Installing and Deploying LiveCycle® ES for JBoss®

Adobe® LiveCycle ES

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Adobe® LiveCycle® ES (8.0) Installing and Deploying LiveCycle ES for Microsoft® Windows®, UNIX®, and Linux
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Contents

About This Document

This guide is one of several resources available to help you learn about Adobe® LiveCycle® ES (Enterprise Suite). LiveCycle ES is a flexible, extensible platform that helps automate and accelerate the flow of business-critical information to and from customers, partners, constituents, and employees.

What's in this document?

This guide provides information about how to install and configure the following solution components on Microsoft® Windows® and Linux® and how to deploy the solution components to JBoss® Application Server:

- Adobe LiveCycle Barcoded Forms ES
- Adobe LiveCycle Business Activity Monitoring ES
- Adobe LiveCycle ES Connector for EMC Documentum
- Adobe LiveCycle ES Connector for IBM FileNet
- Adobe LiveCycle Digital Signatures ES
- Adobe LiveCycle Forms ES
- Adobe LiveCycle Foundation
- Adobe LiveCycle Output ES
- Adobe LiveCycle PDF Generator ES
- Adobe LiveCycle Process Management ES
- Adobe LiveCycle Reader Extensions ES
- Adobe LiveCycle Rights Management ES

Who should read this document?

This guide provides information for administrators or developers responsible for installing, configuring, administering, or deploying LiveCycle ES components. The information provided is based on the assumption that anyone reading this guide is familiar with J2EE application servers, Linux and Microsoft Windows operating systems, MySQL, Oracle®, DB2®, or SQL Server database servers, and web environments.

Conventions used in this document

This guide uses the following naming conventions for common file paths.

Name	Default value	Description
[LiveCycleES root]	Windows: C:\Adobe\LiveCycle8\ Linux: /opt/adobe/livecycle8/	The installation directory that is used for all LiveCycle ES solution components. The installation directory contains subdirectories forAdobe LiveCycle Configuration Manager, the LiveCycle ES SDK, and each LiveCycle ES solution component installed (along with the product documentation). This directory also includes directories relating to third-party technologies.
[appserver root]	The home directory of the application server that runs the LiveCycle ES services.	JBoss Application Server on Windows: C:\jboss JBoss Application Server on Linux: /opt/jboss
[dbserver root]	The location where the LiveCycle ES database server is installed.	Depends on the database type and your specification during installation.

Most of the information about directory locations in this guide is cross-platform (all file names and paths are case-sensitive on Linux). Any platform-specific information is indicated as required.

Additional information

The resources in this table can help you learn more about LiveCycle ES.

For information about	See
General information about LiveCycle ES and the solution components	*LiveCycle ES Overview* at www.adobe.com/go/learn_lc_overview
What's new in the Adobe LiveCycle ES (Enterprise Suite) release	www.adobe.com/go/learn_lc_whatsNew
LiveCycle ES terminology	www.adobe.com/go/learn_lc_glossary
Other services and products that integrate with LiveCycle ES	www.adobe.com/products/livecycle
Other Adobe LiveCycle ES solution components	partners.adobe.com/public/developer/main.html
Installing Adobe LiveCycle Workbench ES	*Installing Your Development Environment* at www.adobe.com/go/learn_lc_installWorkbench

For information about	See
Upgrading to LiveCycle ES from a previous version.	*Preparing for Upgrading to LiveCycle ES* at www.adobe.com/go/learn_lc_upgradePreparation *Upgrading to LiveCycle ES for JBoss* at www.adobe.com/go/learn_lc_upgradeJBoss
Performing administrative tasks for LiveCycle ES	*Administering LiveCycle ES* at www.adobe.com/go/learn_lc_administration
All the documentation available for LiveCycle ES	www.adobe.com/go/learn_lc_documentation
LiveCycle ES release information and last-minute changes that occur to the product	www.adobe.com/go/learn_lc_releaseNotes
Patch updates, technical notes, and additional information about this product version	www.adobe.com/support/products/enterprise/index.html

1 Introduction

This chapter provides information to help you understand the type of installation and deployment you should perform, and information that will help you understand the installation, configuration and deployment process:

For information about preparing your system for installing LiveCycle ES, including system requirements, see the *Preparing to Install LiveCycle ES* guide.

About the installation, configuration, and deployment process

Installing, configuring, and deploying LiveCycle ES involves the following processes:

Installing: You install LiveCycle ES by running the installation program. Installing LiveCycle ES places all of the required files onto your computer, within one installation directory structure. The default installation directory is C:\Adobe\LiveCycle8 (Windows) or /opt/adobe/LiveCycle8 (Linux); however, you can install the files to a different directory. In this guide, the default installation directory is referred to as *[LiveCycleES root]*. (See "Installing the Solution Component Files" on page 11.)

Configuring and assembling: Configuring LiveCycle ES modifies a variety of settings that determine how LiveCycle ES works. Assembling the product places all of the installed components into several deployable EAR and JAR files, according to your configuration instructions. You configure and assemble the components for deployment by running LiveCycle Configuration Manager. (See "Configuring LiveCycle ES for Deployment" on page 15.) You can configure and assemble multiple LiveCycle ES solution components at the same time.

Deploying: Deploying the product involves deploying the assembled EAR files and supporting files to the JBoss Application Server on which you plan to run your LiveCycle ES solution. If you have configured and assembled multiple solution components, the deployable components are packaged within the deployable EAR files. Components and LiveCycle ES archive files (LCAs) are packaged as JAR files.

Initializing the LiveCycle ES database: Initializing the database to be used with LiveCycle ES creates tables for use with Adobe User Management and other components. Deploying any solution component that connects to the LiveCycle ES database requires you to initialize the LiveCycle ES database after the deployment process. (See "Configuration tasks" on page 15.)

Selecting tasks for configuring and deploying LiveCycle ES

After you perform an installation, you can run LiveCycle Configuration Manager to perform a variety of tasks:

- Configure LiveCycle ES solution components in an EAR file for deploying to the application server
- Deploy LiveCycle ES EAR files
- Initialize the LiveCycle ES database
- Deploy LiveCycle ES component deployment
- Validate the LiveCycle ES component deployment
- Configure the LiveCycle Reader Extensions ES Rights credential
- Import the LiveCycle ES Samples

If you install Reader Extensions ES, you can also specify and import the Reader Extensions ES Rights credential required for applying usage rights to PDF documents.

If you want to perform a turnkey installation and deployment (installs, configures, and deploys LiveCycle ES along with JBoss and MySQL), see *Installing and Deploying LiveCycle ES for JBoss Using Turnkey*.

Upgrading to LiveCycle ES

Before installing LiveCycle ES for upgrading from LiveCycle 7.x and later, ensure that you have completed the tasks described in *Preparing to Upgrade to LiveCycle ES* at www.adobe.com/go/learn_lc_upgradePreparation.

Installation and deployment list

The following list includes the steps required for installing LiveCycle ES using the manual method. Your application server must be installed and configured before you perform the installation.

- Ensure that you have the required software installed and configured in the target environment. For more information, see *Preparing to Install LiveCycle ES* at www.adobe.com/go/learn_lc_prepareInstall.
- Run the installation program. (See "Installing the Solution Component Files" on page 11.)
- Run LiveCycle Configuration Manager and select the Configure LiveCycle ES EARs task. This step will configure and assemble LiveCycle ES. For more information, see "Configuring LiveCycle ES for Deployment" on page 15.
- Deploy the EAR files to the application server. You can do this manually or use LiveCycle Configuration Manager. (See "Deploying LiveCycle ES to JBoss Application Server" on page 19.)
- Run LiveCycle Configuration Manager to deploy LiveCycle ES component files, and optionally deploy product samples. (See "Configuring LiveCycle ES for Deployment" on page 15.)

- Access LiveCycle Administration Console and User Management. (See "Accessing LiveCycle Administration Console" on page 22.)
- Configure LDAP access. (See "Configuring LiveCycle ES to access LDAP" on page 25.)

If you want to perform a Turnkey installation and deployment (install, configure, and deploy LiveCycle ES along with JBoss and MySQL), see *Installing and Deploying LiveCycle ES for JBoss Using Turnkey*.

2 Installing the Solution Component Files

This chapter describes how to use the installation program to install LiveCycle ES on a Windows or Linux operating system.

Before you install the solution components, you must ensure that your environment includes the software and hardware required to run LiveCycle ES. You should also understand the installation options and have prepared the environment as required. (See *Preparing to Install LiveCycle ES*.)

This chapter covers the following topics:

Installing the product files

When you run an installation program, you need the following information:

- The serial number for the solution components you are installing
- The type of installation and configuration you are performing (See "Configuring JBoss Application Server" in *Preparing to Install LiveCycle ES* at http://www.adobe.com/go/learn_lc_prepareInstall.)

Note: To successfully install, you need read and write permissions for the installation directory. The following installation directories are the defaults; however, you can specify a different directory as required:

- (Windows) C:\Adobe\LiveCycle8\
- (Linux) /opt/adobe/livecycle8/

When installing on Linux, the installation program uses the logged-in user's home directory as a temporary directory for storing files. As a result, messages such as the following text may appear in the console:

```
WARNING: could not delete temporary file /home/<username>/ismp001/1556006
```

When you complete the installation, you must manually delete the temporary files.

Caution: Ensure that the temporary directory for your operating system meets the minimum requirements as outlined in *Preparing to Install LiveCycle*. The temporary directory is one of the following locations:

- (Windows) TMP or TEMP path as set in the environment variables
- (Linux) Logged-in user's home directory

The InstallShield command line parameter `-is:tempdir` is not supported with the LiveCycle ES installer. To work around this limitation, use the `TMP` environment variable to point to a disk that has the required amount of free space.

On Linux systems, you can install, configure, and deploy as a non-root user:

Note: When you are installing the solution components on a Linux operating system, you must be logged in as the root user to successfully install the solution components to the default location, which is /opt/adobe/LiveCycle8/. If you are logged in as a non-root user, you must change the installation directory to one for which you have permissions (read-write-execute privileges). For example, you could change the directory to home/adobe/livecycle8.

Installing to a Windows staging platform for deployment on Linux

LiveCycle ES can be installed and configured on Windows for deployment on a Linux platform. You can use this functionality for installing to a locked-down Linux environment. For example, a locked-down environment would not have XWindows installed. When you run the installation program on Windows, you can choose a Linux operating system as the target platform for deploying LiveCycle ES. The installation program installs binaries for Linux that are also used by LiveCycle Configuration Manager when you configure the product.

The Windows computer can then be used as a staging location for the deployable objects, which can be copied to a Linux computer for deployment to the application server. The application server that you are targeting must be consistent with what you choose during installation and configuration regardless of the operating system.

Note: If your installation includes LiveCycle PDF Generator ES and you will use the native application conversion feature, the host and target operating system must be Windows.

Installing LiveCycle ES

This section covers the initial installation of LiveCycle ES. For information about configuration and deployment, see "Configuring LiveCycle ES for Deployment" on page 15.

Note: To avoid permission issues during the deployment, ensure that you are logged in as the user who will run the JBoss process when you run the LiveCycle ES installer and LiveCycle Configuration Manager.

➤ **To install LiveCycle ES:**

1. Navigate to the /livecycle_server/8.0 directory of the installation media.
2. Start the installation program:
   - (Windows) Double-click the win_livecycle8_setup.exe file.
   - (Linux) From a command prompt, type the following command :

     ```
     ./linux_livecycle8_setup.bin
     ```
3. When prompted, select the language for the installation to use, and then click **OK**.
4. On the Welcome screen, click **Next**.
5. On the Destination screen, accept the default directory as listed or click **Browse** and navigate to the directory where you want to install the solution component, and then click **Next**.

   Note: If you type in the name of a directory that does not exist, it will be created for you.

Caution: When you install the solution component, you can specify a different installation location. If you are installing on Linux, the directory you specify should not contain any spaces; if it does, the installation program does not install the solution component.

6. Type a serial number in the text box and click **Add**. If you have licensed multiple solution components, repeat this step for each serial number you have. After you add all the serial numbers to the list, click **Next**.

   Tip: To reset the serial number, click **Clear**.

7. On the Type of Installation screen, select **Manual** and click **Next**.

   Note: If you want to perform a turnkey installation, you can select **Configure and Deploy Automatically**. The turnkey method of installation is not described in this document. For information, see *Installing and Deploying LiveCycle ES for JBoss Using Turnkey*.

8. Read the Product License Agreement. If you agree, select **I accept to the terms of the license agreement**, and then click **Next**.

9. ***(Windows staging only)*** Select the operating system for which you plan to configure LiveCycle ES and click **Next.**

   Note: At this point, you can specify to use Windows as a staging platform for your deployment. You can select Linux or a UNIX operating system as the target for deployment even if you are installing on Windows. For more details see "Installing to a Windows staging platform for deployment on Linux" on page 12.

10. ***(PDF Generator ES for Windows only)*** Select the appropriate option on the PDF Generator ES screen:

    - If you select **Yes, enable native application support for PDF Generator ES**, the software will check the version of Adobe Acrobat® you have installed. If you do not have Acrobat installed, accept the prompt to install Acrobat 8.1 now.

      If you have an unsupported version of Acrobat installed, complete the LiveCycle ES installation, uninstall Acrobat, and then install Acrobat 8.1 from the LiveCycle ES installation media by following the instructions in the procedure "Configuring Acrobat 8.1 for PDF Generator ES" on page 21.

    - If you are installing in a clustered environment, select **No, do not enable native application support for PDF Generator ES** and then go to step 12.

11. ***(PDF Generator ES for Windows only)*** Confirm that you have Acrobat installed and click **Next.**

12. Review the installation details and click **Install**. The installation program displays the progress of the installation. A summary screen appears when the solution component installation is completed.

13. Review the release notes that are displayed and click **Next**.

14. Select **Start LiveCycle Configuration Manager** and then click **Finish**.

Note: Selecting the Start option starts LiveCycle Configuration Manager, allowing you to complete your configuration and deployment immediately. If you are not ready to run LiveCycle Configuration Manager immediately, ensure that **Start LiveCycle Configuration Manager** is not selected when you click **Finish**. You can start LiveCycle Configuration Manager later, when you are ready. (See "Running LiveCycle Configuration Manager to configure and deploy LiveCycle ES" on page 16.)

When you are ready to proceed with the configuration and deployment, see "Configuring LiveCycle ES for Deployment" on page 15.

Note: ***(PDF Generator ES for Windows only)*** If you did not choose to install Acrobat 8.1 using the LiveCycle ES installer, you must complete the steps listed in "Configuring Acrobat 8.1 for PDF Generator ES" on page 21.

Viewing the error log

If any errors occur during the installation, the installation program creates a log file called log.txt, which contains the error messages. The log file is located in the *[LiveCycleES root]* directory.

For information about errors that may occur during installation, see "Troubleshooting" on page 56.

Next steps

You must now configure LiveCycle ES for deployment. (See "Configuring LiveCycle ES for Deployment" on page 15.)

3 Configuring LiveCycle ES for Deployment

This chapter describes how to use LiveCycle Configuration Manager to perform any of the following tasks:

- Configure LiveCycle ES solution components in an EAR file for deploying to the application server
- Deploy LiveCycle ES EAR files
- Initialize the LiveCycle ES database
- Deploy LiveCycle ES components
- Validate the LiveCycle ES component deployment
- Configure the LiveCycle Reader Extensions ES Rights credential
- Import the LiveCycle ES Samples

This chapter contains the following sections:

This chapter assumes that you have prepared your environment for hosting LiveCycle ES and installed the solution component files. If you have not done this, see the *Preparing to Install LiveCycle ES* guide and "Installing the Solution Component Files" on page 11.

About LiveCycle Configuration Manager

LiveCycle Configuration Manager is a wizard-like tool used to configure, deploy and validate LiveCycle ES components for deployment to the application server. LiveCycle Configuration Manager is installed with the solution component files when you run the LiveCycle ES installation program. When you run LiveCycle Configuration Manager, you specify the LiveCycle ES solution components you are configuring, as well as the tasks you want LiveCycle Configuration Manager to perform.

You can start LiveCycle Configuration Manager from the installation program to configure solution components during the installation process, or you can start LiveCycle Configuration Manager any time after the installation.

Configuration tasks

To manually configure the application server and deploy the EAR files, you perform the following tasks:

1. Run LiveCycle Configuration Manager and select the task to configure and assemble LiveCycle ES solution component properties and assemble them into EAR files for deploying to the application server.

2. Deploy the LiveCycle ES EAR files by following the instructions in this document. (See "Deploying to JBoss Application Server" on page 20.)

3. Run LiveCycle Configuration Manager and select the tasks to initialize the database, deploy components and archives, and validate component and archive deployment.

4. Verify that the deployed LiveCycle ES services and solution components are available and operational by logging in to LiveCycle Administration Console.

Running LiveCycle Configuration Manager to configure and deploy LiveCycle ES

When you run LiveCycle Configuration Manager, you can select the tasks that you want the program to perform automatically.

Tip: LiveCycle Configuration Manager verifies the values that are specified on each screen when you click Next. If it cannot validate a value, a warning appears, the property on the screen turns red, and you cannot proceed until you enter a valid value.

When LiveCycle Configuration Manager completes the configuration, it places the files to be deployed to the application server (adobe-livecycle-native-*[OS]*.ear, adobe-livecycle.ear, and adobe-workspace-client.ear) in the following directory:

- (Windows) *[LiveCycleES root]*\configurationManager\export
- (Linux) *[LiveCycleES root]*/configurationManager/export

If you plan to manually deploy LiveCycle ES to the application server, you can find the files in the appropriate directory.

➤ **To perform configuration or deployment tasks using LiveCycle Configuration Manager:**

1. Start the application server.
2. Start LiveCycle Configuration Manager by navigating to the *[LiveCycleES root]*/configurationManager/bin directory and entering the following command:
   - (Windows) `ConfigurationManager.bat`
   - (Linux) `./ConfigurationManager.sh`
3. On the Welcome screen, click **Next**.
4. On the Upgrade Selection screen, ensure that **Upgrade LiveCycle 7.x** is not selected, and then click **Next**.
5. On the Solution Component screen, select the LiveCycle ES solution components to configure and deploy and click **Next**.
6. On the Task Selection screen, select all the tasks you want to perform and click **Next**.

   Note: If you do not want to deploy LiveCycle ES using LiveCycle Configuration Manager, select the **Configure LiveCycle ES** task only. After completing this task in LiveCycle Configuration Manager, deploy the configured EAR files by following the instructions in "Deploying to JBoss Application Server" on page 20. Then, return to LiveCycle Configuration Manager to initialize the database, and deploy and validate the component files. (See"Next steps" on page 18.)

Caution: Do not import the LiveCycle ES Samples if you are doing either of the following tasks:

- If you are deploying LiveCycle ES to a production system. Importing the samples creates users with default passwords, which may be a security concern for your production environment.
- If you are deploying either the Connector for EMC Documentum service or the Connector for IBM FileNet service and you want to import LiveCycle ES Samples into the Documentum repository or FileNet object store, you need to skip this step. You can import the samples after you configure, enable, and activate the ECM to be the repository provider using LiveCycle Administration Console. For more information, see "Configuring the Connector for EMC Documentum service" on page 27 or "Configuring the Connector for IBM FileNet service" on page 30.

7. Follow the instructions on the LiveCycle Configuration Manager screens. For more information about the content or input required for any screen, press the F1 key on your keyboard to view Help for that screen.

Note: LiveCycle Configuration Manager requires you to enter the IP address, or qualified host name, of the server running the application server. The default value of `localhost` will not work.

During configuration, you are required to provide the location of the JDBC drivers for your database. The sections that follow provide the location of these drivers. The Oracle, DB2, and MySQL drivers are in the *[LiveCycleES root]*/lib/db/*[database]* directory. If you have not already done so, install the SQL Server database driver.

➤ **To install the SQL Server database driver:**

1. Download the SQL Server 2005 JDBC 1.1 database driver from the Microsoft website.
2. (Windows) Run the file. Extract the files to a temporary directory (referred to as the *[SQL_root]* directory in the remainder of this section).
3. (Linux) Extract the *.tar.gz files to a temporary directory (referred to as the *[SQL_root]* directory in the remainder of this section). The JDBC driver file is *[SQL_root]*/sqljdbc_1.1/enu/sqljdbc.jar.

Saving configurations in LiveCycle Configuration Manager

If you have set a series of configuration options in LiveCycle Configuration Manager, you can save the configuration information so that if you run LiveCycle Configuration Manager again, you can use the same configuration settings. When you run LiveCycle Configuration Manager again, you can select the saved configuration and fields will be populated with the saved information.

Configuration information is saved with the .properties file name extension.

You can use LiveCycle Configuration Manager to revert all the current values back to the default values.

➤ **To save a configuration:**

1. In LiveCycle Configuration Manager, select **Display Menu** at the bottom of the screen.
2. Select **Configurations** > **Save As**.
3. Navigate to the directory where you want to save your configuration, type a name for the configuration, and click **Save**.

➤ **To open a saved configuration:**

1. In LiveCycle Configuration Manager, select **Display Menu** at the bottom of the window, if it is not already selected.
2. Select **Configurations** > **Open**.
3. Select the configuration you want to use and click **Open**.

➤ **To revert to default values:**

1. In LiveCycle Configuration Manager, select **Display Menu** at the bottom of the window, if it is not already selected.
2. Select **Configurations** > **Reset to Defaults**.

Next steps

If you used LiveCycle Configuration Manager to configure and deploy LiveCycle ES, you can now do the following tasks:

- Verify the deployment. (See "Final setup for LiveCycle Rights Management ES" on page 22.)
- Access LiveCycle Administration Console. (See "Accessing LiveCycle Administration Console" on page 22.)
- Configure LiveCycle solution components to access LDAP. (See "Configuring LiveCycle ES to access LDAP" on page 25.)
- Uninstall LiveCycle ES. (See "Uninstalling LiveCycle ES" on page 33.)

4 Deploying LiveCycle ES to JBoss Application Server

This chapter describes how to deploy LiveCycle ES to JBoss Application Server:

About deploying LiveCycle ES solution components

Before you deploy LiveCycle ES, ensure that you have performed these tasks:

- Installed the required software and files, and know the location of the directories you will be working with. If you have not completed this task, see *Preparing to Install LiveCycle ES*, at http://www.adobe.com/go/learn_lc_prepareInstall.
- Run LiveCycle Configuration Manager to configure and assemble LiveCycle ES solution components according to your system and application server requirements. If you need to add a solution component to your deployment, you can run LiveCycle Configuration Manager to make the changes and then redeploy the updated EAR file.

If you are deploying LiveCycle ES for the first time, you must initialize LiveCycle ES by using LiveCycle Configuration Manager after you deploy the product.

If you are using an external web server, see your web server documentation for information about the configuration that is required to allow access to the application server.

Summary of deployable components

During the deployment process, you need to deploy the following components for LiveCycle ES:

- adobe-livecycle-native-jboss-*[OS]*.ear
- adobe-livecycle-jboss.ear
- adobe-workspace-client.ear (LiveCycle Process Management ES only)

After LiveCycle ES is configured with LiveCycle Configuration Manager (required), these files are located in the *[LiveCycleES root]*/configurationManager/export/directory.

Deploying to JBoss Application Server

You deploy LiveCycle ES solution components to JBoss Application Server by copying the deployable components to the deploy directory. JBoss Application Server can be running or stopped when you copy the files to the directory. After you copy the files, you must start or restart the server to ensure that the services start correctly.

➤ **To deploy LiveCycle ES solution components to JBoss Application Server:**

- Copy the following files from the *[LiveCycleES root]*/configurationManager/export directory to the [*appserver root*]/server/all/deploy directory:
  - adobe-livecycle-native-jboss-*[OS]*.ear
  - adobe-livecycle-jboss.ear
  - adobe-workspace-client.ear (LiveCycle Process Management ES only)

Next steps

You must run LiveCycle Configuration Manager to initialize the database, and deploy the components and LiveCycle ES archive files (LCAs). You can also choose to validate the components and LCA deployment. (See "Running LiveCycle Configuration Manager to configure and deploy LiveCycle ES" on page 16.)

5 Post-Deployment Activities

This chapter describes how to verify the deployment by accessing LiveCycle Administration Console and checking the application server log files. It also describes how to get started using LiveCycle ES solution components and services after they have been installed, configured, and deployed to your application server:

After you have configured the settings in this chapter, for additional information about configuring your LiveCycle ES environment for development and production, see *Administering LiveCycle ES* at help.adobe.com/en_US/livecycle/es/admin_guide.pdf.

Configuring Acrobat 8.1 for PDF Generator ES

Note: This functionality is only supported on the Windows platform.

If you did not choose to install Acrobat 8.1 using the LiveCycle ES installer, the following procedure needs to be completed to set up Acrobat 8.1 for use with PDF Generator ES.

➤ **To configure Acrobat 8.1 for use with PDF Generator ES:**

1. If a previous version (8.0 or earlier) of Acrobat is installed, uninstall it using Add or Remove Programs in the Windows Control Panel.
2. Navigate to one of the following folders on the LiveCycle ES installation media:
   - additional\acrobat\efg\
   - additional\acrobat\jpn\
3. Install Acrobat 8.1 by running the AutoPlay.exe file.
4. Navigate to the additional\scripts folder on the LiveCycle ES installation media.
5. Run the following batch file:

```
Acrobat_for_PDFG_Configuration.bat [LiveCycleES root]
```

➤ **To validate the Acrobat 8.1 installation:**

1. Navigate to a PDF file on your system and double-click it to open it in Acrobat.
2. If the PDF file opens successfully, Acrobat 8.1 is installed correctly. If the PDF fails to open correctly, uninstall Acrobat and reinstall it.

Note: Ensure that you dismiss all the Acrobat dialog boxes that are displayed after Acrobat installation is complete, and disable the automatic updates for Acrobat.

Set the environment variable, `Acrobat_PATH` to point to Acrobat.exe (for example, C:\Program Files\Adobe\Acrobat 8.0\Acrobat\Acrobat.exe.

Final setup for LiveCycle Rights Management ES

LiveCycle Rights Management ES requires the application server to be configured to use SSL. For the configuration instructions, see *Administering LiveCycle ES* at help.adobe.com/en_US/livecycle/es/admin_guide.pdf.

Verifying the deployment and accessing LiveCycle Administration Console

You can verify the deployment by logging in to LiveCycle Administration Console. If you cannot log in, LiveCycle ES is running on the application server and the default user has been created in the database.

You can review the application server log files to ensure that components were deployed correctly or to determine the cause of any deployment issues you may encounter.

Accessing LiveCycle Administration Console

LiveCycle Administration Console is the web-based portal for accessing a variety of configuration pages that let you set run-time properties that control the way LiveCycle ES operates. When you log in to LiveCycle Administration Console, you can access User Management, Watched Folder and Email client configuration, and administrative configuration options for other services. LiveCycle Administration Console also provides access to Archive Administration, which administrators use for managing archives and deploying services to a production environment.

The default user name and password for logging in to LiveCycle Administration Console is *administrator* and *password*. After you log in the first time, access User Management and change the password.

Before you access LiveCycle Administration Console, LiveCycle ES must be deployed and running on your application server.

For information about using LiveCycle Administration Console, see *Archive Administration Help* (available from the Help menu of the LiveCycle Administration Console window).

➤ **To access LiveCycle Administration Console:**

1. Type the following URL in a web browser:

   `http://[host name]:[port]/adminui`

   The default port number for JBoss is 8080.

2. In the **User Name** field, type `administrator` and, in the **Password** field, type `password`.

3. After logging in, you can click **Services** to access the service administration pages or click **Settings** to access the pages on which you can administer settings for different solution components.

Viewing the log files

Events, such as run-time or startup errors, are recorded to the application server log files. If you have problems deploying to the application server, you can use the log files to help you find the problem. You can open the log files using any text editor.

Accessing solution component web applications

After LiveCycle ES is deployed, you can access the web applications associated with the following solution components:

- LiveCycle Reader Extensions ES
- LiveCycle Workspace ES
- LiveCycle Rights Management ES

After accessing the web applications using the default administrator permissions to ensure that they are accessible, you can create additional users and roles so that others can log in and use the applications. For information, see *User Management Help* at www.adobe.com/go/learn_lc_adminUM.

➤ **To access the Reader Extensions ES web application:**

Note: You must apply a Reader Extension credential and apply the user roles for a new user. For more information, see the SSL Configuration chapter in *Administrating LiveCycle ES*.

1. Open a web browser and enter this URL:

   http://localhost:8080/ReaderExtensions

   (local deployment using the default port),

2. Log in using the default user name and password:

   User name: administrator

   Password: password

Note: You must have administrator or superuser privileges to log in using the default user name and password. To allow other users to access the Reader Extensions ES web application, you must create the users in User Management and grant them the role “Reader Extensions Web Application”.

➤ **To access Workspace ES:**

1. Open a web browser and enter this URL:

   http://localhost:8080/workspace

   (local deployment using the default port),

2. Log in using the default user name and password:

   User name: administrator

   Password: password

Accessing Rights Management ES:

You must create a user with the role "RM end user console" in User Management and log in to the Rights Management ES administrator or end user applications using the login information associated with that user.

➤ **To access the Rights Management ES end-user web application:**

1. Open a web browser and enter this URL:

   http://*[server]*:*[port]*/edc/Login.do

Note: The administrator user cannot access the Rights Management ES end user web application. You can create new users using the LiveCycle ES Administrative UI.

➤ **To access the Rights Management ES administration web application:**

1. Open a web browser and enter this URL:

   http://*[server]*:*[port]*/adminui

Accessing User Management

User Management allows administrators to maintain a database of all users and groups, synchronized with one or more third-party user directories. User Management provides authentication, authorization, and user management for LiveCycle ES solution components, including Reader Extensions ES, Workspace ES, Rights Management ES, LiveCycle Process Management ES, and LiveCycle Forms ES.

➤ **To access User Management:**

1. Log in to LiveCycle Administration Console.
2. From the home page of LiveCycle Administration Console, click **Settings**.
3. On the Settings page, click **User Management**.

Note: For information about configuring users with User Management, click **User Management Help** in the upper-right corner of the User Management page.

Configuring LiveCycle ES to access LDAP

Use the following procedure as a guideline when configuring User Management to support authentication using LDAP.

➤ **To configure User Management with LDAP (Enterprise Domain):**

1. Type `http://[host name]:[port]/adminui` in the URL line of a web browser and log in. (See "Accessing LiveCycle Administration Console" on page 22.)
2. Click **Settings** > **User Management** > **Domain Management** and click **New Enterprise Domain**.
3. In the **ID** box, type a unique identifier for the domain.
4. In the **Name** box, type a descriptive name for the domain.
5. Click **Add Authentication** and, in the Authentication Provider list, select **LDAP**.
6. Click **OK**.
7. Click **Add Directory**, and under **Profile Name**, select a name for your LDAP profile.
8. Click **Next**.
9. Specify values in the **Server**, **Port**, **SSL**, and **Binding** boxes as required. For details on the settin.gs, see Directory settings in *User Management Help* at www.adobe.com/go/learn_lc_adminUM
10. Under **Populate Page With**, select a directory settings option, such as **Default Sun ONE values**.
11. Click **Next** and configure the **User Settings** as required. For details about the settings, see Directory settings in *User Management Hel*p.
12. Click **Next** configure the **Group Settings** as required. For details about the settings, see Directory settings in *User Management Help*.
13. (Optional) Test your configuration:
    - Click **Test**.
    - In the Test Directory pane, in the **Find** box, enter an object name and, in the **using** box, select the object's type, such as **Login ID**.
    - Click **Test**. If successful, your object's details will be displayed, and then click **Back**.
14. Click **Finish** to exit the New Directory page, and click **OK** again to exit.

Setting PDF Generator ES Watched Folder performance parameters

To avoid java.io.IOException error messages indicating that not enough disk space is available to perform PDF conversions using a watched folder, you can modify the settings for PDF Generator ES in LiveCycle Administration Console.

➤ **To set performance parameters for PDF Generator ES:**

1. Log in to LiveCycle Administration Console and click **Services** > **Archive Administration** > **Service Management** > **PDFGConfigService**.
2. Set the following values:
   - **PDFG Cleanup Scan Seconds**: 1800
   - **Job Expiration Seconds**: 6000
3. Increase **Server conversion timeout** from the default of 270 to a higher value, such as 450.
4. Click **Save**.
5. Restart the server.

Configuring FIPS mode

LiveCycle ES provides a FIPS mode to restrict data protection to Federal Information Processing Standard (FIPS) 140-2 approved algorithms using the RSA BSAFE Crypto-C 2.1 encryption module.

If you did not enable this option using LiveCycle Configuration Manager during the LiveCycle ES configuration or if you enabled it but want to turn it off, you can change this setting through LiveCycle Administration Console.

To modify FIPS mode, you must restart the server.

FIPS mode does not support encryption algorithms used in Acrobat versions earlier than 7.0. If FIPS mode is enabled and you use the Encryption service to encrypt the PDF using a password with a compatibility level set to Acrobat 5, the encryption attempt will fail with an error.

In general, when FIPS is enabled, the Assembler service will not apply password encryption to any document. If this is attempted, a FIPSModeException is thrown indicating that `"Password encryption is not permitted in FIPS mode."` Additionally, the Document Description XML (DDX) `PDFsFromBookmarks` element is not supported in FIPS mode when the base document is password-encrypted.

➤ **To turn FIPS mode on or off:**

1. Log in to LiveCycle Administration Console.
2. Browse to **Settings** > **Core System > Configurations** > **Core Configurations**.
3. Select **Enable FIPS** to enable FIPS mode or deselect it to disable it.
4. Click **OK**.
5. Restart the application server.

Note: LiveCycle ES software does not validate code to ensure FIPS compatibility. It provides a FIPS operation mode so that FIPS-approved algorithms are used for cryptographic services from the FIPS-approved libraries (RSA).

Configuring HTML digital signature

To use the HTML digital signature feature of LiveCycle Forms ES, you must complete the following procedure.

➤ **To enable HTML digital signature:**

1. Manually deploy the *[LivecycleES root]*/deploy/adobe-forms-ds.ear file to your application server.

2. Log in to LiveCycle ES Administrator Console.

3. Select **Service** > **Livecycle** Forms ES.

4. Select **HTML Digital Signature Enabled**.

Configuring the Connector for EMC Documentum service

If you installed the Connector for EMC Documentum service as part of your LiveCycle ES solution, complete the following procedure to configure the service to connect to the Documentum repository.

➤ **To configure Connector for EMC Documentum:**

1. Locate the `adobe-component-ext.properties` file in the *[JBOSS HOME]*/bin folder. If the file does not exist, you must create it. Add a new system property that provides the location of the Documentum Content Server config folder and the following Documentum Foundation Classes JAR files:

   - dfc.jar
   - dfcbase.jar

   The new system property should take this form:

   `[component id]_[component version]``.ext=`*`[JAR files and/or folders]`*

   For example, using default Content Server and Documentum Foundation Classes installations, you add the following system property on a new line, with no line breaks, and end the line with a carriage return, to the file:

   ```
   com.adobe.livecycle.ConnectorforEMCDocumentum_8.0.3174.1.156395.1.ext
   =C:/Documentum/Config,C:/Program Files/Documentum/Shared/dfc.jar,
   C:/Program Files/Documentum/Shared/dfcbase.jar
   ```

   You can determine the version of the component by logging in to the LiveCycle Administration Console and navigating to **Services** > **Archive Administration** > **Service Management**, and then searching for the component. The version number is listed in the **Component Version** column.

2. If JBoss Application Server is not currently running, start the server. Otherwise, stop and then restart the server.

3. Open a web browser and enter this URL:

   http://localhost:8080/adminui (local deployment using the default port)

4. Log in using the default user name and password:

   User name: administrator

   Password: password

5. Navigate to **Services** > **LiveCycle ES Connector for EMC Documentum** > **Configuration Settings**.

6. Type all of the required Documentum repository information. To use Documentum as your repository provider, in the Repository Service Provider Information area, select **EMC Documentum Repository Provider**, and then click **Save**. For more information about the Documentum repository information, see *Documentum Administration Help* at www.adobe.com/go/learn_lc_adminDocumentum.

7. (Optional) Navigate to **Repository Credentials Settings**, click **Add**, specify the Docbase information, and then click **Save**. For more information about the Documentum repository information, see *Documentum Administration Help* at www.adobe.com/go/learn_lc_adminDocumentum.

8. Navigate to **Services** > **Archive Administration** > **Service Management**, select the following services, and then click **Start**:
   - EMCDocumentumAuthProviderService
   - EMCDocumentumContentRepositoryConnector
   - EMCDocumentumRepositoryProvider

   If any of the services do not start correctly, check the settings entered in step 6.

9. Do one of the following tasks:
   - To use the Documentum Authorization service (EMCDocumentumAuthProviderService) to display content from a Documentum repository in the Resources view of Workbench ES, continue with this procedure. Using the Documentum Authorization service overrides the default LiveCycle ES authorization and must be configured in order to log in to Workbench ES using Documentum credentials.
   - To use the LiveCycle ES repository, log in to Workbench ES using the LiveCycle ES super administrator credentials (by default, *Administrator* and *password*). You have now completed the required steps for this procedure. The credentials provided in step 6 are used for accessing the default repository in this case and use the default LiveCycle ES authorization service.

10. Restart JBoss Application Server.

11. Log in to the LiveCycle Administration Console, navigate to **Settings** > **User Management** > **Domain Management**, and click **New Enterprise Domain**.

12. Type a domain ID and name. The domain ID is the unique identifier for the domain. The name is a descriptive name for the domain.

13. Add a custom authentication provider:
    - Click **Add Authentication**.
    - In the **Authentication Provider** list, select **Custom**, and select **EMCDocumentumAuthProvider**.
    - Click **OK**.

14. Add an LDAP authentication provider:
    - Click **Add Authentication**.
    - In the **Authentication Provider** list, select **LDAP**.
    - Click **OK**.

15. Add an LDAP directory:
    - Click **Add Directory**.

- In the **Profile Name** box, type a unique name, and then click **Next**.
- Specify values for the **Server**, **Port**, **SSL**, **Binding**, and **Populate page with** options. If you select **User** for the **Binding** option, you must also specify values for the **Name** and **Password** fields. (Optional) Select **Retrieve Base DN** to retrieve base domain names, as required. When finished, click **Next**.

  For details about the settings, see *User Management Help* at www.adobe.com/go/learn_lc_adminUM.
- Configure the user settings, click **Next**, configure group settings, as required, and then click **Next**.

  For details about the settings, see *User Management Help* at www.adobe.com/go/learn_lc_adminUM.

16. Click **OK** to exit the Add Directory page, and click **OK** again.
17. Select the new enterprise domain and click **Sync Now**. Depending on the number of users and groups in your LDAP network and the speed on your connection, the synchronization process may take several minutes.

    To verify the status of the synchronization, click **Refresh** and view the status in the **Current Sync State** column.
18. Click **Settings** > **User Management** > **Users and Groups**.
19. Search for users that were synchronized from LDAP. Select one or more users, click **Assign Role**, select one or more LiveCycle ES roles, and then click **OK**. Click **OK** a second time to confirm the role assignment. Repeat this step for all users you assign roles to. For more information about assigning LiveCycle ES roles, see *User Management Help* at www.adobe.com/go/learn_lc_adminUM.
20. Start Workbench ES and log in using the following credentials:

    Username: *[username]@[repository_name]*

    Password: *[password]*

    The Documentum repository should now be visible in the Resources view within Workbench ES. If you do not log in using the *username@repository name*, Workbench ES attempts to log in to the default repository specified in step 6.

Once you have configured your Connector for EMC Documentum service, you should see *Administering LiveCycle ES* at www.adobe.com/go/learn_lc_administration for information on correctly configuring Workspace ES functions properly with your Documentum repository.

Creating the XDP MIME format in your Documentum repository

Before users can store and retrieve XDP files from a Documentum repository, you must do one of these tasks:

- Create a corresponding XDP format in each repository where users will access XDP files.
- Configure the Connector for EMC Documentum service to use a Documentum Administrator account when accessing the Documentum repository. In this case, the XDP format is created by the Connector for EMC Documentum service whenever it is required.

➤ **To create the XDP format on Documentum Content Server using Documentum Administrator:**

1. Log in to Documentum Administrator.

2. Click **Formats**.
3. Select **File** > **New** > **Format**.
4. Type the following information into the corresponding fields:

   Name: `xdp`

   Default File Extension: `xdp`

   Mime Type: `application/xdp`
5. Repeat steps 1 -4 for all other Documentum repositories where users will store XDP files.

➤ **To configure the Connector for EMC Documentum service to use a Documentum Administrator:**

1. Open a web browser and enter this URL:

   http://localhost:8080/adminui (local deployment using the default port)
2. Log in using the default user name and password:

   User name: administrator

   Password: password
3. Click **Services** > **LiveCycle ES Connector for EMC Documentum** > **Configuration Settings**.
4. In the **Documentum Principal Credentials Information** section, update the following information:

   User Name: *[Documentum Administrator user name]*

   Password: *[Documentum Administrator password]*
5. Click **Save**.
6. Click **Repository Credentials Settings**.
7. Select a repository from the list or, if none exist, click **Add**.
8. Type the following information:

   Repository Name: *[Repository Name]*

   Repository Credentials User Name: *[Documentum Administrator user name]*

   Repository Credentials Password: *[Documentum Administrator password]*
9. Click **Save**.
10. Repeat steps 7 - 9 for all repositories where users will store XDP files.

Configuring the Connector for IBM FileNet service

If you installed the Connector for IBM FileNet service as part of your LiveCycle ES solution, complete the following procedure to configure the service to connect to the FileNet object store.

➤ **To configure Connector for IBM FileNet:**

1. Locate the `adobe-component-ext.properties` file in the *[JBOSS HOME]*/bin folder. If the file does not exist, you must create it. Add a new system property that provides the location of the following Application Engine JAR files:
   - activation.jar
   - javaapi.jar
   - log4j-1.2.8.jar
   - mailapi.jar
   - p8cjares.jar
   - soap.jar
   - xercesimpl.jar
   - xml-apis.jar

   The new system property should take this form:

   `[component id]_[component version]``.ext=`*`[JAR files and/or folders]`*

   For example, using a default Application Engine installation, add the following system property on a new line, with no line breaks, and end the line with a carriage return, to the file:

   ```
   com.adobe.livecycle.ConnectorforIBMFileNet_8.0.3174.1.156395.1.ext=
   C:/Program Files/FileNet/lib2/activation.jar,
   C:/Program Files/FileNet/lib2/javaapi.jar,
   C:/Program Files/FileNet/lib2/log4j-1.2.8.jar,
   C:/Program Files/FileNet/lib2/mailapi.jar,
   C:/Program Files/FileNet/lib2/p8cjares.jar,
   C:/Program Files/FileNet/lib2/soap.jar,
   C:/Program Files/FileNet/lib2/xercesImpl.jar,
   C:/Program Files/FileNet/lib2/xml-apis.jar
   ```

   You can determine the version of the component by logging in to LiveCycle Administration Console and navigating to **Services** > **Archive Administration** > **Service Management**, and then searching for the component. The version number is listed in the **Component Version** column.

2. If JBoss Application Server is not currently running, start the server. Otherwise, stop and then restart the server.

3. Open a web browser and enter this URL:

   http://localhost:8080/adminui (local deployment using the default port)

4. Log in using the default user name and password:

   User name: administrator

   Password: password

5. Navigate to **Services** > **LiveCycle ES Connector for IBM FileNet** > **Configuration Settings**.

6. Type all of the required FileNet repository information, in the Repository Service Provider Information area, select **IBM FileNet Repository Provider**, and then click **Save**. For more information about the FileNet repository information, see *FileNet Administration Help* at http://www.adobe.com/go/learn_lc_adminFileNet.

Note: The credentials you provide during this step are validated when the IBM FileNet repository services are started in the next step. If the credentials are invalid, an error is thrown and the services will fail to start.

7. Navigate to **Services** > **Archive Administration** > **Service Management**, select the following services, and then click **Start**:
   - IBMFileNetAuthProviderService
   - IBMFileNetContentRepositoryConnector
   - IBMFileNetRepositoryProvider

   If any of the services do not start correctly, check the settings entered in step 6.

8. Do one of the following tasks:
   - To use the FileNet Authorization service (IBMFileNetAuthProviderService) to display content from a FileNet object store in the Resources view of Workbench ES, continue with this procedure. Using the FileNet Authorization service overrides the default LiveCycle ES authorization and must be configured in order to log in to Workbench ES using FileNet credentials.
   - To use the LiveCycle ES repository, log in to Workbench ES using the LiveCycle ES super administrator credentials (by default, `Administrator` and `password`). You have now completed the required steps for this procedure. The credentials provided in step 6 use the default LiveCycle ES authorization service for accessing the default repository in this case.

9. Restart JBoss Application Server.

10. Log in to the LiveCycle Administration Console, navigate to **Settings** > **User Management** > **Domain Management**, and click **New Enterprise Domain**.

11. Type a domain ID and name. The domain ID is the unique identifier for the domain. The name is a descriptive name for the domain.

12. Add a custom authentication provider:
    - Click **Add Authentication**.
    - In the **Authentication Provider** list, select **Custom**, and select **IBMFileNetAuthProviderService**.
    - Click **OK**.

13. Add an LDAP authentication provider:
    - Click **Add Authentication**.
    - In the **Authentication Provider** list, select **LDAP**.
    - Click **OK**.

14. Add an LDAP directory:
    - Click **Add Directory**.
    - In the **Profile Name** box, type a unique name, and then click **Next**.
    - Specify values for the **Server**, **Port**, **SSL**, **Binding**, and **Populate page with** options. If you select **User** for the **Binding** option, you must also specify values for the **Name** and **Password** fields. (Optional) Select **Retrieve Base DN** to retrieve base domain names, as required. When finished, click **Next**.

      For details about the settings, see *User Management Help* at http://www.adobe.com/go/learn_lc_adminUM.

- Configure the user settings, click **Next**, configure group settings, as required, and then click **Next**.

  For details about the settings, see *User Management Help* at http://www.adobe.com/go/learn_lc_adminUM.

15. Click **OK** to exit the Add Directory page, and click **OK** again.

16. Select the new enterprise domain and click **Sync Now**. Depending on the number of users and groups in your LDAP network and the speed on your connection, the synchronization process may take several minutes.

    To verify the status of the synchronization, click **Refresh** and view the status in the **Current Sync State** column.

17. Click **Settings** > **User Management** > **Users and Groups**.

18. Search for users that were synchronized from LDAP. Select one or more users, click **Assign Role**, select one or more LiveCycle ES roles, and then click **OK**. Click **OK** a second time to confirm the role assignment. Repeat this step for all users you want to assign roles to. For more information on assigning LiveCycle ES roles, see *User Management Help* at http://www.adobe.com/go/learn_lc_adminUM.

19. Start Workbench ES and log in using the following credentials:

    Username: *[username]@[repository_name]*

    Password: *[password]*

    The FileNet object store should now be visible in the Resources view within Workbench ES. If you do not log in using the *username@repository name*, Workbench ES attempts to log in to the default repository specified in step 6.

Once you have configured your Connector for IBM FileNet service, you should see *Administering LiveCycle ES* at www.adobe.com/go/learn_lc_administration for information on correctly configuring Workspace ES functions properly with your FileNet repository.

Uninstalling LiveCycle ES

The uninstall program located in the *[LivecycleES root]* directory does not remove any files that you deployed to your application server.

Caution: By running the uninstall program, all of the contents within the product installation directory are subject to removal without further warning. Before proceeding, back up any data you do not want to lose.

➤ **To remove the files from your computer:**

1. Invoke the uninstall program:
   - (Windows) Perform these tasks:
     - Use **Add or Remove Programs** in the Windows Control Panel.
       - Remove **Adobe LiveCycle ES**.
       - Remove **Adobe Acrobat 8.1 Professional** (if installed with PDF Generator ES).
     - Alternatively, you can complete these manual steps:
       - cd *[LivecycleES root]*/_uninst/server
       - Double-click the livecycle8_uninstall.exe file.
   - (Linux) From a terminal, type `./livecycle8_uninstall.bin` (you may need to make this binary an executable file).
2. Follow the on-screen instructions in the uninstall program, and then click **Finish**.

6 Manually Configuring BAM Server for LiveCycle ES

This section describes the tasks that must be performed to manually install and configure LiveCycle Business Activity Monitoring ES for use with LiveCycle ES:

These instructions use the following naming conventions for common file paths.

Name	Description	Default value
[jboss bam root]	The home directory of the application server for Business Activity Monitoring ES.	JBoss on Windows: C:\jboss JBoss on Linux: /opt/jboss
[LiveCycleES root]	The location where the LiveCycle ES services are installed	Windows: C:\Adobe\LiveCycle8 Linux: /opt/Adobe/LiveCycle8

Most of the information about directory locations in this guide is cross-platform (all file names and paths are case-sensitive on Linux). Any platform-specific information is indicated as required.

Creating and configuring the BAM Server metadata database

You must create a Business Activity Monitoring ES metadata database to store the definitions of the process metrics that BAM Server monitors, as well as the details of any alerts and object run-time data that need to be persisted to disk.

Because Business Activity Monitoring ES metadata can grow quite large, you must allocate at least 50 MB for the BAM Server metadata database. For production deployments, allocate at least 200 MB.

BAM Server can require specific settings for some aspects of the Business Activity Monitoring ES metadata database configuration. The settings depend on the type of application server that is hosting BAM Server and the type of database server used to store the Business Activity Monitoring ES metadata.

User accounts

You must also create a user account that BAM Server can use to connect to the Business Activity Monitoring ES metadata database. The user account must have create, modify, and update privileges on the database.

For Oracle, you must also create a user account that BAM Server can use to connect to the metadata database. The user account must have create, modify, and update privileges on the database. Assign the roles CONNECT and RESOURCE, and the ACCESS_ANY_WORKSPACE, CREATE_ANY_VIEW and UNLIMITED_TABLESPACE system privileges. The database user account must be associated with a tablespace that you create specifically for Business Activity Monitoring ES metadata.

Configuring your database environment

If you are using DB2 as the Business Activity Monitoring ES metadata database, you must create an environment variable that contains the name of the associated DB2 instance. You also must include the path to the DB2 shared libraries in the library path variable.

The following examples show commands for configuring the environment variables. Use the command that corresponds with your operating system. You may need to modify the command according to the location where you installed DB2.

Example: *Commands to configure environment variables on Windows*

The following commands apply to a DB2 instance named *DB2*, with DB2 library files installed in C:\SQLLIB\BIN:

```
set DB2INSTANCE=DB2
set PATH=C:\SQLLIB\BIN;%PATH%
```

Example: *Commands to configure environment variables on Solaris*

The following commands apply to a DB2 instance named *db2fs*, with DB2 library files installed in /opt/IBM/db2/V8.1/lib:

```
export DB2INSTANCE=db2fs
export LD_LIBRARY_PATH=/opt/IBM/db2/V8.1/lib:${LD_LIBRARY_PATH}
```

Example: *Commands to configure environment variables on AIX*

The following commands apply to a DB2 instance named *db2f*.

```
/opt/IBM/db2/V8.1/lib:
export DB2INSTANCE=db2fs
export LIBPATH=/opt/IBM/db2/V8.1/lib:${LIBPATH}
```

Creating the BAM Server metadata database

To enable BAM Server to connect to the database that stores BAM Server metadata, you must create a data source file and deploy the file to the instance of JBoss Application Server that runs BAM Server. You must also modify the default data-type mappings on JBoss.

➤ **To create the metadata database for MySQL:**

1. If JBoss Application Server is running, stop it by navigating to *[appserver root]*/bin from a command prompt and typing the following command:
   - (Windows) `shutdown.bat -S`
   - (Linux) `./shutdown.sh -S`
2. To ensure that the MySQL database for LiveCycle ES is running, select **Start** > **All Programs** > **Administrative Tools** > **Services**.
3. Open a command prompt, navigate to *[appserver root]*\mysql\bin and type the following command to start the MySQL monitor:

   ```
   mysql -u<username> -p<password>
   ```

   Note: `<username>` and `<password>` are the credentials you created for your MySQL database.
4. From the mysql> prompt, type the following command:

   ```
   create database adobe_meta;
   ```
5. From the mysql > prompt, type the following command:

   ```
   GRANT ALL ON adobe_meta.* TO 'adobe'@'localhost' IDENTIFIED BY 'adobe';
   ```
6. At the mysql> prompt, type `quit` to exit the MySQL Monitor.

➤ **To create the metadata database for SQL Server:**

1. If JBoss Application Server is running, stop it by navigating to *[appserver root]*/bin from a command prompt and typing the following command:
   - (Windows) `shutdown.bat -S`
   - (Linux) `./shutdown.sh -S`
2. Start the SQL Server application and click **Security** > **Logins** > **New Login**.
3. Specify a login name and password. You need to confirm the password.
4. (Optional) Deselect **enforce password policy**.
5. Under Default Database, keep this setting as master and click **OK**.
6. Click **Database** > **New Database.**
7. In the **Database name** field, type `adobe_meta` as the name of your metadata database.
8. In the **Owner** field, specify the login name you entered in step 3.
9. Under Database data, in the **Initial size** field, type `50`.

10. Under Database log, in the **Initial size** field, type `10`, and then click **OK**.
11. Click **Security** > **Logins** and specify the metadata database name, and then click **properties**.
12. Under General, in the **default database** field, select the metadata database name.
13. Under User mapping > Users mapped to this login, ensure that your metadata database is selected.
14. Ensure that the user is dbo and the default schema is dbo.
15. Select your metadata database login and verify that **db_owner** and **public** are both selected.
16. Click **OK**.

Installing JBoss Application Server

If you are manually configuring JBoss Application Server for running BAM Server, you must download and install JBoss Application Server 4.0.3 SP1 from this location:

http://labs.jboss.com/jbossas/downloads

Installing database drivers on JBoss Application Server for BAM Server

To enable BAM Server to connect to the Business Activity Monitoring ES metadata database and the LiveCycle ES database, you need to install the drivers for the types of databases you are using.

Note: LiveCycle ES and BAM Server run in completely different JBoss navigation trees, which means that drivers are needed in each tree. As a result, you must reinstall these drivers for BAM Server.

➤ **To install the JDBC driver for MySQL:**

1. Obtain the mysql-connector-java-3.0.15-ga-bin-jar file from the MySQL website:

   http://www.mysql.com/products/connector/j/

2. Copy the file to the *[jboss bam root]*/server/default/lib directory.

➤ **To install the JDBC driver for SQL Server:**

- Copy the database server driver file, sqljdbc.jar, to the *[jboss_bam_root]*/server/all/lib/ directory.

Configure the BAM Server metadata database

The following procedure describes how to configure the Business Activity Monitoring ES metadata database.

➤ **To configure the MySQL data source:**

1. Navigate to the *[jboss bam root]*/server/all/deploy directory and create a file named *celequest_metadata-ds.xml* by using a text editor.

2. Add the following code into the celequest_metadata-ds.xml file:

```
<datasources>
     <no-tx-datasource>
     <jndi-name>com.celequest.metadata.metaDatasource</jndi-name>
     <connection-url>jdbc:mysql://[host name]:[port]/[dbname]
       </connection-url>
     <driver-class>com.mysql.jdbc.Driver</driver-class>
     <user-name>[username]</user-name>
     <password>[password]</password>
     <min-pool-size>10</min-pool-size>
     <max-pool-size>100</max-pool-size>
     <blocking-timeout-millis>20000</blocking-timeout-millis>
     <idle-timeout-minutes>10</idle-timeout-minutes>
     <prepared-statement-cache-size>50</prepared-statement-cache-size>
     <transaction-isolation>TRANSACTION_READ_COMMITTED
       </transaction-isolation>
   </no-tx-datasource>
</datasources>
```

where

- *[host name]* is the name of the computer where MySQL is running.
- *[port]* is the port used to access the database. The default port for MySQL is 3306.
- *[dbname]* is the name of the BAM Server metadata database.
- *[username]* is the name of the database user account that can access the BAM Server metadata database.
- *[password]* is the password for the user name specified for the *[username]* element.

3. Save and close the file.

➤ **To configure the SQL Server 2005 data source:**

1. Navigate to the *[jboss bam root]*/server/all/deploy directory and create a file named *celequest_metadata-ds.xml* by using a text editor.

2. Add the following code into the celequest_metadata-ds.xml file:

```
<datasources>
   <no-tx-datasource>
     <jndi-name>com.celequest.metadata.metaDatasource</jndi-name>
     <connection-url>jdbc:sqlserver://[host name]:[port];dbname=[dbname]
       </connection-url>
     <driver-class>com.microsoft.sqlserver.jdbc.SQLServerDriver
       </driver-class>
     <user-name>[username]</user-name>
     <password>[password]</password>
     <min-pool-size>10</min-pool-size>
     <max-pool-size>100</max-pool-size>
     <blocking-timeout-millis>20000</blocking-timeout-millis>
     <idle-timeout-minutes>10</idle-timeout-minutes>
     <prepared-statement-cache-size>50</prepared-statement-cache-size>
     <transaction-isolation>TRANSACTION_READ_COMMITTED
       </transaction-isolation>
   </no-tx-datasource>
```

```
</datasources>
```

where

- *[host name]* is the name of the computer where SQL Server 2005 is running.
- *[port]* is the port used to access the database. The default port for SQL Server 2005 is 1433.
- *[dbname]* is the name of the BAM Server metadata database.
- *[username]* is the name of the database user account that can access the BAM Server metadata database.
- *[password]* is the password for the user name specified for the *[username]* element.

3. Save and close the file.

Connecting JBoss Application Server for BAM Server to the LiveCycle ES database

You must configure a connection to the LiveCycle ES database on the instance of JBoss Application Server that runs BAM Server so that it can retrieve information about the process run-time data.

The procedure to configure the connection you use depends on the type of database you are using to store LiveCycle ES data:

"Connecting to the LiveCycle ES database on SQL Server" on page 40"

"Connecting to the LiveCycle ES database on MySQL" on page 41

Connecting to the LiveCycle ES database on SQL Server

To enable BAM Server to connect to the LiveCycle ES database, you need to create a data source file and deploy it to the instance of JBoss Application Server that runs BAM Server.

➤ **To create a data source for the LiveCycle ES database on SQL Server 2005:**

1. Open a text editor and create a new text file using the following code:

```
<datasources>
  <local-tx-datasource>
    <jndi-name>IDP_DS</jndi-name>
    <connection-url>jdbc:sqlserver://[host name]:[port];
      databaseName=[dbname]</connection-url>
    <driver-class>com.microsoft.sqlserver.jdbc.SQLServerDriver
      </driver-class>
    <user-name>[username]</user-name>
    <password>[password]</password>
    <min-pool-size>10</min-pool-size>
    <max-pool-size>100</max-pool-size>
    <blocking-timeout-millis>60000</blocking-timeout-millis>
    <idle-timeout-minutes>15</idle-timeout-minutes>
    <prepared-statement-cache-size>100</prepared-statement-cache-size>
    <transaction-isolation>TRANSACTION_READ_COMMITTED
      </transaction-isolation>
    <!-- sql to call when connection is created
    <new-connection-sql>some arbitrary sql</new-connection-sql>
    -->
```

```
     <!-- sql to call an existing pooled connection when it is obtained from
pool
     <check-valid-connection-sql>some arbitrary sql
       </check-valid-connection-sql>
     -->
     <!-- corresponding type-mapping in the standardjbosscmp-jdbc.xml
(optional) -->
     <metadata>
     <type-mapping>MS SQLSERVER2000</type-mapping>
     </metadata>
   </local-tx-datasource>
</datasources>
```

where

- *[host name]* is the name of the computer where SQL Server 2005 is running.
- *[port]* is the port used to access the LiveCycle ES database. The default port for SQL Server 2005 is 1433.
- *[dbname]* is the name of the LiveCycle ES database.
- *[username]* is the user name of the database user account that can access the LiveCycle ES database.
- *[password]* is the password for the user name specified for the *[username]* element.

2. Save the file as adobe-ds.xml in the *[jboss bam root]*/server/all/deploy/ directory.

Connecting to the LiveCycle ES database on MySQL

To enable BAM Server to connect to the LiveCycle ES database, you need to create a data source file and deploy it to the instance of JBoss Application Server that runs BAM Server.

➤ **To create a data source for the LiveCycle ES database on MySQL:**

1. Open a text editor and create a new text file using the following code:

```
<datasources>
   <local-tx-datasource>
     <jndi-name>IDP_DS</jndi-name>
     <connection-url>jdbc:mysql://[host_name]:[port]/[dbname]
       </connection-url>
     <driver-class>com.mysql.jdbc.Driver</driver-class>
     <user-name>[username]</user-name>
     <password>[password]</password>
     <min-pool-size>1</min-pool-size>
     <max-pool-size>100</max-pool-size>
     <blocking-timeout-millis>20000</blocking-timeout-millis>
     <idle-timeout-minutes>10</idle-timeout-minutes>
     <prepared-statement-cache-size>50</prepared-statement-cache-size>
     <transaction-isolation>TRANSACTION_READ_COMMITTED
       </transaction-isolation>
   </local-tx-datasource>
</datasources>
```

where

- *[host name]* is the name of the computer on which MySQL is running.
- *[port]* is the port used to access the LiveCycle ES database.
- *[dbname]* is the name of the LiveCycle ES database.
- *[username]* is the user name of the database user account that can access the LiveCycle ES database.
- *[password]* is the password for the user name specified for the *[username]* element.

2. Save the file as adobe-ds.xml in the *[jboss bam root]*/server/all/deploy directory.

Configuring required JBoss Application Server JVM options

You must configure the Java™ Virtual Machine (JVM) to support BAM Server.

➤ **To configure the JBoss Application Server JVM options:**

1. Navigate to the *[jboss bam root]*/bin directory and open the startup script in a text editor:
   - (Windows) `run.bat`
   - (Linux) `run.sh`
2. Change the `JAVA_OPTS` memory settings to `256M` minimum and `1024M` maximum, and include `-server` to improve the performance:
   - (Windows) `set JAVA_OPTS=%JAVA_OPTS% -server -XX:MaxPermSize=256m -Xms256m -Xmx1024m`
   - (Linux) `JAVA_OPTS="$JAVA_OPTS -server -XX:MaxPermSize=256m -Xms256m -Xmx1024m"`

   For large data loads, consider increasing the maximum memory to `-Xmax1536m` (1.5 GB).
3. Add a `JAVA_OPTS` setting to enable UTF-8 character support:
   - (Windows) `set JAVA_OPTS=%JAVA_OPTS% -Dfile.encoding=utf8`
   - (Linux) `JAVA_OPTS="$JAVA_OPTS -Dfile.encoding=utf8"`
4. Add a `JAVA_OPTS` setting to increase the thread stack size to `300`:
   - (Windows) `set JAVA_OPTS=%JAVA_OPTS% -XX:ThreadStackSize=300`
   - (Linux) `JAVA_OPTS="$JAVA_OPTS -XX:ThreadStackSize=300"`
5. Save and close the startup script file.

Optional JBoss Application Server JVM parameters

You can set several optional JVM parameters that are related to the Business Activity Monitoring ES metadata database, including language, country, and collation strength. These JVM parameters are expressed using commands in the following format:

`-Dcom.celequest.property.` *[PARAMETER]* `=` *[VALUE]*

This table provides valid values for *[PARAMETER]* and *[VALUE]*.

Parameter	Description
LANGUAGE	The ISO language code for the server. For example, the following command sets the LANGUAGE parameter to Portuguese: `-Dcom.celequest.property.LANGUAGE=PT`
COUNTRY	The ISO country code for the server.
LOCALESORT	Specifies whether locale-sensitive string comparisons are performed. Valid values are `true` and `false`: • Specify `true` to have locale-sensitive string comparisons performed. • Specify `false` to not have locale-sensitive string comparisons performed. The default value is `false`.
STRENGTH	The level of collation strength, which is the extent to which non-English characters are compared and collated. Valid values (in the order of least discriminating to most discriminating) are `primary`, `secondary`, `tertiary`, and `identical`. The default value is `tertiary`. For more information about collation parameters, see the Sun Java documentation at http://java.sun.com/j2se/1.4.2/docs/api/java/util/Locale.html. **Note:** This setting is functional only if `LOCALESORT` is set to `true`.
DECOMPOSITION	The mode of collation decomposition. Valid values are `none`, `canonical`, and `full`. The default value is `canonical`. For more information about collation parameters, see the Sun Java documentation at http://java.sun.com/j2se/1.4.2/docs/api/java/util/Locale.html **Note:** This setting is functional only if `LOCALESORT` is set to `true`.

To set multiple properties, separate each command with a space. For example, the following commands set the language to Portuguese and the locale to Brazil:

```
-Dcom.celequest.property.LANGUAGE=PT -Dcom.celequest.property.LOCALE=BR
```

Customizing port numbers

If it is necessary to run more than one JBoss Application Server on a computer, the following ports should be changed for the secondary server(s). In the following list, the change to port is a suggestion. Utilities such as TCPView for Windows, or Netstat can be used to verify that a change to port is available.

For each of the following files, open them in a text editor and make the changes as indicated:

***[jboss bam root]*\server\all\deploy\jbossweb-tomcat50.sar\server.xml**

- Change HTTP/1.1 Connector port from 8080 to 8888.
- Change AJP 1.3 Connector port from 8009 to 8099.
- Change SSL/TLS Connector port from 8443 to 8493.

***[jboss bam root]*\server\all\conf\jboss-service.xml**

- Change WebService port from 8083 to 8899.
- Change NamingService Port from 1099 to 9999.
- Change RMIport from 1098 to 9998.
- Change RMIObjectPort from 4444 to 9444.
- Change PooledInvoker ServerBindPort from 4445 to 9445.

***[jboss bam root]*\server\all\deploy\cluster-service.xml**

- Change ha.jndi.HANamingService port from 1100 to 1190.
- Change RmiPort from 1101 to 1191.
- Change RMIObjectPort from 4447 to 9447.
- Change ServerBindPort from 4446 to 9446 (only needed in a cluster).

***[jboss bam root]*\server\all\deploy\jms\hajndi-jms-ds.xml**

- Change java.naming.provider.url from 1100 to 1190.

***[jboss bam root]*\server\all\conf\jacorb.properties**

- Change OAPort from 3528 to 9528.
- Change OASSLPort from 3529 to 9529.

***[jboss bam root]*\server\all\deploy-hasingleton\jms\uil2-service.xml**

- Change ServerBindPort from 8093 to 8993.

***[jboss bam root]*\server\all\deploy\snmp-adaptor.sar\META-INF\jboss-service.xml**

- Change Port from 1162 to 1182.
- Change Port from1161 to 1181.

***[jboss bam root]*\server\all\deploy\snmp-adaptor.sar\managers.xml**

- Change Port from1162 to 1182.

Configuring Process Management ES for BAM Server

You can configure Process Management ES to connect to BAM Server using LiveCycle Administration Console. You must specify the server on which the LiveCycle ES server and BAM Server are running and the user account information with which to access BAM Server.

➤ **To configure Process Management ES for BAM Server:**

1. Log in to LiveCycle Administration Console.
2. Click **Services** > **LiveCycle Process Management ES** > **Server Settings** > **BAM Configuration Settings**.

3. Type values for the following properties:

   BAM Host: The host name or IP address of the server on which BAM Server is running. The default value is `localhost`.

   BAM Port: The service port of the application server on which BAM Server is running. The default value is `8080`.

   LiveCycle Host: The host name or IP address of the server on which the LiveCycle ES server is running. The default value is `localhost`.

   LiveCycle Port: The service port of the application server on which the LiveCycle ES server is running. The default value is `8080`.

   User Name: (Optional) The user name of the administrator user account that Process Management ES uses to access BAM Server. The default user name is `system`.

   Note: If you specify the user name for a different user account, you must ensure that the user has complete administrative privileges for BAM Server. For information about administering BAM Server user accounts, see *Using BAM Workbench*.

   Password: (Optional) A valid password for the user name specified above. The default password is `manager`.

4. Click **Save** and restart the LiveCycle ES server.

Deploying the BAM Server for LiveCycle ES EAR file

➤ **To deploy the BAM Server EAR file:**

1. Stop JBoss Application Server.
2. Navigate to *[LiveCycle ES root]*/deploy and copy the CAS_Adobe.ear file to *[jboss bam root]*/server/all/deploy/.
3. Restart the application server.

Configuring Business Activity Monitoring ES

➤ **To log in to the BAM Workbench interface:**

1. After JBoss Application Server is initialized, access the BAM Workbench interface by typing the following URL in a web browser:

   `http://[host name]:[port]/bam/login/workbench.htm`

2. Log in as an administrator. The default administrator account for BAM Server uses the following ID:

   Username: `system`

   Password: `manager`

   Note: Perform the following steps **only** if you could not access the BAM Workbench interface using steps 1 and 2 above.

1. Go the Services control panel and verify that the JBoss for Adobe LiveCycle8 service is running.
2. Right-click the service entry and click **Properties** to set the service Startup type to manual.

3. On the General tab, select **Manual** from the Startup type list and then click **OK**. This will ensure that the JBoss service will not start automatically when the machine is restarted.
4. Stop the JBoss for Adobe LiveCycle8 service by clicking **Stop the service**.
5. From a command prompt, navigate to *[LiveCycleES root]*/jboss/bin and type the following command:

```
run.bat -c all
```

➤ **To configure the BAM Server system settings:**

1. Start BAM Workbench by typing `http://[host name]:[BAM port]/bam/workbench` in the URL line of a web browser.
2. On the login page, enter the system manager user name and password. These values are the defaults:

   Username: `system`

   Password: `manager`
3. Navigate to **Workbench** > **Administration console** > **System settings**.
4. In the **Configure** list, select **Checkpoint Configuration**.
5. Select **Enable Checkpoint**.
6. In the **Recovery Log Directory** field, type the path to the BAM logging directory; for example, type the following directory:

`[jboss bam root]/server/all/log`

7. In the **Configure** list, select **Logging Directory**.
8. In the **Logging Directory** field, type the path to the BAM logging directory as follows:

`[jboss bam root]/server/all/log`

9. Under System Control, ensure that **Recover State on Restart** is selected.
10. In the **Configure** list, select **SMTP** and enter the following parameters:

    Host: The URL to the SMTP host.

    Address: The IP address for the SMTP host.

    User: The account user name.

    Password: The account user password.
11. Click **OK**.
12. Restart the LiveCycle ES server and BAM Server.

➤ **To import the LiveCycle ES metadata definitions:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.
2. On the login page, type the system manager user name and password. These values are the defaults:

   Username: `system`

   Password: `manager`

3. Click the **Administration Console** tab and click **Import/Export**.
4. Select **Import Metadata from a JAR file (upload)** and enter the full path to the location of the Business Activity Monitoring ES metadata template that is appropriate for the type of database that you are using for the LiveCycle ES database:
   - (DB2) adobeimport_DB2.jar
   - (MySQL) adobeimport_MySQL.jar
   - (Oracle) adobeimport_Oracle.jar
   - (SQL Server) adobeimport_SQLServer.jar

   These files are installed in the *[LiveCycle root]*/deploy directory.
5. Click **Upload** and then click **OK** to import the file.

➤ **(Oracle) To update the JDBC Query:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.
2. On the login page, type the system manager user name and password. These values are the defaults:

   Username: `system`

   Password: `manager`
3. Click the **Application Workbench** tab and click events to see a list of events.
4. Double-click **Adobe event** and then click **Edit This Event**.
5. In the **JDBC Query** box, type in the following code:

```
select uuid,major_version,minor_version,"descriptor",state,service_uuid,
component_oid,update_time,create_time from tb_sc_service_configuration
where monitor='1'
```

6. Click **Resubmit Query**.
7. Click the **Polling** tab and, in the **Incrementing Field** list, select **update_time**. Notice the Initial Value (such as 2000-01-01 00:00:00); you may need this info later.
8. Click **Save this Event**.

Configuring LDAP settings for BAM Server

In addition to manually creating users and user permissions, Business Activity Monitoring ES lets you import user information from supported LDAP providers. You can schedule automatic synchronizations or perform manual synchronizations with the LDAP server to automatically update the existing users and roles.

When synchronizing with the LDAP server, the user base DN, login identification and password, full name, description, and email address properties are cached in the BAM Server metadata database.

When BAM Server imports users from the LDAP server, LDAP groups are converted to Business Activity Monitoring ES roles. Users are assigned roles according to the group they belong to in LDAP. For more information, see "Limitations of BAM Server LDAP connectivity" on page 48.

Note: BAM Server integrates with any LDAP provider that supports the LDAP version 3 protocol.

Limitations of BAM Server LDAP connectivity

The following limitations apply to the BAM Server connectivity with the LDAP server:

- You can configure a connection to only one LDAP server.
- BAM Server creates roles based on groups that are defined on the LDAP server. When BAM Server encounters a group for which a role is not yet created, it creates the role and assigns it a set of zero permissions. You can later modify the permissions as required. (See "Configuring LDAP role mapping" on page 50.)
- If BAM Server imports a user and the user does not belong to a group to which a Business Activity Monitoring ES role corresponds, the user is created but remains unassigned to any roles.
- You cannot change the role that a user is assigned to if the user is imported from the LDAP server. Role assignments for imported users can be accomplished by making changes to the LDAP server. However, you can assign manually-created users to roles that are created based on LDAP groups.

Best practices for BAM Server LDAP connectivity

When setting up the BAM Server connectivity with the LDAP server, it is strongly recommended you adhere to the following best practices:

- If the connection to the LDAP server is not secure, you should use SSL.
- For authentication, Simple Authentication and Security Layer (SASL) is the recommended method and is well supported by LDAP.
- For security reasons, the access permissions of the LDAP synchronization user should be limited to querying the LDAP server. For more information on the synchronization user, see "Configuring automatic LDAP synchronization" on page 48.

Caution: The password for this user is stored in the BAM Server metadata using reversible symmetric encryption. Therefore, anyone with access to the metadata can obtain this password.

Configuring automatic LDAP synchronization

You can schedule the automatic synchronization of BAM Server with the LDAP server. Synchronization ensures that the user accounts and role definitions that BAM Server caches in the BAM Server metadata database are up to date with the content of the LDAP server.

During synchronization, BAM Server creates new roles based on any new groups in the LDAP server and removes existing roles based on any groups that have been removed from the LDAP server since the previous synchronization.

Note: Roles are removed even if users that were created manually are assigned to the roles. For these users, if the roles are removed due to synchronization, the user accounts still exist but are no longer assigned to the roles.

➤ **To configure automatic LDAP synchronization:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.
2. Click the **Administration Console** tab and then click **System Settings**.
3. Click the **LDAP Synchronization** tab.
4. Select **LDAP Enabled** if it is not already selected.
5. Specify values for the following properties:

   Initial Context Factory: The JNDI name through which BAM Server connects to the LDAP server. The default value is `com.sun.jndi.ldap.LdapCtxFactory`. You probably do not need to change this value.

   LDAP Server: The DNS name or IP address of the LDAP server.

   LDAP Port: The port on which the LDAP server is running. The default port is typically 389. However, if you select the SSL option, the default port is typically 636. You must confirm with your LDAP administrator which port to specify.

   LDAP SSL: Select this option if the LDAP server is configured to use SSL. Selecting this option may affect the LDAP Port setting.

   LDAP Authentication: The authentication method used by the LDAP server. Select one of the following options:

   - Simple
   - SASL (Simple Authentication and Security Layer). Select this option for Sun ONE.
   - Compare Encrypted Password

   LDAP Principal DN Prefix: For the simple authentication method, the text you specify will be inserted before the user's login name:

   - For LDAP servers that require DN login, set this to the appropriate property value followed by an equal sign (for example, `cn=` or `uid=`).
   - For Active Directory, leave this value blank.

   LDAP Principal DN Suffix: For the simple authentication method, the text you specify will be inserted after the user's login name:

   - For LDAP servers that require DN login, set this to the appropriate chain of values; the first character of the suffix must be a comma (","), as shown in the example:

     ```
     ,ou=Users,dc=domain,dc=name
     ```

   - For Active Directory, which requires a simple login with an email address, set this to an at symbol (@) followed by the domain name that is set for Active Directory.

   LDAP Synchronization User: The user that binds to the server and reads the lists of users and roles. For security purposes, you must specify a user account that can only read the LDAP directory.

   LDAP Synchronization Password: The password associated with the user specified for the LDAP Synchronization User option.

6. Click **Test Connection**. The connection and the user mapping and role mapping configuration are tested. If the connection settings are correct, a message will indicate that the connection was successful. If you have not yet configured LDAP User Mapping and LDAP Role Mapping, the message returns an error.

7. To set the LDAP Synchronization Schedule, use the **Add Schedule**, **Edit Schedule**, and **Remove Schedule** buttons to create the schedule you want.

   Note: You should set synchronization for a time when the fewest number of users are likely to be logged in.

8. Click **OK**.

Configuring LDAP user mapping

You can configure the user mapping parameters that determine which users are imported and synchronized from the LDAP server. The parameters you specify depend on the LDAP server provider that you are using.

➤ **To configure the LDAP user mapping parameters:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.

2. Click the **Administration Console** tab, and then click **System Settings**.

3. Click the **LDAP User Mapping** tab and specify values for the following parameters:

   LDAP User Base DN: The root of the tree that will be searched for users, for example:

   - (Sun ONE) `OU=people,DC=your domain,DC=com`
   - (Active Directory) `CN=Users,DC=yourdomain,DC=com`

   LDAP User Search Filter: The format that is appropriate for the type of LDAP server you are using. For example, your LDAP server could have a special group for Business Activity Monitoring ES users. This filter could then ensure that only users with this group membership are imported.

   LDAP User LoginID: The login ID of the indicated provider. This value will become the user's login ID in Business Activity Monitoring ES.

   LDAP User Full Name: Enter `cn` if you are using either Sun ONE or Active Directory.

   LDAP User Description: Enter `description` if you are using either Sun ONE or Active Directory.

   LDAP User PrimaryEmail: Enter `userPrincipalName`. This refers to the user's email address in the LDAP directory.

   LDAP User EncryptedPassword: Enter the password associated with the specified user if you are using either Sun ONE or Tivoli. Leave blank for Active Directory.

4. Click the **LDAP Synchronization** tab and click **Test Connection** to verify whether the users are imported successfully.

5. Click **OK**.

Configuring LDAP role mapping

You can configure the role mapping parameters that determine which groups or roles are imported or synchronized, or both. The parameters you specify depend on the LDAP server provider you are using.

➤ **To configure the LDAP role mapping parameters:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.
2. Click the **Administration Console** tab and then click **System Settings**.
3. Click the **LDAP Role Mapping** tab and specify values for the following parameters:

   LDAP Role Base DN: The format that is appropriate for the type of LDAP server you are using:

   - (Sun ONE) `OU=Groups,DC=your domain,DC=com`
   - (Active Directory) `CN=Users,DC=yourdomain,DC=com`

   LDAP Role Search Filter: The format that is appropriate for the type of LDAP server you are using:

   - (Sun ONE) `(&(objectclass=groupOfUniqueNames))`
   - (Active Directory) `(&(objectclass=group))`

   LDAP Role LoginID: Enter `cn` if you are using either Sun ONE or Active Directory.

   LDAP Role Full Name: Enter `displayname` if you are using either Sun ONE or Active Directory.

   LDAP Role Description: Enter `description` if you are using either Sun ONE or Active Directory.

   LDAP Role Member: The name of the multivalued property that contains role members:

   - (Sun ONE) `uniqueMember`
   - (Active Directory) `member`

   LDAP Role Member is: Use one of the following options:

   - `Distinguished Name` if the role member properties identify users by distinguished names, such as `cn=jadmin,ou=people,dc=your domain,dc=com`.
   - `Login identification` if the role member properties identify users by the value of the property used as the Business Activity Monitoring ES login ID.
4. Click the **LDAP Synchronization** tab and click **Test Connection** to verify whether the users are imported successfully.
5. Click **OK**.

Manually synchronizing with the LDAP server

You can manually synchronize BAM Server with the LDAP server at any time. Synchronization requests are queued to prevent concurrent synchronizations.

➤ **To manually synchronize with the LDAP server:**

1. Start BAM Workbench by typing `http://[host name]:[port]/bam/workbench` in the URL line of a web browser.
2. Click the **Administration Console** tab and then click **System Settings**.
3. Click the **LDAP Synchronization** tab.
4. Click **Synchronize Now**. The time required to synchronize depends on your environment. A message appears when the synchronization is complete.
5. Click **OK**.

Using the BAM Dashboard

When a process is activated and immediately invoked, the process instance is not registered on the corresponding BAM Dashboard. BAM Server requires several seconds after a process is activated before it can monitor the process for activity. After you activate a process, wait several seconds before invoking it.

If you install BAM Server after LiveCycle ES has run a process, you will have to populate BAM Dashboard. Populating BAM Dashboard initializes BAM Server to begin polling the LiveCycle ES database. When this process is enabled, the AdobeView can be created from the information gathered from the LiveCycle ES database. In the case of a clean LiveCycle ES installation, the database will be empty and no view will be created.

➤ **To populate BAM Dashboard:**

1. Navigate to **Workbench** > **Application Workbench** > **Events**.
2. Find `AdobeEvent` in the **Events** list and restart the event, select **disable dependencies**, and then click **enable all**.
3. Select "Disable dependencies" on all the events other than the AdobeEvent and the System Events that start with VC.
4. Select **Enable Only this object** during the Enabling ActivityInstanceStartedEvents.
5. Enable all **ActivityInstanceCompletedEvents**.
6. Select **Enable Only this object** during the Enabling ProcessInstanceStartedEvents.
7. Enable all **ProcessInstanceCompletedEvents**, all **QueueEvents**, all **TaskCompletedEvents**, all **ReassignedEvents**, and all **TaskSpentTimeOnQueueEvents**.
8. Navigate to **Workbench** > **Application Workbench** > **Views**.
9. Find **AdobeView** in the **Views** list and restart the view.
10. Click **disable dependencies** and then click **enable all**. There will be a delay while the list of existing orchestrations is populated.

    When BAM Dashboard has been populated, you can log in to BAM Dashboard to view the LiveCycle ES processes.

➤ **To log in to BAM Dashboard:**

1. Type the URL to the dashboard in a web browser. For example, type this URL:

   `http://[host name]:[port]/bam/login/dashboard.htm`

2. Log in as an administrator. The default administrator account for BAM Server uses the following credentials:

   Username: `system`

   Password: `manager`

Shutting down the BAM Server

Use the following procedure to shut down BAM Server under JBoss Application Server.

➤ **To shutdown Business Activity Monitoring ES on JBoss Application Server:**

1. Log in to the BAM Workbench as a system administrator.
2. Perform a system checkpoint by selecting **Administration Console** > **System Settings dialog** > **Checkpoint Configuration** tab, and then click **Run Checkpoint Now**.

   A snapshot saves the state of the system. When the **Recover Check point State on Restart** option of the System controls tab is on, the servers restore the last checkpoint data when they restart.
3. Run the JBoss Application Server shutdown script:
   - (Windows) `\[jboss bam root]\bin\shutdown.bat -S`
   - (UNIX) `./[jboss bam root]/bin/shutdown.sh -S`

Additional documentation

You can access additional information on LiveCycle Business Activity Monitor here:

- Business Activity Monitor - Dashboard at www.adobe.com/go/learn_lc_bamdashboard
- Business Activity Monitor - Server at www.adobe.com/go/learn_lc_bamserver
- Business Activity Monitor - Workbench at www.adobe.com/go/learn_lc_bamworkbench

Uninstalling Business Activity Monitoring ES

You must uninstall BAM Server completely before attempting to reinstall.

➤ **To uninstall BAM Server:**

1. Stop the BAM Server.
2. Undeploy the BAM Server EAR file.
3. Remove the following files:
   - *[jboss bam root]*/server/all/deploy/CAS_Adobe.ear
   - *[jboss bam root]*/server/all/log/*
4. Delete all of the files from the recovery log directory and logging directory that have names similar to the following patterns:
   - filestore*.dat
   - DEFAULTRECOVERYLOGGER_*
   - chkpoint*
5. Review the contents of the *[appserver root]*\bin folder and, if any chkpoint* files exist, delete them.
6. Use your database management tools to drop the database tables that store the BAM Server metadata. Alternatively, you may want to create a new BAM Server metadata database.

7 Advanced Production Configuration

This section describes advanced tuning for LiveCycle Output ES, LiveCycle Forms ES and LiveCycle PDF Generator ES. This section should only be completed on a production system by an advanced application server administrator.

LiveCycle Output ES and LiveCycle Forms ES

The current default value for PoolMax is 4. The actual value to set would depend upon the hardware configuration and the expected usage in your environment.

For optimal use, we recommend that the lower limit of PoolMax must not be less than the number of CPUs available and the upper limit must be determined by the load pattern on your server. Generally, the upper limit should be set to twice the number of CPUs on the server.

➤ **To modify existing PoolMax value:**

1. Edit the JBoss startup script using a text editor.
2. Add the following properties for ConvertPdf:
   - `com.adobe.convertpdf.bmc.POOL_MAX=4`
   - `com.adobe.convertpdf.bmc.MAXIMUM_REUSE_COUNT=5000`
   - `com.adobe.convertpdf.bmc.REPORT_TIMING_INFORMATION=true`
   - `com.adobe.convertpdf.bmc.CT_ALLOW_SYSTEM_FONTS=true`
3. Add the following properties for XMLFM:
   - `com.adobe.xmlform.bmc.POOL_MAX=4`
   - `com.adobe.xmlform.bmc.MAXIMUM_REUSE_COUNT=5000`
   - `com.adobe.xmlform.bmc.REPORT_TIMING_INFORMATION=true`
   - `com.adobe.xmlform.bmc.CT_ALLOW_SYSTEM_FONTS=true`

LiveCycle PDF Generator ES

LiveCycle PDF Generator ES is capable of doing multiple PDF conversions simultaneously for certain types of input files. This is enforced through the use of stateless session beans.

EJB Pool Size Configuration

Four different stateless session beans exist for enforcing independent pool sizes for the following types of input files:

- Adobe PostScript® and Encapsulated PostScript (EPS) files
- Image files (such as BMP, TIFF, PNG, JPEG etc.)
- OpenOffice files

- All other file types (except HTML files) like Microsoft Office files, Photoshop, PageMaker, and FrameMaker files

The pool size for HTML-to-PDF conversions is not managed through the use of stateless session beans.

The default pool size for PostScript and EPS files and for Image files is set to 3, and the default pool size for OpenOffice and other file types (except HTML) is set to 1.

You can configure the PS/EPS and Image pool-size to a different value, based on your server hardware configuration, such as the number of CPUs, the number of cores within each CPU, and so on. However, it is mandatory for the OpenOffice and other file types pool size to be left unchanged (that is, one) for proper functioning of PDF Generator ES.

This section describes how the pool size for PS2PDF and Image2PDF can be configured for each of the supported application-servers.

The text below assumes that the following two LiveCycle ES application EARs have been deployed on the application server:

- adobe-livecycle-<*app-server*>.ear
- adobe-livecycle-native-<*app-server*>-<*platform*>.ear

Here, <*app-server*> should be replaced with the name of the application server on which LiveCycle ES has been deployed in lowercase (such as "jboss", "weblogic". or "websphere"), and <*platform*> should be replaced with one of the four strings – "x86_win32", "x86_linux", "sparc_sunos", or "powerpc_aix" – depending on whether you are running your application server on Windows, Linux, SunOS™, or AIX operating system.

➤ **To configure the pool size for PS2PDF and Image2PDF:**

1. Open the adobe-livecycle-jboss.ear file in WinRAR.
2. Navigate to the following path, opening nested JAR files in WinRAR successively:

   adobe-pdfg-bmc-invoker-ejb.jar > META-INF
3. Extract jboss.xml to any suitable location on the file system and open it in a plain text editor.
4. In the XML, navigate to the node with the following path (expressed in the standard XPath notation):

   `jboss / container-configurations / container-configuration`
5. Choose the `container-configuration node` for which the `container-name` node is set to the value `PDFG ImageToPDF Stateless SessionBean`.
6. Further navigate to `container-pool-conf` and set the `MaximumSize` node to the appropriate value (for example, the new pool size for Image2PDF conversions).
7. Repeat steps 5 and 6 for the PS2PDF pool size (if required). The `container-name` node for PS2PDF conversions is set to PDFG PSToPDF Stateless SessionBean.
8. Save your changes and repackage the entire EAR structure in the original form.
9. Redeploy the modified EAR file in JBoss Application Server. You will be prompted to restart JBoss.
10.

A Troubleshooting

This section discusses possible issues you may encounter when installing and deploying LiveCycle ES, and suggests steps for avoiding or working around them.

Getting help

This section describes the steps you should take prior to contacting Adobe Support. If, after reviewing the LiveCycle ES documentation, you have not resolved your issues, contact Adobe Support. To help expedite your service, have the following information available:

- What were you doing when the problem occurred?
- Can you repeat the problem?
- Was an error message displayed when the problem occurred? Did you observe anything else?
- If you disable the Show Friendly HTTP Error Messages option in Internet Explorer (Tools > Options > Advanced), do the errors persist?

Installation considerations

If you are having problems installing, configuring, or deploying LiveCycle ES, make certain that you have carefully followed the instructions in these LiveCycle ES documents:

- *Preparing to Install LiveCycle ES*
- *Installing and Deploying LiveCycle ES* for your application server
- *Administering LiveCycle ES*

If you have installed and configured everything according to the documentation, review the following sections for issues similar to those you are experiencing.

Application server considerations

Check the following application server settings prior to contacting Adobe Support:

- **Total transaction lifetime timeout:** 300
- **Initial heap size:** 256
- **Maximum heap size**: 1024 Mb
- **Prepared statement cache**: 100
- **Database connection pool maximum**: IDP_DS is 100 and RM_DS is 30
- **Topics and queues connection factories**
  - **Connection pool maximum connections**: 50

Database initialization considerations

If you are having problems initializing the LiveCycle ES server, consider the following possibilities:

- Database instances must contain only alphanumeric characters in their names.
- (Linux) Database instances must not exceed the platform-specific threshold of 8 characters.

If the initialization fails at the beginning of the process, check for the following conditions:

- The LiveCycle ES database has already been created and the user has full rights to it.
- The database server is accessible when you ping it.
- The database is empty, that is, it has no tables, sequences, views or index tables.
- The JNDI name for `IDP_DS` has been created.

If initialization fails while writing to the Registry, check the application server logs for errors pertaining to the queues and topics. If errors exist, verify that the queues and topics have been configured properly.

Problems accessing Services page within LiveCycle Administration Console

If you navigate to the Services page in LiveCycle Administration Console and the page appears blank, perform this workaround to ensure that the page displays correctly:

➤ **To display the Services page correctly:**

1. Start JBoss Application Server manually (not using the Windows service) using the command:

   ```
   run -b localhost -c all
   ```

2. In the Windows hosts file located in the C:\windows\system32\drivers\etc\hosts directory, add the IP address and host name of the LiveCycle ES server.

Troubleshooting with log files

This section describes how to troubleshoot LiveCycle ES using the log files.

LiveCycle Configuration Manager log file

By default, the LiveCycle Configuration Manager log file is located in *[LiveCycleES root]*\ConfigurationManager\log and is named lcm.0.log (or similar). The log files are useful for LiveCycle Configuration Manager failure analysis and may be required when dealing with Adobe Enterprise Support.

JBoss log file

By default, the JBoss log files are located in *[LiveCycleES root]*\jboss\server\all\log and are named boot.log and server.log. The log files are useful for JBoss Application Server and LiveCycle ES deployment and bootstrapping failure analysis and may be required when dealing with Adobe Enterprise Support.

Scheduler service configuration for nondefault JNDI URLs

To function correctly, the Scheduler service may require some additional configuration.

Non-clustered environments

This is the JNDI URL for the IDP_DS that is managed by your application server:

```
org.quartz.dataSource.idp.java.naming.provider.url
```

if the JNDI URL differs from the default JNDI URL for the application server (that is, for JBoss: jnp://localhost:1099).

➤ **To set the scheduler properties:**

1. Create a new file named dscscheduler.properties.
2. Set the values of the above properties as necessary for the app server node. For example:

```
org.quartz.dataSource.idp.java.naming.provider.url =
  jnp://localhost:1099/
org.quartz.jobstore.isClustered = true
org.quartz.scheduler.instanceId = AUTO
```

3. Add the JVM argument `-Dadobe.idp.scheduler.properties=`*`[Path to this file]`*`/dscscheduler.properties` to the application server startup scripts/configuration.

Error messages

This section contains a list of error messages specific to LiveCycle ES and their definitions.

Class not found

If you see this error, check the following issues:

- Is the class path setting invalid or missing?
- Is the JAR file obsolete?
- Is there a compilation problem in the class?

JNDI name not found

If you see this error, check the following issues:

- If the symptom is an exception stack trace showing

  ```
  javax.naming.NameNotFoundException: jdbc/<badName>
  ```

  check that the expected name is spelled correctly. If it is not, you must fix the code.

➤ **To correct most common JNDI exceptions:**

1. Check the JNDI tree on the LiveCycle ES application server. Does the name used appear in the tree?
   - If yes, it is most likely that your code has not properly set up the `InitialContext` object being used for the lookup and the lookup is being done on a JNDI tree that is not the one the resource is

listed in. Refer to the property values to use in the *Installing and Deploying LiveCycle ES* document for your application server.

- If no, continue to step 2.

2. Does the resource appear in the JNDI tree under a name other than that listed in the lookup?
   - If yes, you are using the wrong lookup name. Provide the correct name.
   - If no, continue to step 3.
3. Review the application server logs during startup. If the application server has been configured to make this resource available but something is going wrong, an exception will be shown here. Is there an exception?
   - If yes, review the exception and stack trace. If the NameNotFoundException is a symptom of another problem based on your investigation of the server logs, move on to the troubleshooting steps for that problem.
   - If no, continue to step 4.
4. If the resource is not listed in the JNDI tree, and there is no exception at startup to explain why it isn't available, the most probable issue is that the application server has not been configured properly to make that resource available. Review the application server configuration. Has it been configured to make this resource available?
   - If no, see *Installing and Deploying LiveCycle ES* for your application server.
   - If yes, this is not one of the common problems that cause this issue. Contact Adobe Support.

Exceptions thrown when initializing the LiveCycle ES database multiple times

When you initialize the LiveCycle ES database after it has already been initialized, exceptions may be thrown indicating that the POF schema has been initialized.

This error can be safely ignored.

OutOfMemoryError: Java heap space error

LiveCycle ES can require transactions that run for longer than the default application server transaction time-out value. For example, processing large PDF documents can be very time intensive. These errors can appear in the application server log when Workbench ES users drag large files to the Resources view.

If you encounter OutOfMemoryError messages in the application server log, you must increase the transaction time-out value. The recommended value is 300 seconds (5 minutes).

➤ **To configure the JBoss transaction time-out:**

1. Open *[appserver root]*/server/all/conf/jboss.service.xml using a text editor.
2. Locate the `attribute` element that has the `name` attribute with the value `TransactionTimeout`:

   ```
   <attribute name="TransactionTimeout">300</attribute>
   ```

3. Modify the text in the `attribute` element to be a larger number, as required.
4. Save jboss.service.xml.

Failure to deploy EARs

Depending on the LiveCycle ES services you are installing, and your system configuration, you may receive errors when deploying the EARs. If this occurs you should increase the MaxPermSize on your application server from 256 to 512. See *Preparing to Install LiveCycle ES* for specific instructions on setting this value on your application server.