Administration JEE

Home	Public	Forum	**Subscription**

SmartDoc Technologies Courseware: www.aemforms.training

Last Updated: 2-22-2024

Administration-JEE

Before you Begin 6

Course Overview 6

www.aemforms.training 6

Limited Courseware License 6

Fundamentals 7

AdminUI 7

AEM Forms Workbench 8

Core Configurations 8

LCA Files 8

Packages 9

Workbench to AEM Replication 9

Exercises 9

Enable Safe Back-up Mode 9

Review Core Configurations 10

Global document storage root directory 11

Fonts Directories 11

Default document max inline size 11

Enable FIPS 11

Enable WSDL 11

Enable DSC invocation statistic 12

Work with AEM Forms Archives 12

Import an Archive 12

Deploy an application 13

Create an Archive 13

Install a Package with Package Manager 15

View the Workbench to AEM Replication 18

User Administration 19

The AEM Forms Administrator Accounts 19

AEM Forms JEE 19

AEM Forms on OSGi Author 19

AEM Forms on OSGi Publish 20

Start in AdminUI 20
Best Practice 20
AdminUI 20
User Administration in Touch UI. 21
User Administration in Classic UI 21
Exercises 21
Secure the JEE Administrator Account 21
Create a JEE Administrator Equivalent Account 21
Change the Super Administrator Password 24
Change the LiveCycle Client SDK Configuration 26
Secure the OSGi Administrator Account 26
Create an OSGi Administrator Equivalent 26
Change the Admin Password on AEM OSGi 27
Create a formUsers Group 28
Add a User (AdminUI) 30
Login to AEM as the new user 30
View the User in AEM TouchUI 31
Synchronize AEM Forms JEE with Microsoft Active Directory 32
Create an Enterprise Domain 32
Synchronize the Enterprise Domain 35
Synchronize JEE Roles with OSGi Groups 36
Manage Roles & Permissions 39
Create a user in the DefaultDom 39
Create a group in the DefaultDom 40
Create a dynamic group based on specific criteria 41
Create a Custom Role 43
Trouble-shooting: Unlock the Super Administrator Account in AdminUI 45
Trouble-shooting: Reset the Admin Password for AEM-OSGi 45
Bonus: SPIs for AEM Forms 46
Service Administration ________ 48
Service Accounts 48
Service Endpoints 48
JDBC 49
LDAP 49

Exercises: 50
View the CRX Configuration Service 50
Update the PDF Generator Account 51
Update the SharePoint Account 51
Configure the SMTP Service 52
JEE Configuration 52
OSGi Configuration 53
Enable or disable an endpoint 54
Modify an endpoint 54
Remove an endpoint 55
Change the Security on an Endpoint 55
Create a WatchedFolder endpoint 55
Configure the JDBC Service 57
Microsoft SQL Server 57
Encrypt your Password 58
Oracle 60
Configure the JDBC Service 60
Test the Connection 61
Configuration Parameters for Services 64
Work with LDAP 66
Configure the LDAPService 66
Call the LDAP Query Operation 67
Call the LDAP Query to XML Operation 71
Forms Workflow Administration 75
Forms Workflow Administration 75
Administrator and Task Notifications 75
Configure notifications for administrators 76
Configure notifications for users and groups 76
Exercises: 76
Create an error-producing application 76
Create Process presentForm 78
Create Process presentFormBadXPathExpression 78
Create Process presentFormAssetReferenceCouldNotBeResolved 79
Create Process presentFormBranchStallRequested 80

Use the Forms Workflow Tools....81
Configure Outgoing SMTP Mail....83
Configure stalled branch notifications....83
Configure stalled operation notifications....84
Configure task assignment notifications....84
Test the Automated Notifications....85

Security and Maintenance____86
AEM Forms JEE Health Monitor....86
SSL and Long-Lived Certificates....86
Exercises....87
Use Health Monitor....87
Whitelist IP Numbers for AdminUI....88
Open Admin UI Access to specific IPs....91
Create a Long-Lived Certificate....91
Update your configuration file....93

About this Courseware____94

Before you Begin

This course covers the specific Administration issues of an AEM Forms JEE system. The Administration section on aemforms.training has Administration courses for AEM Forms OSGi.

Course Overview

Prerequisites: Introduction and Installation JEE

Approximate Instructor-Led Classroom Duration: 1 Day

Exercise Environment: Use your own JEE Server or the SmartDoc VMWare image for the exercises. If you use your own server, install this archive from the Student Files.

– *AEM-Forms-JEE-Administration <version>.lca*

www.aemforms.training

The support site (**www.aemforms.training**) is designed to support our students during and after a training session. Here is what you will find on the support site.

– The **Known Issues** section documents bugs and issues with various versions of AEM Forms.

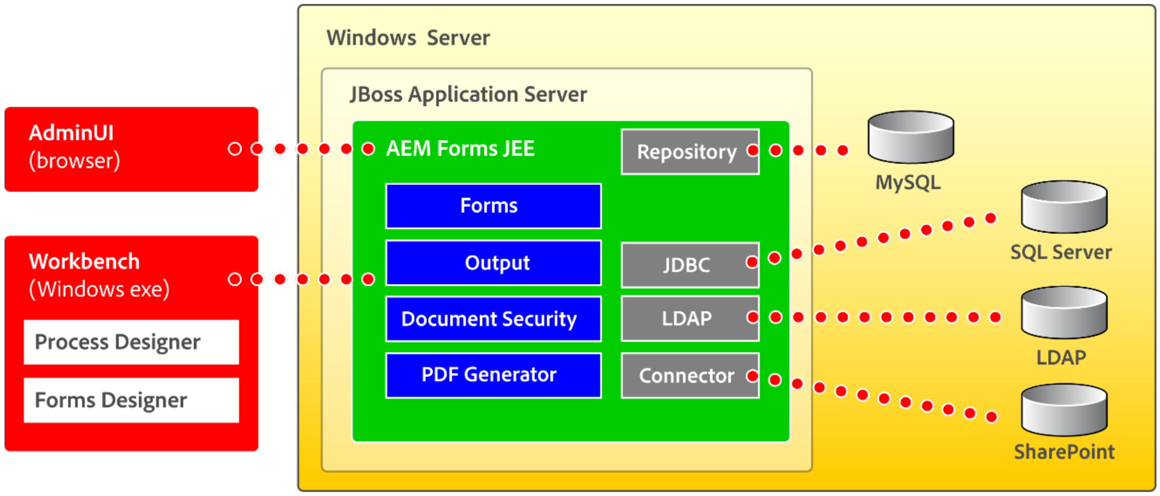
– The **Sandbox** section lists AEM Forms Servers you can use for the hands-on exercises.

– The **Forum** section enables you to post, review, and answer questions about AEM Forms.

Limited Courseware License

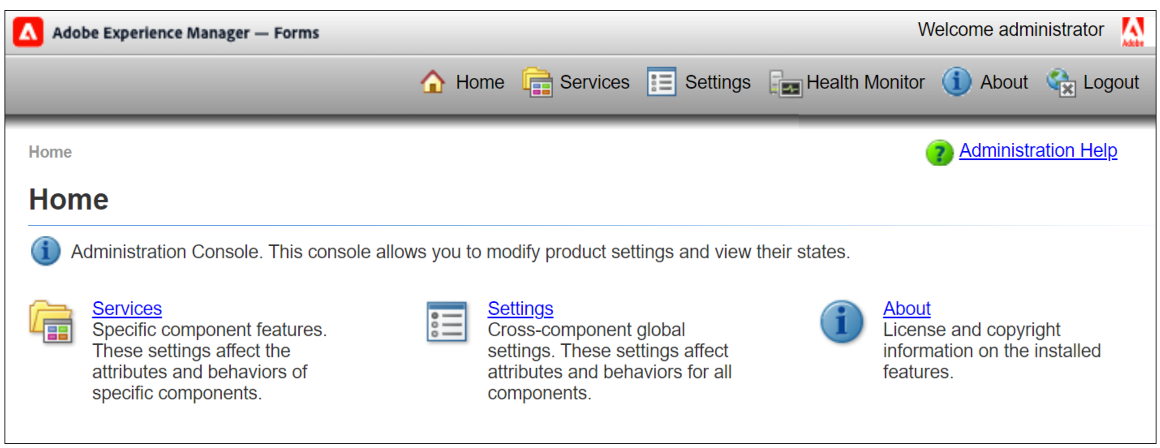
Fundamentals

This section covers the fundamentals of AEM Forms JEE.

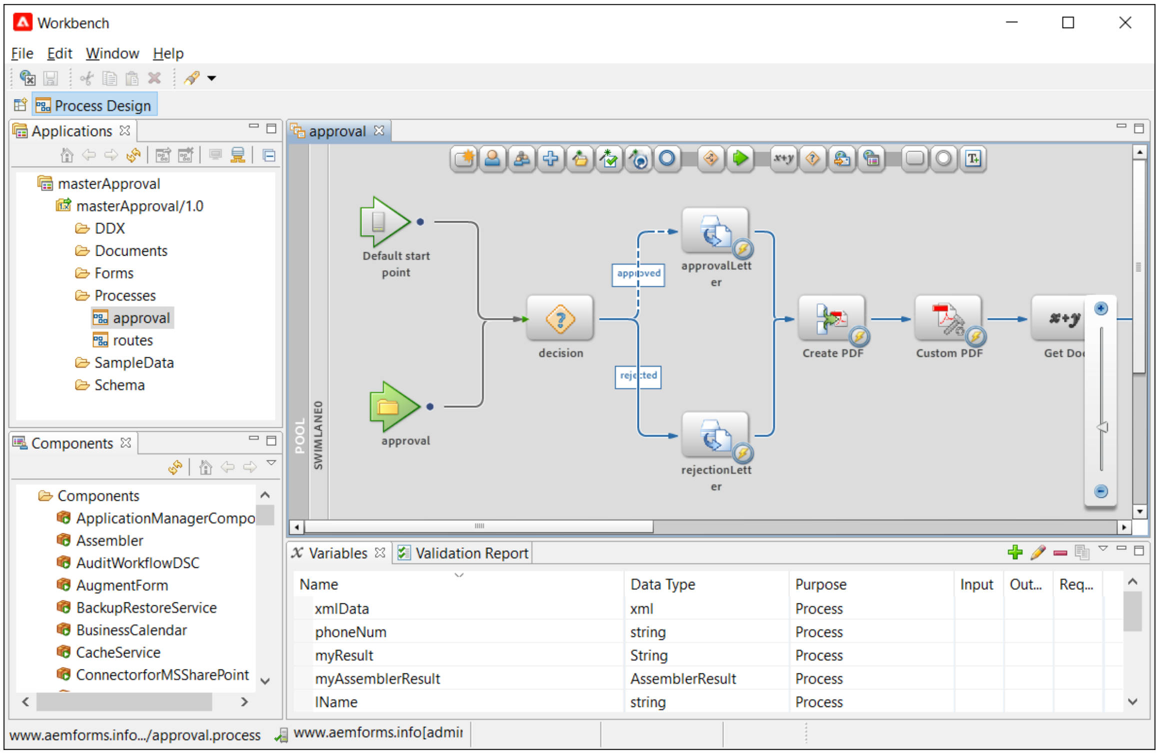


AdminUI

The Home screen shows the main sections of AdminUI.

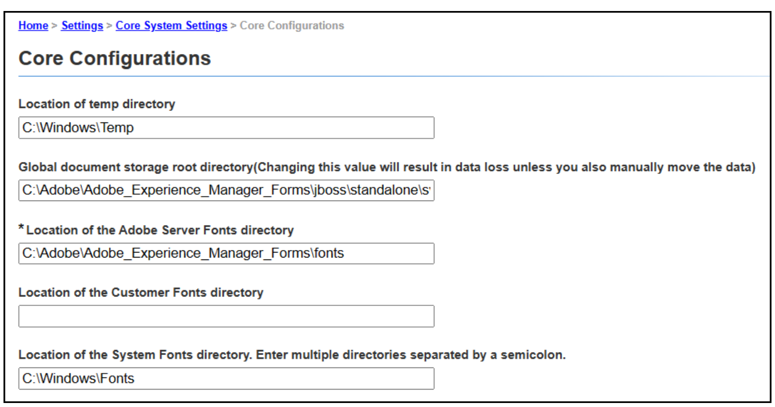


AEM Forms Workbench



Core Configurations

Forms and other related assets that you create in Workbench are replicated to CRX and you can view these in the AEM Touch UI.



LCA Files

AEM Forms JEE uses an application model that it inherited from LiveCycle. We can export this complete application model as a LiveCycle archive file (.lca). This includes your process diagram, variables, forms, and related assets such as images and schema files. This LCA file facilitates the transfer of your application from one server to another, which is useful when moving from a development server to a staging server.

Packages

Package Manager is part of CRXDE Lite. We use Package Manager to create and work with packages. Packages enable us to import and export repository content. Packages typically contain content, applications, and configurations. We use packages to install new functionality, transfer content and apps between AEM OSGi server instances, backup repository content, and export content to the local file system.

Workbench to AEM Replication

Forms and other related assets in Workbench are replicated to AEM.

Exercises

Enable Safe Back-up Mode

By default, Adobe Experience Manager - Forms usually runs in a non-backup mode. When you are in this mode, you need to completely shut down the server before backing up the database and global document storage directory. However, if you operate in *safe backup mode*, you can backup these repositories while the server is running.

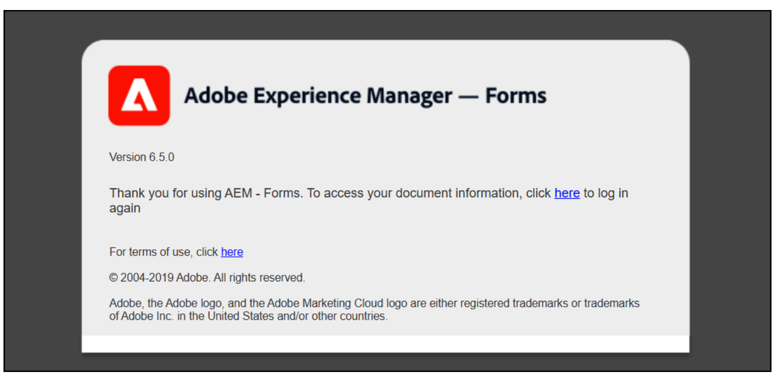
Follow these steps to configure this option.

1. Open a browser and enter the URL for AdminUI.

http://localhost:8080/adminui

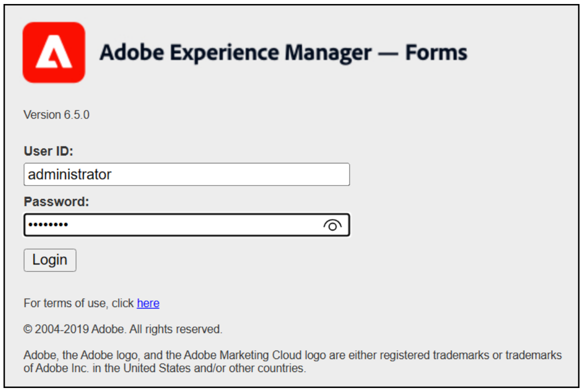
2. You should see this screen *(see illustration)*.

3. Click the here link to login.



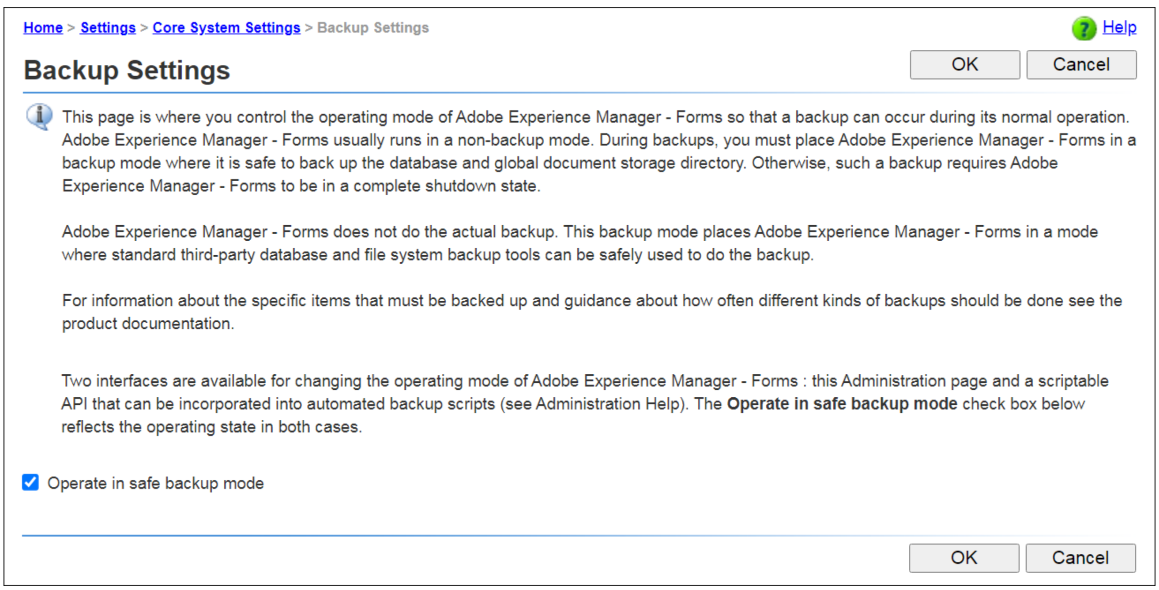
4. Enter administrator and your administrator password. If you are using the SmartDoc VMWare image, the password is **password**.

5. Click **Login**.



6. Select **Settings - Core Systems Settings - Backup Settings**.

7. Select **Operate in safe backup mode** *(see illustration)*.



8. Click **OK**.

   Note: *This does not do the actual backup. This backup mode places Adobe Experience Manager - Forms in a mode where standard third-party database and file system backup tools can be safely used to do the backup.*

Review Core Configurations

Follow these steps to review the *Core Configurations* in AdminUI.

9. Select **Settings - Core Systems Settings - Configurations**.

10. Review the configurations.

    Note: *Any changes here will take effect after you restart the server.*

The following are important configurations and items on the Core Configurations page. For a complete list of configurations and explanations, search for *"AEM Forms Core Configurations options"*.

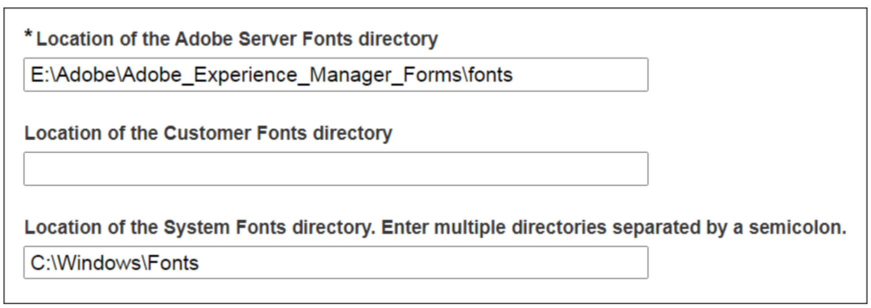
Global document storage root directory

This directory is used for all of the following.

- Storing long-lived documents. PDF files in a Long-lived process persist until they are removed. If some of these documents are lost or corrupted, AEM Forms may become unstable. You should put this directory on RAID.
- Storing temporary documents needed during processing. You can also store these documents in the AEM Forms database, but the GDS has better performance.
- Transferring documents between nodes in a cluster.
- Receiving incoming parameters from remote API calls.
- This directory should be backed-up.
- Changing the location of the GDS directory is a major system change.
- Do not use the same directory location for the temp directory and the GDS directory.

Fonts Directories

11. Server fonts are an important part of a document generation system. This is especially true when you are rendering PDF files that contain embedded fonts with the Output Service. The fonts specified in your XDP templates must reside in one of these directories.



* Location of the Adobe Server Fonts directory

E:\Adobe\Adobe_Experience_Manager_Forms\fonts

Location of the Customer Fonts directory

Location of the System Fonts directory. Enter multiple directories separated by a semicolon.

C:\Windows\Fonts

Default document max inline size

This is the maximum amount of bytes kept in memory when passing documents between different AEM Forms services. Documents that are smaller are stored in memory *(faster)* and documents that are larger are stored on the hard disk *(slower)*.

Enable FIPS

This will raise the minimum level of encryption your system will allow. Federal Information Processing Standard (FIPS) 140-2 is a U.S. government-defined cryptology standard. When running in FIPS mode, AEM forms restricts data protection to FIPS 140-2 approved algorithms by using the RSA BSAFE Crypto-C 2.1 encryption module.

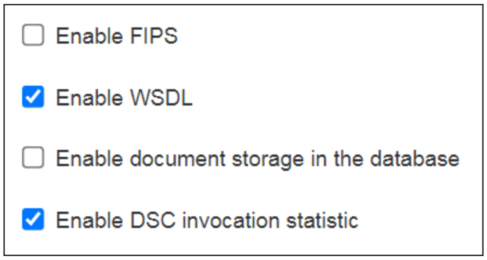
- Encryption in Acrobat 7 or below is no longer supported.
- The Assembler Service will not allow password encryption on any PDF. A *FIPSModeException* is thrown stating that *"Password encryption is not permitted in FIPS mode."*

Enable WSDL

This is good to enable for a Development machine, but you probably want to disable it on a production machine to make your system more secure. This selection enables the generation of a WSDL file *(Web Service Definition Language)* for all AEM Forms services.

Enable DSC invocation statistic

AEM Forms will track invocation statistics like the number of invocations, amount of time taken to invoke, and the number of errors in invocations. If you don't want these statistics, deselect this option to improve performance.

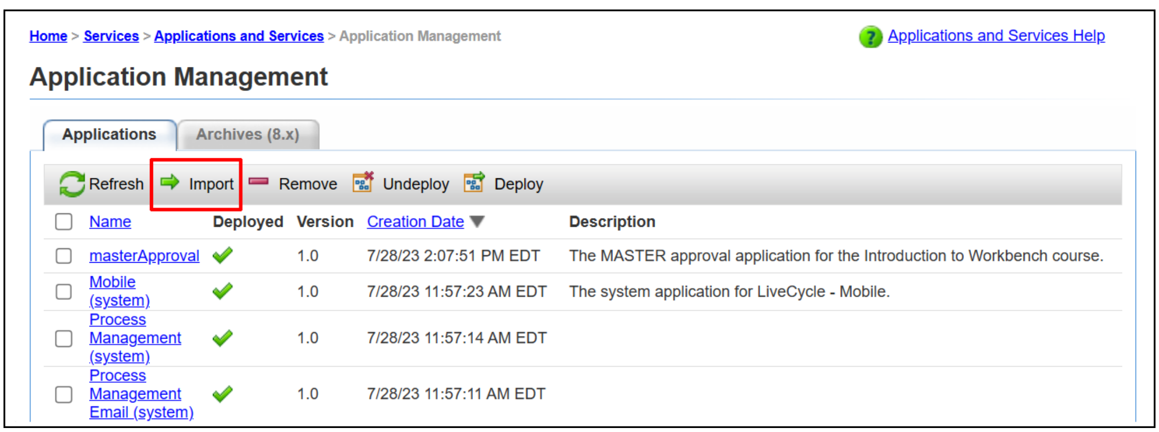


Work with AEM Forms Archives

You must be either an Application Administrator or a Super Administrator in order to install an LCA.

Import an Archive

12. Open AdminUI if it is not already open.
13. Select **Services** – **Applications and Services** – **Application Management**.
14. You should see the *Application Management* screen *(see illustration)*.
15. Click **Import** *(see illustration)*.



16. Click **Choose File** and navigate to your Student Files.
17. Select the **CRXRetrieval_<version>.lca** file and click **Open**.
18. Click **Preview**. The Preview Application page displays information about the application *(see illustration)*.

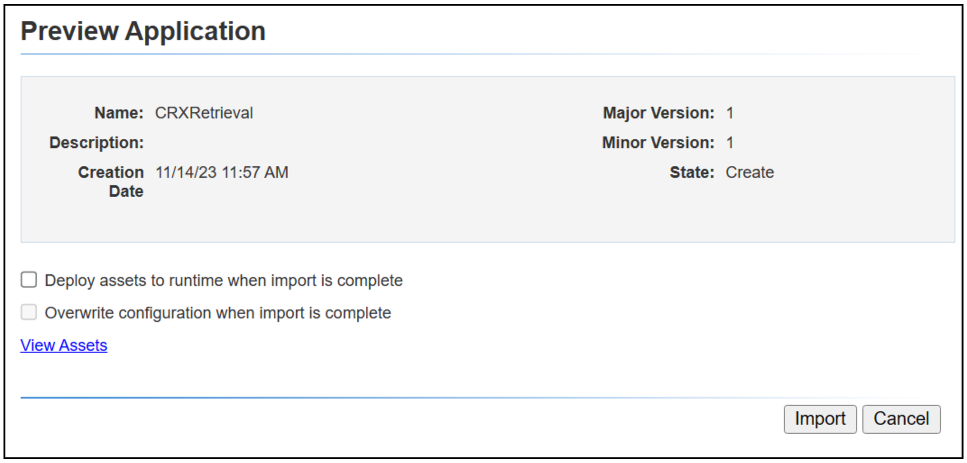
    Note: *This screen displays these options, but don't choose any of them right now.*

    – *(Optional) To see a list of the assets contained in the application, click View Assets.*

    – *(Optional) To deploy the assets to the runtime, select Deploy assets to runtime when import is complete. If you do not select this option, you can deploy the assets later.*

– *(Optional) In AEM Forms there is the option to Overwrite configuration when import is complete. If selected, AEM Forms will import all of the process configuration files used by the process in the LCA including endpoints, security profiles, and service configuration parameters.*

19. Click **Import**.

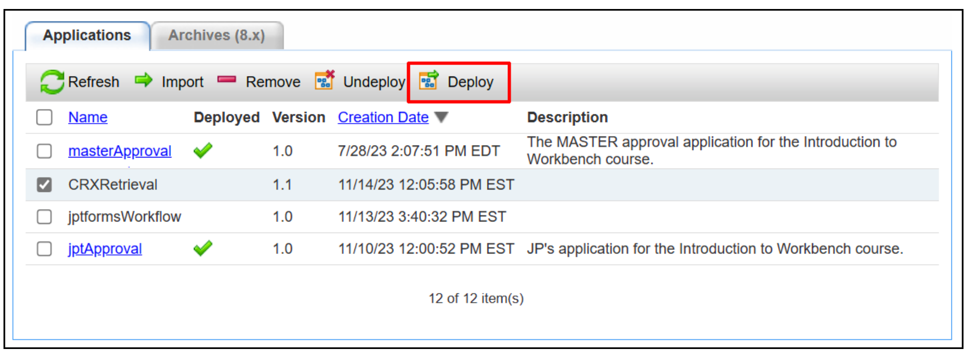


Deploy an application

We can deploy applications that we have imported, or applications that Workbench users have created and checked-in from Workbench.

20. In the Administration Console, click **Services** — **Applications and Services** — **Application Management**.

21. Select the checkbox next to the **CRXRetrieval** application and click **Deploy** *(see illustration)*.



22. Click **OK** in the confirmation dialog box.

23. You will now see a checkmark in the Deployed column and the application is now a service.

Create an Archive

We create AEM Forms archive files in Workbench.

24. Open the **AEM Workbench** Windows application.

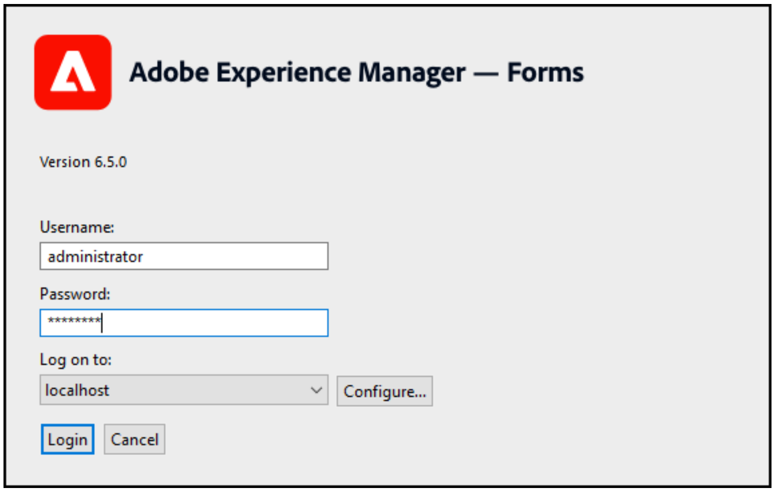
25. Select **Click here to login** *(see illustration)*.

26. Enter these values to login to localhost.

– Username: **administrator**

– Password: **password**

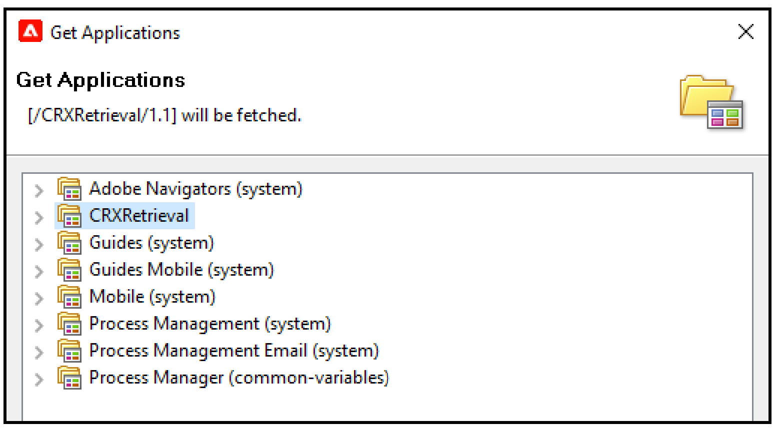
– Log on to: **localhost**



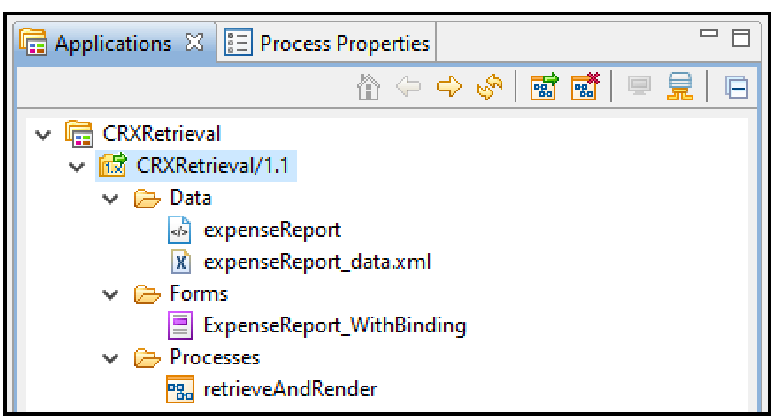
27. Click **Login**.

28. Select **File – Get Application**.

29. Select **CRXRetrieval** *(see illustration)* and click **OK**.

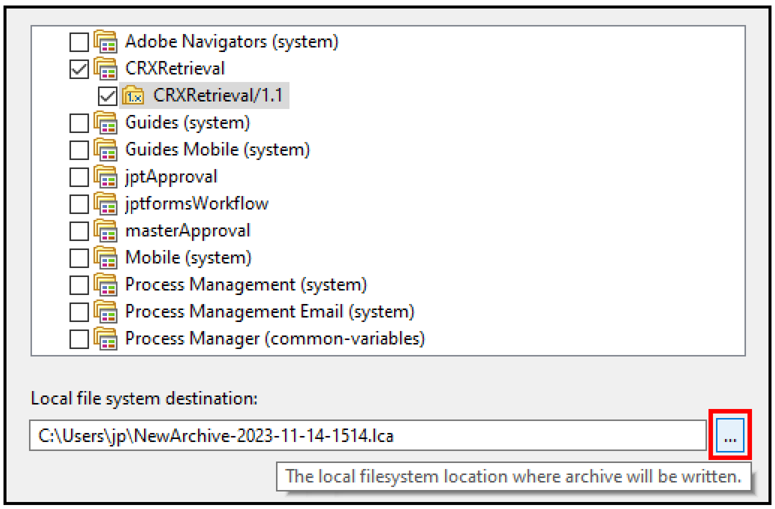


30. Expand the CRXRetrieval folders so you can see the complete application archive *(see illustration)*.



__Note:__ An AEM Forms archive include our process diagram, variables, forms, and related assets such as images and schema files. The LCA file facilitates the transfer of our applications from one server to another, which is useful when moving from a development server to a staging server.

31. In the Applications view, right-click the application version and select **Create AEM – Forms Archive**.
32. Select **Create A New Archive File**.
33. Click **Next**.
34. Notice the CRXRetrieval/1.1 application is selected (see illustration).
35. Click **Browse** *(see illustration)* and locate a folder to store the archive.



36. Click **Finish** to create the archive.
37. Click **OK** on the Export Success message box.

Install a Package with Package Manager

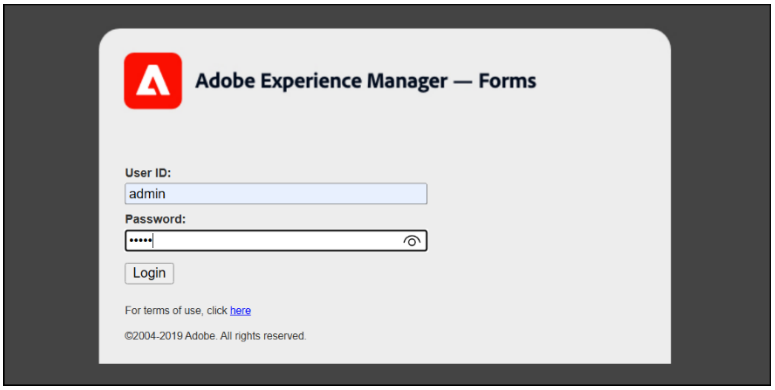
In this exercise, we will upload and install the **SmartDoc Master Forms** package.

38. Open a new browser tab and enter this URL.

http://localhost:8080/lc/aem/start.html

39. Enter **admin** for the *User ID* and **admin** for the *Password*.
40. Click **Login** (see illustration).

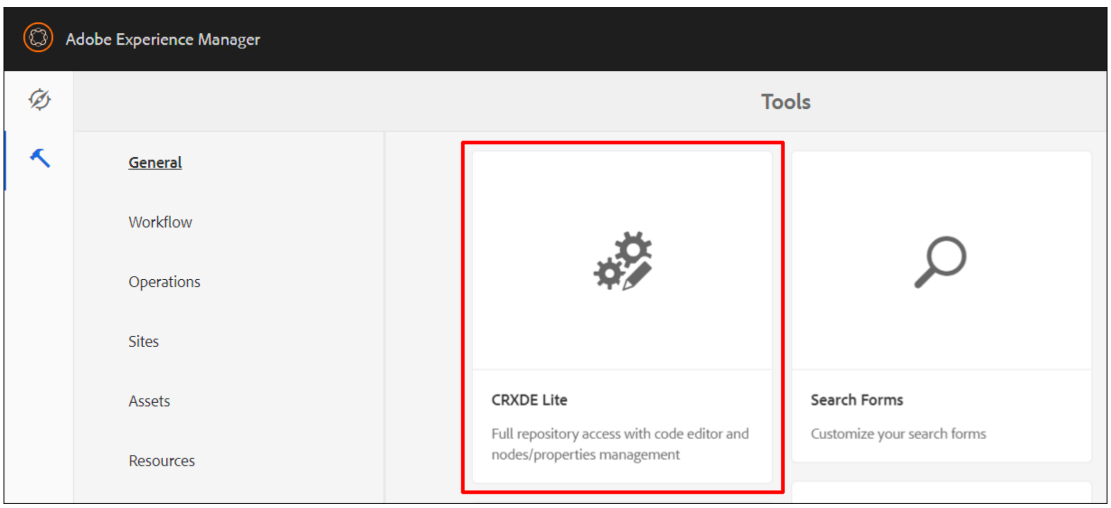
__Note:__ admin is super administrator on the OSGi platform and admin is the default password.



41. You will see the main screen for the AEM TouchUI.

42. Select **Tools** *(the hammer icon)*.

43. Select **General – CRXDE Lite** *(see illustration)*.

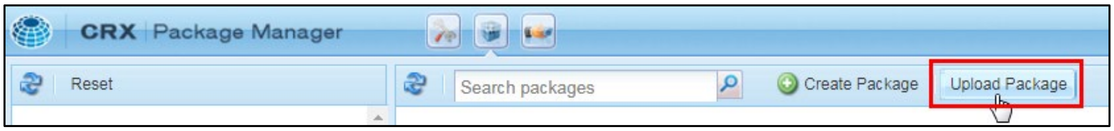


44. CRXDE Lite will open in a new browser tab.

45. Click **Package Manager** *(see illustration)*.

You will now see the **CRX Package Manager**.

46. Click **Upload Package**.



47. In the *Upload Package* window click **Browse…**

48. Select the **SmartDoc-Master-Forms-<version>.zip** package from your Student Files.

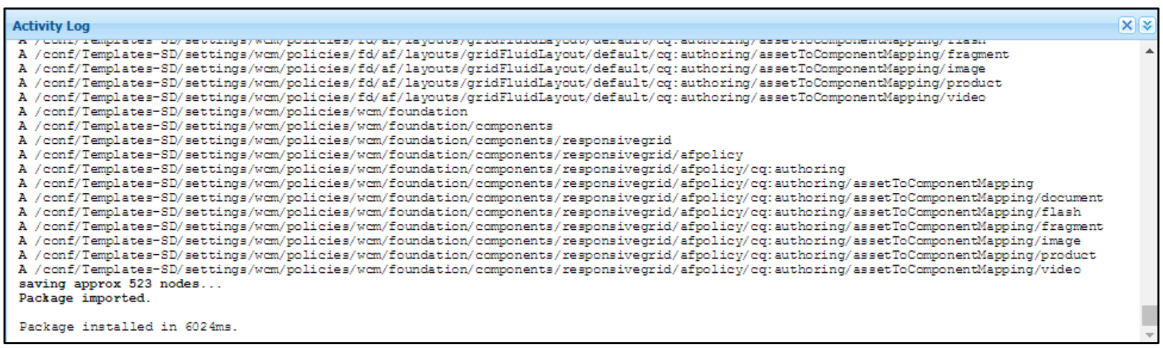
49. Click **Open** and **OK**.

50. Check to see if your package has dependencies or if it is ready to install.

51. If all is good, click **Install**.

52. In the Install Package dialog window ignore the **Advanced Settings** drop-down and click **Install**.

***Note:** The **Activity Log** panel will display the content that was added from the package and will also tell you how many "nodes" (assets, components) were installed in your repository.*



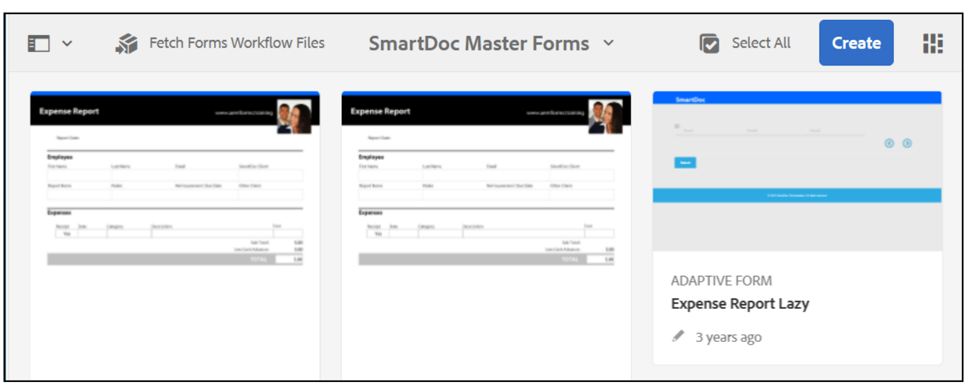
53. Select the browser tab with the AEM Touch UI.

54. Select Navigation (the compass icon in the upper left).

55. Click Forms and click Forms & Documents.

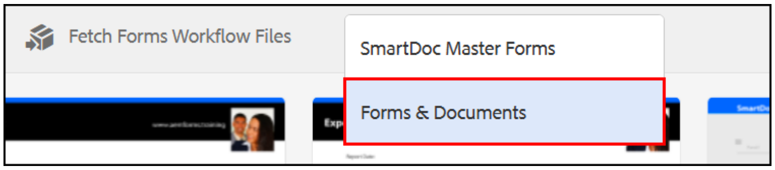
56. Open the SmartDoc Master Forms folder.

57. These were the assets that were installed when you installed the package *(see illustration)*.



View the Workbench to AEM Replication

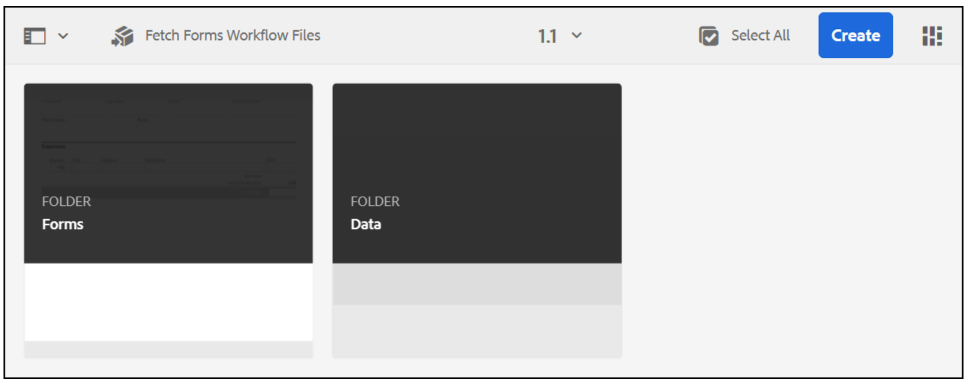
58. Select the center navigation and go back to Forms & Documents *(see illustration)*.



59. Open the CRXRetrieval folder.

60. Open the 1.1 folder.

61. Notice the *Forms* and *Data* folders. These were automatically replicated from the assets in the *CRXRetrieval* Workbench application *(see illustration)*.

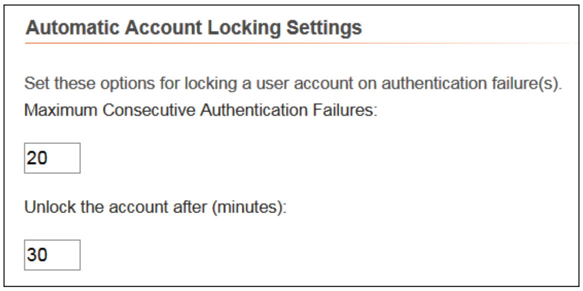


User Administration

This section shows best practices for setting up AEM Forms users, groups, roles, and privileges.

The AEM Forms Administrator Accounts

There are multiple administrator accounts you need to manage. You need to remove the default passwords and you need to avoid being locked out.



You need to manage three different administrator accounts while also updating the *Adobe LiveCycle Client SDK Configuration* properties and the properties of any replication agents.

The default Super Administrator account credentials for *AEM Forms JEE* is:

– *Username*: **administrator**

– *Password*: **password**

The default Super Administrator account credentials for *AEM Forms on OSGi* is:

– *Username*: **admin**

– *Password*: **admin**

The *Adobe LiveCycle Client SDK Configuration* properties are very important. If you fail to update the administrator password on the *Adobe LiveCycle Client SDK Configuration* panel, you will become locked out of your system. This is because this OSGi service will always try to logon to the JEE services. After several attempts to logon without the correct password, AEM Forms will eventually reach the limit of *Maximum Consecutive Authentication Failures* and lock the Super Administrator account.

These are three typical instances of AEM Forms and recommendations for each type. Some of these may not apply to your environment.

AEM Forms JEE

Make sure to update the *Adobe LiveCycle Client SDK Configuration* properties with your new password.

http://<servername>:8080/adminui

AEM Forms on OSGi Author

Make sure to update the *Adobe LiveCycle Client SDK Configuration* properties with your new password.

http://<servername>:4502/system/console/configMgr

Make sure to update the *Replication Agents* with your new password.

4502/etc/replication/agents.author/publish.html

AEM Forms on OSGi Publish

Make sure to update the *Adobe LiveCycle Client SDK Configuration* properties with your new password.

http://<servername>:4502/system/console/configMgr

If you are running a *Publish* instance as a service, stop the service and launch the *Publish* instance by double-clicking the JAR file or by starting it from the command line.

Start in AdminUI

The User Administration on a JEE system can take place in all of the following:

– AdminUI

– User Administration in TouchUI

– User Administration in Classic UI

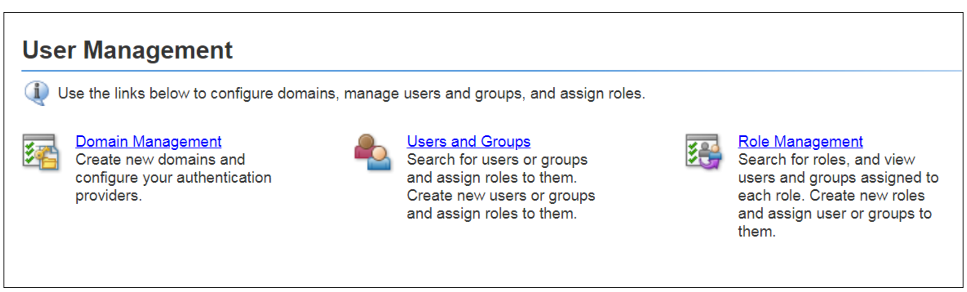
Best Practice

When creating users and groups on an AEM Forms JEE server, the best practice is to first create them in AdminUI. This approach is covered in the upcoming exercise entitled, **Create a Forms-User Group on JEE (AdminUI)**. When you do it this way, you will see the username prefixed with **lcu::<domain>::**. Once these users and groups are created in AdminUI, you can add permissions to them with the Touch UI and the Classic UI but don't initiate user creation in the Touch UI or in the Classic UI.

If you are using an AEM Forms on OSGi system, you can initiate user creation in the Touch UI or in the Classic UI. Adobe's preference it that we use the Touch UI.

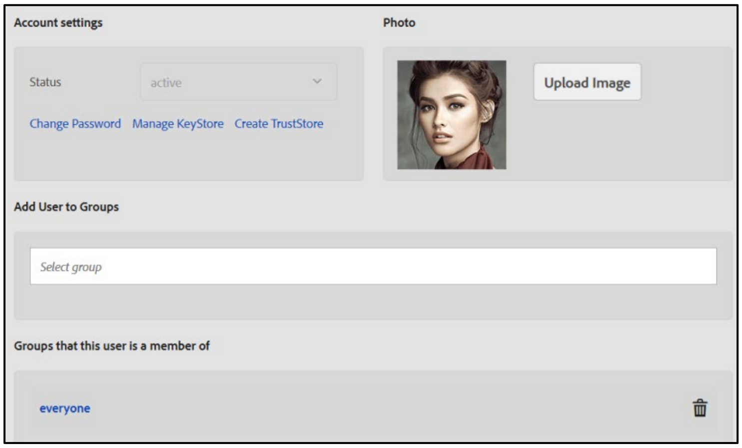
AdminUI

AdminUI enables you to configure domains, manage users and groups, and assign roles.



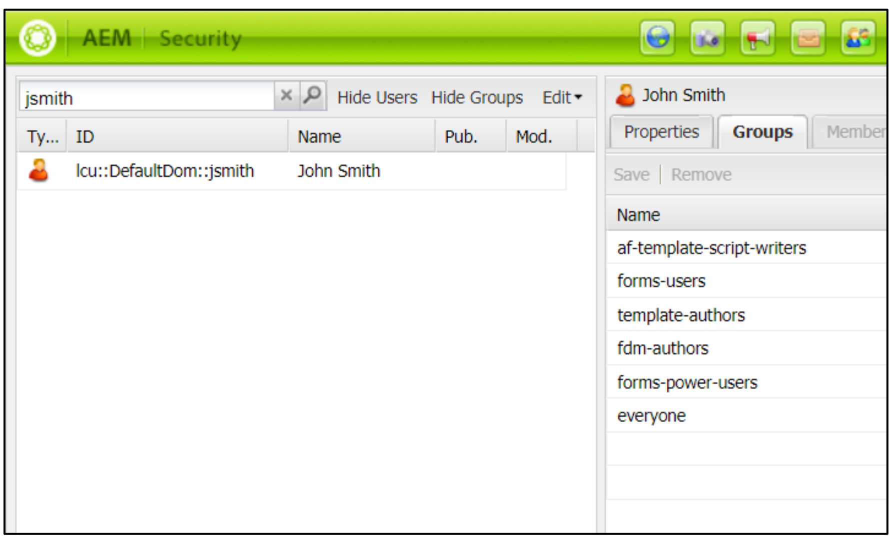
User Administration in Touch UI.

Touch UI enables you to configure users, groups and permissions on OSGi.



User Administration in Classic UI.

Classic UI also enables you to configure users, groups and permissions on OSGi.



Exercises

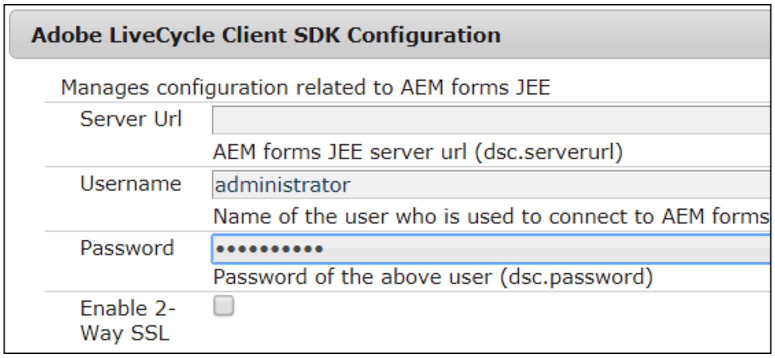
Secure the JEE Administrator Account

Create a JEE Administrator Equivalent Account

As with most systems, creating an *Administrator Equivalent Account* is one of the first steps to take when configuring a new system. You can use this account if you get locked out of the default account and you can *unlock* the default account from the *Administrator Equivalent Account.* Follow these steps to create an *Administrator Equivalent Account.*

> ***Note:*** *You cannot use a Super Administrator equivalent for the* ***Adobe LiveCycle Client SDK Configuration*** *login. The Username property must be set to* ***administrator****. Although, AEM instances on OSGi seem to be OK with a*

*Super Administrator equivalent. The OSGi stack on a JEE server will lock as soon as the Username property changes to anything except **administrator**.*



1. Login to **AdminUI** with the default administrator account.

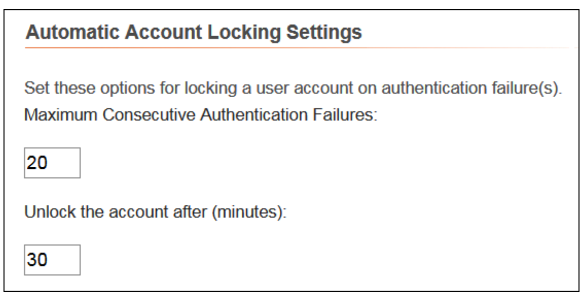
http://<servername>:8080/adminui

– *Username*: **administrator**

– *Password*: **password**

2. Select **Settings** > **User Management** > **Domain Management**.

Scroll down and you will see these settings.



This setting provides the rules for automatic locking of accounts.

3. Select **Settings – User Management – Users and Groups**.

4. Select **New Group**.

5. Enter these values.

– Group Name: **SuperAdmins**

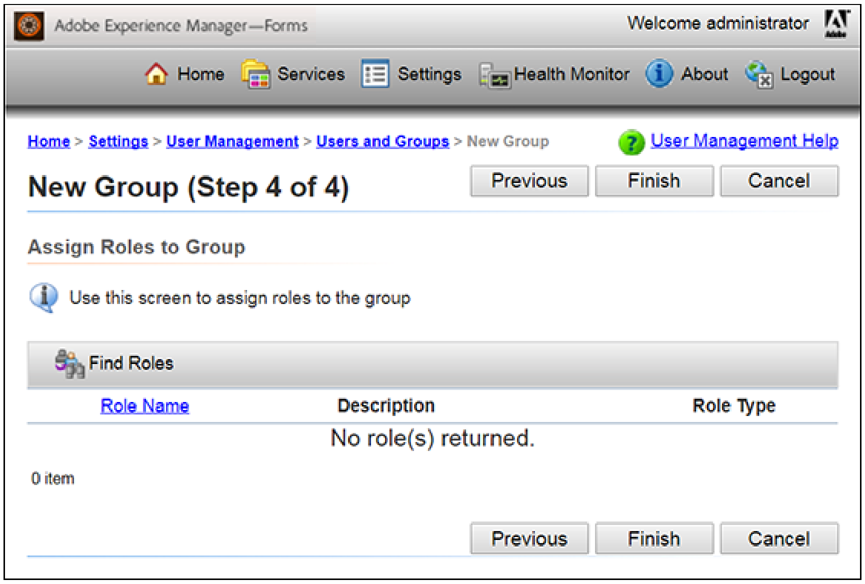
– Description: **In general, it's a best practice to assign roles to groups.**

– Domain: **DefaultDom**

6. Click **Next**.

7. Click **Next**.

8. Click **Next**. Note, you want to stop on the *Assign Roles to Group* screen *(see illustration)*.



9. Select **Find Roles**.

10. Select these roles.

– **Administration Console User**

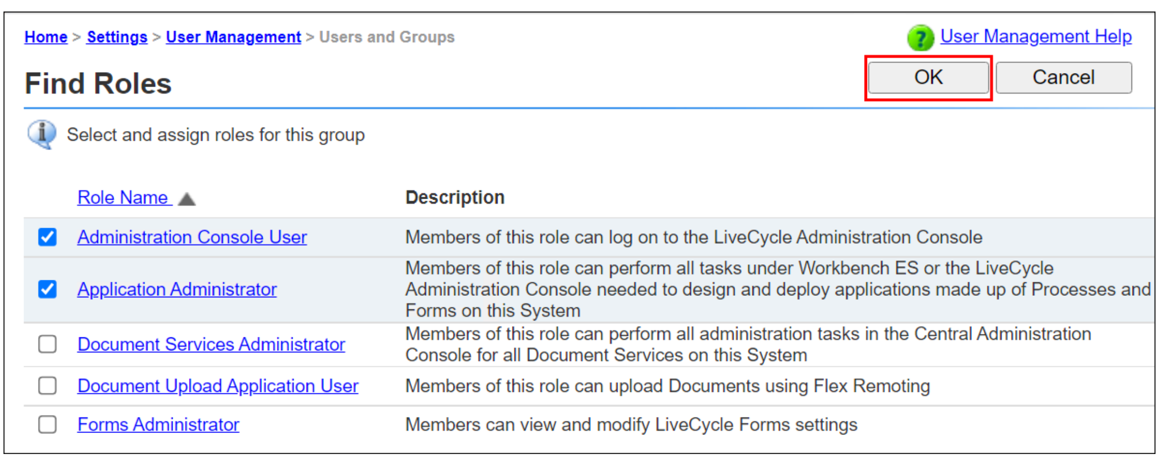
– **Application Administrator**

– **Security Administrator**

– **Services User**

– **Super Administrator**

11. Click **OK**.



12. Click **Finish**.

13. Click **New User**.

14. Enter these values.

– First Name: **backup**

– Last Name: **Administrator**

– Common Name: **backupAdministrator**

– Domain: **DefaultDom**

– User Id: **backupAdministrator**

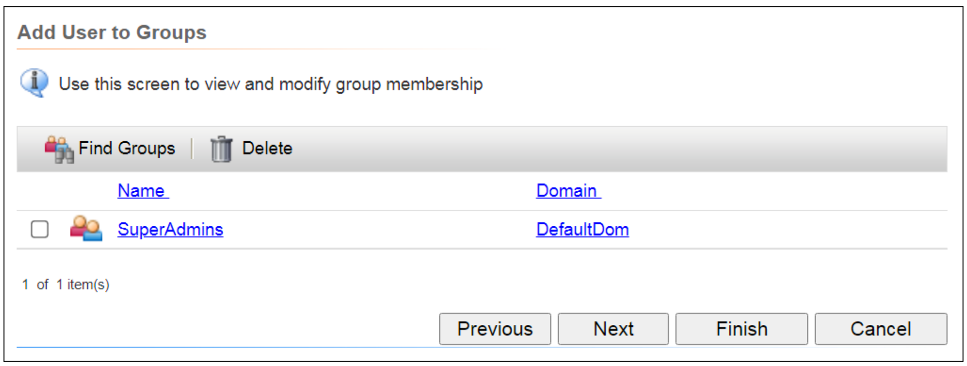
15. Click **Next**.

16. Select **Find Groups**.

17. Click **Find**.

18. Select the **SuperAdmins** group you created previously.

19. Click **OK**. Your screen will look like this.



20. Click **Next**. You don't need any roles because the user's roles will be inherited from its group.

21. Click **Finish**.

22. Store your SuperAdministratorEquivalent **User ID** and **password** in a place where you can find it later.

Change the Super Administrator Password

23. Click **Logout**.

24. Login to **AdminUI** with your **backupAdministrator** account.

25. Open a second tab and enter this URL for the **Web Console Configuration**.

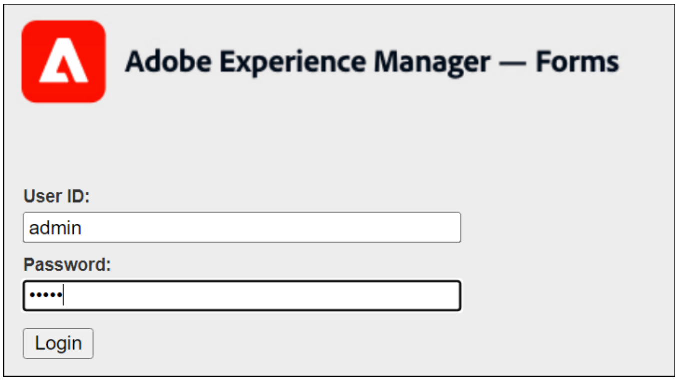
http://<servername>:8080/lc/system/console/configMgr

26. Enter the default user name and password for AEM OSGi.

– *Username*: **admin**

– *Password*: **admin**

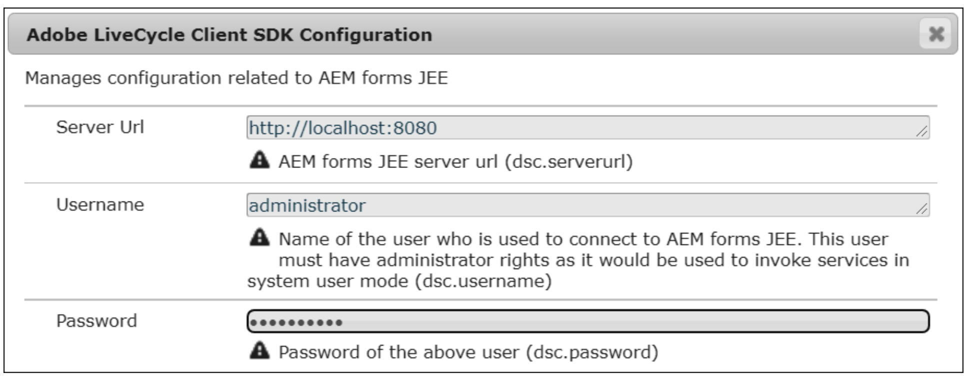
27. Click **Login** *(see illustration)*.



28. Hit **Ctrl-F** and search for **Adobe LiveCycle Client SDK Configuration.**

29. Click **Edit the configuration values** *(the pencil icon)*.

30. The password here must be changed right after you update the default administrator password. This service uses the default administrator account and if the password is not updated, it will time out after too many failed login attempts.



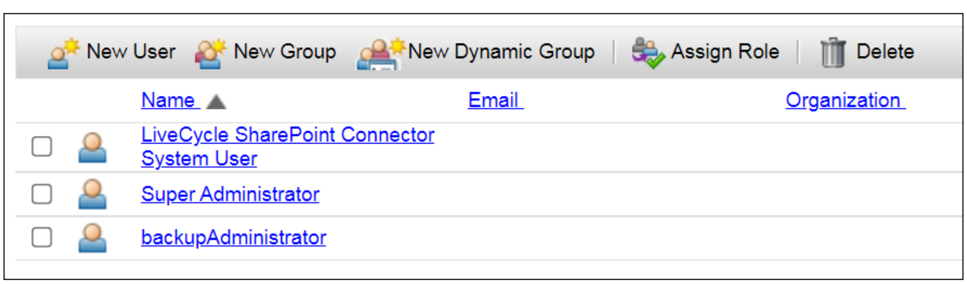
31. Go to **AdminUI** in your first browser tab to update the administrator password.

32. Select **Settings – User Management – Users and Groups**.

33. Select **Users** and **DefaultDom**.

34. Click **Find**.

35. Select **Super Administrator** *(see illustration)*.



36. Scroll down to *Login Settings* at the bottom of the *Edit User* panel.

37. Click **Change Password**.

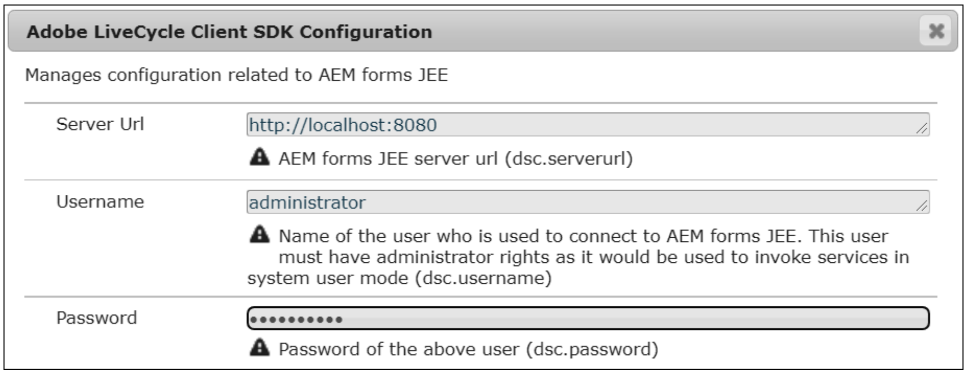
38. Enter the **new password** in the two fields.

39. Click **Save**. You should see a *Password updated successfully at <date> <time>* message.

40. Go to your second browser tab with the Web Console Configuration.

http://<servername>:8080/lc/system/console/configMgr

41. Enter the new administrator password for the AEM Forms administrator account.



42. Scroll to the bottom of the *Adobe LiveCycle Client SDK Configuration* panel.

43. Click the **Save** button to save the new data.

44. **Logout** of AdminUI.

45. **Restart** your JBoss service.

Change the LiveCycle Client SDK Configuration

> ***Note:*** *You must also do this for every AEM Forms on OSGi system that is pointing to your AEM Forms JEE system. This needs to be done right away so your system does not lock up.*
>
> ***Note:*** *You cannot use a Super Administrator equivalent for the* ***Adobe LiveCycle Client SDK Configuration*** *login. The Username property must be set to* ***administrator****. Although, AEM instances on OSGi seem to be OK with a Super Administrator equivalent. The OSGi stack on a JEE server will lock as soon as the Username property changes to anything except* ***administrator****.*

Secure the OSGi Administrator Account

Create an OSGi Administrator Equivalent

> ***Note:*** *First determine whether your system uses* ***admin|admin*** *or* ***administrator|password*** *as the default login for lc/crx/de. If you use* ***administrator|password****, you may not need to execute these steps.*

1. Login to CRXDE with the default administrator account.

http://<servername>:8080/lc/crx/de

– *Username*: **admin**

– *Password*: **admin**

2. Go to AEM.

http://<servername>:8080/lc/aem/start.html

3. Select **Tools – Security – Users**.

4. Click **Create User**.

5. Enter information including the following:

– ID: **backupAdministrator**

– Password: ***********

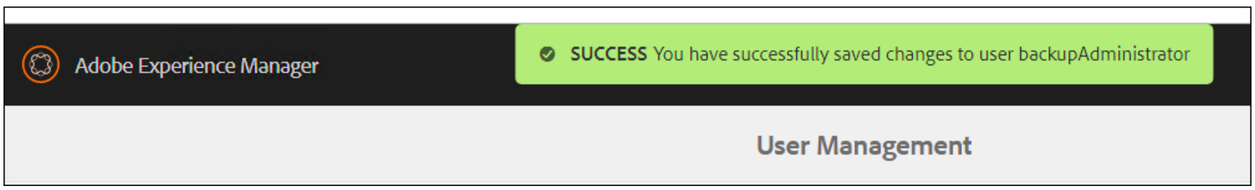
– Retype Password: ***********

6. Select **Groups**.

7. Enter **administrators** and select the **administrators** group.

8. Click **Save & Close**.

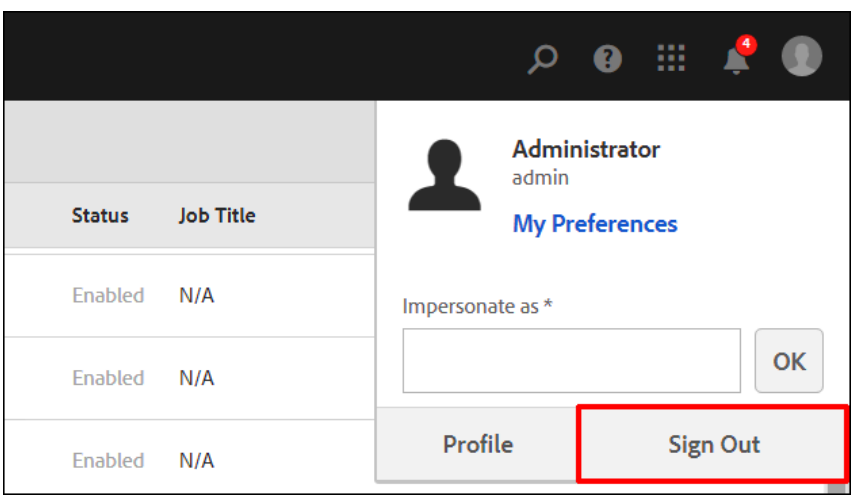
You will see the Success message.



> ***Note:*** *On JEE systems, I have noticed multiple instances when an admin login does not work on lc/aem/start.html but it does work on lc/crx/de. Once the login works on lc/crx/de, you can switch over to the AEM TouchUI.*

Change the Admin Password on AEM OSGi

9. Select **User – Sign Out** to sign out as the default administrator.



10. Login to CRXDE with your new **backupAdministrator** account.

http://<servername>:8080/lc/crx/de

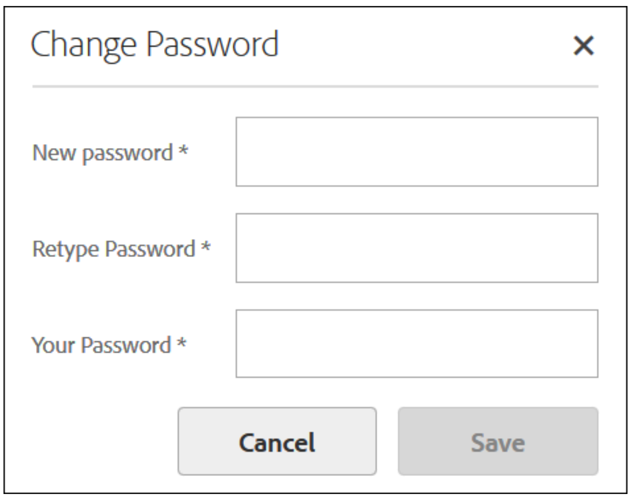
– *Username*: **backupAdministrator**

– *Password*: ***********

11. Go to AEM.

http://<servername>:8080/lc/aem/start.html

12. Select **Tools – Security – Users**.
13. Select **Administrator**.
14. Click **Change Password**.
15. Enter the new password.
16. Retype the new password.
17. Enter Your Password *(your new backupAdministrator account)*.



18. Click **Save**.
19. Click **Save & Close**.
20. **Restart** your server.

Create a formUsers Group

Follow these steps to create a new **formUsersJEE** group in AdminUI.

1. Login to **AdminUI** with an administrator account.

http://<servername>:8080/adminui

2. Select **Settings – User Management – Users and Groups**.
3. Select **New Group**.
4. Enter these values.

– Group Name: **formUsersJEE**
  Note: If you are working off a shared server, add your name to this group name.

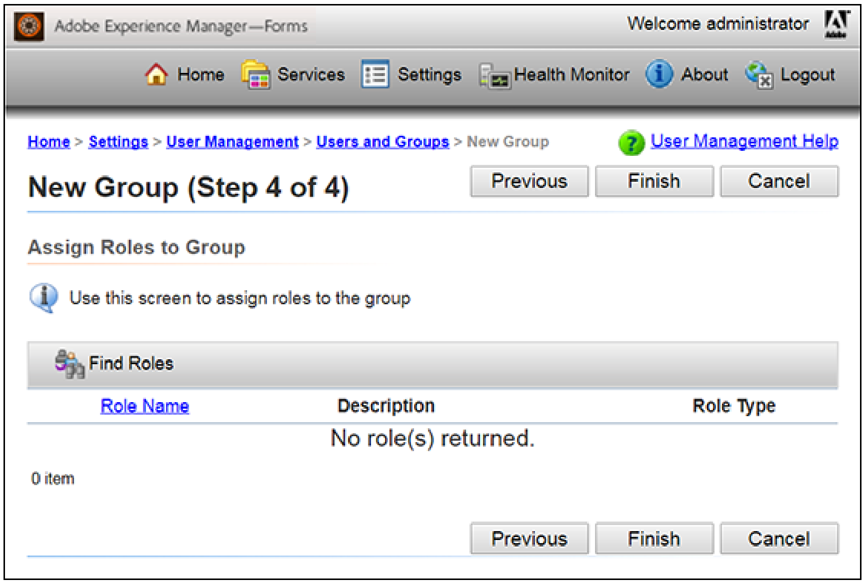
– Description: **The common Roles and Permissions that are required by users of AEM Forms.**

– Domain: **DefaultDom**

5. Click **Next**.

6. Click **Next**.

7. Click **Next**. Note, you want to stop on the *Assign Roles to Group* screen.



8. Select **Find Roles**.

9. Select these roles for adaptive form privileges.

– **af-template-script-writers**

– **fdm-authors**

– **forms-power-users**

– **forms-users**

– **template-authors**

10. Select this role as well. We will use it in a future exercise to map to an AEM repository group.

– **Application Administrator:** To use Workbench.

11. These roles are also important for AEM Forms Users, but they are not critical for adaptive forms. If your users will be using legacy LiveCycle services like Workbench and PDF Generator, you should consider these roles as well.

– **Forms Administrator:** To modify LiveCycle Forms settings.

– **LiveCycle SharePoint Connector Administrator:** To view and modify SharePoint Connector Configuration settings.

– **Output Administrator:** To view and modify LiveCycle Output settings.

– **PDFG Administrator:** For administrative access to PDF Generator.

– **PDFG User:** For non-administrative access to PDF Generator.

– **Reader Extensions Web Application:** To invoke the Reader Extensions web application.

- **Services User:** To view and invoke any LiveCycle Service.
- **Workspace User:** To login to the Workspace end user application.
- **cm-agent-users:** For the Correspondence management module.

12. Click **OK**.
13. Click **Finish**.

Add a User (AdminUI)

Follow these steps to add a new user to your group.

14. Select **New User**.
15. Enter these values.

- First Name: **John**
- Last Name: **Smith**
- Common Name: **John Smith**
- Domain: **DefaultDom**
- User Id: **jsmith**
- Password: **password**

16. Click **Next**.
17. Select **Find Groups**.
18. Click **Find**.
19. Select the **formUsersJEE** group you created previously.
20. Click **OK**.
21. Click **Next**.
22. Click **Finish**.

Login to AEM as the new user

You may need to first login to this instance of AEM as **jsmith** before **jsmith** will show up in the administrator's view. If this is the case, make sure to use a different browser. Your current browser is likely logged in to AEM as an administrator.

23. Open a new browser that is NOT already logged in to AEM. I usually use Firefox for this because I use Chrome as my main browser, and it is usually logged in to AEM.
24. Open AEM with your new browser.

http://<servername>:8080/lc/aem/start.html

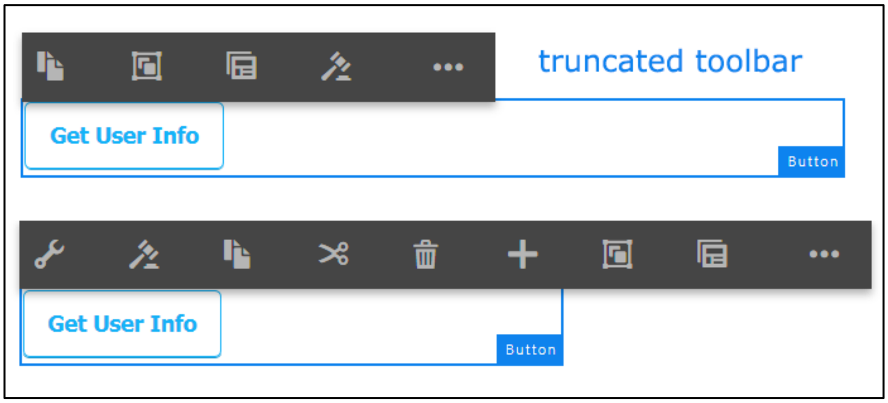
25. Login with your new form user.

- User Id: **jsmith**
- Password: **password**

26. Select **Navigation – Forms.**

John Smith has access to all of the features in the AEM Forms module.

> ***Note:*** *If you are seeing a truncated adaptive forms toolbar, you need to update your packages.*



View the User in AEM TouchUI

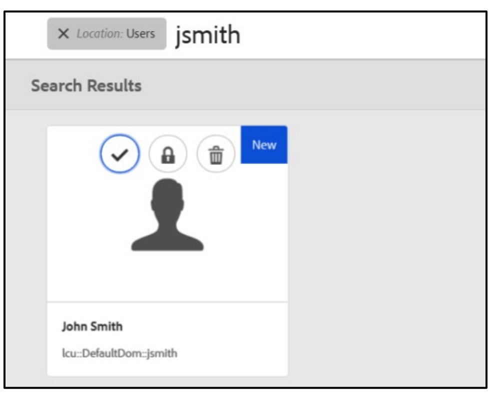
27. Go back to the browser where you are logged in as Administration.

28. Open the AEM TouchUI.

http://<servername>:8080/lc/aem/start.html

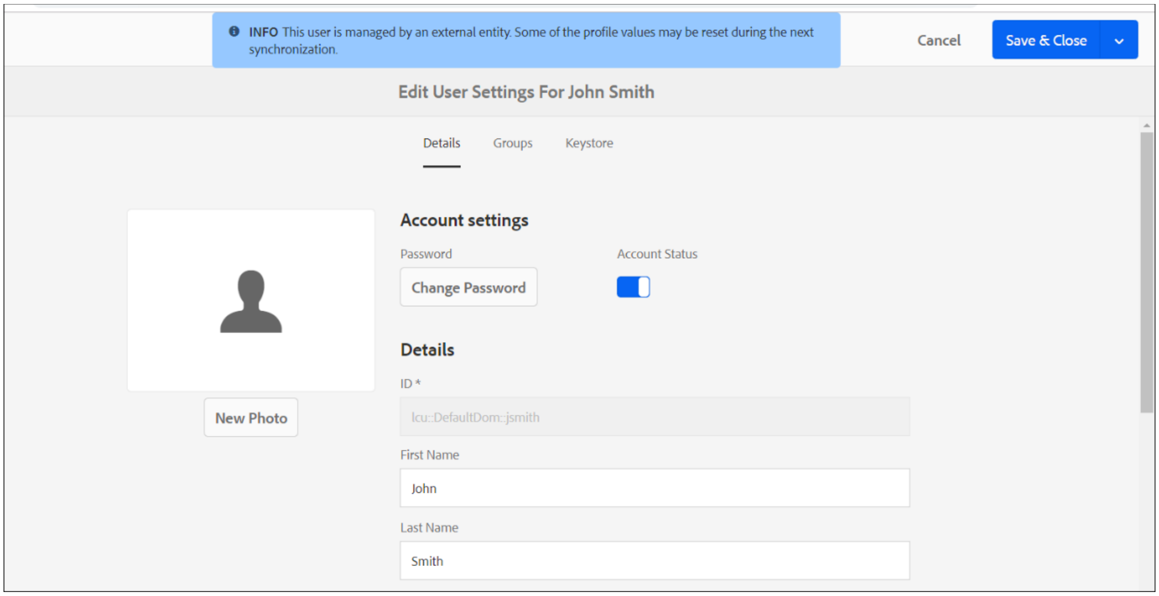
29. Select **Adobe Experience Manager – Tools – Security – Users**.

30. Search for **John Smith**.



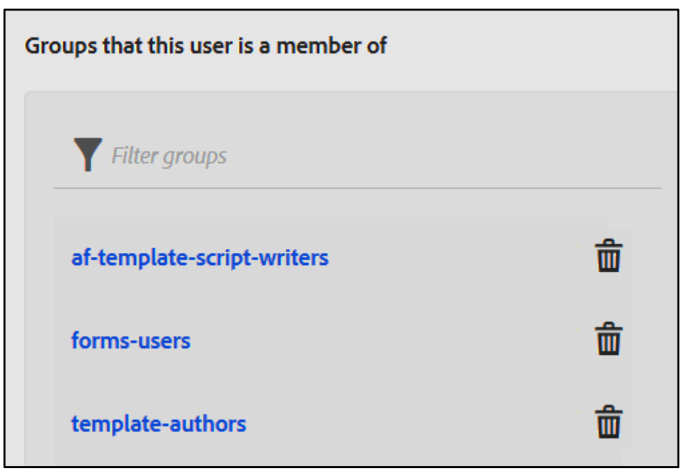
31. Click on the **John Smith** card.

You will see that the user is managed by an external entity and the ID is set to lcu::DefaultDom::jsmith.



32. Select the **Groups** tab to see John Smith's groups.

33. Scroll down and you will see the roles you assigned in AdminUI. Notice that the roles are referred to as groups here in AEM.



Synchronize AEM Forms JEE with Microsoft Active Directory

Create an Enterprise Domain

Follow these steps to create a new enterprise domain that will synchronize with your Active Directory LDAP.

1. Login to **AdminUI**.

2. Select **Settings – User Management**.

3. On the *User Management* page, click **Domain Management**.

4. Click **New Enterprise Domain**.

5. In the *ID* box, type **SDActiveDir**. The domain ID is the unique identifier for the domain.

6. In the *Name* box, type **SmartDoc Active Directory Enterprise Domain**.

7. Deselect **Enable Account Locking**.

8. Click **Add Authentication**.

9. Select **LDAP**.

10. Click **OK.**

11. Click **Add Directory**.

12. Enter **SDActiveDir** for the Profile Name.

13. Click **Next**.

14. Add your server into the Server property field *(exclude the http://)*.
    You can use a machine name like **133WinSrvr2012** or an IP Number.

15. Add the port number of your directory server *(likely 389, 1389, or 10389)*.
    Microsoft Active Directory uses port 389

16. Set *SSL* to **No**.

17. Set the *Binding* to **User** and enter the LDAP's username and password.
    If your using Active Directory on a Windows 2012 Server and your administrator is the domain administration, you should prefix your username with the domain name like this: **SMARTDOCTECH\Administrator**

18. Select the **Default Active Directory 2016** values in the drop-down. Note: If you are using earlier versions, this dropdown may say **Default Active Directory 2012**.

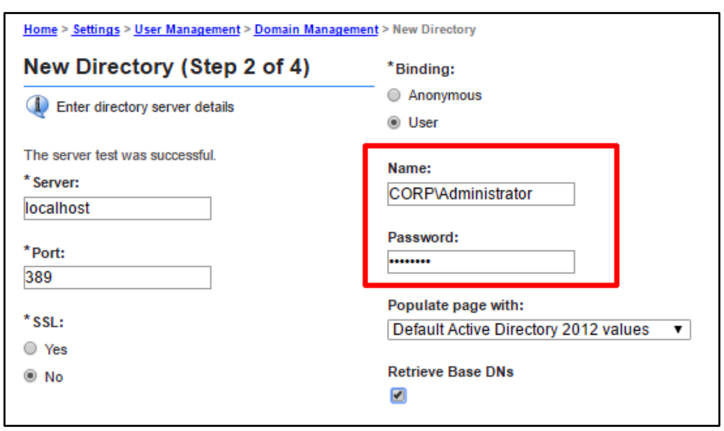
19. Select the **Retrieve Base DNs** checkbox.

20. Select **Enable Referrer**.

21. Click **Test** to test the connection. If it succeeds you should see this message:

The server test was successful.

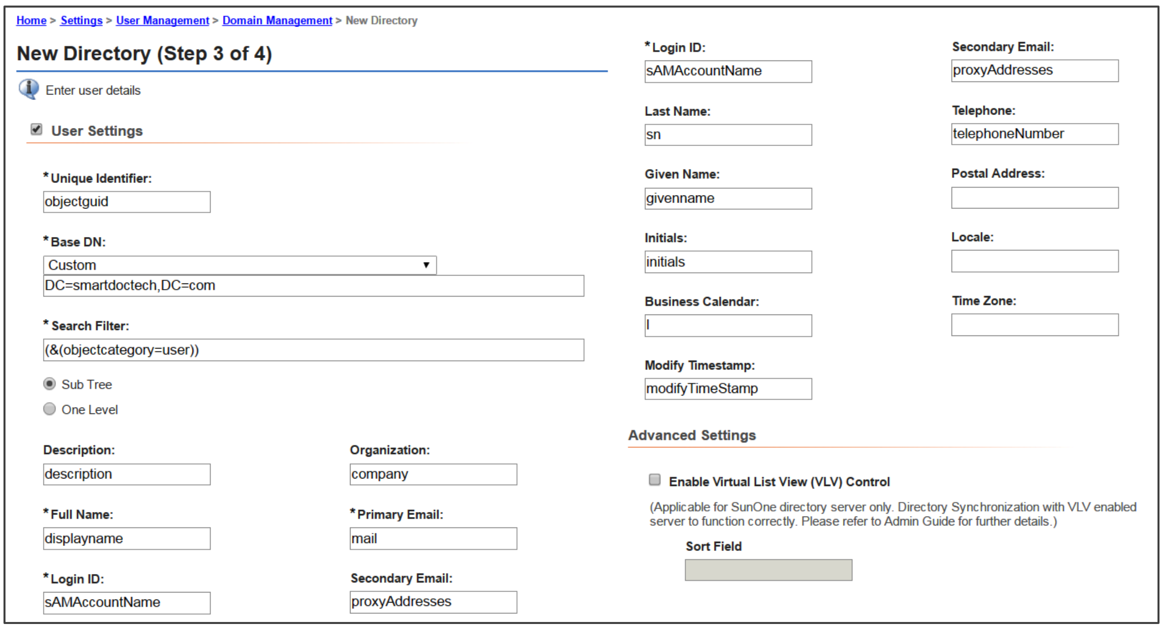
Note: *If there is a failure, you can review the exception in the Application Server log file.*



22. Click **Next**.

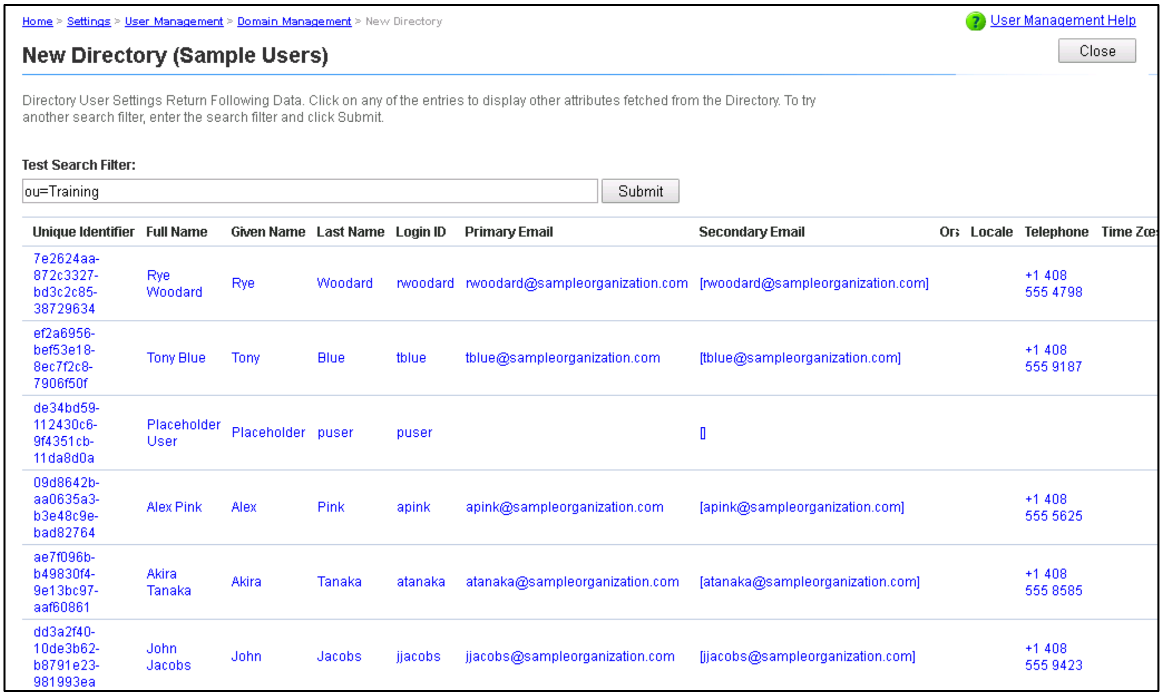
23. Select **User Settings** and enter **objectguid** for the unique identifier.
24. Select your **Base DN** property.
25. Enter **(&(objectcategory=user))** for Search Filter.
26. Enter **displayname** for Full Name.
27. Enter **mail** for Primary Email.
28. Enter **sAMAccountName** for Login ID.
29. Click **Test**.

You should see the values populate.



30. Click **Close**.
31. Click **Next**.
32. Select **Group Settings** and enter **objectguid** for the unique identifier.
33. Select your **Base DN** property.
34. Enter **(&(objectcategory=group))** for Search Filter.
35. Enter **cn** for Full Name.
36. Enter **member** for Member DN.
37. Click **Test**.

You should see the values populate.



Unique Identifier	Full Name	Given Name	Last Name	Login ID	Primary Email	Secondary Email	Or	Locale	Telephone	Time Zo
7e2624aa-872c3327-bd3c2c85-38729634	Rye Woodard	Rye	Woodard	rwoodard	rwoodard@sampleorganization.com	[rwoodard@sampleorganization.com]			+1 408 555 4798	
ef2a6956-bef53e18-8ec7f2c8-7906f50f	Tony Blue	Tony	Blue	tblue	tblue@sampleorganization.com	[tblue@sampleorganization.com]			+1 408 555 9187	
de34bd59-112430c6-9f4351cb-11da8d0a	Placeholder User	Placeholder	puser	puser		[]				
09d8642b-aa0635a3-b3e48c9e-bad82764	Alex Pink	Alex	Pink	apink	apink@sampleorganization.com	[apink@sampleorganization.com]			+1 408 555 5625	
ae7f096b-b49830f4-9e13bc97-aaf60861	Akira Tanaka	Akira	Tanaka	atanaka	atanaka@sampleorganization.com	[atanaka@sampleorganization.com]			+1 408 555 8585	
dd3a2f40-10de3b62-b8791e23-981993ea	John Jacobs	John	Jacobs	jjacobs	jjacobs@sampleorganization.com	[jjacobs@sampleorganization.com]			+1 408 555 9423	

38. Click **Close** to close this page.

39. Click **Finish**.

40. Click **OK**.

Synchronize the Enterprise Domain

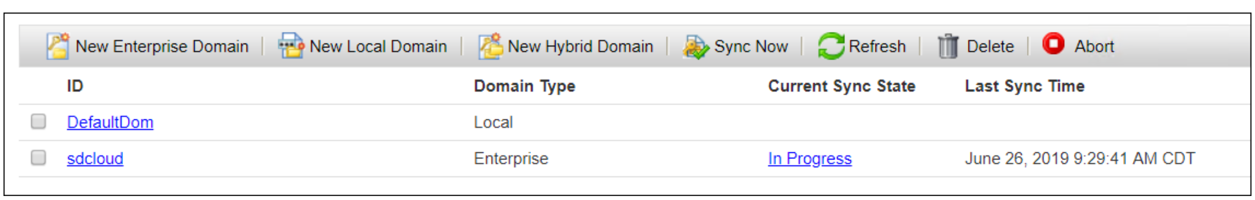
Follow these steps to synchronize your AEM Forms Enterprise Domain with your LDAP.

41. Select **Home - Settings - User Management - Domain Management**.

42. Select the checkbox next to the **SDActiveDir** domain ID.

43. Click **Sync Now**. The status will change to *Scheduled*.

44. Click **Refresh** and the status will change to *Completed* or *In Progress* depending on the size of your LDAP.



ID	Domain Type	Current Sync State	Last Sync Time
DefaultDom	Local		
sdcloud	Enterprise	In Progress	June 26, 2019 9:29:41 AM CDT

When it is completed, you can click the **Completed** link to read the log. Here is a sample log.

Severity	Timestamp	Message
INFO	June 26, 2019 9:31:03 AM CDT	Synchronization Completed Successfully
INFO	June 26, 2019 9:31:03 AM CDT	Group Members Synchronization Completed. Total number of group memberships fetched: 90, added: 82, deleted: 0 and unknown: 8.
INFO	June 26, 2019 9:29:44 AM CDT	Starting reading group members
INFO	June 26, 2019 9:29:44 AM CDT	Group Synchronization Completed. Total number of groups fetched: 73, added: 73, updated: 0 and deleted: 0
INFO	June 26, 2019 9:29:43 AM CDT	Reading Groups from Directory: sdcloud
INFO	June 26, 2019 9:29:43 AM CDT	Starting reading groups
INFO	June 26, 2019 9:29:43 AM CDT	User Synchronization Completed. Total number of users fetched: 43, added: 43, updated: 0 and deleted: 0
INFO	June 26, 2019 9:29:41 AM CDT	Reading Users from Directory: sdcloud
INFO	June 26, 2019 9:29:41 AM CDT	Starting reading users
INFO	June 26, 2019 9:29:41 AM CDT	Starting synchronization

45. Select **Home - Settings - User Management – Users and Groups**.
46. Select the following for your query.

– Find: *leave this blank*
– using **Name**
– in: **Users**
– and domain: **SDActiveDir**

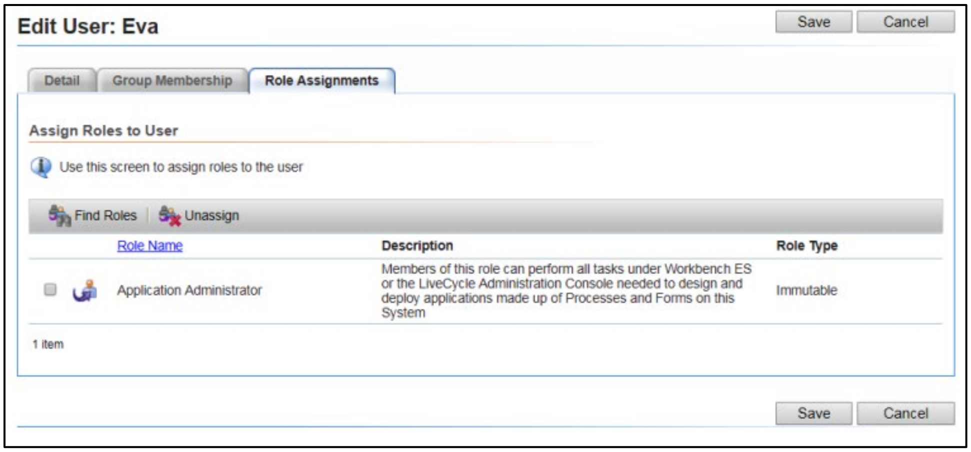
47. Click **Find**.

You will now see the new user that was synchronized from your Active Directory.

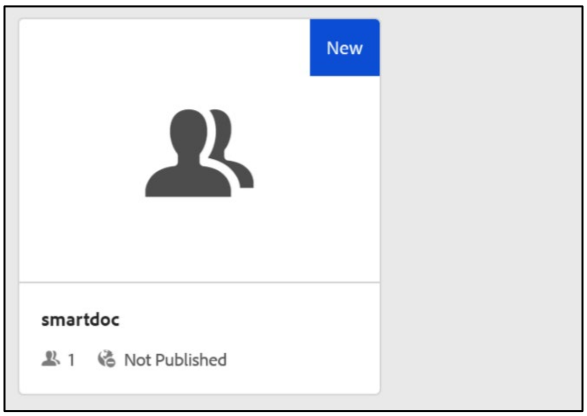
Synchronize JEE Roles with OSGi Groups

As of AEM 6.4, the JEE groups do not transfer as AEM repository groups. Only the JEE users are moved over as AEM users. However, you can map a JEE Role ID to an AEM repository groups. Follow these steps.

1. Create a user or group on JEE with the **Application Administrator** role. For this example, we created a user named Eva Terry.



2. Create a group on OSGi named **smartdoc**.

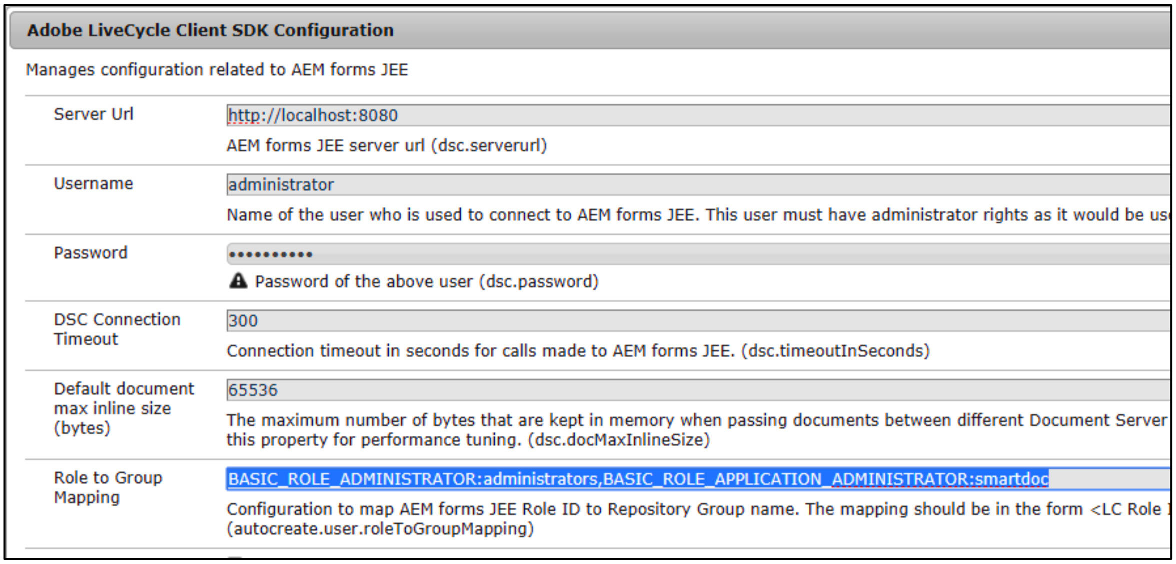


3. Open **Web Console – Configuration**.

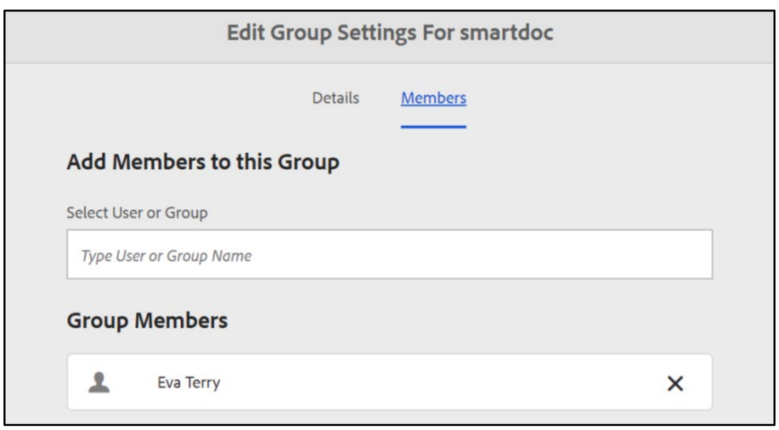
http://<servername>:8080/lc/system/console/configMgr

4. Search for **SDK** to view the LiveCycle Client SDK Configuration.
5. Scroll down to the **Role to Group Mapping**.
6. Add this to the mapping.

BASIC_ROLE_APPLICATION_ADMINISTRATOR:smartdoc



7. Click **Save**.
8. **Restart** your server.
9. Open the **smartdoc** osgi group. You will now see Eva Terry in your smartdoc group.



Note: *You may need to first login as Eva Terry.*

You can now add additional OSGi permissions to the smartdoc group.

Here are some other JEE roles you can map to OSGi groups. Make sure to test each on in a DEV environment first.

BASIC_ROLE_ADMINISTRATOR

BASIC_ROLE_ADMIN_CONSOLE

BASIC_ROLE_SECURITY_ADMINISTRATOR

BASIC_ROLE_TRUST_ADMINISTRATOR

BASIC_ROLE_APPLICATION_ADMINISTRATOR

BASIC_ROLE_DOCUMENT_SERVICES_ADMINISTRATOR

BASIC_ROLE_ADOBE_SERVICES_USER

BASIC_ROLE_PROCESS_ADMIN

BASIC_ROLE_RESOURCE_ADMIN

BASIC_ROLE_DOCUMENT_UPLOAD_USERS

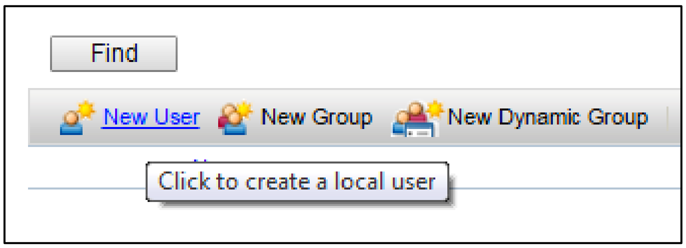
Manage Roles & Permissions

Create a user in the DefaultDom

1. Open **AdminUI**.

2. Select **Settings - User Management - Users and Groups**.

3. Click **New User**.



4. Enter values for the following properties under **General Settings**.

– First Name

– Last Name

– Common Name

– Domain: Select DefaultDom.

5. Enter values for the following properties under **Login Settings**.

– User Id

– Password

– Confirm Password

6. Click **Next**.

7. To add the user to a group, click **Find Groups** and do these tasks:

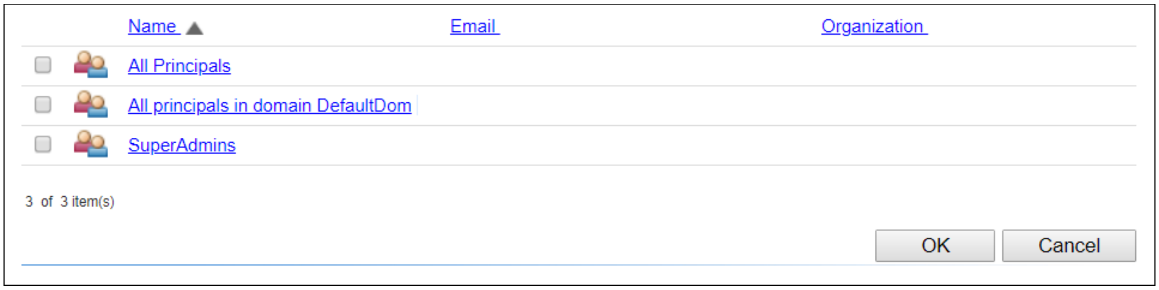
– In the **Find** box, type all of, or part of, the group name.

– Select **DefaultDom** as the domain to search.

– Select the number of items to display.

– Click **Find**.

– Select the check box for the group that you will add the user to. If you created the SuperAdmins group, you can use this one.



– Click **OK**.

– Click **Next**.

8. Click **Find Roles** to assign roles to the user.

9. Select the check box for the roles to assign.

10. Click **OK**.

11. Click **Finish**.

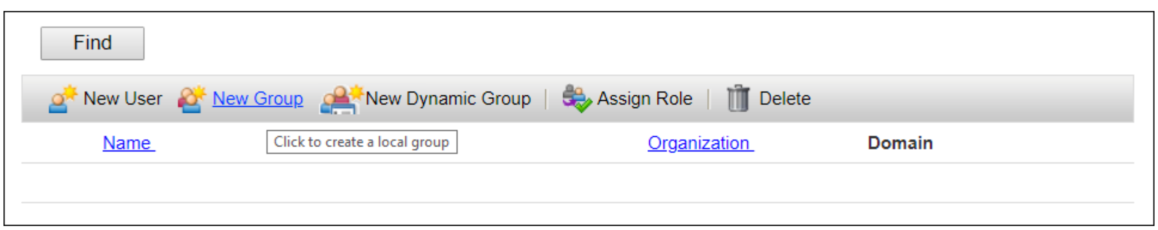
Create a group in the DefaultDom

When you manually create a group, you can add users and other groups to it and assign roles to the group. You can also associate the group with a parent group.

12. Open **AdminUI** if it is not already opened.

13. Select **Settings - User Management - Users And Groups**.

14. Click **New Group**.



15. Complete the *General Settings* section and click **Next**. *Group Name* is a mandatory attribute.

16. To add users and groups to this new group, click **Find Users/Groups** and do these tasks:

– In the **Find** box, type your search criteria. You can leave this blank to show all users.

– Select **Name** or some other option.

– Select **Users** or some other option.

– Select **DefaultDom** for the domain.

17. Click **Find**.

18. Check the box for the users you just created.

19. Click **OK**.

20. Click **Next**.

21. You can skip the **Associate this group to other groups** step. This step enables you to add an existing group to your new group. Click **Next** to skip this step.

22. Click **Find Roles** to assign roles to the group.

23. Select the check box for the roles to assign.

24. Click **OK**.

25. Click **Finish**.

Create a dynamic group based on specific criteria

In a dynamic group, you do not individually select the users who belong to the group. Instead, you specify a set of rules and all users who meet those rules are automatically added to the dynamic group.

A dynamic group contains only users. It cannot contain other groups. However, a dynamic group can belong to a parent group.

26. Open **AdminUI**.

27. Select **Settings** — **User Management** — **Users And Groups**.

28. Click **New Dynamic Group**.

29. Enter **<yourname>SmartDocDynamic** as the *Group Name*.

30. Enter **This is my sample dynamic group** as your description.

31. Select **DefaultDom** as the *Domain*.

    Note: *The Email, Description, and Canonical Name attributes are case-sensitive when using the Equals operator. They are not case-sensitive with the Starts With, Ends With, or Contains operators. The Domain Name attribute is case-sensitive when using the Contains operator. It is not case-sensitive with the Starts With, Ends With, or Equals operators.*

Here are some examples for your dynamic group.

– *Email*: User's email domain, such as **@smartdoctech.com**

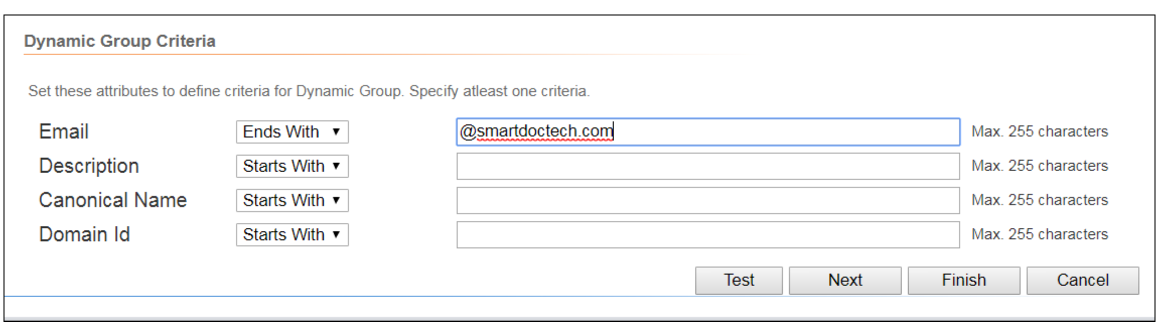
– *Description*: User's description, such as **Systems Administrator**.

– *Canonical Name*: User's canonical name, such as **you=smartdoctech.com**.

– *Domain Name*: The name of the domain to which the user belongs, such as **DefaultDom**.

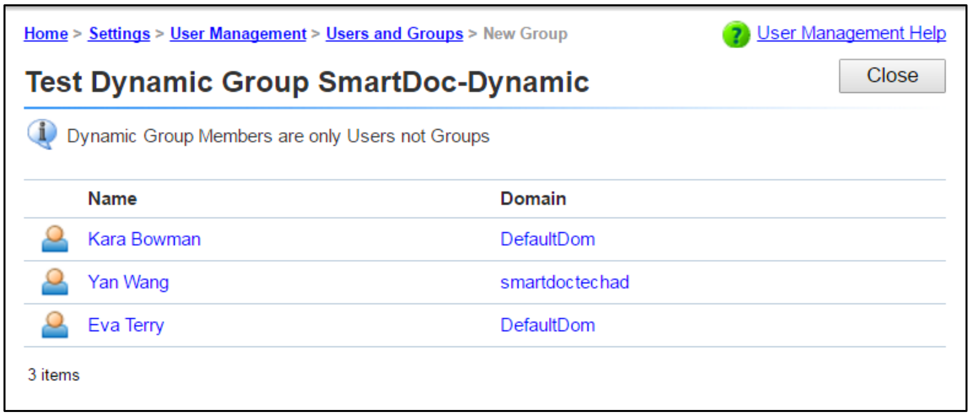
32. Select **Ends With** in the *Email* field.

33. Enter **@smartdoctech.com** in the value field.



34. Click **Test**. A Test page will display the first 200 users who meet the defined criteria.

Your test results may vary, but it will look something like this.



35. Click **Close**.

36. If the test returned the expected results, click **Next**. Otherwise, edit the criteria and test it again.

37. Click **Next**.

38. Click **Finish**.

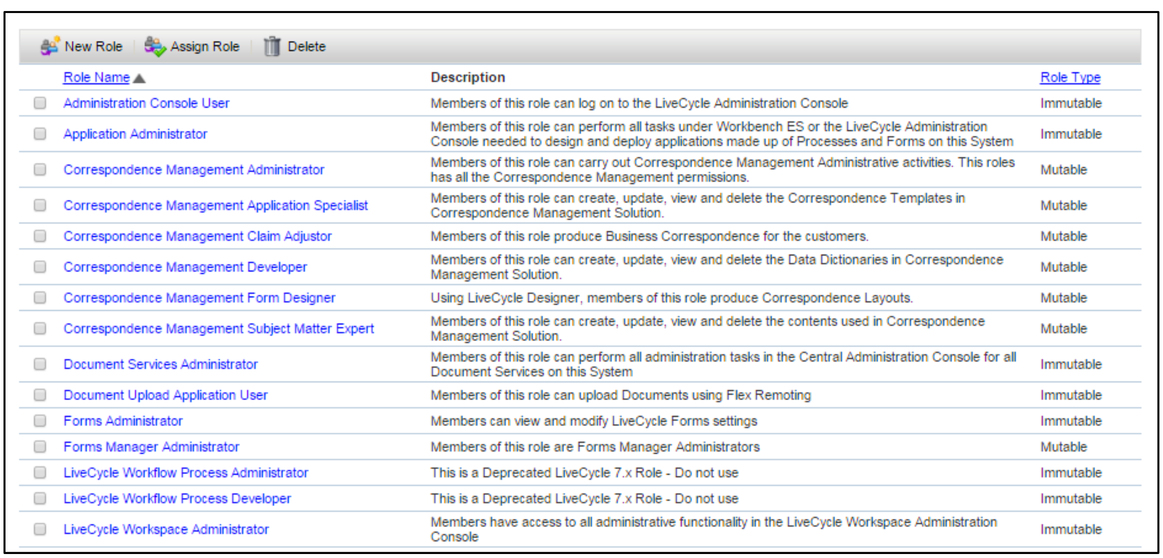
You will now see your dynamic group listed when you search groups.

In AEM Forms JEE, permissions are assigned to roles and roles are assigned to users. Permissions are not assigned directly to users or groups. Follow these steps to learn about roles and permissions.

39. Open **AdminUI**.

40. Select **Home – Settings — User Management — Role Management**.

41. Click **Find**. You will see a list of roles along with a description and type.



Role Name	Description	Role Type
Administration Console User	Members of this role can log on to the LiveCycle Administration Console	Immutable
Application Administrator	Members of this role can perform all tasks under Workbench ES or the LiveCycle Administration Console needed to design and deploy applications made up of Processes and Forms on this System	Immutable
Correspondence Management Administrator	Members of this role can carry out Correspondence Management Administrative activities. This roles has all the Correspondence Management permissions.	Mutable
Correspondence Management Application Specialist	Members of this role can create, update, view and delete the Correspondence Templates in Correspondence Management Solution.	Mutable
Correspondence Management Claim Adjustor	Members of this role produce Business Correspondence for the customers.	Mutable
Correspondence Management Developer	Members of this role can create, update, view and delete the Data Dictionaries in Correspondence Management Solution.	Mutable
Correspondence Management Form Designer	Using LiveCycle Designer, members of this role produce Correspondence Layouts.	Mutable
Correspondence Management Subject Matter Expert	Members of this role can create, update, view and delete the contents used in Correspondence Management Solution.	Mutable
Document Services Administrator	Members of this role can perform all administration tasks in the Central Administration Console for all Document Services on this System	Immutable
Document Upload Application User	Members of this role can upload Documents using Flex Remoting	Immutable
Forms Administrator	Members can view and modify LiveCycle Forms settings	Immutable
Forms Manager Administrator	Members of this role are Forms Manager Administrators	Mutable
LiveCycle Workflow Process Administrator	This is a Deprecated LiveCycle 7.x Role - Do not use	Immutable
LiveCycle Workflow Process Developer	This is a Deprecated LiveCycle 7.x Role - Do not use	Immutable
LiveCycle Workspace Administrator	Members have access to all administrative functionality in the LiveCycle Workspace Administration Console	Immutable

42. Select the **Application Administrator** role.

You will see the following *Role Description* for this role.

***NOTE:** Members of this role can perform all tasks under Workbench, or the Administration Console needed to design and deploy applications made up of Processes and Forms on this System.*

43. Select the **Permissions** tab.

You will see the following *Role Permissions* for this role.

Permission name	Description
Admin Console Login	Permission for any authenticated user to view the Central Admin Console
CRL Read	Read any CRL (Certificate Revocation List) in the Trust Store
Certificate Read	Read any Certificate in the Trust Store
Component Add	Install a new component in the System
Component Delete	Delete any component in the System
Component Read	Read any component in the System
Credential Read	Read any Signing Credential in the Trust Store
Event Type Edit	Allows edit to Event types
PDFGUserPermission	PDFG User Permission
PERM_WORKSPACE_ADMIN	Manage Workspace settings
PERM_WORKSPACE_USER	Log into the Workspace end user application
Process Recording Read/Delete.	Permission allowing the user to list and retrieve workflow audit instances
Repository Delegate	Permission allowing the user to set an ACL on a resource.
Repository Read	Permission allowing the user to read the content of a resource.
Repository Traverse	Permission allowing the user to include a resource in a list resources request or read the metadata of a resource.
Repository Write	Permission allowing the user to write repository metadata and content.
Service Activate	Start any Service, making it available for invocation
Service Add	Deploy a new Service to the Service Registry. This includes adding new Processes and Process Variants
Service Deactivate	Stop any Service in the System
Service Delegate	Set the Security Profile on a Service in the Service used to delegate run time permissions to users and groups
Service Delete	Delete any Service in the System including Processes and Process Variants
Service Invoke	Invoke any Service in the Service Registry available at runtime
Service Modify	Modify the Configuration Properties of any Service in the System. This includes lock and unlock of a Service in the IDE and Adding or Removing Endpoints from a Service
Service Read	Read any Services in the System. This includes all Processes and Process Variants

Create a Custom Role

44. Open **AdminUI**.

45. Select **Settings** — **User Management** — **Role Management**.

46. Click **New Role**.

47. Enter **<yourname>ApplicationAdministratorALT** for the Role Name.

48. Enter **This is an alternative Application Administrator with fewer permissions.** for the Role Description.

49. Click **Next**.

50. Click **Find Permissions**.

51. Select the following permissions for this role except for the permissions that have been grayed-out. Notice that since we are creating an alternative Application Administrator, we have revoked some permissions.

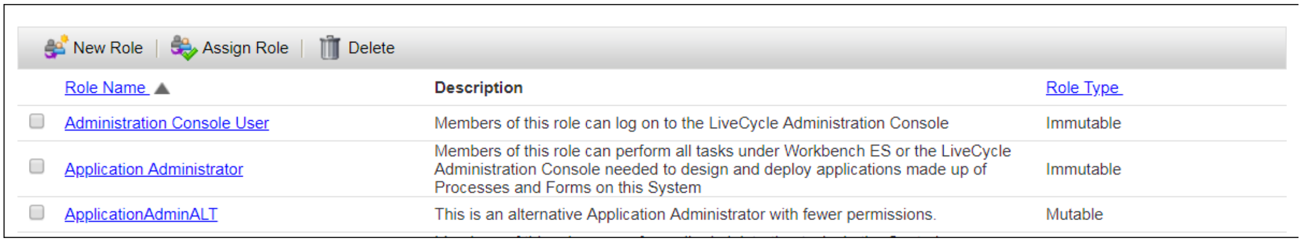
Permission name	Description
Admin Console Login	Permission for any authenticated user to view the Central Admin Console
CRL Read	Read any CRL (Certificate Revocation List) in the Trust Store
Certificate Read	Read any Certificate in the Trust Store
Component Add	Install a new component in the System
Component Delete	Delete any component in the System
Component Read	Read any component in the System
Credential Read	Read any Signing Credential in the Trust Store
Event Type Edit	Allows edit to Event types
PDFGUserPermission	PDFG User Permission
PERM_WORKSPACE_ADMIN	Manage Workspace settings
PERM_WORKSPACE_USER	Log into the Workspace end user application
Process Recording Read/Delete.	Permission allowing the user to list and retrieve workflow audit instances
Repository Delegate	Permission allowing the user to set an ACL on a resource.
Repository Read	Permission allowing the user to read the content of a resource.
Repository Traverse	Permission allowing the user to include a resource in a list resources request or read the metadata of a resource.
Repository Write	Permission allowing the user to write repository metadata and content.
Service Activate	Start any Service, making it available for invocation
Service Add	Deploy a new Service to the Service Registry. This includes adding new Processes and Process Variants
Service Deactivate	Stop any Service in the System
Service Delegate	Set the Security Profile on a Service in the Service used to delegate run time permissions to users and groups
Service Delete	Delete any Service in the System including Processes and Process Variants
Service Invoke	Invoke any Service in the Service Registry available at runtime
Service Modify	Modify the Configuration Properties of any Service in the System. This includes lock and unlock of a Service in the IDE and Adding or Removing Endpoints from a Service
Service Read	Read any Services in the System. This includes all Processes and Process Variants

52. Click **OK**.

53. Click **Next**.

54. Click **Finish**.

You have now created a new *Mutable* role. The Role Type is mutable because it can be changed.



Trouble-shooting: Unlock the Super Administrator Account in AdminUI

If you are locked-out of your default Super Administrator Account on AdminUI, follow these steps to unlock the account.

1. Login to **AdminUI** with your **SuperAdministratorEquivalent** account.

http://<servername>:8080/adminui

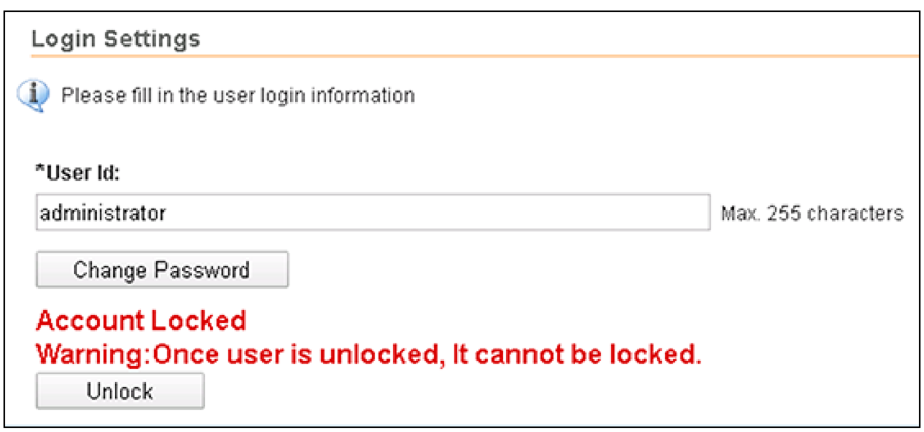
– *Username*: **superadmin**

– *Password*: **********

2. Select **Settings – User Management – Users and Groups**.

3. Select **Super Administrator**. Note, you can also use the *Find Users and Groups* search tool.

4. Scroll to **Login Settings** at the bottom of the *Edit User* panel.



5. If you see the *Account Locked* message, click the **Unlock** button.

Your account is now unlocked.

Trouble-shooting: Reset the Admin Password for AEM-OSGi

Follow these steps.

1. Find the path to your segmentstore. It will be something like this.

\crx-quickstart\repository\segmentstore

2. Have a copy of **oak-run-1.6.1.jar** or the oak-run that is compatible with your instance.

3. Select **CMD**.

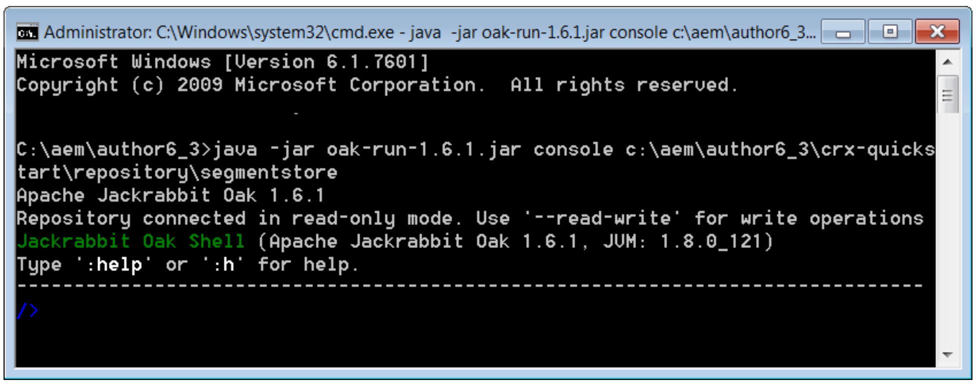
4. Enter the directory of your **oak-run-1.6.1.jar**.

5. Enter this command.

java -jar oak-run-1.6.1.jar console c:\aem\author6_3\crx-quickstart\repository\segmentstore

java -jar oak-run-1.6.1.jar console c:\aem6.3\author\crx-quickstart\repository\segmentstore

Oak-run will be launched in console mode. You should see a prompt.



6. Enter this command.

:load admin-reset.groovy

7. Press **Enter**.

The script will change the admin password to admin. It will say something like this.

Found admin node : SegmentNodeBuilder{path=/home/users/some/path}

8. Enter the following to exit the console and stop the oak run jar.

:q

9. Exit **CMD**.

10. Start **AEM**.

Bonus: SPIs for AEM Forms

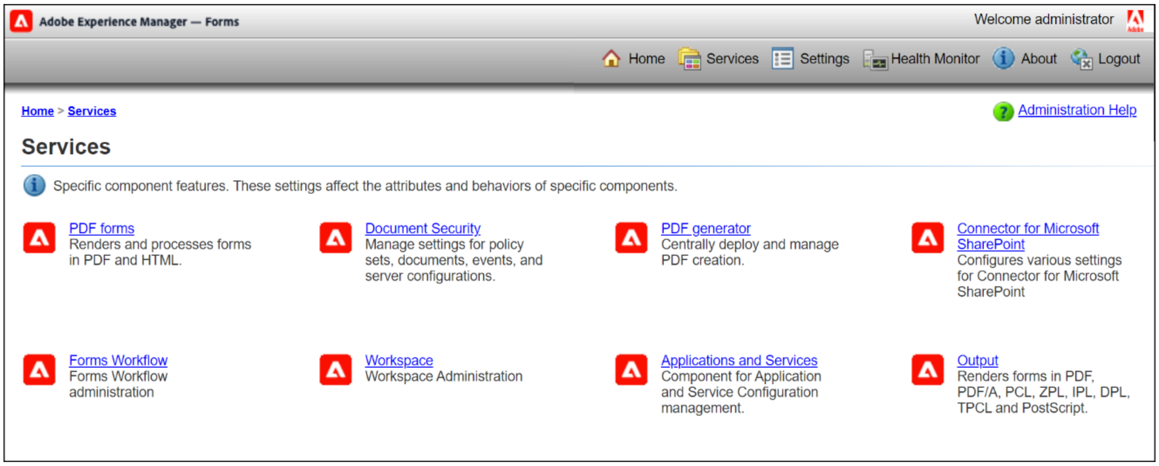
The AEM Forms SPI *(Service Provider Interface)* is a set of Java APIs that enable you to create custom service providers for the *User Management* service, the *Rights Management* service, and the *Signature* service. The User Management service enables administrators to maintain a database for all users and groups, synchronized with one or more third-party user directories. The User Management service provides authentication, authorization, and user management for the AEM Forms services.

An EAH *(External Authorization Handler)* provides centralized access control for documents in your organization. The *Rights Management* service controls access to policy-protected documents by performing a policy evaluation when determining whether a user can access a policy-protected document. For example, the *Rights Management* service decides whether a user can print a policy-protected document.

By creating an external authorization handler, you can use an access control mechanism that your content management system uses, in addition to the standard policy evaluation process. As a result, document access can be controlled by the same control mechanism that your content management system uses. For example, when the *Rights Management* service determines whether a user can print a policy-protected document, it uses the standard policy evaluation process and the access control mechanism that your content management system uses.

Service Administration

Because AEM Forms has a Service Oriented Architecture, a great deal of your work as an AEM Forms Administrator is to configure, test and administer these services. You will also need to manage the endpoints for these services. The *out-of-the-box* AEM services are organized into these categories.



Service Accounts

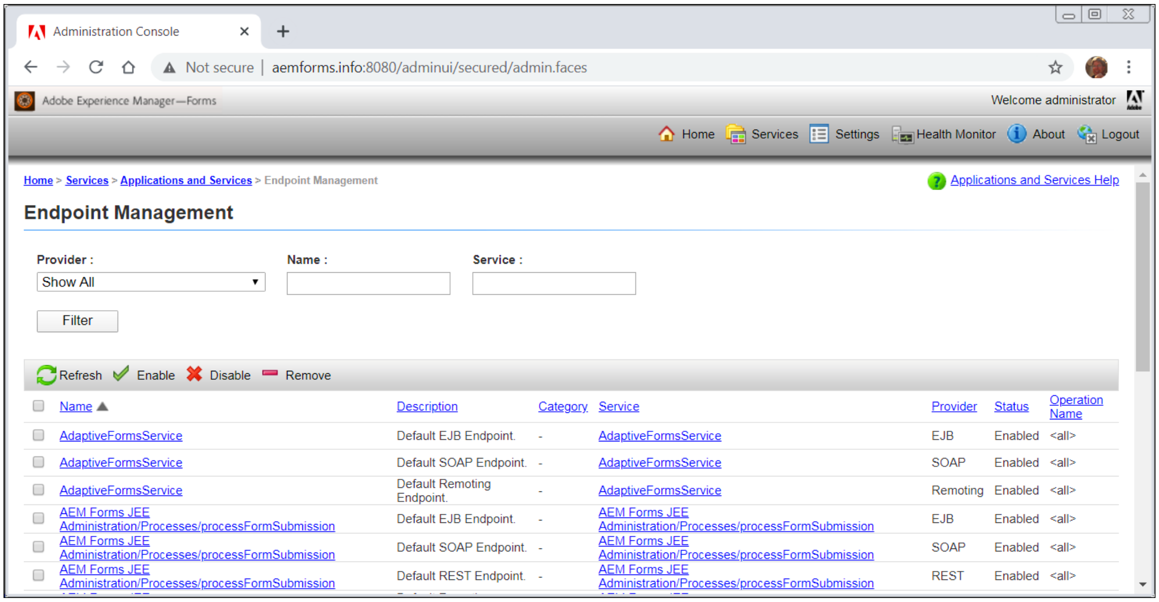
When your server is installed, there are a few service accounts that are required. You may need to update these service accounts from time to time. Here are two examples.

– PDF Generator requires the local machine’s administrator account.

– The SharePoint Connector requires a valid SharePoint account.

Service Endpoints

The services in AEM Forms are accessed by calling the endpoints. As an Administrator, you can configure and manage these endpoints and also create new endpoints.



JDBC

In order to connect the AEM Forms JDBC components to a relational enterprise database, you must do all of the following.

– You must have the JAR *(Java Archive)* file for the JDBC Driver.

– You must configure an appropriate datasource.

– You must configure your process components to use the datasource.

In LiveCycle ES4, we needed to download the JDBC driver JAR from your database provider. You may still need to do this if you aren't using one of these popular drivers that now come with AEM Forms JEE.

– db2jcc.jar

– sqljdbc4.jar

– mysql-connector-java-bin.jar

– ojdbc6.jar

You can find the drivers in these locations.

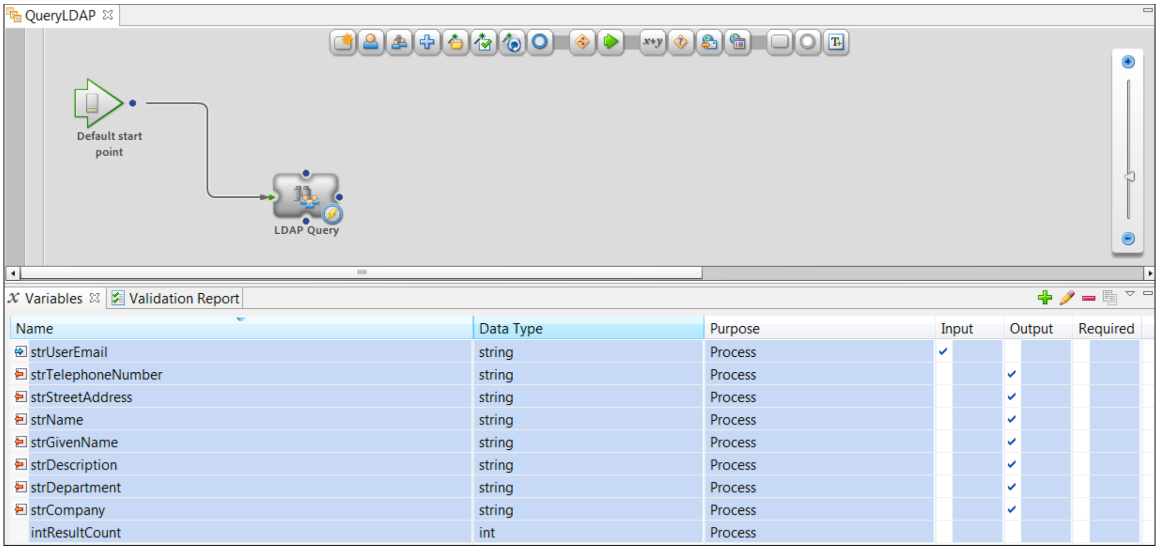
C:\Adobe\Adobe_Experience_Manager_forms\lib\db\mssql

C:\Adobe\Adobe_Experience_Manager_forms\lib\db\mssql\java6

C:\Adobe\Adobe_Experience_Manager_forms\jboss\modules\system\layers\base\com\microsoft\main

LDAP

Integrating your applications with your company's LDAP will enable you to create dynamic workflows.



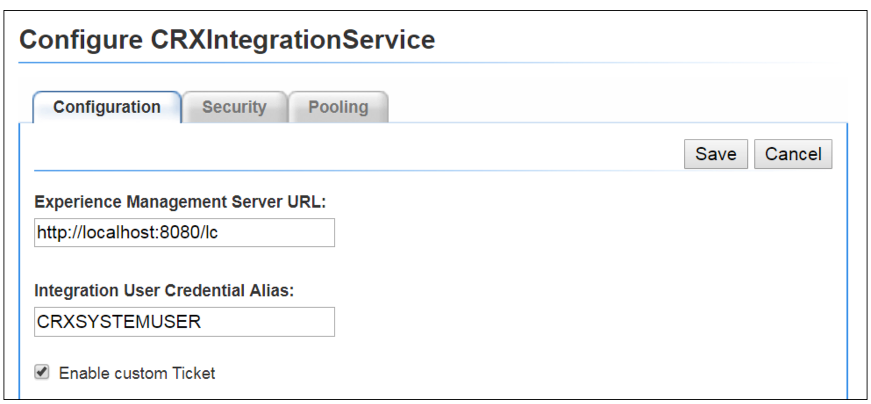
Exercises:

View the CRX Configuration Service

Follow these steps to confirm that your JEE server is pointing to the correct instance of CRX.

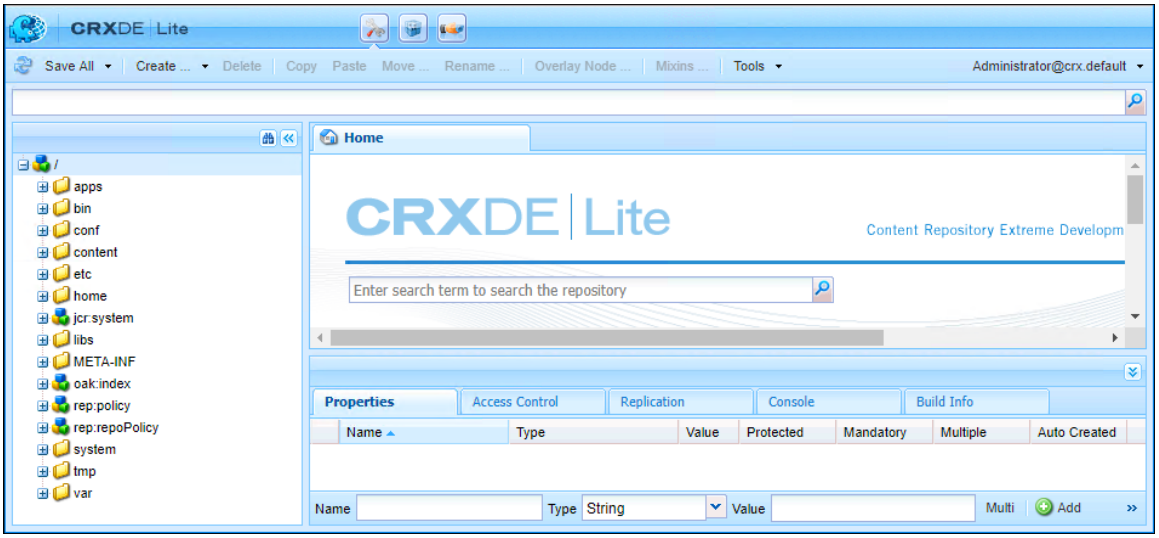
1. Navigate to **Home – Services – Applications and Services – Service Management**.

2. Locate the **CRXIntegrationService** and click the link.



3. Note the server name and port of the CRX repository. If the location of your repository differs, you need to update these values. Incorrect values here can cause problems importing LCA files.

4. Open **CRXDE | Lite**.

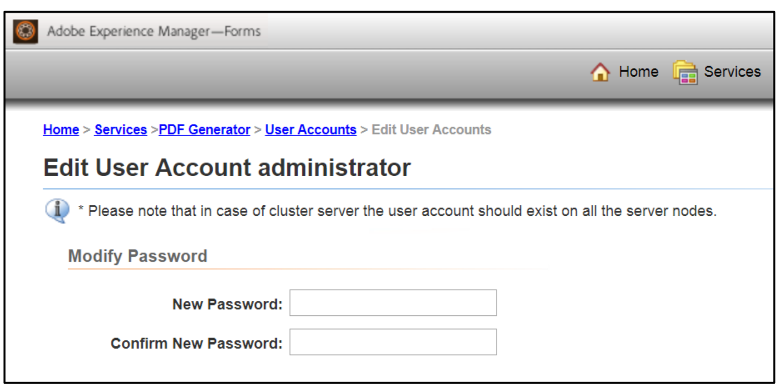


This is the CRX repository for your JEE server.

Update the PDF Generator Account

When you change the password on your **Local System Administrator** account, you need to update the password that PDF Generator uses. Follow these steps.

1. Open **AdminUI**.
2. Select **Services – PDF Generator – User Accounts**.
3. Click the **Administrator** link.
4. Make the updates.

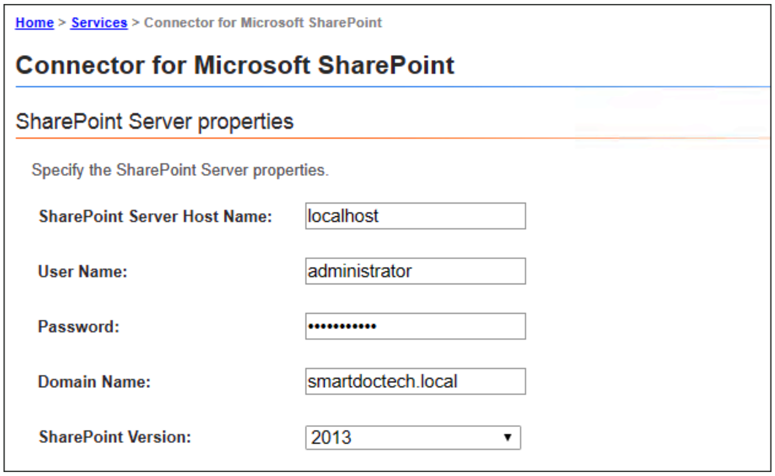


5. Click **Save**.

Update the SharePoint Account

If your SharePoint account username or password changes, you must update these values in AdminUI.

1. Open **Admin UI**.
2. Select **Home – Services – Connector for Microsoft SharePoint**.



3. Make the updates.

4. Click **Save**.

Configure the SMTP Service

Follow these steps to configure your server's outgoing SMTP mail service.

JEE Configuration

1. Open **AdminUI** and go to this page.

Home – Services – Applications and Services – Service Management.

2. Select **Foundation** and click **Filter**.

3. Select the **EmailService** link and click **Stop**. Your service should now be in a Stopped state.

4. Click the EmailService link and configure the **SMTP mail service**.

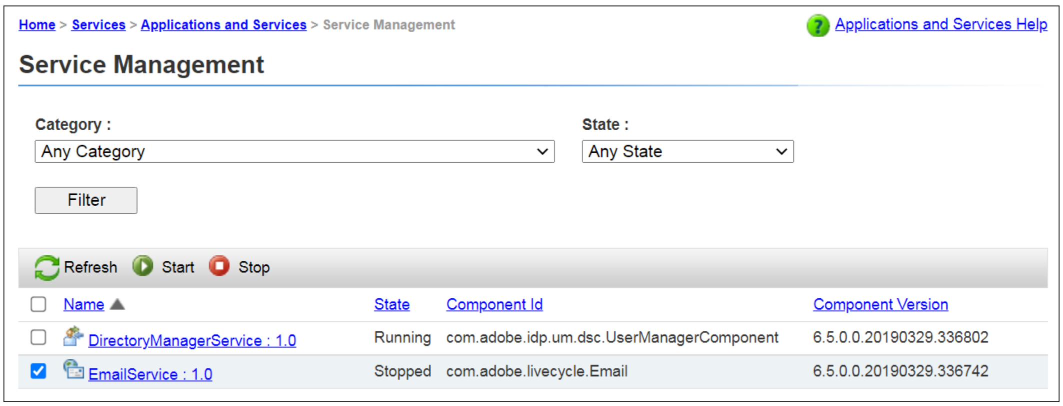
You can use these settings if you have a Gmail account. Otherwise, use your own SMTP settings.

SMTP Host	**smtp.gmail.com**
SMTP Port Number	**465**
SMTP Authenticate	**Select**
User Name	**A Gmail address**
Password	************
SMTP Transport Security	**SSL**

5. Click **Save** and **Save**.

6. Select **Service Management** and select your **EmailService**.

7. Click **Start**. Your service should now be in a Running state.



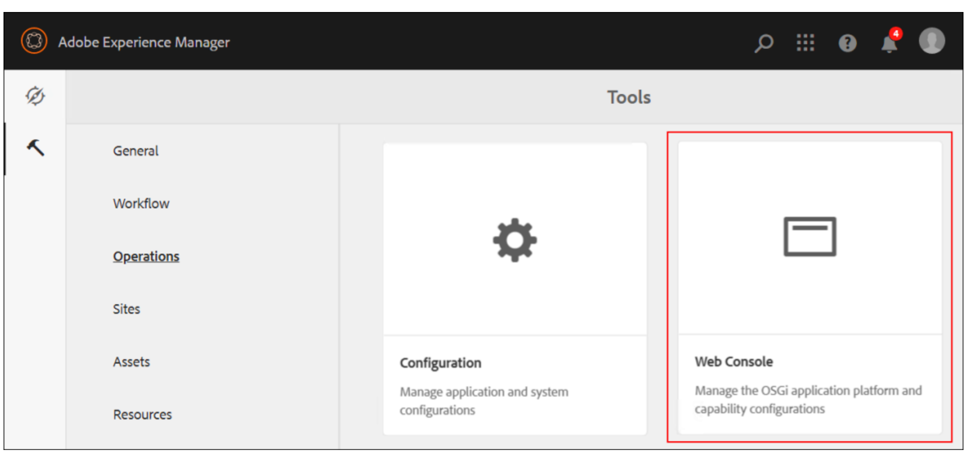
OSGi Configuration

8. Open the AEM Touch UI with this URL.

http://localhost:8080/lc/aem/start.html

9. Enter the OSGi Administrator credentials (admin|admin) and click **Login**.

10. Select **Tools – Operations – Web Console** *(see illustration)*.



11. Search for **Day CQ Mail Service**.

12. Click **Edit the configuration values** *(the pencil icon)*.

13. You can use these settings if you have a Gmail account. Otherwise, use your own SMTP settings.

SMTP server host name	**smtp.gmail.com**
SMTP server port	**465**
User	**A Gmail address, like smartdoctechllc@gmail.com**
Password	**********
"From" address	**smartdoctechnology@gmail.com**
SMTP use SSL	**true (checked)**
SMTP use StartTLS	**false (not checked)**
Debug email	**false (not checked)**

14. Click **Save**.

Enable or disable an endpoint

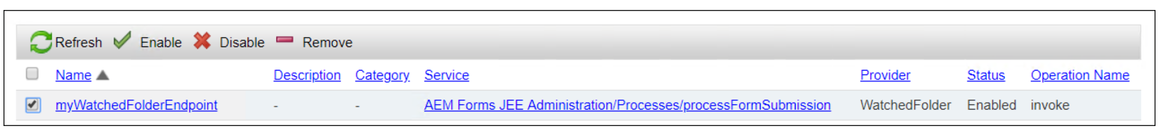
By default, new endpoints are automatically enabled. But if you have disabled an endpoint, you will need to enable it for it to be operational.

15. In Administration Console, select **Services - Applications and Services - Endpoint Management**.

16. Select **WatchedFolder** for the Provider.

17. Click **Filter**.

18. Select the WatchedFolder endpoint you just created.



19. Click **Disable**. Notice the Status has changed.

20. Now click **Enable** to go back to your former status.

Modify an endpoint

The changes you make to an endpoint configuration using the Administration Console are not reflected in the design-time copies of your applications. If you redeploy an application, any change that you made to its endpoints using the Administration Console will be lost.

21. In the Administration Console, click **Services - Applications and Services - Endpoint Management**.

22. On the **Endpoint Management** page, click the endpoint link to modify the properties.

23. On the **Update Endpoint** page, modify the endpoint name, description, or settings.

24. Click **Update** if you want to save any of your changes.

You can also do this task from the Service Management page by selecting a service and then clicking the *Endpoints* tab.

Remove an endpoint

25. In the Administration Console, click **Services - Applications and Services - Endpoint Management**.

26. On the Endpoint Management page, select the check box for the endpoint to remove and click **Remove**. The endpoint is no longer displayed.

Change the Security on an Endpoint

Follow these steps. If you are working off a shared server, the Instructor will demonstrate these steps.

27. Open **AdminUI**.

28. Select **Home – Services – Applications and Services – Application Management**.

29. Select the **AEM Forms JEE Administration** link on the *Applications* tab.

30. Select the **receiveFormSubmission** process.

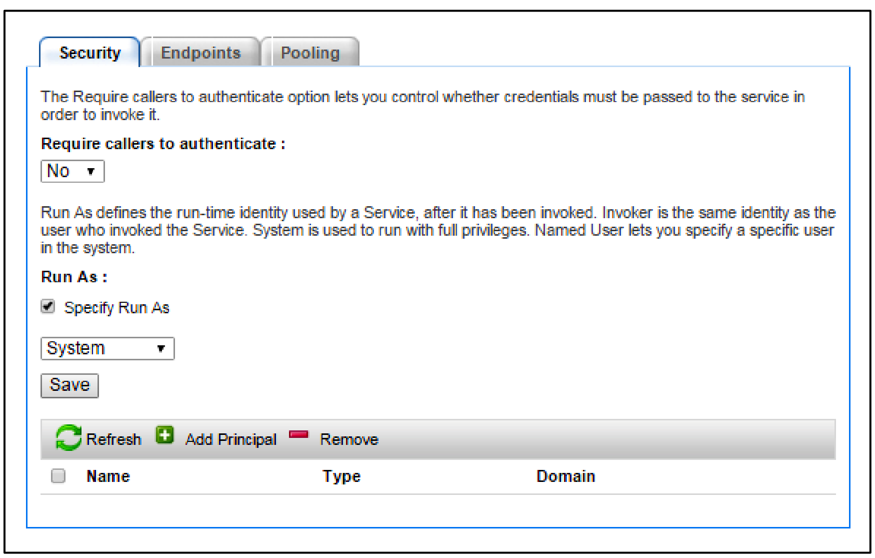
31. Select the **Security** tab.

32. Change the *Require callers to authenticate property* to **No**.

33. Select the *Specify Run As* property.

34. Select **System**.

35. Click **Save**.

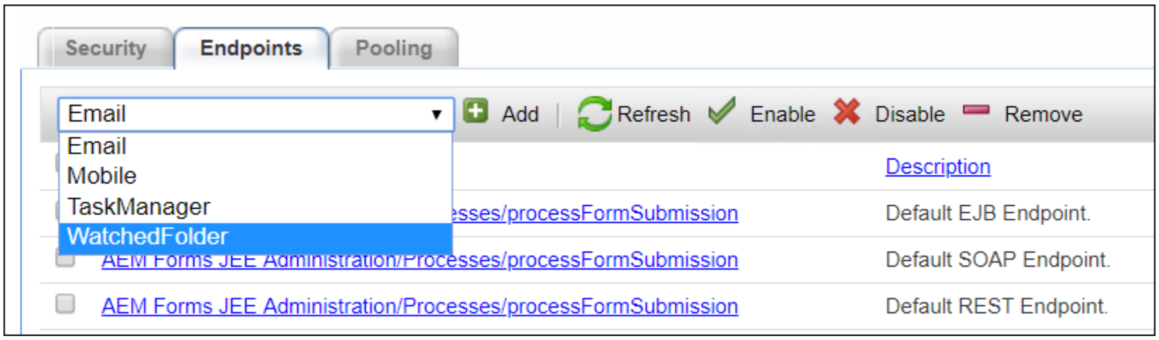


Users will now be able to submit XML to this web service without entering the administrator password.

Create a WatchedFolder endpoint

Follow these steps to add a Watched Folder endpoint for the *processFormSubmission* service.

1. Open **AdminUI**.
2. Select **Home – Services – Applications and Services – Application Management**.
3. Click on the **AEM Forms JEE Administration** link on the *Applications* tab.
4. Select the **processFormSubmission** service.
5. Select **WatchedFolder** in the drop-down list.



6. Click **Add**. You will see the *Add WatchedFolder Endpoint* screen.
7. Add the following properties to your endpoint.

Property	Value
Name	**myWatchedFolderEndpoint**
Description	**My new watchedfolder**
Path	**/WatchedFolders/AEM Forms JEE Administration/processFormSubmission**
Asynchronous	Select
Include File Pattern	*
Operation Name	invoke
inputXML	Select Variable and enter ***.***
generatedDocument	

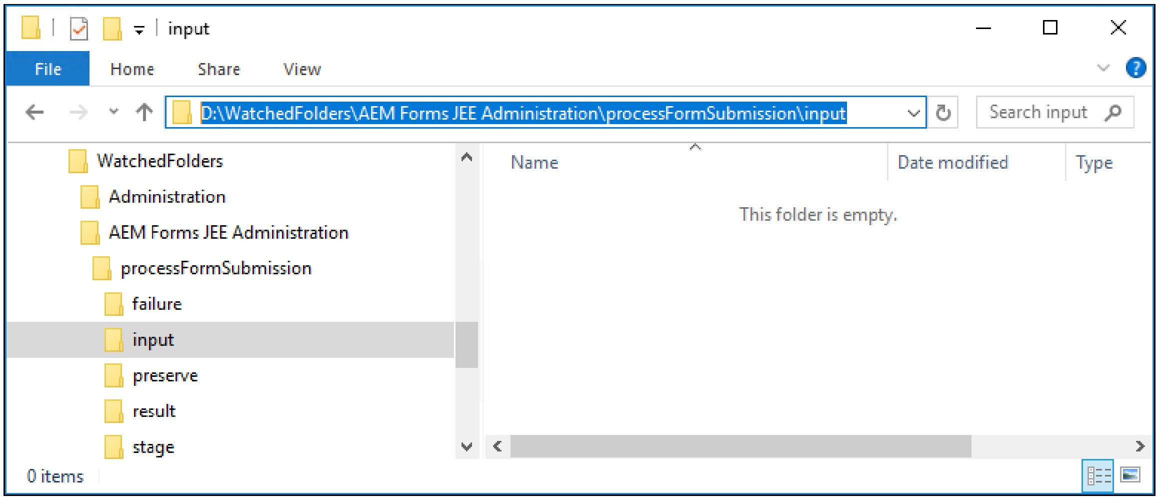
8. Click **Add** to add your endpoint.

   ***Note:** The WatchedFolder is created on the server so you need to test it on the server.*

Follow these steps to test your WatchedFolder endpoint.

9. Make sure your **processFormSubmission** process is set to **Record** in Workbench.
10. Go to your Student Files and copy the **sample data for REST submit.xml** file.
11. Open the **input** folder in the AEM Forms JEE Administration folder on your server. If you are working off a shared server, the Instructor will demonstrate these steps because the WatchedFolder in on the server's drive.

\WatchedFolders\AEM Forms JEE Administration\processFormSubmission\input



12. Drop the **sample data for REST submit.xml** file onto the input folder. It will hang for a second and then be consumed. When it disappears, that is an indication that it has been consumed and the xml file is now passed to the service.

Do either of the following to see your generated PDF.

– Review a Workbench Recording.

– Search the results folder for the generated file. You may need to add a .pdf extension to the file in order to open it in Adobe Acrobat or Reader.

When using watched folders as a way to send and receive documents with a service, take extra precautions with file system security. When a user drops content in the watched folder, that content is exposed through the watched folder. In this case, the service does not authenticate the actual end user. Instead, it relies on ACL and Share level security to be set at the folder level to determine who can effectively invoke the service.

Configure the JDBC Service

You must create a data source in the JBoss configuration file lc_turnkey.xml or in another similar configuration file. You can find the lc_turnkey.xml file in this location.

C:\Adobe\Adobe_Experience_Manager_forms\jboss\standalone\configuration\lc_turnkey.xml

You must add a datasource for your database in the <datasources> node.

Microsoft SQL Server

This is an example of a datasource for Microsoft SQL Server. It is also a best practice to encrypt your database login credentials.

```
<datasource jndi-name="java:/ER_DS" pool-name="ER_DS" enabled="true" use-java-context="true">
    <connection-url>jdbc:sqlserver://localhost:1433;DatabaseName=db_er</connection-url>
    <driver-class>com.microsoft.sqlserver.jdbc.SQLServerDriver</driver-class>
    <driver>sqlserver</driver>
    <transaction-isolation>TRANSACTION_READ_COMMITTED</transaction-isolation>
    <pool>
        <min-pool-size>1</min-pool-size>
        <max-pool-size>30</max-pool-size>
    </pool>
    <security>
```

```
        <security-domain>EncryptDBPassword_ER_DS</security-domain>
    </security>
    <timeout>
        <blocking-timeout-millis>20000</blocking-timeout-millis>
        <idle-timeout-minutes>2</idle-timeout-minutes>
    </timeout>
    <statement>
        <prepared-statement-cache-size>20</prepared-statement-cache-size>
    </statement>
</datasource>
```

Your lc_turnkey.xml will contain a driver for the database that you are using for your repository. You must add a driver element for other database you want to use. For instance, in this example, there was already a driver element for **mysql**. I needed to add the driver element for **sqlserver**.

```
<drivers>
    <driver name="mysql" module="com.mysql">
        <driver-class>com.mysql.jdbc.Driver</driver-class>
    </driver>
    <driver name="sqlserver" module="com.microsoft">
        <xa-datasource-class>com.microsoft.sqlserver.jdbc.SQLServerXADataSource</xa-datasource-class>
    </driver>
</drivers>
```

Encrypt your Password

You can add your database login in plain text without encryption.

```
<security>
    <user-name>sa</user-name>
    <password>password</password>
</security>
```

However, it is a better practice to encrypt your password. Follow these steps to encrypt your password.

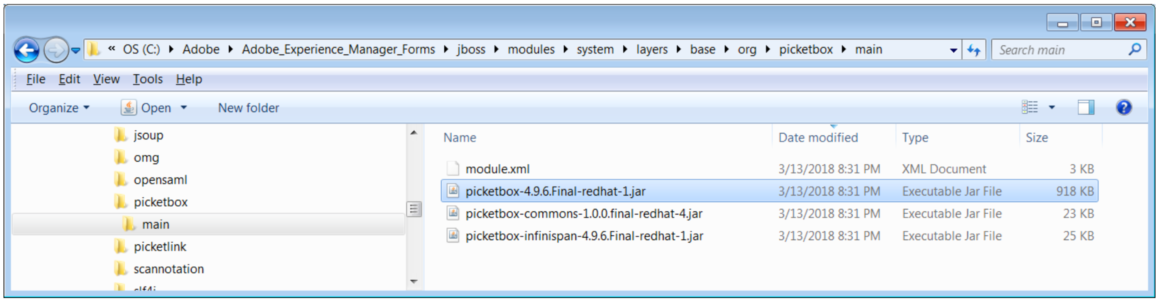
1. Shutdown your JEE server.
2. Make a backup of lc_turnkey.xml.
3. Open a **CMD** window as Administrator.
4. Change directories to your JBoss directory.

C:\Adobe\Adobe_Experience_Manager_Forms\jboss

5. Open the **JBoss Command to Encrypt Clear Text Datasource Password.txt** file from your Student Files.
6. Check your paths and filenames with this command and make any necessary updates.

```
java -cp "modules/system/layers/base/org/picketbox/main/picketbox-4.9.6.Final-redhat-1.jar;
modules/system/layers/base/org/jboss/logging/main/jboss-logging-3.3.0.Final-redhat-1.jar"
org.picketbox.datasource.security.SecureIdentityLoginModule password > myEncryptedPassword.txt
```

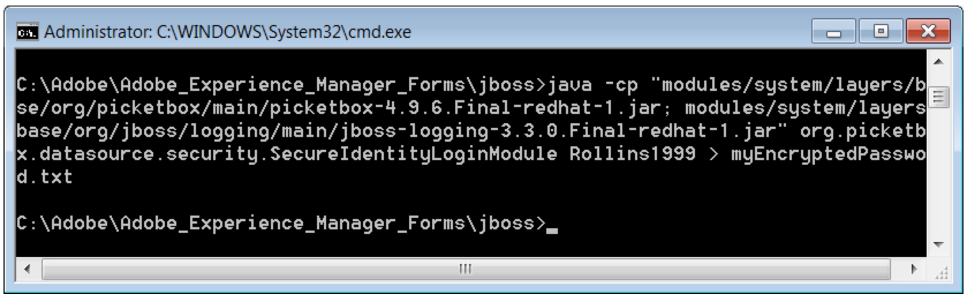
For instance, make sure you have this file in the location detailed in the command.



7. Enter the **password** of your database into the command.

8. Copy the command to the CMD window.

9. Execute the command. The result will be saved to a file named **myEncryptedPassword.txt** in your JBoss folder.



10. Update the security node in your datasource.

<security>

<security-domain>EncryptedPasswordER_DS</security-domain>

</security>

11. Add a new security-domain element into the security-domains section. Update this item with your information. You can copy and paste the encrypted password from the myEncryptedPassword.txt file. You also need to update the username and the datasource name.

<security-domain name="EncryptedPasswordER_DS">

<authentication>

<login-module code="org.picketbox.datasource.security.SecureIdentityLoginModule" flag="required">

<module-option name="userName" value="sa"/>

<module-option name="password" value="***************************"/>**

<module-option name="managedConnectionFactoryName" value="jboss.jca:name=ER_DS,service=LocalTxCM"/>

</login-module>

</authentication>

</security-domain>

12. **Save** this new lc_turnkey.xml file.

13. Restart your server.

14. Review your server log file. You can find the log here:

\Adobe_Experience_Manager_forms\jboss\standalone\log\server.log

15. Search for this line to validate that the SQL Server data source is bound. You will need to replace the name of your datasource.

INFO [org.jboss.as.connector.subsystems.datasources] (MSC service thread 1-5) JBAS010400: Bound data source [java:/ER_DS]

Oracle

This is an example datasource for an Oracle database.

```
<datasource jndi-name="java:/DefaultDS" pool-name="DefaultDS" enabled="true" use-java-context="true">
    <connection-url>jdbc:oracle:thin:@itsrv32c:1621:Pro20</connection-url>
    <driver-class>oracle.jdbc.driver.OracleDriver</driver-class>
    <driver>oracle</driver>
    <transaction-isolation>TRANSACTION_READ_COMMITTED</transaction-isolation>
    <pool>
        <min-pool-size>1</min-pool-size>
        <max-pool-size>30</max-pool-size>
    </pool>
    <security>
        <security-domain>EncryptDBPassword</security-domain>
    </security>
    <validation>
        <exception-sorter class-name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleExceptionSorter"/>
    </validation>
    <timeout>
        <blocking-timeout-millis>20000</blocking-timeout-millis>
        <idle-timeout-minutes>2</idle-timeout-minutes>
    </timeout>
    <statement>
        <prepared-statement-cache-size>20</prepared-statement-cache-size>
    </statement>
</datasource>
<drivers>
    <driver name="oracle" module="com.oracle">
        <xa-datasource-class>oracle.jdbc.xa.client.OracleXADataSource</xa-datasource-class>
    </driver>
</drivers>
```

Configure the JDBC Service

Follow these steps in AdminUI to properly configure the JdbcService.

16. Login to **AdminUI**.
17. Select **Services - Applications and Services - Service Management**.
18. Search or browse for the **JdbcService : 1.0**.
19. Select the **JdbcService : 1.0**.
20. Select **Enable Testing** so the Test button will show in Workbench.

Test the Connection

Follow these steps to create a new application in Workbench and configure a JDBC service.

> ***Note:*** *The database and datasource for this exercise are setup on the SmartDoc sandbox servers.*

21. Open **Workbench**.
22. Select **File - New - Application…**
23. Enter **sqlQuery_<yourname>** for the Application Name.
24. Enter **This application will test the JDBC datasource** for the Description.
25. Click **Finish**.
26. Open the new Application folder.
27. Right-click on the **sqlQuery_<yourname>1.0** and select **New - Folder…**
28. Enter **Processes** as the folder name.
29. Click **Finish**.
30. Right-click on the **Processes** folder and select **New – Process**.
31. Enter **sqlQuery** as the process name.
32. Click **Finish**.
33. Drag and drop an **Activity Picker** to your process.
34. In the *Define Activity* window, expand the **Foundation** category.
35. Select the **Query Single Row** operation of the *JDBC* service.
36. Click **OK**.
37. Click **Yes** in the Confirm window.
38. Expand the **Input** panel and enter your **Datasource Name**.

– Microsoft SQL Server: **java:/ER_DS**

– MySQL: **java:/MYSQL_ER**

39. Click the Ellipse button next to the SQL Statement field.
40. In the SQL Statement Info Editor window, enter this SQL Statement:

MS SQL Server	MySQL
SELECT [id] **FROM [db_er].[dbo].[tbl_user]** **WHERE [email] = ?;**	**SELECT id** **FROM db_er.tbl_user** **WHERE email = ?;**

41. Check the **Use Parameterized Query** checkbox.

42. Click the **"+"** button on the right side of the table.

    ***Note**: you may need to expand the width of the window to see this button.*

43. Click the **Type** field in the Index 1 row and select **STRING**.

44. Select the **Value** field in the Index 1 row and click the **Ellipse** button.

45. Select **+New Variable** and create a variable with these properties.

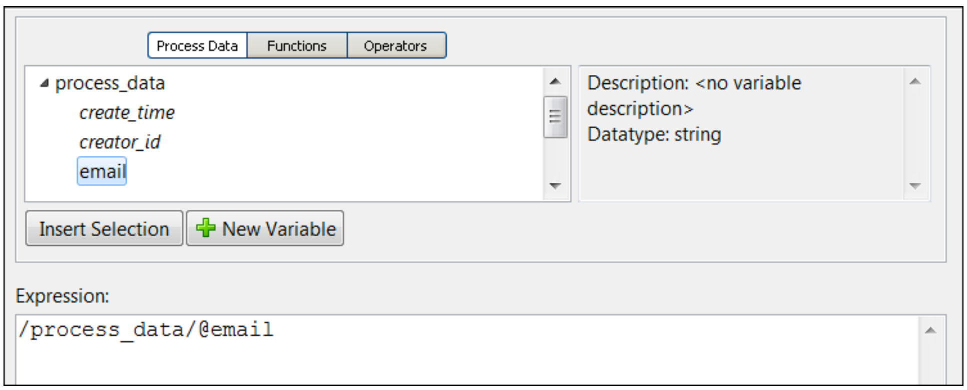
– Name: **email**

– Type: **string**

– Purpose: **Input**

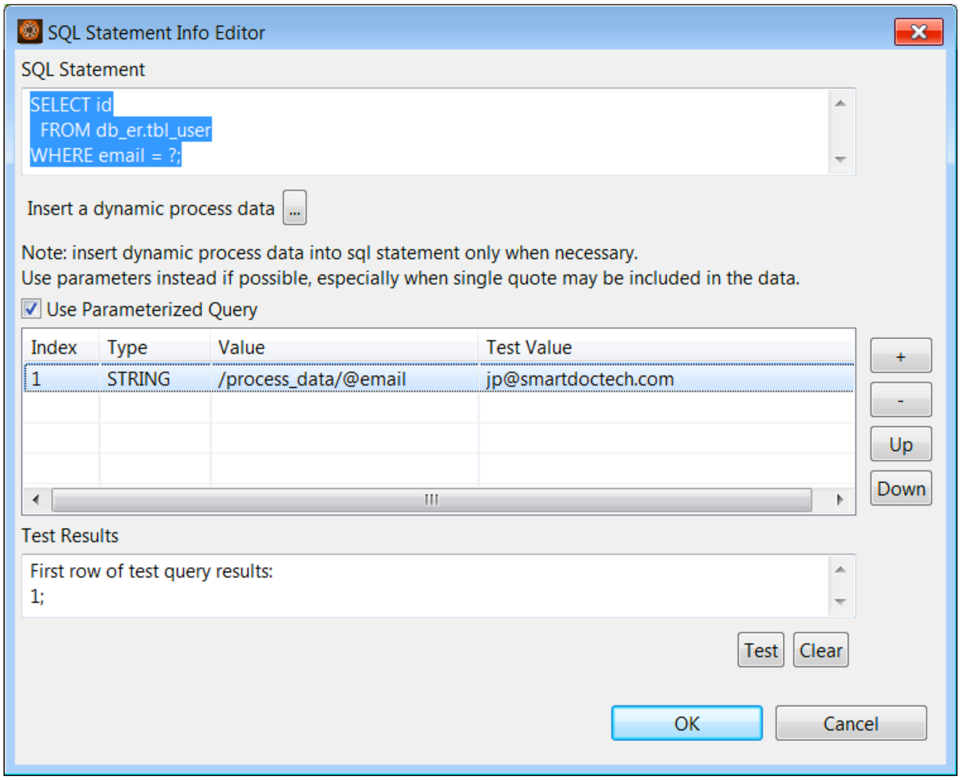
46. Click **OK**.

47. Double-click on the **email** variable in the XPath Builder to select it. The expression will be created.



48. Click **OK**.

Your SQL Statement Info Editor should now look like this:



49. Click the **Test** button to test your SQL Statement. You can use this sample email address.

jp@smartdoctech.com

50. When complete click **OK**.

51. Expand the **Output** section.

52. Click the **Ellipse** button next to the *Data Mapping* field.

53. In the *SQL Results Mapping Editor* click the "+" button on the right side of the table.

54. Click the Column Name field in the Index 1 row and type in: **id**.

55. Select the Process Variable field in the Index 1 row and click the **Ellipse** button.

56. Select **+New Variable** and create a variable with these properties.

– Name: **userID**

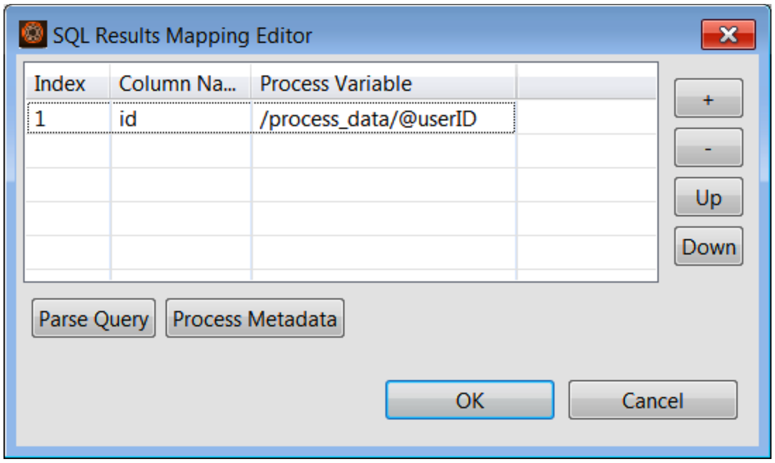
– Type: **int**

57. Click **OK**.

58. Double-click on the **userID** variable in the XPath Builder to select it. The expression will be created.

59. Click **OK**.

Your *SQL Results Mapping Editor* should now look like this:



60. Click **OK**.

61. Under the Number of Rows Retrieved click the **green plus sign** *(Create new Variable)* to create a new integer variable with these values:

– Name: **userCount**

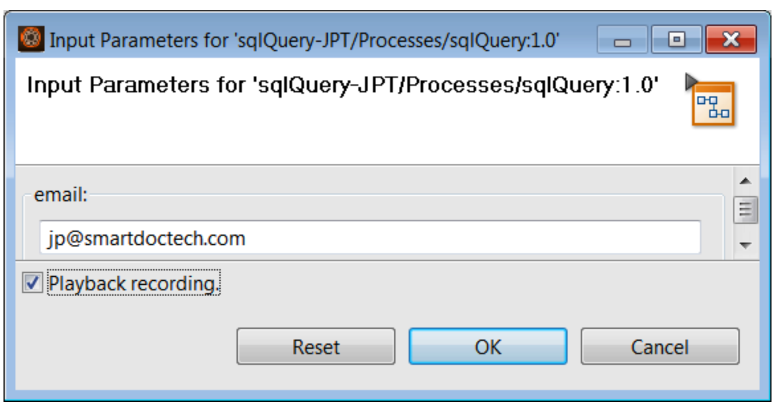
– Type: **int**

62. Click **OK**.

63. Right-click on your process and select Invoke.

64. Enter **jp@smartdoctech.com** for the email.

65. Select **Playback recording**.



66. Click **OK**.

Configuration Parameters for Services

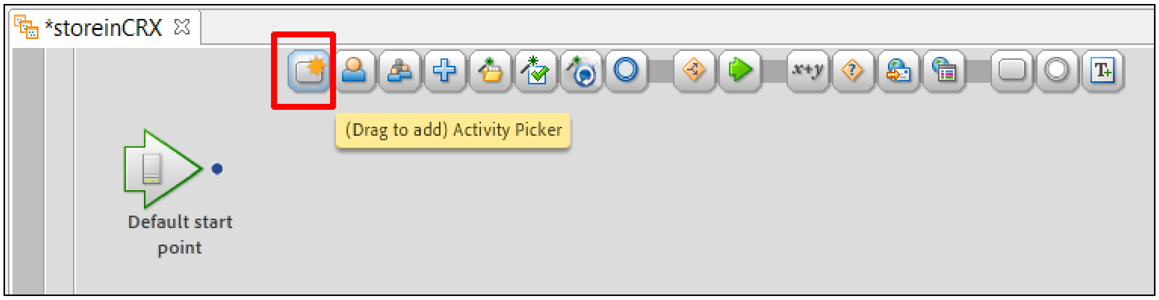
If you have a configuration that needs to change from system to system, it may be a good idea to create a Configuration parameter.

Follow these steps to create a Configuration parameter.

1. Open Workbench if it is not already open.

2. Open the **QueryLDAP** process you created earlier.

3. Drag and drop an **Activity Picker** icon on to your process diagram.



4. Expand the **Foundation** category of services.

5. Select the **Query Single Row** operation of the *JDBC* service.

6. Click **OK**.

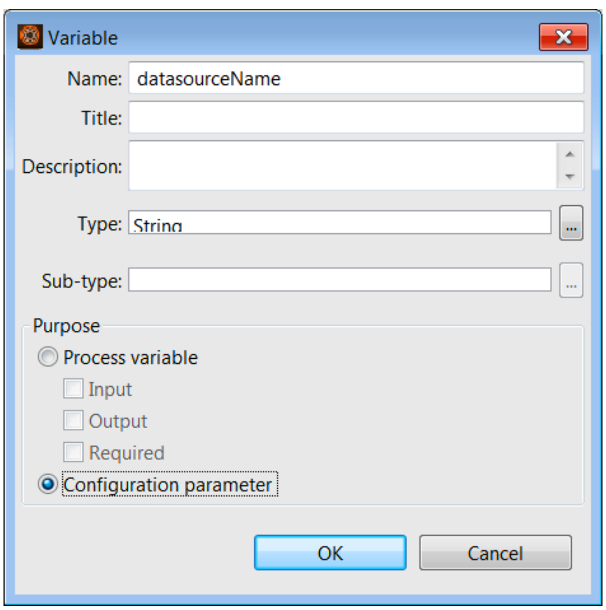
7. Enter **queryDB** for the Name.

8. Expand the Input panel and change literal value to **variable**.

9. Click **Create new Variable** *(the green plus).*

10. Enter **datasourceName** for the Name.

11. Select **Configuration parameter**.



12. **Save** your process and **Deploy** your service.

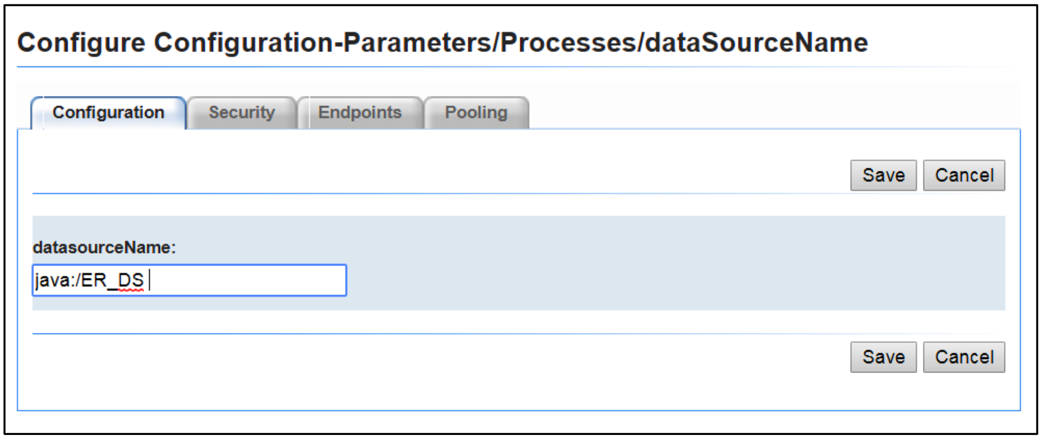
    Note: *Unless you finish the SQL programming, you will receive an error warning. That's OK, the goal is to see how your new Configuration parameters is now available in AdminUI.*

13. Open **AdminUI**.

14. Select your service.

15. Select the **Configuration** tab.

16. Enter the value of your configuration parameter. The application is now more portable because the Administrator can update these properties in AdminUI.



17. Click **Save**.

Work with LDAP

Configure the LDAPService

Follow these steps to configure the LDAPService in AdminUI.

1. Login to AdminUI and select **Services – Applications and Services –Service Management**.

2. Select **Foundation** in the *Category* drop down list.

3. Click **Filter**.

4. Select the checkbox to the left of the *LDAPService*.

5. Click **Stop** to stop the *LDAPService*.

6. Click the **LDAPService** link.

7. Set the following properties.

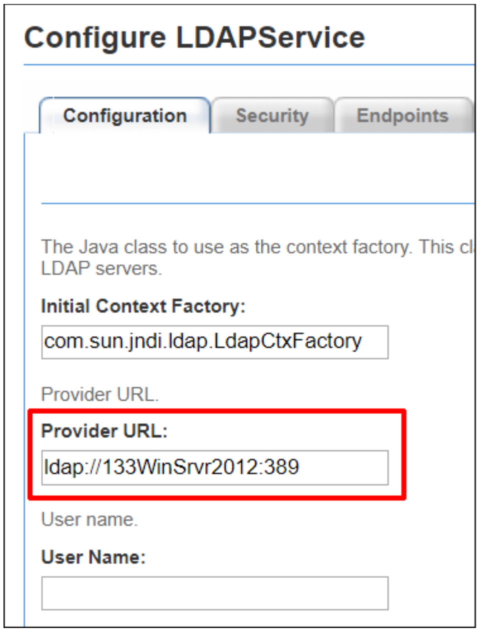
Initial Context Factory:	**com.sun.jndi.ldap.LdapCtxFactory**
Provider URL:	**ldap://<servername>:<port>**
User Name:	**Your ldap username**
Password:	**Your ldap password**

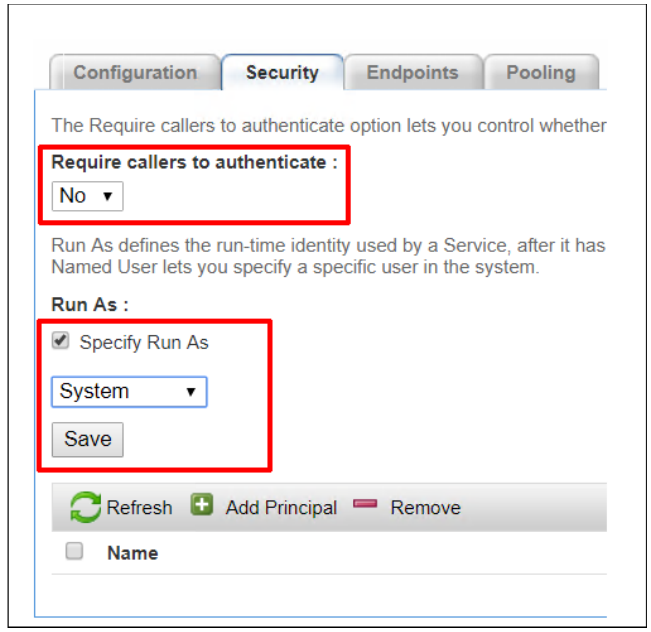
8. Click **Save**.

9. Select the **Security** tab.

10. Select **No** for Require callers to authenticate.

11. Select **System** for Specify Run As.





12. Click **Save**.

13. Go back and start the **LDAPService**.

Call the LDAP Query Operation

Follow these steps to call the LDAPService from your application in Workbench.

1. Open **Workbench**.

2. Select **File - New - Application…**

3. Enter the Application Name: **<yourname>LDAPQuery**.

4. Enter **Testing my connection and retrieval from LDAP** as the Description.

5. Click **Finish**.

6. Right-click on the **<yourname>LDAPQuery/1.0** folder and select **New - Folder…**

7. Enter **Processes** as the folder name.

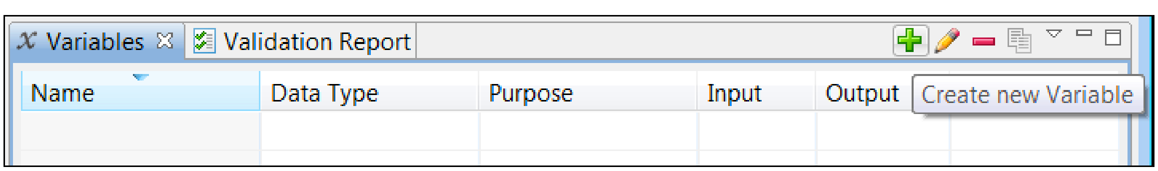
8. Click **Finish**.

9. Right-click on the **Processes** folder and select **New - Process…**

10. Enter **QueryLDAP** as the name.

11. Click **Finish**.

12. Click **Create new Variable** *(the green plus)* on the Variables panel.



13. Enter the following values for your new process variable.

Name:	**strUserEmail**
Type:	**string**
Purpose:	**Input**

Note: *These values are for the SmartDoc Cloud. You may need to change them if you are using a different LDAP system.*

14. Follow this approach and create these other variables.

Name:	**strGivenName**
Type:	**string**
Purpose:	**Output**

Name:	**strName**
Type:	**string**
Purpose:	**Output**

Name:	**strCompany**
Type:	**string**
Purpose:	**Output**

Name:	**strDepartment**
Type:	**string**
Purpose:	**Output**

Name:	**strDescription**
Type:	**string**
Purpose:	**Output**

Name:	**strStreetAddress**
Type:	**string**
Purpose:	**Output**

Name:	**strTelephoneNumber**
Type:	**string**
Purpose:	**Output**

Name:	**intResultCount**
Type:	**int**

15. Drag and drop an **Activity Picker** on to your process diagram.

16. In the **Define Activity** window, expand the **Foundation** category.

17. Select the **LDAP Query** operation of the *LDAP* service.

18. Click **OK**.

19. Enter **LDAP Query** as the Name property.

20. Expand the **LDAP Query Options** panel.

21. Click the **ellipse** button to launch the *LDAP: Query Options Editor*.

22. Click the **Base-DN** dropdown and select **DC=smartdoctech,DC=com**. Note: This will differ if you are using your own LDAP.

23. Click the **Editor** button to launch the **Search Query Builder**.

24. Click the first dropdown and select **mail**.

25. Click the second dropdown and select **=**.

26. Click the **Ellipse** button next to the third field to launch the *XPath Builder*.

27. Double-click the **strUserEmail** variable. You should now have this XPath expression.

/process_data/strUserEmail

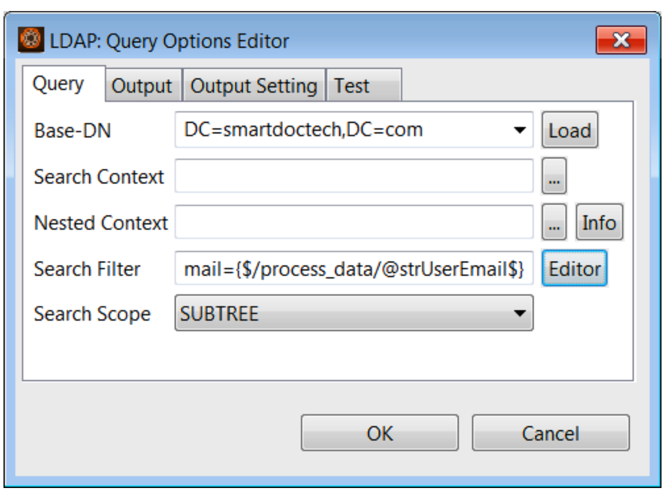
28. Click **OK**.

29. Click **Insert**.

30. Click **OK**.

31. Set the *Search Scope* to **SUBTREE**.

Your dialog should now look like this.



32. Select the **Output** tab.

33. Select **Use First** in the dropdown.

34. Click the Ellipse button to the right of the **Save Result Count into** field to launch the XPath Builder.

35. Double-click the **intResultCount** variable. You should now have this XPath expression.

/process_data/@intResultCount

36. Click **OK**.

37. Click the **+** button to create a new row.

38. Select **givenName** in the *Attribute* dropdown.

39. Click the Ellipse button to launch the XPath Builder.

40. Double-click the **strGivenName** variable. You should now have this XPath expression.

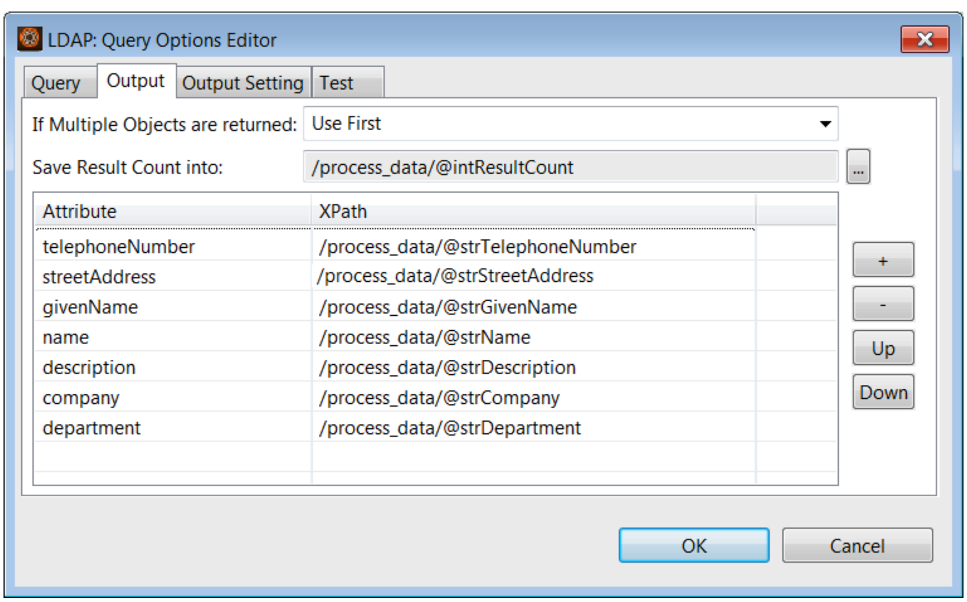
/process_data/@strGivenName

41. Click **OK**.

42. Follow the same steps to add the following Attributes and XPath expressions. You need to click the **+** button each time to create a new row.

Attribute:	**XPath**
givenName	/process_data/@strGivenName
name	/process_data/@strName
company	/process_data/@strCompany
department	/process_data/@strDepartment
description	/process_data/@strDescription
streetAddress	/process_data/@strStreetAddress
telephoneNumber	/process_data/@strTelephoneNumber

Your dialog should now look like this.



43. Click **OK**.

44. Click **Save**.

45. Right-click on the process design and select **Invoke Process**.

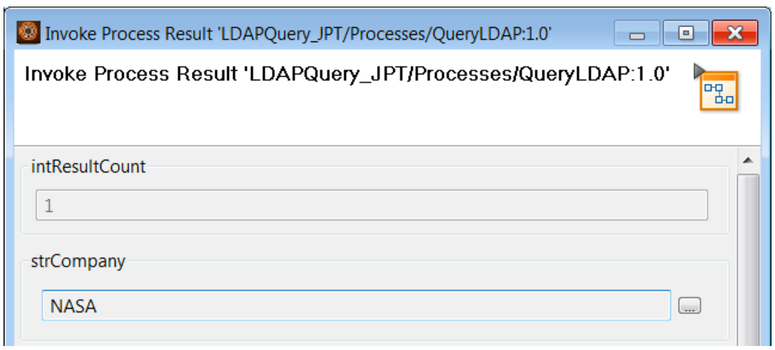
46. Test your process with the following user.

nasaJames@smartdoctech.com

47. Select **Enable and playback recording**.

48. Click **OK**.

You should see the following results.



Call the LDAP Query to XML Operation

Follow these steps to call the LDAP Query to XML Operation from your application in Workbench.

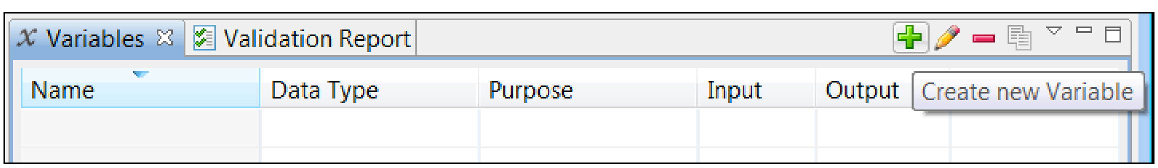
1. Open Workbench if it is not already open.

2. Right-click on the Processes folder and select **New - Process…**

3. Enter the name **QueryLDAPToXML**.

4. Click the **Finish** button.

5. Click **Create new Variable** *(the green plus)* on the Variables panel.



6. Enter the following values for your new process variable.

Name:	**myXMLDocument**
Type:	**xml**
Purpose:	**Output**

> ***Note:*** *These values are for the SmartDoc Cloud. You may need to change them if you are using a different LDAP system.*

7. Click **OK**.

8. Follow this approach and create this other variable.

Name:	**strUserEmail**
Type:	**string**
Purpose:	**Input**

9. Drag and drop an **Activity Picker** on to your process diagram.

10. In the **Define Activity** window, expand the **Foundation** category.

11. Select the **LDAP Query to XML** operation of the LDAP service.

12. Click **OK**.

13. Enter **LDAP Query to XML** as the Name property.

14. Expand the **LDAP and XML Options** panel.

15. Click the Ellipse button to launch the **LDAP: Query Options Editor**.

16. Click the **Base-DN** dropdown and select **DC=smartdoctech,DC=com**.

17. Click the **Editor** button to launch the **Search Query Builder**.

18. Click the first dropdown and select **mail**.

19. Click the second dropdown and select =.

20. Click the **Ellipse** button next to the third field to launch the *XPath Builder*.

21. Double-click the **strUserEmail** variable. You should now have this XPath expression.

/process_data/strUserEmail

22. Click **OK**.

23. Click **Insert**.

24. Click **OK**.

25. Set the *Search Scope* to **SUBTREE**.

26. Click the **Output** tab.

27. Enter **form1** as the Root Element.

28. Click the **+** button to create a new row.

29. Select **givenName** in the *Attribute* dropdown.

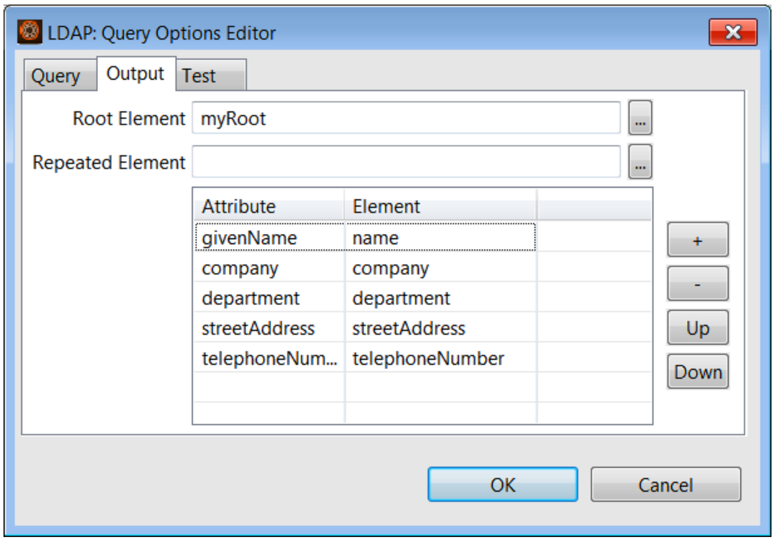
30. Enter **name** for the element.

31. Click the **+** button to create a new row.

32. Follow the same steps to add the following Attributes and Elements. You need to click the **+** button each time to create a new row.

Attribute:	Element
givenName	name
company	company
department	department
streetAddress	streetAddress
telephoneNumber	telephoneNumber

Your dialog should now look like this.



33. Click **OK**.

34. Expand the **Output** panel.

35. Select the **myXMLDocument** variable as the Output variable.

36. Click **Save**.

37. Right-click on the process design and select **Invoke Process**.

38. Test your process with the following user.

nasaJames@smartdoctech.com

39. Select **Enable and playback recording**.

40. Click **OK**.

41. Click the **ellipse** icon in the myXMLDocument field.

You should see the following results.

<form1>

<element>

<telephoneNumber>281-244-6472</telephoneNumber>

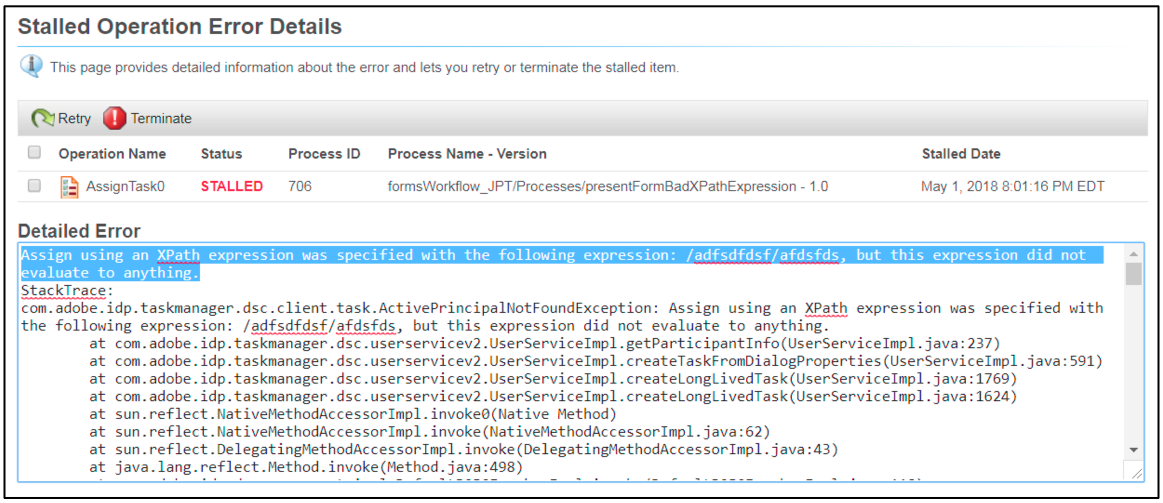
```
        <company>NASA</company>
        <department>Form Development</department>
        <name>James</name>
    </element>
</form1>
```


Forms Workflow Administration

You will now configure your system to support Forms Workflow.

Forms Workflow Administration

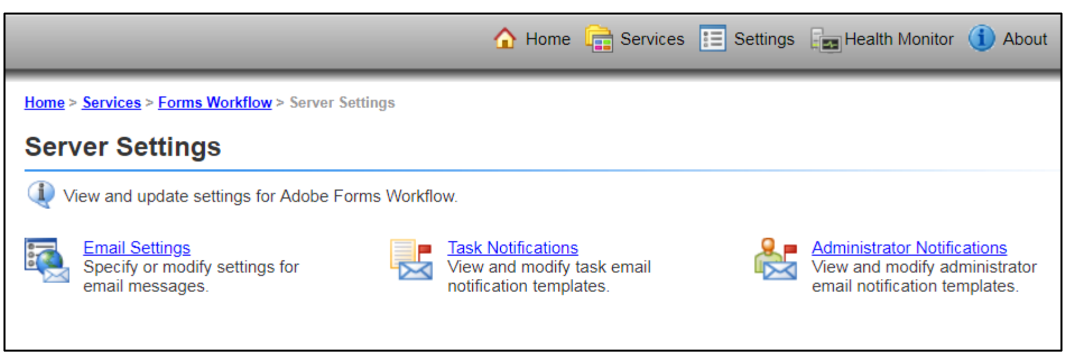
AdminUI has many screens that enable you to observe and manage long-lived workflows. We will create a few different workflows and observe them. In some cases, we will act on them in AdminUI.



Administrator and Task Notifications

You can configure automated notifications based on certain AEM Forms workflow events. These configurations are set in the **Server Settings** section of the **Forms Workflow** section of AdminUI.

Home – Services – Forms Workflow – Server Settings



You will first need to configure the *Email Settings* so the automated messages can be sent.

Configure notifications for administrators

You can configure templates that AEM Forms Workflow will use to generate the email notifications that are sent to administrators. If a branch stalls *(stops proceeding either deliberately or because of an error)*, you can have an email notification sent to an administrator or another user, who can then investigate the problem.

You configure the following types of notifications for administrators:

- stalled branch
- stalled operation

Configure notifications for users and groups

You can configure the following types of notifications for users and groups:

- reminders
- task assignments
- deadlines

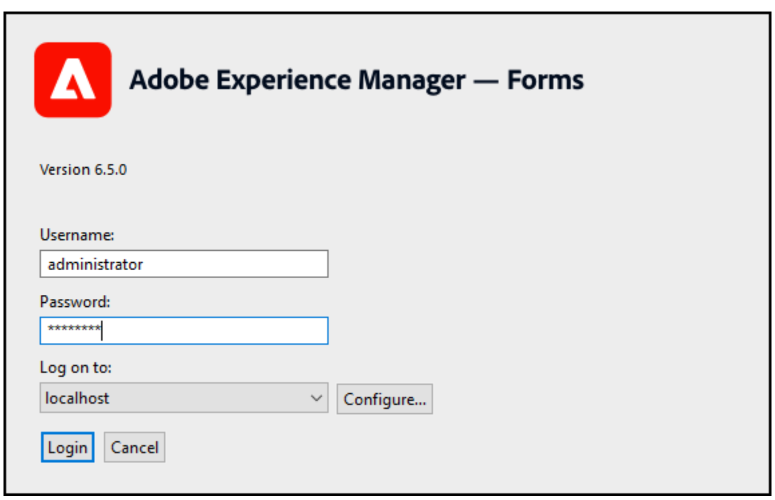
Exercises:

Create an error-producing application

In this first task, you will create a new application in Workbench. You will create folders and processes in the application.

1. Open the **AEM Workbench** Windows application.
2. Select **Click here to login**.
3. Enter these values to login to localhost.

- Username: **administrator**
- Password: **password**
- Log on to: **localhost**



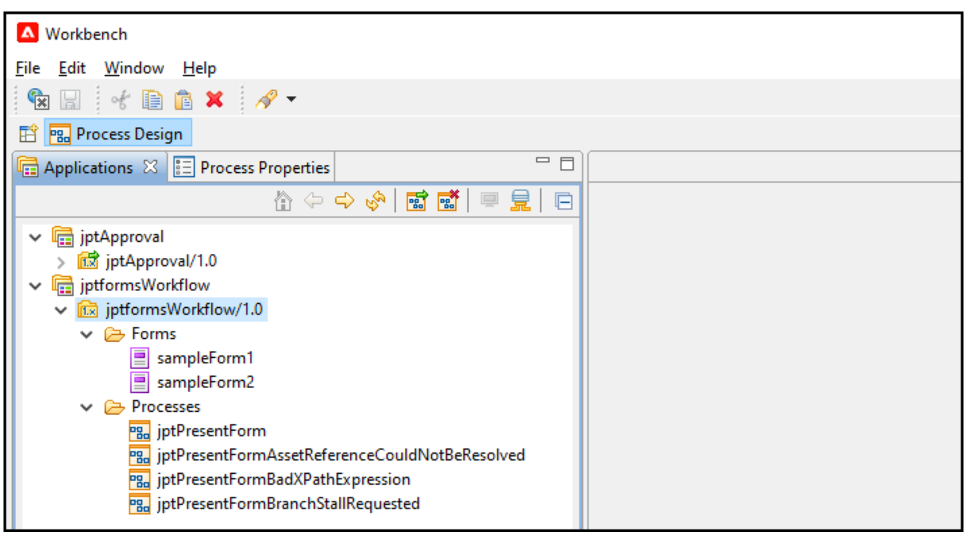
4. Click **Login**.
5. Select **File – New – Application...**
6. Enter the Application Name: **<yourname>formsWorkflow.**
7. Click the **Finish** button.
8. Open the new Application folder.
9. Right-click on the **<yourname>formsWorkflow/1.0** and select *New - Folder...*
10. Enter **Forms** as the folder name.
11. Click **Finish**.
12. Repeat the previous step and enter the folder name: **Processes.**
13. Drag the **sampleForm1.xdp** file from the Student Files to the new **Forms** folder.
14. Drag the **sampleForm2.xdp** file from the Student Files to the new **Forms** folder.
15. Right-click on the **Processes** folder and select *New - Process...*
16. Enter the name **<yourname>PresentForm**.
17. Click **Finish**.
18. Create 3 more processes with these names.

– **<yourname>PresentFormBadXPathExpression**

– **<yourname>PresentFormAssetReferenceCouldNotBeResolved**

– **<yourname>PresentFormBranchStallRequested**

19. Your application should now look like this.

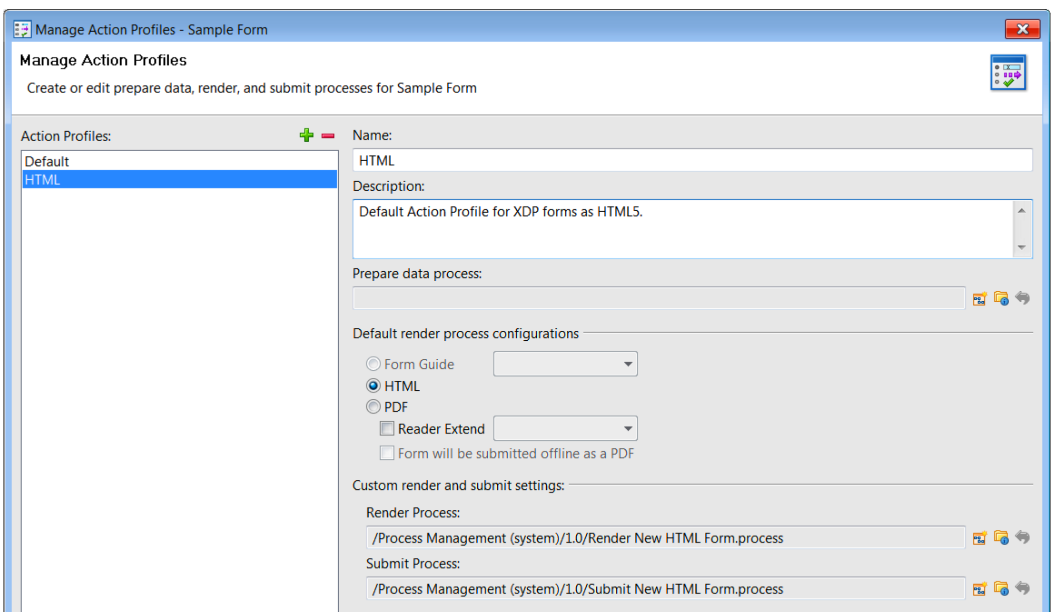


20. Follow the steps in the next 4 sections to build these processes.

Create Process presentForm

21. Open the **<yourname>presentForm** process.
22. Add an **Assign Task** activity to your workflow.
23. Configure it with these properties.

Property	Value
Name	**<yourname>AssignTask**
Initial User Selection: Assign to specific user	**Administrator, or another user with Workspace permissions**
Task Information	Literal value **<yourname>_presentForm**
Presentation & Data: Asset	**Forms/sampleForm1.xdp**
Presentation & Data: Action Profile	Create a new one called **HTML** *See screenshot below*

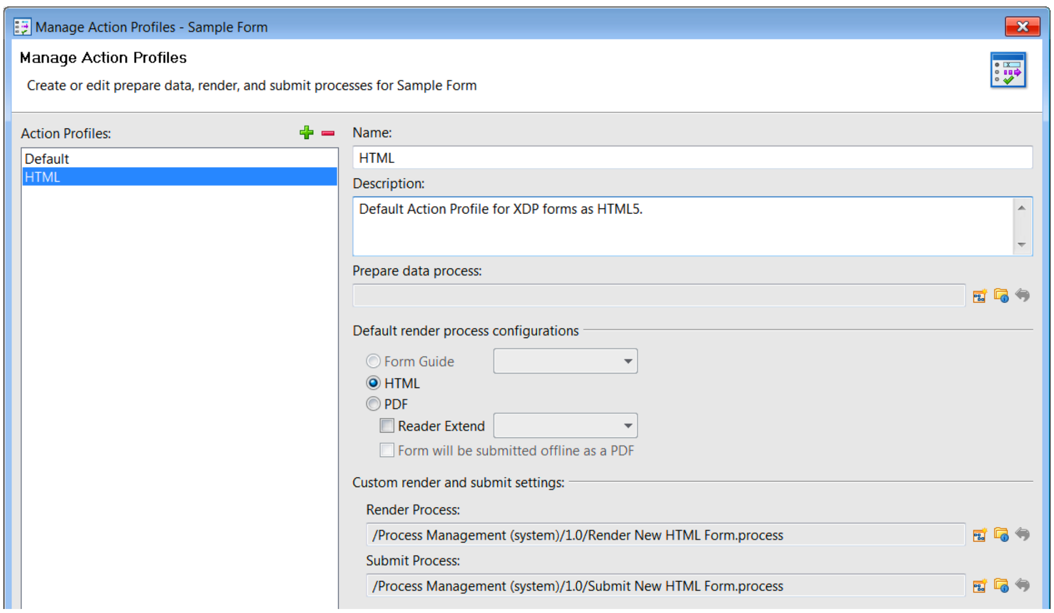


24. Click **OK**.
25. Click **Save**.

Create Process presentFormBadXPathExpression

26. Open the **<yourname>presentFormBadXPathExpression** process.
27. Add an **Assign Task** activity to your workflow.
28. Configure it with these properties.

Property	Value
Name	**<yourname>AssignTask**
Initial User Selection: XPath expression	First, change the option from *Assign to specific user* to *XPath expression*. Then, enter an invalid XPath expression. For instance: **/adfsdfdsf/afdsfds**
Task Information	Literal value **<yourname>_presentForm**
Presentation & Data: Asset	**Forms/sampleForm1.xdp**
Presentation & Data: Action Profile	**HTML**



29. Click **OK**.

30. Click **Save**.

Create Process presentFormAssetReferenceCouldNotBeResolved

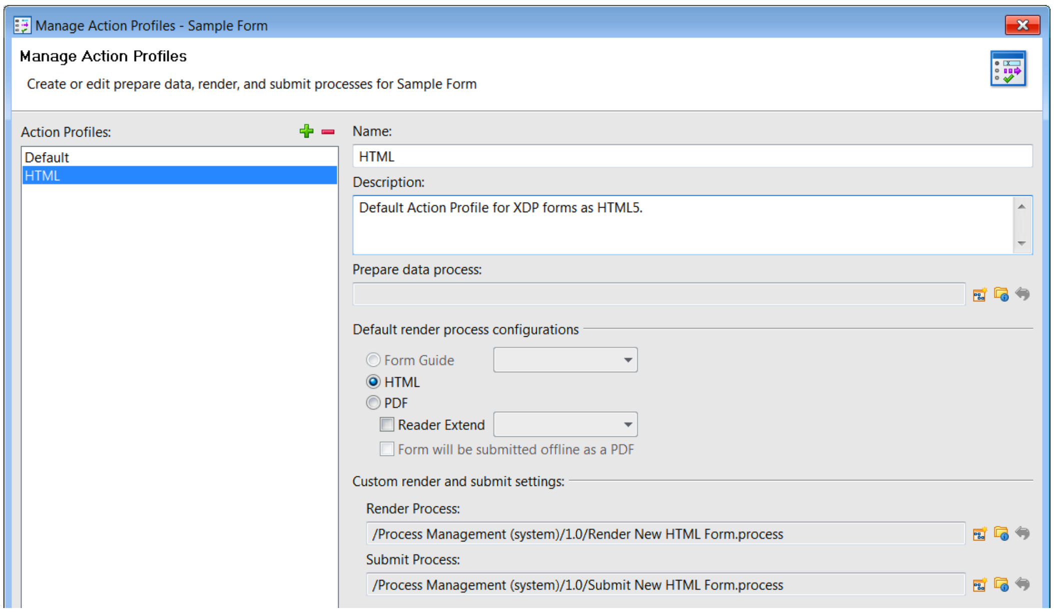
31. Open the **<yourname>presentFormAssetReferenceCouldNotBeResolved** process.

32. Add an **Assign Task** activity to your workflow.

33. Configure it with these properties.

Property	Value
Name	**<yourname>AssignTask**
Initial User Selection: Assign to specific user	**Administrator, or another user with Workspace permissions**
Task Information	Literal value

	<yourname>_presentForm
Presentation & Data: Asset	**Forms/sampleForm2.xdp**
Presentation & Data: Action Profile	Create a new one called **HTML** *See screenshot below*

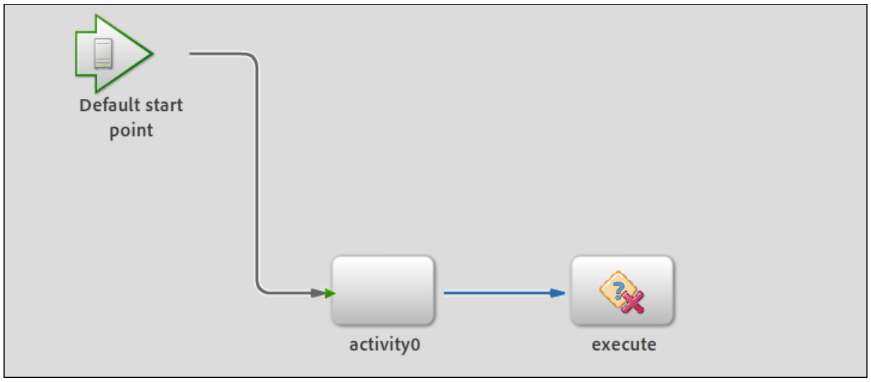


34. Click **OK**.
35. Click **Save**.
36. Delete the **sampleForm2.xdp** from your Forms folder.

Create Process presentFormBranchStallRequested

> ***Note:*** *The Stall activity is only available in AEM Forms 6.3 and above. When a stall action is executed, the branch to which it belongs is stalled. Stall actions are useful for preventing situational errors that you anticipate may occur.*

37. Open the **<yourname>presentFormBranchStallRequested** process.
38. Drag and drop an **Abstract Activity** icon to your workflow.
39. Drag and drop the **Activity Picker** to your workflow.
40. Select the **Stall** service.
41. Configure it with a **Message**.
42. Your application will now look like this.



Use the Forms Workflow Tools

You will now invoke your processes and use the Forms Workflow tools in AdminUI. Follow these steps to create some instances of your processes.

43. Right-click on your **<yourname>presentForm** process in Workbench to invoke it.

44. Invoke the **<yourname>presentForm** process again.

45. Right-click on your **<yourname>presentFormBadXPathExpression** process in Workbench to invoke it.

46. Right-click on your **<yourname>presentFormAssetReferenceCouldNotBeResolved** process in Workbench to invoke it.

47. Right-click on your **<yourname>presentFormBranchStallRequested** process in Workbench to invoke it.

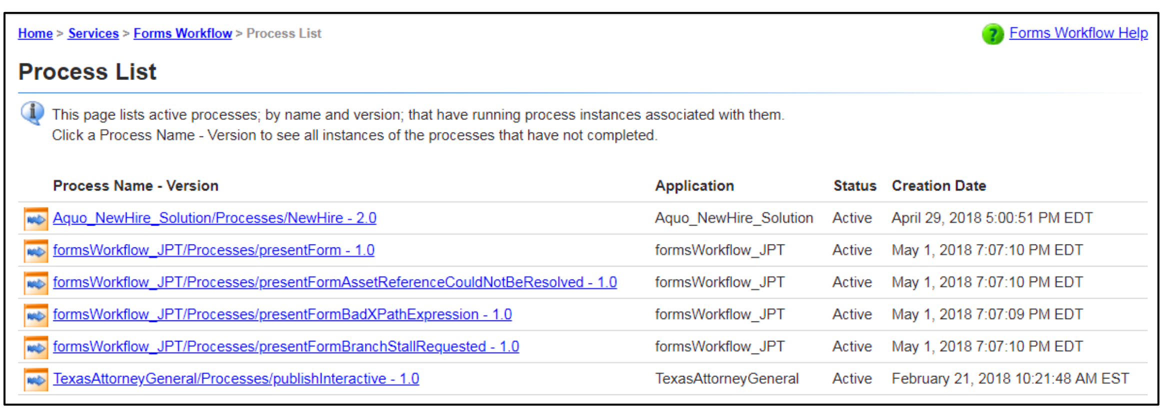
48. Open **AdminUI**.

49. Go to the following page in 6.4 and higher.

Home – Services – Forms Workflow – Forms Workflow

> ***Note:*** *The path in 6.3 and earlier was Home - Services - Forms Workflow - Process List*

50. Your will see your Process List.



Home > Services > Forms Workflow > Process List

Forms Workflow Help

Process List

This page lists active processes; by name and version; that have running process instances associated with them.
Click a Process Name - Version to see all instances of the processes that have not completed.

Process Name - Version	Application	Status	Creation Date
Aquo_NewHire_Solution/Processes/NewHire - 2.0	Aquo_NewHire_Solution	Active	April 29, 2018 5:00:51 PM EDT
formsWorkflow_JPT/Processes/presentForm - 1.0	formsWorkflow_JPT	Active	May 1, 2018 7:07:10 PM EDT
formsWorkflow_JPT/Processes/presentFormAssetReferenceCouldNotBeResolved - 1.0	formsWorkflow_JPT	Active	May 1, 2018 7:07:10 PM EDT
formsWorkflow_JPT/Processes/presentFormBadXPathExpression - 1.0	formsWorkflow_JPT	Active	May 1, 2018 7:07:09 PM EDT
formsWorkflow_JPT/Processes/presentFormBranchStallRequested - 1.0	formsWorkflow_JPT	Active	May 1, 2018 7:07:10 PM EDT
TexasAttorneyGeneral/Processes/publishInteractive - 1.0	TexasAttorneyGeneral	Active	February 21, 2018 10:21:48 AM EST

51. Select the **<yourname>presentForm** process.

You should see two instances if you invoked the process twice.

52. Select one instance and click **Suspend**.

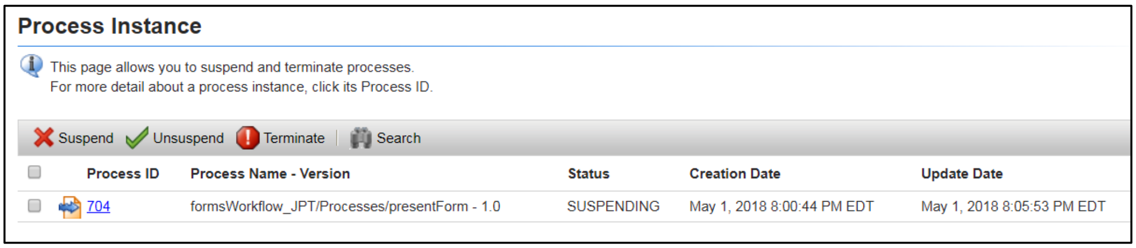
53. Select the other instance and click **Terminate**.

54. Refresh **AdminUI**.

55. Go back to the Process List page.

56. Select the **presentForm** process.

57. You will now only see one instance and the status of the instance is *SUSPENDING*.



58. Go to the following page.

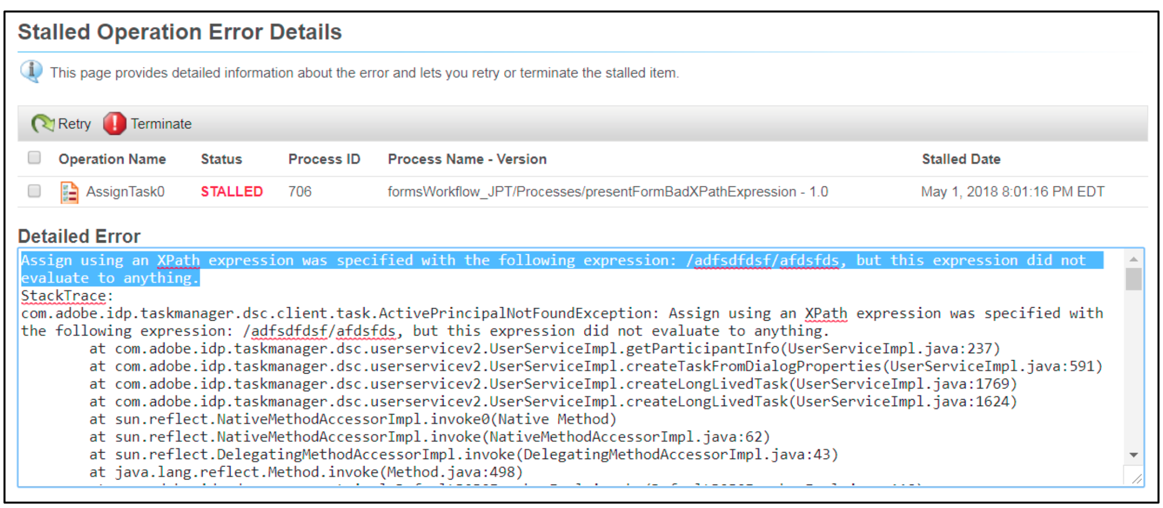
Home – Services – Forms Workflow – Stalled Operations Errors

59. Select one of your stalled operations.

60. Notice the **Error Details**.

61. You should see a relevant message like the following.

Assign using an XPath expression was specified with the following expression: /adfsdfdsf/afdsfds, but this expression did not evaluate to anything.

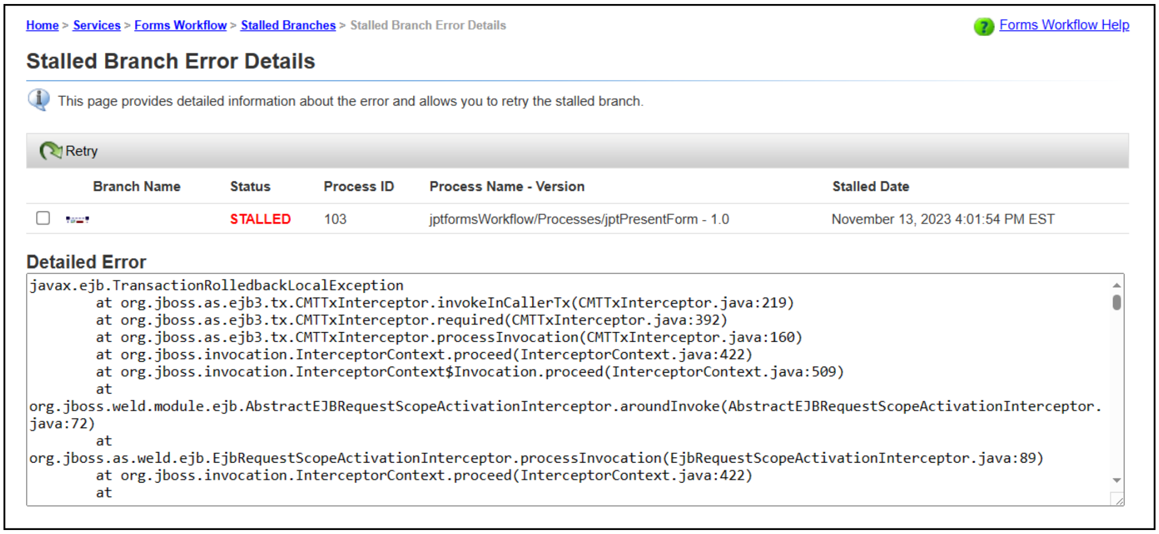


62. Go to the following page.

Home – Services – Forms Workflow – Stalled Branches – Stalled Branch Error Details

63. Your will see your stalled branches.

64. Click the link and you will see your stalled branch error details *(see illustration)*.



65. Explore the other **Forms Workflow** tools in AdminUI.

Configure Outgoing SMTP Mail

Follow these steps to configure your *Email Settings*.

66. Open **AdminUI** and go to this page.

Services – Forms Workflow – Server Settings – Email Settings

67. Enter your **SMTP Server** settings.

SMTP server host name	**smtp.gmail.com**
SMTP server port	**465**
User	**A Gmail address, like smartdoctechnology@gmail.com**
Password	**********
"From" address	**smartdoctechnology@gmail.com**
SMTP use SSL	**true (checked)**
SMTP use StartTLS	**false (not checked)**
Debug email	**false (not checked)**

68. **Restart** the server for the email settings to take effect.

Configure stalled branch notifications

69. Open **AdminUI** and go to this page.

Services – Forms Workflow – Server Settings – Administrator Notifications

Note: This application requires Flash version 10.1 or higher.

70. Select **Stalled Branch** under *Notification Type*.

71. Select **Enable Stalled Branch**.

72. In the **Email Address** field, type the addresses of the users to notify when a branch stalls. You must use the format *user@domain.com* and separate each address with a comma. Typically, this email address is for an administrator.

73. Keep the default text in the **Subject** field.

74. Keep the default text in the **Notification Template** field.

75. Select a **Message Format**, either HTML or Text.

76. Keep the default **Email Encoding** format to use for the email message. The default is *UTF-8*, which most users outside of Japan will use. Users in Japan may select *ISO2022-JP*.

77. Click **Save**.

Configure stalled operation notifications

If an operation stalls *(stops proceeding either deliberately or because of an error)*, you can have an email notification sent to an administrator or another user, who can then investigate the problem.

78. Select **Stalled Operation** under *Notification Type*.

79. Select **Enable Stalled Operation**.

80. In the **Email Addresses** field, type the addresses of the users to notify when an operation stalls.

81. Keep the default text in the **Subject** field.

82. Keep the default text in the **Notification Template** field.

83. Select a **Message Format**, either HTML or Text.

84. Keep the default **Email Encoding** format to use for the email message.

85. Click **Save**.

Configure task assignment notifications

86. Open **AdminUI** and go to this page.

Home – Services – Forms Workflow – Server Settings – Task Notifications

87. Select **Task Assignment** under *Notification Type*.

88. Select **Enable Task Assignment**.

89. Do not select **Include Form Data**. You can try this in a later test. This will include an attachment of the form and data with the task assignment email message.

90. Keep the default text in the **Subject** field.

91. Keep the default text in the **Notification Template** field.

92. Select a **Message Format**, either HTML or Text.

93. Keep the default **Email Encoding** format to use for the email message.

94. Click **Save**.

Test the Automated Notifications

Follow these steps to test your automated notifications.

95. Open the **Aquo_NewHire_Solution** application in Workbench.

96. Double-click the **HR Review** step.

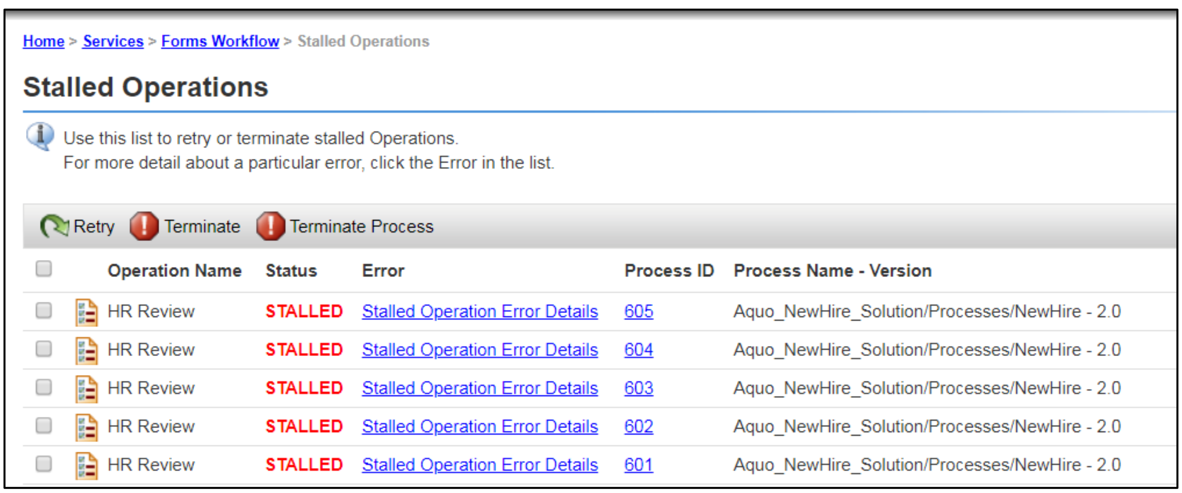
97. Update a property that will cause an operation error. For instance, you can make a reference to a form that does not exist to generate a stalled operation.

98. Invoke the process a few times.

99. Open **AdminUI** and go to this page.

Home – Services – Forms Workflow – Stalled Operations

100. You should see some stalled operations.



Home > Services > Forms Workflow > Stalled Operations

Stalled Operations

Use this list to retry or terminate stalled Operations.
For more detail about a particular error, click the Error in the list.

Retry Terminate Terminate Process

Operation Name	Status	Error	Process ID	Process Name - Version
HR Review	STALLED	Stalled Operation Error Details	605	Aquo_NewHire_Solution/Processes/NewHire - 2.0
HR Review	STALLED	Stalled Operation Error Details	604	Aquo_NewHire_Solution/Processes/NewHire - 2.0
HR Review	STALLED	Stalled Operation Error Details	603	Aquo_NewHire_Solution/Processes/NewHire - 2.0
HR Review	STALLED	Stalled Operation Error Details	602	Aquo_NewHire_Solution/Processes/NewHire - 2.0
HR Review	STALLED	Stalled Operation Error Details	601	Aquo_NewHire_Solution/Processes/NewHire - 2.0

101. Click **Stalled Operation Error Details**.

102. You will see the error.

Assign using an XPath expression was specified with the following expression: /process_data/czxvxcv/zcxcvcxvv, but this expression did not evaluate to anything.

103. You will also see the **Stack Trace**.

Security and Maintenance

System monitoring can be done on both the *AEM OSGi* and the *AEM Forms JEE* levels.

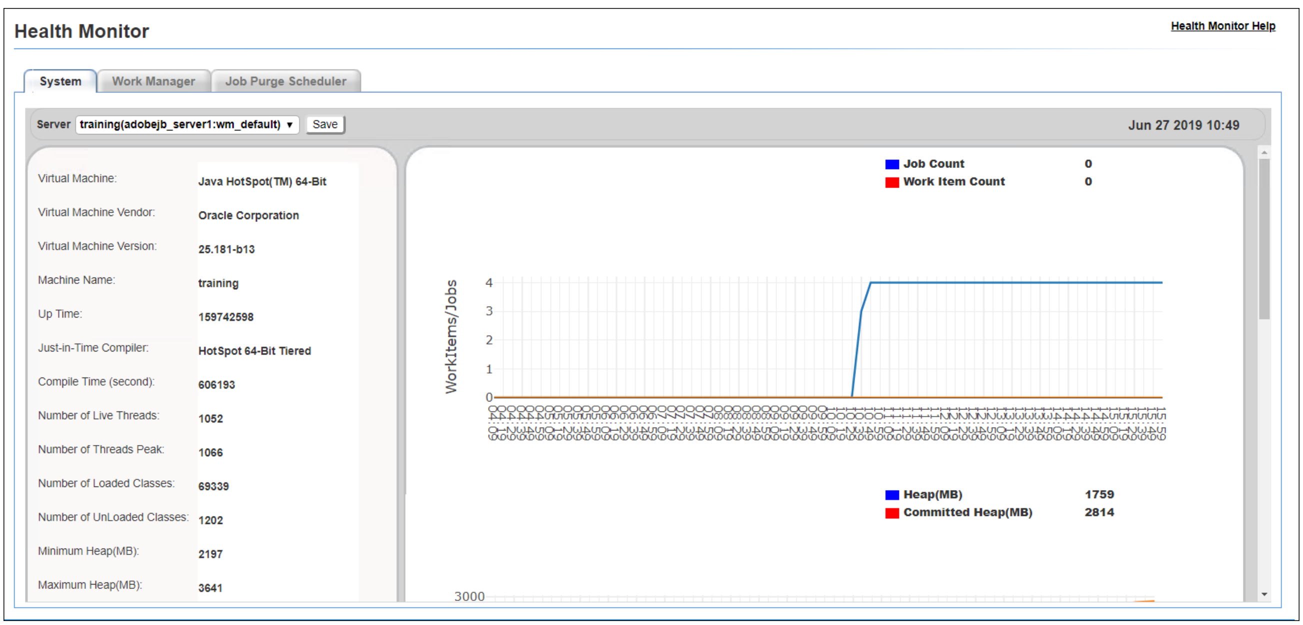
AEM Forms JEE Health Monitor

AdminUI has a Health Monitor tool for your AEM Forms JEE services. The Health Monitor displays server information, memory usage, and processor usage. It also enables you to purge obsolete records from your system. Health Monitor requires the *Adobe Flash Player* version 9 or above. Health Monitor has the following 3 tabs.

– The **System** tab displays resource monitoring charts and information about your server.

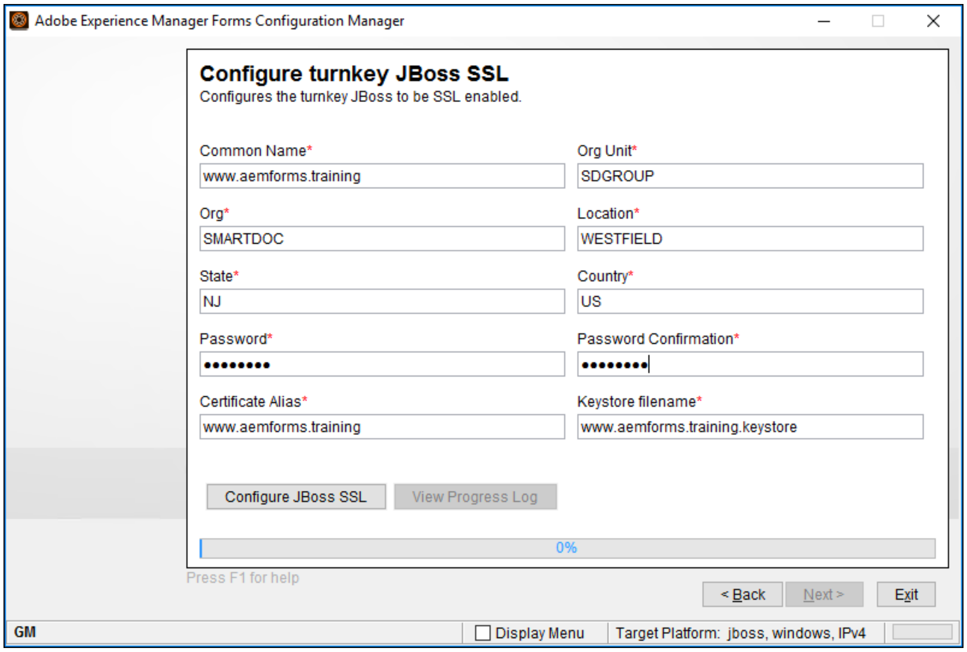
– The **Work Manager** tab displays data that is related to Work Manager, such as the number of work items in the Work Manager queue.

– The **Job Purge Scheduler** tab enables you to purge obsolete records from the Job Manager database. This will improve system performance and free up disk space.



SSL and Long-Lived Certificates

The certificates that Configuration Manager creates will only last 3 months. After that, SSL will no longer work.



Exercises

Use Health Monitor

Follow these steps in the Health Monitor.

1. Open **AdminUI**.

   Note: *Health Monitor requires the Adobe Flash Player version 9 or above.*

2. Select **Health Monitor**.

3. You will see the following 3 tabs.

– The **System** tab displays resource monitoring charts and information about your server.

– The **Work Manager** tab displays data that is related to Work Manager, such as the number of work items in the Work Manager queue.

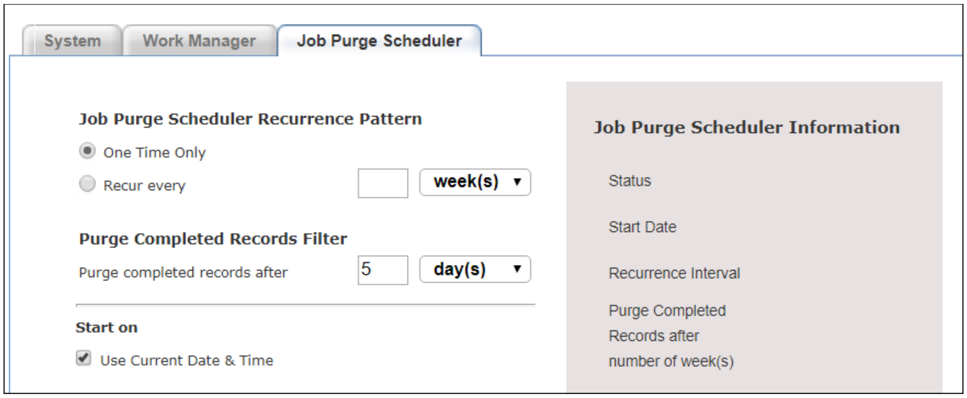
– The **Job Purge Scheduler** tab enables you to purge obsolete records from the Job Manager database. This will improve system performance and free up disk space.

4. Select the **System** tab to review your *System Information*.

5. Select the **Job Purge Scheduler** tab.

6. Select **One Time Only**.

7. Set the parameters for your one time job purge.



Note: *The purge only applies to processes that are completed. If you have a long-lived process that is not complete, and the records are older than the time you stipulate here, they will not be purged.*

8. Specify when the purge will occur.

   Note: *If you enter a past date, the purge will begin immediately.*

9. Click **Start Scheduler**.

Whitelist IP Numbers for AdminUI

Adobe AEM Forms has implemented a Cross Site Request Forgery Filter *(CSRF Filter)* that prevents malicious people from piggybacking on a user's request for pages after visiting another web page in a separate tab. This CSRF Filter works by blocking access to pages to all IPs other than those on a *"Referrer Whitelist"*. Upon installation of a server, the local user is automatically added to this whitelist.

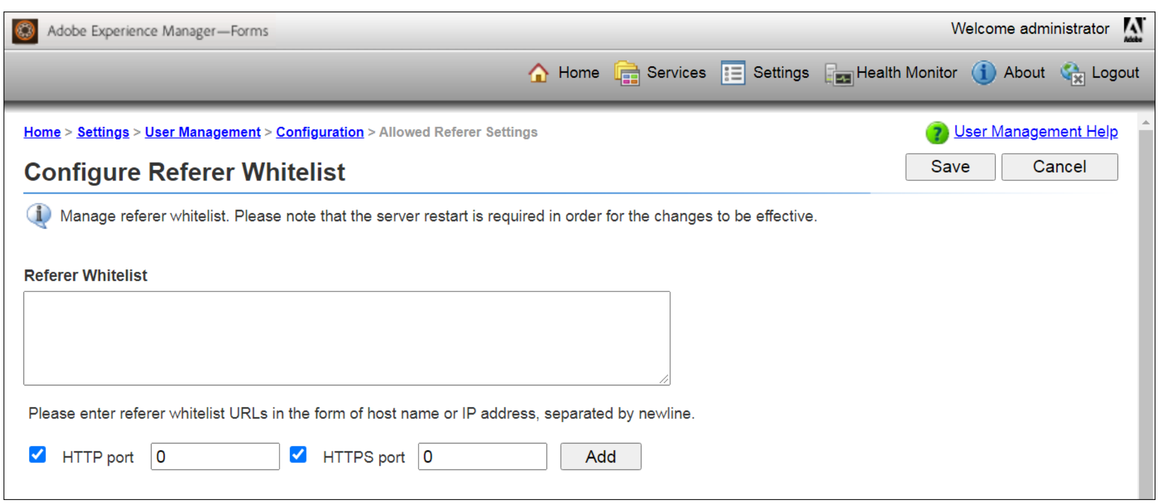
Follow these steps so you can access AdminUI from other IP addresses.

10. Open **AdminUI**.

http://localhost:8080/adminui

11. Navigate to this page.

Home – Settings – User Management – Configuration – Configure Allowed Referer URL's



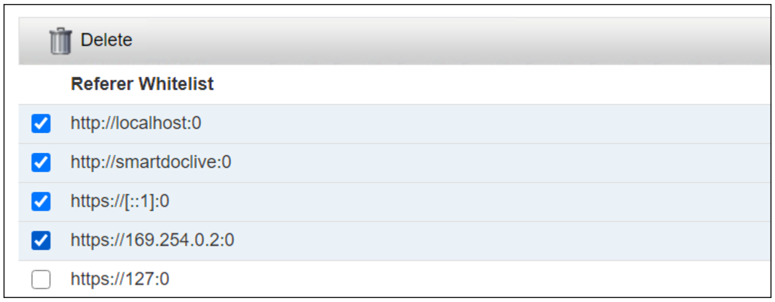
If you need to open AdminUI access to any an outside user, you have two options.

– Open AdminUI access to all IPs *(we will do this one)*

– Open Admin UI Access to specific IPs

The end-user will still need to provide a valid username and password for authentication.

12. **Select** all the items on the Referer Whitelist *(see illustration)*.



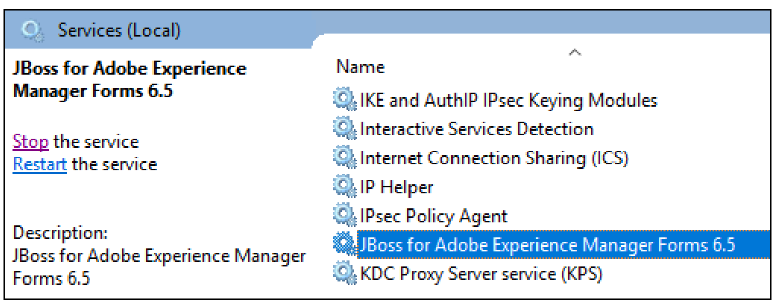
13. Click **Delete** to remove all of the items on the *Referer Whitelist.*

14. Ensure that the whitelist is completely empty *(0 items)* and click **Save**.

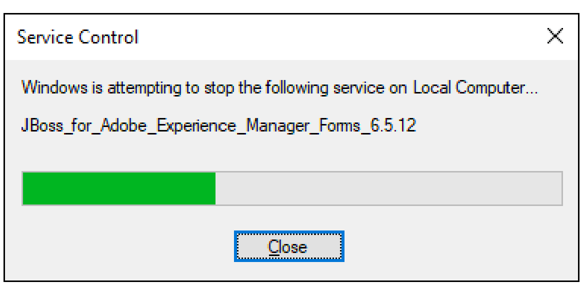
15. **Close** AdminUI.

16. If you are using Windows Server, open **Server Manager** and select **Tools – Services**. If you are using a Windows desktop version, search for *Services.*

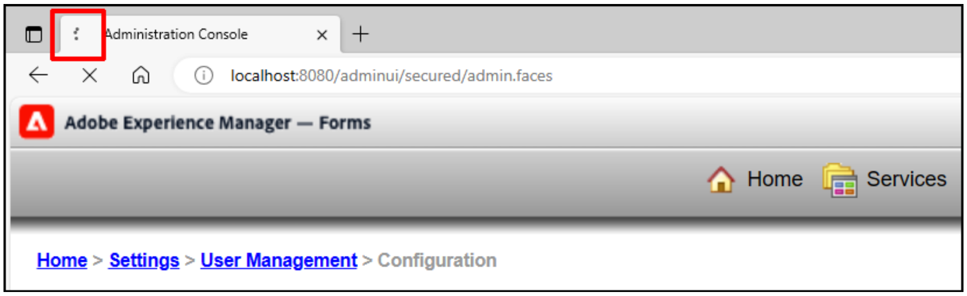
17. Select *JBoss_for_Adobe_Experience_Manager_Forms_<version>* and click **Restart the service** *(see illustration)*.



18. Windows will stop and start the service which will cause your empty whitelist to automatically disable the CSRF Filter. Once this happens, you will be able to access AdminUI from outside IP addresses.

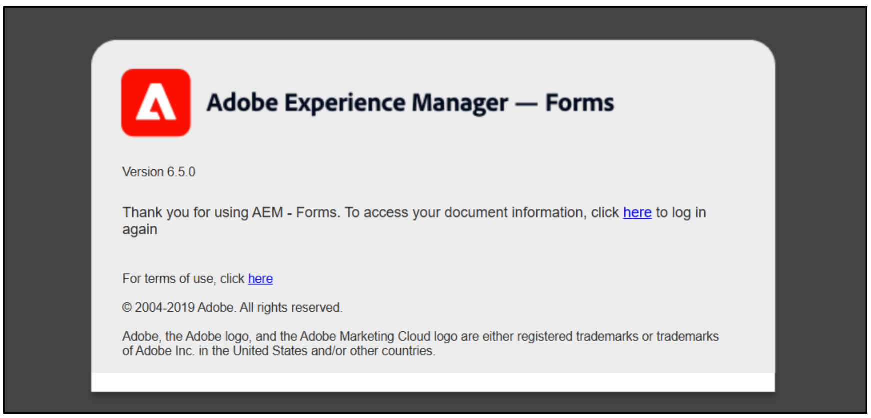


19. Wait for the service to completely restart. This can take 5 minutes or more depending on your server. Watch the animated icon in your browser for the status *(see illustration)*.



20. When the server is ready, you will see this screen *(see illustration)*.

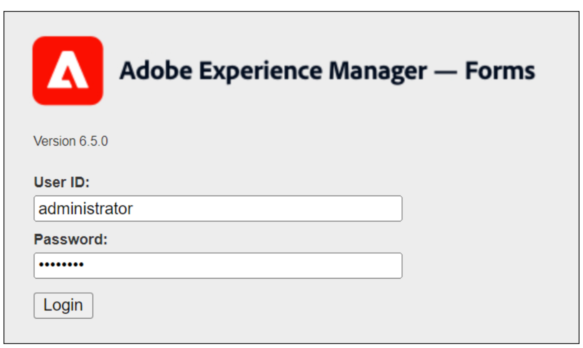
21. Click the **here** link.



22. Enter these values to login to localhost.

– Username: **administrator**

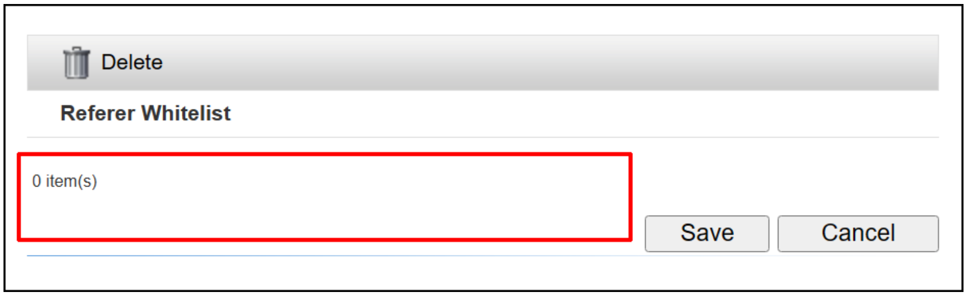
– Password: **password**



23. Navigate to this page.

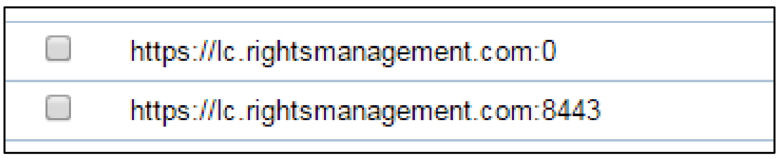
Home – Settings – User Management – Configuration – Configure Allowed Referer URL's

24. You should see an empty whitelist *(see illustration)*.



Open Admin UI Access to specific IPs

Alternatively, you can also add URLs and IPs explicitly to the while list. For instance, in this example, the *https://lc.rightsmanagement.com* URL is specifically added to the whitelist. This is the method to follow when you need to limit access to your AdminUI console.



Create a Long-Lived Certificate

Follow these steps to create a long-lived certificate and install it on your server.

25. Navigate to **[Adobe_JAVA_HOME]/bin** in Windows File Explorer. It will be something like this.

C:\Adobe\Adobe_Experience_Manager_Forms\Java\jdk1.8.0_74\bin

26. **Copy** the path to the clipboard.

27. Run CMD as an administrator.

28. **CD** to the directory path you copied.

29. Enter **DIR**. You should see the keytool.exe program.

30. Enter this command to create the keystore and certificate.

keytool -genkeypair -alias <certficate-name> -keyalg RSA -keystore <keystore-name>.keystore -storepass <password> -validity 360 -keysize 2048

keytool -genkeypair -alias www.aemforms.training -keyalg RSA -keystore www.aemforms.training.keystore -storepass sdcloud2018 -validity 999 -keysize 2048

keytool -genkeypair -alias www.smartdoctech.com -keyalg RSA -keystore www.smartdoctech.com.keystore -storepass sdcloud2018 -validity 999 -keysize 2048

keytool -genkeypair -alias www.aem.training -keyalg RSA -keystore www.aem.training.keystore -storepass sdcloud2018 -validity 999 -keysize 2048

> ***Note:*** *Use **www.aemforms.training** for the First and Last names. This becomes your certificate name. I originally used **James Terry,** and this caused an error that said the certificate name did not match the server.*

31. Enter **www.aemforms.training** or **www.smartdoctech.com** when prompted for the name.

32. Enter **SDGROUP** for the Org Unit.

33. Enter **SMARTDOC** for the Org Unit.

34. Enter your city, state, and country.

35. Return to use the same **sdcloud2018** password.

36. Go back to Windows File Explorer.

37. Copy the keystore file from your bin directory to this directory.

copy <keystore-name>.keystore C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration

38. Go back to your **CMD** prompt.

39. Enter this command to export the certificate file.

keytool -export -alias "<certficate-name>" -file <certficate-name>.cer -keystore C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration\<keystore-name>.keystore

keytool -export -alias "www.aemforms.training" -file www.aemforms.training.cer -keystore C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration\www.aemforms.training.keystore

keytool -export -alias "www.smartdoctech.com" -file www.smartdoctech.com.cer -keystore C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration\www.smartdoctech.com.keystore

keytool -export -alias "www.aem.training" -file www.aem.training.cer -keystore C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration\www.aem.training.keystore

40. Enter the password.

41. Copy the certificate file from the **jdk1.8.0_74\bin** directory to this directory.

C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration

42. Write the contents of the certificate to a text file by typing this command.

keytool -printcert -v -file <certficate-name>.cer > c:\myCertificateContents.txt

keytool -printcert -v -file www.aemforms.training.cer > c:\www.aemforms.training.txt

keytool -printcert -v -file aemformses.cer > c:\myNewCertificateContents.txt

keytool -printcert -v -file www.smartdoctech.com.cer > c:\www.smartdoctech.com.txt

keytool -printcert -v -file www.aem.training.cer > c:\www.aem.training.txt

43. Open the text file to see the details of your certificate.

Owner: CN=www.aemforms.training, OU=SDGroup, O=SmartDoc, L=Iselin, ST=NJ, C=US
Issuer: CN=www.aemforms.training, OU=SDGroup, O=SmartDoc, L=Iselin, ST=NJ, C=US
Serial number: 28619d99

Valid from: Thu Aug 02 14:33:04 EDT 2018 until: Tue Apr 27 14:33:04 EDT 2021

Certificate fingerprints:

MD5: 44:12:FE:5B:A6:FA:5E:4B:34:0C:6B:9E:54:9B:5F:8B

SHA1: 4E:E5:05:B4:43:4A:BF:95:05:EC:A7:D7:6A:A6:CF:26:6A:C0:7C:AC

SHA256:
D3:71:EA:A5:8F:5C:F5:FE:FE:1A:3D:1E:E6:68:78:1B:63:55:51:19:3C:4B:4C:B8:E7:5B:87:29:62:FB:D0:96

Signature algorithm name: SHA256withRSA

Version: 3

Extensions:

#1: ObjectId: 2.5.29.14 Criticality=false

SubjectKeyIdentifier [

KeyIdentifier [

0000: 21 D0 37 40 5E BE 43 CD 0E A1 6E 39 24 F8 E4 19 !.7@^.C...n9$...

0010: B8 7C BF A5 ....

]

]

Update your configuration file

Follow these steps to configure AEM Forms with your new self-signed certificate.

44. **Down** your AEM Forms JEE server.

45. Make a copy of your **lc_turnkey.xml** file located here and add today's date to the filename.

C:\Adobe\Adobe_Experience_Manager_Forms\jboss\standalone\configuration

46. **Edit** your original **lc_turnkey.xml** file.

47. **Change** the values in the keystore node to point to your new keystore and certificate.

<keystore path="C:/Adobe/Adobe_Experience_Manager_Forms/jboss/standalone/configuration/aemformses.keystore" keystore-password="password" alias="AEMformsCert" key-password="password"/>

<ssl>

<keystore path="C:/Adobe/Adobe_Experience_Manager_Forms/jboss/standalone/configuration/www.aem.training.keystore" keystore-password="sdcloud2018" alias="aem.training" key-password="password"/>

</ssl>

48. **Save** your changes to the lc_turnkey.xml file.

49. **Restart** your AEM Forms JEE server.

About this Courseware

SmartDoc Technologies supplied the official *Adobe-Certified* AEM Forms Training courseware to Adobe and Adobe's clients from 2016 – 2021. During that time, our SmartDoc Courseware was battle-tested by thousands of students worldwide. Our SmartDoc Technologies courseware has been peer-reviewed and certified by the Adobe *Engineering*, *Product*, and *Curriculum* teams and by thousands of students like you.

In addition to having the highest *quality* AEM Forms courseware, the SmartDoc library also has the highest *quantity* of AEM Forms courseware. You will find the perfect course for your specific AEM Forms needs in the SmartDoc library. You can always find a current listing of our Adobe AEM Forms training courses on our website.

www.smartdoctech.com