

6. On the System Settings dialog, open the **SMTP Configuration** tab and configure the e-mail delivery settings.

The SMTP (simple mail transfer protocol) configuration specifies how the FileNet Business Activity Monitor connects to the mail server that delivers email notifications. The server is external to the FileNet Business Activity Monitor and is managed by your email system administrator. Contact that administrator to set up an account for the FileNet Business Activity Monitor, and for details about these configuration settings.

Setting	Description
SMTP Host	Name of the e-mail host that provides the transport. A typical name might look like this: mail.mydomain.com
SMTP From Address	Address that appears in the From field for all e-mail messages sent by the system.
SMTP User	User name that the system uses to access the transport.
SMTP Password	Password that validates the user to the transport.

7. Create an account for each user. See the “User accounts” documentation in the Introduction reference for detailed information.

This completes the steps for configuring the FileNet Business Activity Monitor.

- You should run the test-demo to confirm that the installation is working correctly. See *Running the test-demo*.
- Users may now log in and begin creating scenarios.

For information about using the FileNet BAM Workbench, see the Getting Started. For detailed information about the entire product, see the Introduction.

Setting up LDAP settings

In addition to allowing you to manually create users and user permissions, FileNet Business Activity Monitor enables you to import user information from supported LDAP providers. FileNet Business Activity Monitor can be set up for scheduled synchronizations with the LDAP server to update the existing users and roles; manual synchronization is also an option.

In the importation process, FileNet Business Activity Monitor adds or updates the users; LDAP groups are converted to roles in FileNet Business Activity Monitor. When users are imported, they retain the LDAP role assignments.

NOTE: For more information, see [“Limitations in LDAP connectivity” on page 77](#) and [“Best practices” on page 77](#).

FileNet Business Activity Monitor has tested and certifies integration with the following LDAP providers:

- SunOne Directory Server 5.2
- Microsoft Active Directory 2000
- Microsoft Active Directory 2003

NOTE: FileNet Business Activity Monitor should be able to integrate with any LDAP provider that supports LDAP Version 3 Protocol. However, only the three listed above are certified.

This section describes the following topics:

- *Limitations in LDAP connectivity*
- *Best practices*
- *Setting up LDAP synchronization*
- *Setting up LDAP user mapping*
- *Setting up LDAP role mapping*
- *Manually synchronizing with the LDAP server*

Limitations in LDAP connectivity

Bear in mind the following limitations:

- If FileNet Business Activity Monitor does not recognize a role, it creates the role and assign a set of zero permissions. You can later modify the permissions as necessary.
- If FileNet Business Activity Monitor imports a user but none of the groups/roles to which the user is assigned, the user is nonetheless created but remains unassigned to any roles in FileNet Business Activity Monitor.
- Users that have been manually created in FileNet Business Activity Monitor can be assigned to any imported roles. However, imported users cannot be assigned to imported roles; such assignments must be made on the LDAP server.

Best practices

When setting up LDAP in FileNet Business Activity Monitor, it is strongly recommended you adhere to the following best practices:

- If the line between FileNet Business Activity Monitor and the LDAP server is not secure, use the SSL option.
- For authentication, SASL is the recommended method and is well supported by LDAP.
- For security reasons, the LDAP synchronization user, as described in [“Setting up LDAP synchronization” on page 78](#), should be given minimum permissions, limited to querying the LDAP server.

The password for this user is stored in the FileNet Business Activity Monitor metadata using *reversible* symmetric encryption. Therefore, anyone with access to the metadata could conceivably obtain this password.

NOTE: This is also another strong argument for securing the metadata database.

Setting up LDAP synchronization

This section describes the settings for scheduling the automatic synchronization of FileNet Business Activity Monitor with the LDAP server. During the synchronization process, FileNet Business Activity Monitor adds new roles to groups that appear on the LDAP server and removes any roles whose groups have been removed from the LDAP server.

NOTE: Users that have been added manually are not affected by synchronization, even if their roles have been removed from the LDAP server.

To set up LDAP synchronization:

1. Log into the FileNet BAM Workbench.
2. Open the Administration Console and click **System Settings**.
3. Open the LDAP Synchronization tab.

The screenshot shows the 'System Settings' dialog box with the 'LDAP Synchronization' tab selected. The 'LDAP Enabled' checkbox is checked. The 'Initial Context Factory' is set to 'com.sun.jndi.ldap.LdapCtx:Factory'. The 'LDAP Server' is 'sunone.yourdomain.com' and the 'LDAP Port' is '389'. The 'LDAP Use SSL' checkbox is unchecked. The 'LDAP Authentication' is set to 'CompareEncryptedPassword'. The 'LDAP Principal DN Prefix' is 'cn=' and the 'LDAP Principal DN Suffix' is ',ou=people,dc=viewceler,dc=com'. The 'LDAP Synchronon User DN' is 'cn=Directory Manager' and the 'LDAP Synchronization Password' is masked with asterisks. There are buttons for 'Test Connection' and 'Synchronize Now'. The 'LDAP Synchronization Schedule' table has one entry: 'At 1:00 AM daily'. There are buttons for 'Add Schedule...', 'Edit Schedule...', and 'Remove Schedule...'. The dialog has 'OK' and 'Cancel' buttons at the bottom.

4. Check the **LDAP Enabled** check box, if it is not checked already.
5. Configure the following settings:

Parameter	Value
Initial Context Factory	<p>The JNDI (Java Naming and Directory Interface) through which FileNet Business Activity Monitor connects to the LDAP server.</p> <p>The default is: com.sun.jndi.ldap.LdapCtxFactory</p> <p>Note: You will probably not need to change this value.</p>
LDAP Server	The DNS name or IP address of the LDAP server.
LDAP Port	<p>Port on which the LDAP server is running.</p> <p>The default is 389; however, if you select the SSL option below, the port value is likely to be 636, depending on your LDAP server configuration.</p>
LDAP SSL	<p>Check or uncheck.</p> <p>If checked, the LDAP server must be configured for SSL. Also, this may affect the LDAP port setting, as described above.</p>
LDAP Authentication	<p>There are three options:</p> <ul style="list-style-type: none"> • Simple • SASL (Simple Authentication and Security Layer) • Compare Encrypted Password <p>Note: Select SASL for SunOne and Microsoft Active Directory.</p>
LDAP Principal DN Prefix	cn=
LDAP Principal DN Suffix	<p>Refers to the DN suffix at the end of a distinguished name.</p> <p>For example:</p> <ul style="list-style-type: none"> • SunOne: ou=people,dc=yourdomain,dc=com • Active Directory: @your domain.com
LDAP Synchronization User	<p>Use the value appropriate to the indicated provider:</p> <ul style="list-style-type: none"> • SunOne: ,cn=Directory Manager • Active Directory: Administrator@your domain.com
LDAP Synchronization Password	Password for above user.

NOTE: The sample settings in the above table have been tested and used in successfully LDAP configurations.

6. After setting the parameters as desired, click **Test Connection**.

7. Set the LDAP Synchronization Schedule:

Use the **Add Schedule**, **Edit Schedule**, and **Remove Schedule** buttons to create the desired scheduled.

NOTE: It is recommended you set synchronization for a time when as few users as possible are likely to be logged on.

8. Click **OK** or click another tab to configure additional settings.

The LDAP synchronization settings are now complete. The next section describes the LDAP user mapping parameters.

Setting up LDAP user mapping

This section describes the user mapping parameters that determine which users will be imported and/or synchronized. The settings vary depending on the LDAP server provider being used.

To set the name mapping parameters:

1. In the **System Settings** dialog box, open the LDAP User Mapping tab.

User Interface		Logging Levels	
SMTP Configuration	Single Sign-On	System Control	Thread Configuration
Checkpoint Configuration	Execution Throttling	External Reports	LDAP Role Mapping
LDAP Synchronization	LDAP User Mapping	Logging	Memory Monitoring

LDAP User Base DN:

LDAP User Search Filter:

LDAP User LoginID:

LDAP User Full Name:

LDAP User Description:

LDAP User Primary Email:

LDAP User Encrypted Password:

2. Configure the following settings:

Parameter	Value
LDAP User Base DN	Use the format appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: OU=people,DC=yourdomain,DC=com • Active Directory: CN=Users,DC=yourdomain,DC=com
LDAP User Search Filter	Use the format appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: (&(objectclass=inetOrgPerson)) • Active Directory: (&(objectclass=user)) <p>For example, your LDAP server could have a special group for FileNet Business Activity Monitor users. This filter could then ensure that only users with this group membership were imported.</p>
LDAP User LoginID	Use the value appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: cn • Active Directory: sAMAccountName <p>This value will become the user's login ID in FileNet Business Activity Monitor.</p>
LDAP User Full Name	Enter "displayname" for both SunOne and Active Directory.
LDAP User Description	Enter "description" for both SunOne and Active Directory.
LDAP User PrimaryEmail	Enter "mail" for both SunOne and Active Directory.
LDAP User EncryptedPassword	Enter "userPassword" for both SunOne and Active Directory.

NOTE: The sample settings in the above table have been tested and used in successfully LDAP configurations.

3. Click **OK** or click another tab to configure additional settings.

Setting up LDAP role mapping

This section describes the role mapping parameters that determine which groups/roles will be imported and/or synchronized. The settings vary depending on the LDAP server provider being used.

To set the role mapping parameters:

1. In the **System Settings** dialog box, open the LDAP Role Mapping tab.

The screenshot shows the 'System Settings' dialog box with the 'LDAP Role Mapping' tab selected. The dialog has a title bar with 'System Settings' and 'Help'. Below the title bar is a navigation pane with several tabs: User Interface, Logging Levels, SMTP Configuration, Single Sign-On, System Control, Thread Configuration, LDAP Synchronization, LDAP User Mapping, Logging, Memory Monitoring, Checkpoint Configuration, Execution Throttling, External Reports, and LDAP Role Mapping. The 'LDAP Role Mapping' tab is active, showing the following configuration fields:

LDAP Role Base DN:	CN=Users,DC=viewceler,DC=com
LDAP Role Search Filter:	(&(objectclass=group))
LDAP Role LoginID:	sAMAccountName
LDAP Role Full Name:	displayname
LDAP Role Description:	description
LDAP Role Member:	member
LDAP Role Member Is:	Distinguished Name

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

2. Configure the following settings:

Parameter	Value
LDAP Role Base DN	Use the format appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: OU=Groups,DC=yourdomain,DC=com • Active Directory: CN=Users,DC=yourdomain,DC=com
LDAP Role Search Filter	Use the value appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: (&(objectclass=groupOfUniqueNames)) • Active Directory: (&(objectclass=group))
LDAP Role LoginID	Enter “cn” for both SunOne and Active Directory.
LDAP Role Full Name	Enter “displayname” for both SunOne and Active Directory.
LDAP Role Description	Enter “description” for both SunOne and Active Directory.
LDAP Role Member	Use the value appropriate to the indicated provider: <ul style="list-style-type: none"> • SunOne: uniqueMember • Active Directory: member
LDAP Role Member is:	Select one of the following options: <ul style="list-style-type: none"> • Distinguished Name, if the users are defined using a format such as “cn=jadmin,ou=people,dc=yourdomain,dc=com” • Login Id, if users are defined using a format such as “JoeAdmin@yourdomain.com”

NOTE: The sample settings in the above table have been tested and used in successfully LDAP configurations.

3. Click **OK** or click another tab to configure additional settings.

Manually synchronizing with the LDAP server

You can manually synchronize FileNet Business Activity Monitor with the LDAP server any time. Synchronization requests are queued to prevent concurrent synchronizations.

To manually synchronize:

1. Open the Administration Console and click **System Settings**.
2. Open the LDAP Synchronization tab.
3. Press the **Synchronize Now** button.

After a few moments, a message will indicate that the synchronization is complete.

Synchronize Now button

LDAP Principal DN Suffix: @viewceler.com

LDAP Synchronization User: mhandwerker

LDAP Synchronization Password: *****

Test Connection

Synchronize Now

LDAP Synchronization Schedule:

Description
Every 30 minutes between 12:00 AM and 11:30 PM daily

Add Schedule...

Edit Schedule...

Remove Schedule...

OK Cancel

4. Click **OK** or click another tab to configure additional settings.

Running the test-demo

The Test-Demo allows you to see some of the basic functionality of the FileNet Business Activity Monitor, and to confirm that it is installed correctly. The Test-Demo uses XML files to configure dashboards, scenarios, rules, and alerts, and to load data that simulates events entering the system. It will send alert notifications to you, and optionally send you email messages with information about detected events.

To prepare for running the test-Demo:

1. Configure the SMTP server settings per Step 6 on “[Configuring the FileNet Business Activity Monitor in FileNet BAM Workbench](#)” on page 74.
2. Put the Test-Demo files in a directory that is accessible to the browser that you are using to access the FileNet BAM Workbench.
 - For UNIX installations, either copy the files to a Windows location, or mount the UNIX location as a Windows connection.
3. Locate the directory where you installed the demo files during installation.

The recommended location is:

C:\FileNetBAM\Installer\Demo (Windows)
 ~/filenetbam/installer/Demo (UNIX)

The original samples are located on the product CD-ROM in this directory:

\\samples\installer\demo

You can now run the Test-Demo.

To run the Test-Demo:

1. Ensure that the FileNet Business Activity Monitor is running.
2. Open a browser window and log in to the FileNet BAM Workbench as the system user.
 http://filenetbam_host/filenetbam/workbench
3. On the Administration Console tab, click **Import/Export**.
4. Select **Import Metadata from Directory Server** and enter the full path to the latest subdirectory of the Demo directory. For example:
 C:\FileNetBAM\Installer\Demo_export.jar
5. Choose **OK** and wait for the import to complete.
6. Log out and re-log in to the FileNet BAM Workbench as user “Zaphod” with password “twoheads”:
 Username: **Zaphod**
 Password: **twoheads**
7. (optional) Change Zaphod’s delivery profile to send his e-mail to you. Doing so will allow you to test the e-mail delivery configuration.
8. Upload the event data into the **orderStatusEvent** event stream.
 - Open the **FileNet BAM Workbench** tab.
 - Open the **Events** folder in the Table and Views list.

- Select the orderStatusEvent event and then click the **Upload Event File** option. Upload the orderStatusData_fixed.txt file from the demo directory.

After the “File has been processed” prompt, the events will have been received and processed by the rules.

9. Log in to a FileNet BAM Dashboard and see two alert notifications:

- In a new browser window, log in to the FileNet BAM Dashboard as user “zaphod” with password “twoheads”:

`http://filenetbam_host/filenetbam/dashboard`

- Zaphod’s default dashboard shows two alert messages and a few charts associated with the dashboard. For details about an alert, click it directly.

10. If you changed zaphod’s email address in Step 7 above, you should also have received the alert notifications as email messages.

To remove the Test-Demo data and object definitions:

1. In the FileNet BAM Workbench, open the FileNet BAM Workbench:

- Delete the orderStatusEventIdentifier agent (choose to delete all dependencies when prompted).
- Delete the Zaphod user.

2. Open the Scenario Modeler and delete the Order Management business activity.

The Test-Demo data and objects are now removed from the installation.

Uninstall the FileNet Business Activity Monitor

Uninstalling the FileNet Business Activity Monitor involves removing the files installed with the application, dropping the metadata database, and removing the application server configuration settings.

In this Chapter:

[“Uninstalling on BEA WebLogic” on page 88](#)

[“Uninstalling on JBoss” on page 91](#)

Uninstalling on BEA WebLogic

This section describes how to uninstall from the BEA Weblogic application server.

To uninstall the FileNet Business Activity Monitor:

1. Start BEA WebLogic if it is not already running.
2. Run the Uninstaller application:

On Windows:

- Open the Windows Control Panel (**Start > Settings > Control Panel**).
- Choose **Add/Remove Programs**.
- Select FileNet Business Activity Monitor and click **Remove**.

On Solaris:

- Run the uninstaller:

```
./uninstaller$parc.bin
```

3. When the uninstaller loads, click **Next** to proceed from the Welcome page.
4. Complete the following settings in the Locate the WebLogic Application Services screen:

NOTE: These are the same settings you defined in “Installing and Deploying on BEA WebLogic” on page 19.

Setting	Your value
Host name Host server machine name as referenced in URLs, such as http:// myHost :7001/console.	<input type="text"/>
Port BEA WebLogic listening port, such as http://myHost:7001/console.	<input type="text"/>
User name BEA WebLogic administrator user name.	<input type="text"/>
Password BEA WebLogic administrator password.	<input type="text"/>

5. Click **Next** to proceed with the uninstall.

- In the Drop Metadata Database Tables screen, enter the same values you assigned in when installing and configuring.

Setting	Your value
Database vendor Choose the name of the vendor for your database.	<input data-bbox="734 516 1344 579" type="text" value=" <pick-from-list> "/>
Database instance name Instance name of the database.	<input data-bbox="734 659 1344 726" type="text"/>
Database server name Server hosting the database.	<input data-bbox="734 806 1344 873" type="text"/>
Database port Port number for connecting to the database.	<input data-bbox="734 953 1344 1020" type="text"/>
Database user name Username for connecting to the DBMS. Must have create and modify privileges for the metadata database.	<input data-bbox="734 1100 1344 1167" type="text"/>
Database password Password for the database username.	<input data-bbox="734 1247 1344 1314" type="text"/>

- Click **Next** to proceed.
- In the Uninstall FileNet Business Activity Monitor screen, click **Next** to uninstall the application.
- In the Uninstall Summary screen, click **Finish**.
- Restart the computer.
 Restarting is required to complete the uninstallation.
- Remove the application directory and all of its contents. The recommended location is:
 C:\FilenetBAM (Windows)
 ~/filenetbam (UNIX)
- Remove the FileNet Business Activity Monitor ear file.

13. (UNIX) Remove the installation directory and its contents:

```
rm -rf /opt/finenetbam/
```

Uninstalling on JBoss

To uninstall the FileNet Business Activity Monitor from a JBoss installation:

1. Stop the FileNet Business Activity Monitor.

Log into the FileNet BAM Workbench as a system administrator and stop the servers from the **Administration Console > System Settings dialog > System Control tab > Shutdown Now** command.

2. (Optional) Stop the JBoss application server.

3. Remove the application EAR file from the JBoss deploy directory.

.../jboss-3.2.6/server/default/deploy/FNBAM_<version>_jboss3.2.x.ear

4. Remove the source descriptors for the FileNet Business Activity Monitor database connection from the deploy directory.

There should be at least one file (celequest_metadata-ds.xml) for the metadata database, and optionally other files for context data databases.

5. Remove the application directory and all of its contents.

6. The recommended location is:

```
C:\FilenetBAM    << Windows
~/filenetbam    << UNIX
```

FileNet Business Activity Monitor Database Settings

The FileNet Business Activity Monitor uses a DBMS database to store the definitions of all objects in the FileNet Business Activity Monitor installation. It also stores the details of persisted runtime alerts and objects, which can use a significant amount of storage. As such, allocate at least 50 MB for the metadata database.

To access the database, FileNet Business Activity Monitor requires an account to use when connecting to the database. That account needs create, modify, and update privileges on the database.

NOTE: If you are using Sybase to manage the metadata database, you must allocate at least 50MB for the transaction log and configure the database to use “DDL in transaction”.

Connection pool settings

The FileNet Business Activity Monitor connects to the database via a database connection pool managed by the web application server. When installing the FileNet Business Activity Monitor, the procedures in [“Creating the JDBC metadata connection pool” on page 20](#) requires the following settings. Fill in these values and provide them to the person installing the FileNet Business Activity Monitor.

Setting	Your value
Host Host machine name used to connect to the DBMS.	<input type="text"/>
Port Port on the host machine name used to connect to the DBMS.	<input type="text"/>

Setting	Your value
User name Account use name that the application uses to connect to the DBMS.	<input type="text"/>
Password Password for the <username>.	<input type="text"/>
Database instance name (Sybase and SQL Server only) Name of the database to accommodate the FileNet Business Activity Monitor metadata.	<input type="text"/>
SID (Oracle only) Database instance identifier.	<input type="text"/>
Maximum capacity Maximum connections to maintain to the database. Do not set this value lower than 200 connections.	<input type="text" value="200"/>

Tools and Utilities

These tools and utility applications assist the installation and configuration process:

- [“cqinitmetadata.jar” on page 95](#) — Initializes a new, empty metadata database for the FileNet Business Activity Monitor.
- [“cqupgrade.jar” on page 98](#) — *Upgrades exported metadata files (.xml) to include the features required for the current product version.*

cqinitmetadata.jar

Initializes a new, empty metadata database for the FileNet Business Activity Monitor.

Syntax

```
java -cp cqinitmetadata.jar<sep><classpath>  
com.celequest.metadata.upgrade.Upgrade dbType jdbcURL  
[-l loggingDir] [-d jdbcDriver] [-u dbUser] [-p dbPasswd]
```

```
java -cp cqinitmetadata.jar<sep><classpath>  
com.celequest.metadata.upgrade.Upgrade dbType jdbcURL  
[-l loggingDir] [-d jdbcDriver] [-u dbUser] [-p dbPasswd]  
[-language LANGUAGE] [-country COUNTRY] [-localesort true|false]  
[- strength STRENGTH] [-decomposition DECOMPOSITION]
```

Parameters

- **sep** - Separator for your platform: semicolon (;) on Windows, colon (:) on UNIX. See the Examples section below.
- **classpath** - Java class path to the <jdbcDriver>.
- **dbType** - DBMS type: oracle, sqlserver, or db2.
- **jdbcURL** - JDBC URL that connects to the database being initialized. The URL contains all information for connecting to the database specific to the DBMS. See example below.
- **loggingDir** - (optional) Directory to write the log messages during initialization. Omit this option to suppress logging.
- **jdbcDriver** - (optional) JDBC driver class name to use instead of the default driver for the <dbType>. The driver must be in the Java classpath.

The default drivers are:

- **SQLSERVER** — com.microsoft.jdbc.sqlserver.SQLServerDriver
- **ORACLE** — oracle.jdbc.driver.OracleDriver
- **DB2** — COM.ibm.db2.jcc.Db2Driver
- **dbUser** - (optional) Database user account to use for creating the database. This account must have create and modify privileges on the database. Use this argument when you cannot include the name in the <jdbcURL>, such as on DB2.
- **dbPasswd** - (optional) Password for the <dbUser> account.
- **LANGUAGE** - (optional) The ISO language code for the server.
- **COUNTRY** - (optional) The ISO country code for the server.
- **LOCALESORT**- (optional) Set to true or false to indicate whether to perform locale sensitive string comparisons. (Default is false.)
- **STRENGTH** - (optional) Specifies the level of collation strength: identical, primary, secondary, or tertiary. (Default is tertiary.)

- DECOMPOSITION - (optional) Specifies one of the following collation decomposition modes: none, canonical, or full. (Default is canonical.)

Examples

Use these example URLs when using the default JDBC drivers. (The examples have line breaks to fit on this page; do not break them in practice.)

NOTE: Some command shells require special handling for some characters in the URL. For example, to pass an ampersand (&) in a Sybase URL from the Microsoft command line, enclose the URL in quotes.

- SQLServer

```
jdbc:microsoft:sqlserver://<host>:<port (probably 1433)>;
SelectMethod=cursor;databaseName=<dbname>;
user=<dbuser>;password=<dbpassword>
```

- Oracle (thin)

```
jdbc:oracle:thin:<dbuser>/<dbpassword>@<host>:
<port (probably 1521)>:<sid (probably orcl)>
```

- Oracle (OCI)

```
jdbc:oracle:oci:<dbuser>/<dbpassword>@<service>
```

- DB2

```
jdbc:db2://<host>:<port (probably 5000)>/<dbname>
```

Location

This utility is located on the product CD-ROM at:

```
/FileNetBAM/CQInitMetadata/cqinitmetadata.jar
```

Usage

Requires Java and a JDBC driver appropriate to the target DBMS. This utility and the JDBC driver must both be in the Java classpath.

The database user account <dbuser> must have create and modify privileges for the metadata database.

Examples

These example has line breaks to fit on this page; do not break the actual command. Also, the class path arguments (-cp) need to be separated with either a colon (:) for UNIX or a semi-colon (;) for Windows.

- Initialize an SQLServer detectable using mssqlserver.jar in the current directory as the JDBC driver on Windows:

```
java -cp cqinitmetadata.jar;msutil.jar;msbase.jar;mssqlserver.jar
com.celequest.metadata.upgrade.Upgrade SQLSERVER "jdbc:microsoft:sqlserver://
puck:1433;SelectMethod=cursor;
databaseName=cqstmeta;user=skyleer;password=teacup"
```

- Initialize a DB2 detectable using DB2Driver.jar in db2jcc.zip as the JDBC driver on UNIX:

```
java -cp cqinitmetadata.jar:/opt/usrl/db2admin/java12/db2jcc.zip
com.celequest.metadata.upgrade.Upgrade DB2
```

```
jdbc:db2://snug:5000/cqmetadb -u skyler -p teacup
```

cqupgrade.jar

Upgrades exported metadata files (.xml) to include the features required for the current product version.

Syntax

This utility has three forms:

```
java -jar cqupgrade.jar -i inFile.xml [-o outFile.xml]
java -jar cqupgrade.jar -i inDirectory [-o outDirectory]
java -jar cqupgrade.jar -version
```

Parameters

- `inFile.xml` - Upgrades the named metadata file.
- `inDirectory` - Upgrades all files in the named directory, and in all subdirectories of that directory.
- `outDirectory` - (optional) Places the upgraded files in the named directory, in their original directory structure. Omit this option to upgrade the files in place: replaces the original files with the upgraded ones.
- `outFile.xml` - (optional) Name and location for the upgraded file. Omit this option to upgrade the file in place: replaces the original file with the upgraded one.

NOTE: Be careful about changing filenames because system files must have their original name.

- `version` - Prints the cqupgrade utility version.

NOTE: This version does not correspond to the FileNet Business Activity Monitor version.

Location

This utility is located on the product CD-ROM at:

```
/FileNetBAM/CQUpgrade/cqupgrade.jar
```

Usage

Upgrade metadata XML files that were exported from FileNet Business Activity Monitor using the Administration Console in the FileNet BAM Workbench. Later, you can use the same interface to import the metadata into the more recent FileNet Business Activity Monitor release.

If a file was created from a very old version of FileNet Business Activity Monitor, it might not be upgradeable. In that case, the utility will generate the error message “Error parsing input file” and list the file.

NOTE: You can also receive this error if the file is damaged. Contact FileNet Corporation for assistance.

Examples

To upgrade in place, all of the metadata files in the current directory and in subdirectories of the current directory:

```
java -jar cqupgrade.jar -i .
```

This example upgrades all of the files in the User directory, where User is a subdirectory of the current directory:

```
java -jar cqupgrade.jar -i .\User\
```

This example uses a user definition as the source, upgrades it, and creates a new file called NewUser.xml:

```
java -jar cqupgrade.jar -i .\User\Skyler.xml -o .\User\NewUser.xml
```

Appendix: File Samples

This appendix contains complete copies of files used in the process of installing and configuring FileNet Business Activity Monitor, including:

[“celequest_metadata-ds.xml”](#) on page 101

[“celequest_context-ds.xml”](#) on page 101

[“typemappings_mssqlserver.xml”](#) on page 102

[“typemappings_oracle.xml”](#) on page 103

[“typemappings_db2.xml”](#) on page 104

[“typemappings_derby.xml”](#) on page 105

celequest_metadata-ds.xml

This file is part of the JBoss configuration, as described in [“Configuring JBoss” on page 29](#). An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <local-tx-datasource>
<jndi-name>com.celequest.metadata.metaDataSource</jndi-name>

    <connection-url><!--Insert jdbcURL --></connection-url>
    <driver-class><!--Insert jdbcDriver --></driver-class>

    <!-- The login and password -->
    <user-name><!--Insert dbUsername --></user-name>
    <password><!--Insert dbPassword --></password>

    <min-pool-size>5</min-pool-size>
    <max-pool-size>20</max-pool-size>
    <idle-timeout-minutes>5</idle-timeout-minutes>
    <track-statements>false</track-statements>
    <application-managed-security/>

  </local-tx-datasource>
</datasources>
```

celequest_context-ds.xml

This file is part of the JBoss configuration, as described in [“Configuring JBoss” on page 29](#). An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM.

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <no-tx-datasource>
    <jndi-name><!--Insert jndiName --></jndi-name>

    <connection-url><!--Insert jdbcURL --></connection-url>
    <driver-class><!--Insert jdbcDriver --></driver-class>

    <!-- The login and password -->
    <user-name><!--Insert dbUsername --></user-name>
    <password><!--Insert dbPassword --></password>

    <min-pool-size>5</min-pool-size>
    <max-pool-size>20</max-pool-size>
    <idle-timeout-minutes>5</idle-timeout-minutes>
    <track-statements>false</track-statements>
    <application-managed-security/>
  </no-tx-datasource>
</datasources>
```

typemappings_mssqlserver.xml

This portion of a file is part of the JBoss configuration, as described in “[Configuring JBoss](#)” on page 29. An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM.

```
<type-mapping>
<name>MS SQLSERVER</name>
...
<!-- Celequest Type mapping -->
<mapping>
<java-type>com.celequest.jar.Jar</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertFiring</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertAck</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.alert.AlertInstance</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.metadata.ejb.BigString</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.util.misc.SerializableWrapper</java-type>
<jdbc-type>VARBINARY</jdbc-type>
<sql-type>IMAGE</sql-type>
</mapping>
```

typemappings_oracle.xml

This portion of a file is part of the JBoss configuration, as described in “[Configuring JBoss](#)” on page 29. An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM.

```
<type-mapping>
<name>Oracle 9i</name>
...
<!-- Celequest Type mapping -->
<mapping>
<java-type>com.celequest.metadata.ejb.BigString</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.jar.Jar</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertFiring</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertAck</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertInstance</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.util.misc.SerializableWrapper</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
```

typemappings_db2.xml

This portion of a file is part of the JBoss configuration, as described in “[Configuring JBoss](#)” on page 29. An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM.

```
<type-mapping>
<name>DB2</name>
...
<!-- Celequest Type mapping -->
<mapping>
  <java-type>com.celequest.metadata.ejb.BigString</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.jar.Jar</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.alert.AlertFiring</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.alert.AlertAck</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.alert.AlertInstance</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
<mapping>
  <java-type>com.celequest.util.misc.SerializableWrapper</java-type>
  <jdbc-type>VARBINARY</jdbc-type>
  <sql-type>BLOB (1G) </sql-type>
</mapping>
```

typemappings_derby.xml

This portion of a file is part of the JBoss configuration, as described in “[Configuring JBoss](#)” on page 29. An electronic copy is available in the `/samples/jboss` directory on the FileNet Business Activity Monitor product CD-ROM.

```
<type-mapping>
<name>Derby</name>
...
<!-- Celequest Type mapping -->
<mapping>
<java-type>com.celequest.metadata.ejb.BigString</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.jar.Jar</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertFiring</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertAck</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.alert.AlertInstance</java-type>
<jdbc-type>BLOB</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
<mapping>
<java-type>com.celequest.util.misc.SerializableWrapper</java-type>
<jdbc-type>LONGVARBINARY</jdbc-type>
<sql-type>BLOB</sql-type>
</mapping>
```

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