AEM Forms Administration



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AEM Forms Administration

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Before you Begin

This course, and all our SmartDoc courseware, is now being taught by many trainers in many locations. Therefore, we are providing this section and this information to help you get started.

Course Overview

Prerequisites: Introduction to AEM Forms.

Approximate Instructor-Led Classroom Duration: 3 days

This course focuses on the AEM Forms on OSGi product. There is a similar course entitled AEM Forms Administration JEE for students who wish to focus on the AEM Forms on JEE product.

AEM Forms Administration OSGi is a 3-day, instructor-led course where you will learn to install, configure, and maintain an AEM Forms on OSGi server. It can be taught live, in a classroom, or as a virtual course. AEM Forms on OSGi is the world's leading enterprise forms management platform. It facilitates the creation and management of responsive and adaptive HTML5 forms and includes out-of-the-box forms portal components and document services.

You will learn all the Administration tools including the Felix Web Console, CRXDE Lite, and the various administration consoles in AEM's Touch UI and Classic interfaces. You will learn how to install, configure, manage, maintain, and secure an AEM Forms on OSGi server. You will learn how to integrate your server with your enterprise applications like databases, mail servers, and LDAP systems. You will learn how to configure the Adobe Document Services on OSGi. You will learn how to create and manage workflows with the AEM Forms on OSGi workflow tools.

Local Environments

Students should work on their own environments with Administrator access.

The *Introduction-and-Installation* course shows how to install and configure local Author and Publish environments. These environments are important for Administration because students cannot use one of the pre-configured AEM Forms Sandbox environments.

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.

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CRX and Packages

This module covers important fundamentals of CRX and AEM Forms packages. You will learn about the important folders in CRX and work with CRXDE Lite to create a package for an AEM Forms application.

CRXDE Lite

Each CRX folder has an important purpose. It is important for you as a developer or IT Administrator to understand Adobe's intent for each of these CRX folders.

₩ ≪	🙆 Home				
 apps bin conf content content content content content content 	CRX	DE Li	te 。	ontent Reposit	•
🕀 🔂 jcr:system					×
inds inds	Properties	Access Control	Replication Console	В	uild Info 🔶
	Name 🔺	Туре	Value	Protected	Mandatory
H Canada and Canada an	1 jcr:created	Date	2020-10-26T12:07:29.171-04:00	true	false ^
🗉 🛃 rep:repoPolicy	2 jcr:createdBy	String	admin	true	false
🗉 🥥 system	3 jcr:mixinTypes	Name[]	rep:AccessControllable	true	false
🖽 🥥 tmp	4				• •
🗄 🣁 var	Name	Type Stri	ng 🔽 Value	Multi 😳	Add »

<u>/apps</u>

This is the folder that we use for our development as opposed to /libs which is used by Adobe for AEM's core software. You can copy Adobe's adaptive form components from /libs and paste them in /apps to make them your own. You can also use a process called Sling Resource Merger to inherit from /libs.

/conf

This folder contains your adaptive form templates, cloud configurations, and your design-time workflow models.

/content

This folder contains your adaptive forms and your Form Data Models. It also contains page content and the digital assets housed by the AEM Assets module.

/etc

This folder contains the CSS of your theme and any watched folders. It is also possible that legacy client libraries might be in this location.

/libs

This folder contains all AEM's core software. When an Administration runs a service pack or a cumulative fix pack, most, if not all the updates are prefixed by /libs/.

/var

This folder contains your run-time workflow models.

Package Manager and Packages

Package Manager is part of CRXDE Lite. You can use Package Manager to create and work with packages. Packages enable you to import and export repository content. Packages typically contain content, applications, and configurations You will use packages to accomplish all the following:

- To install new functionality.
- To transfer content and apps between AEM server instances.
- To backup repository content.
- To export content to the local file system.



Package an AEM Forms application

Each package you create with Package Manager contains filters to target the specific content you want in the package. The challenge of creating a package for an AEM Forms application is to filter in all the locations where Adobe persists the AEM Forms content. Notice how the Forms and Themes content is persisted to two different CRX locations. You need to filter in all the locations.

Item	Filter
Forms	/content/forms/af/ <name></name>
	/content/dam/formsanddocuments/ <name></name>
Theme	/etc/clientlibs/fd/themes/ <name></name>
	/content/dam/formsanddocuments-themes/ <name></name>
Design Time Workflow model	/conf/global/settings/workflow/models/ <name></name>
Run Time workflow model	/var/workflow/models/ <name></name>
Watched Folder	/etc/fd/watchfolder/staging/ <name></name>
	/etc/fd/watchfolder/config/ <name></name>

Dependencies

Add your server's Service Pack as a dependency of your application. Administrators will receive a notification after they upload your application to their server.

Version: 1.0	rmsExample-1.0.zip Build: 2 Last modified 11:12 admin dependencie nd model for an AEM Forms application package	sl
Edit Bui	d Install Download Share	More -
Package:	Dec14FormsExample	
Download:	Dec14FormsExample-1.0.zip (1.4 MB)	
Group:	my_packages	
Dependencie	es:adobe/cq650/servicepack:aem-service-pkg:6.5.6	

Package Share and Software Distribution

Package Share is a deprecated Adobe service that may still be listed in your version of CRXDE Lite. The service was discontinued in June, 2020.

– Package Manager – Develop	Package Share (service discontinued, June, 2020)	
CRXDE Lite		
Save All 🔹 Create 👻 Delete Copy	Paste Move Rename Overlay Node Mixins Tools •	»
/content/hello-world		P
a «	🚱 Home	
 A provide the second second	CRXDE Lite Enter search term to search the repository	Content Re

CRXDE Lite 20 3 Save All
Create ...
Delete Copy Paste Move ... Rename ... Overlay Node Mixins ... Tools -» Q /content/hello-world 🙆 Home ₩ ≪ 🚊 🛃 / 😑 💋 apps **CRX**DE Lite 😑 💋 adobe 😑 🥥 jptsite Content Re 🗄 📁 clientlibs 🗄 🣁 components Enter search term to search the repository 9 ■ 🥥 aemforms-fragment-commons 🗄 길 clientlibs

The Package Share button is removed in AEM 6.5.5. and higher.

Package Share was replaced with Adobe Software Distribution in June, 2020.



https://experience.adobe.com/downloads

Exercises

Demo: Download Packages from Software Distribution

As of June, 2020, you cannot necessarily access Software Distribution with the same Adobe ID you used for Package Share. You need to login with an account that meets Adobe-wide security standards. If you don't have one, Adobe recommends contacting a Support Administrator within your organization.

Note: You may need to login with Firefox, Microsoft Edge, or some other browser where you are not already logged in with an Adobe ID.

https://experience.adobe.com/downloads

Follow these steps to download a package.

1. Open this URL with a browser.

https://experience.adobe.com/downloads

2. Sign in with an Adobe ID.

Adobe Experience Cloud	
Sign In with an Adobe ID	

- 3. Click the Adobe Experience Manager tab.
- 4. Select your version.
- 5. Select Forms.
- 6. Select Content.
- 7. Select the AEM Forms Gov. Reference Site.

A Software Distribution Gener	Adobe Experience Manager	AEM as a Cloud Service	Adobe Campaign	Marketing Hub	III 🛛	🎤 🥚
Search downloads Q Type here	AEM downlo	ads				
Filters Reset) TITLE		SIZE	SOLUTION	VERSION	SOFTWARE TYP
6.5	AEM Forms Go	ov. Reference Site	78.3 MB	Forms	6.5	Content
Solution	AEM Forms W	e.Finance Reference Site	62.4 MB	Forms	6.5	Content
Forms						
Type Content						

- 8. Click the Accept EULA Terms.
- 9. Click Download.
- 10. Locate and select the current Service pack.

Details EU	A			
Description	Adobe Experience Manager 6.5.5.0 is an important update that includes ne features, key customer requested enhancements and performance, stabili security improvements, released since the general availability of 6.5 releas April 2019. It can be installed on top of Adobe Experience Manager (AEM)	ty, e in	٩	
Product	AEM			
Version Package type	6.5 Service & cumulative fix			-

- 11. Click the Accept EULA Terms.
- 12. Click Download.

Install a Package in Package Manager

Note: If you are using a SmartDoc Sandbox Server, this package is already installed.

In this exercise, you will upload and install the **SmartDoc Master Forms** package. You will need to follow these steps whenever you must upload and install an AEM package.

- 1. Launch AEM.
- 2. Click Adobe Experience Manager in the upper-left corner of the header bar.
- 3. Select **Tools** (the hammer icon).
- 4. Select General CRXDE Lite.

	dobe Experience Manager		
Þ		То	ols
×	General		
	Workflow		0
	Operations	*	\mathcal{Q}
	Sites		
	Assets	CRXDE Lite	Search Forms
	Resources	Full repository access with code editor and nodes/properties management	Customize your search forms

5. Click Package Manager.

Package Manager Develop	Package Share (service discontinued, June, 2020)	
CRXDE Lite		
🎯 Save All 🔹 Create 🔹 Delete Cop	r Paste Move Rename Overlay Node Mixins Tools ▼	**
/content/hello-world		P
a «	🚳 Home	
 aps adobe j ptsite j clientlibs j components aemforms-fragment-commons clientlibs 	CRXDE Lite Enter search term to search the repository	Content Re

You will now see the CRX Package Manager.

- 6. Click Upload Package.
- 7. In the Upload Package window click Browse...
- 8. Select the SmartDoc-Master-Forms-<version>.zip package from your Student Files.

- 9. Click Open and OK. Your package will upload.
- 10. Check to see if your package has dependencies or if it is ready to install.
- 11. If all is good, click **Install**.
- 12. In the Install Package dialog window ignore the Advanced Settings drop-down and click Install.

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.

Activity Log	X
A / conf/templates = D/settings/wam/poinces/template/template/template/templates = D/setting/assettemplates/manpaintemplates/ A / conf/templates=D/settings/wam/poinces/templates/templ	
A /conf/Templates=5D/setTrag/wcm/policies/d/af/layouts/gridTludilayout/default/cg:authoring/setToComponentMapping/reguent	
A /conf/Templates-SD/settings/wam/policies/fd/af/layouts/gridFluidLayout/default/cg:authoring/assetToComponentMapping/ingduct	
A /conf/Templates-SD/settings/wcm/policies/fd/af/lavouts/gridFluidLavout/default/cg:authoring/assetToComponentMapping/video	
A /conf/Templates-SD/settings/wom/bolicies/wom/foundation	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping/document	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping/flash	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping/fragment	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping/image	
A /conf/Templates-SD/settings/wcm/bolicies/wcm/foundation/components/responsivegrid/afpolicy/cg:authoring/assetToComponentMapping/product	
A /conf/Templates-SD/settings/wcm/policies/wcm/foundation/components/responsiveorid/afpolicy/cg:authoring/assetToComponentMapping/video	
saving approx 523 nodes	
Package imported.	
Package installed in 6024ms.	
-	

- 13. Start your Publish Server if it is not already running.
- 14. Once your Publish Server is up, you can follow these steps to replicate this package.
- 15. Open a browser tab with Package Manager on your Author instance.

http://<servername>:4502/crx/packmgr/index.jsp

- 16. Locate the SmartDoc-Master-Forms package that you previously installed (see illustration).
- 17. Click More and select Replicate (see illustration).

	oc-Master-Forms-2.8.zip .8 Build: 11 Last installed 14:43 admin			Share	1 MB
Edit B	uild Reinstall Download Share	Mo	re 👻		
Package:	SmartDoc-Master-Forms		Delete		
Download	SmartDoc-Master-Forms-2.8.zip (1 MB)		Coverage		
Group:	my_packages		Contents		
Filters:	/apps/siteBasicSmartDoc		Rewrap		
	/content/siteBasicSmartDoc		Other Version	s	
	/etc/designs/siteBasic /content/forms/af/smartdoc-master-forms		Uninstall		
	/content/dam/formsanddocuments/smartdoc-master-f		Test Install		
	/conf/Templates-SD		Validate		
	/conf/SD Editable Template Folder /etc/clientlibs/fd/themes/smartdoc		Replicate		
	/content/dam/formsanddocuments-themes/smartdoc			_	

18. When your replication completes, the package will be *copied to*, and *installed on*, your Publish Server. You will see this message in the Activity Log.

Replicate Package: /etc/packages/my_packages/SmartDoc-Master-Forms-3.5.zip Mon Feb 14 2022 10:56:11 GMT-0500 (Eastern Standard Time) Replicating package Package is replicated asynchronously in 144ms.

19. Login to your Publish instance with this URL.

http://<servername>:4503/libs/granite/core/content/login.html

- 20. Enter your User name and Password and click Sign In.
- 21. Open your Publish Server's Package Manager to view the replicated package. Notice that the package is installed. You may need to refresh your browser.

http://localhost:4503/crx/packmgr/index.jsp

Exercise: Create a Package for an AEM Forms application

When you create a package, you are creating a zip file that contains repository content in the form of a file-system serialization. Adobe refers to this serialization as *vault* serialization and a package also contains *vault* meta information, which includes *import configuration details and filter definitions*.

22. Open Package Manager (see illustration).

http://<server name>:<port>/crx/packmgr/index.jsp

Package Manager Develop	Package Share (service discontinued, June, 2020)	
CRXDE Lite		
Save All Create Delete Copy	Paste Move Rename Overlay Node Mixins Tools -	>>
/content/hello-world		٩
# «	🚳 Home	
Apps Adobe Action of the second	CRXDE Lite Enter search term to search the repository	Content Re

23. Select Create Package.

- 24. Enter <yourname>FormsExample as the Package Name.
- 25. Click **OK**.
- 26. Click Edit.
- 27. Enter 1.0 for the Version number.
- 28. Enter This is a good model for an AEM Forms application package as the Description.
- 29. Click Browse next to Thumbnail.
- 30. Locate the packageThumbnail.png in your Student files and click Open.
- 31. Click Save.

Your package should now look like this.

Version: 1	ample-1.zip nodel for an AEM Forms application package		Build new	
Edit Build	Install Download Share	More 🝷		
Package: Group:	jptFormsExample my_packages			
Filters:				

- 32. Click Edit (see illustration above).
- 33. Select Filters.
- 34. Click Add filter.
- 35. Click the Select Path icon to the right of the Root path field.
- 36. Navigate to /apps/siteBasicSmartDoc and select it.
- 37. Click **OK**.
- 38. Click Done. You should now see 1 filter for /apps/siteBasicSmartDoc.
- 39. Click Add filter each time and add these additional filters.

Item	Filter
Sites Application	/apps/siteBasicSmartDoc
	/content/siteBasicSmartDoc
	/etc/designs/ <mark>siteBasic</mark>
Forms	/content/forms/af/smartdoc-master-forms
	/content/dam/formsanddocuments/smartdoc-master-forms

Templates	/conf/Templates-SD
Theme	/etc/clientlibs/fd/themes/ <mark>smartdoc</mark>
	/content/dam/formsanddocuments-themes/smartdoc
Data Integrations	/content/dam/formsanddocuments-fdm/smartdoc
Assets	/content/dam/ <mark>sitebasic</mark>
Client Library	/etc/clientlibs/ <mark>smartdocjs</mark>
<i>Design Time</i> Workflow model	/conf/global/settings/workflow/models/processFormSubmission0
<i>Run Time</i> Workflow model	/var/workflow/models/processFormSubmission0
Watched Folder	/etc/fd/watchfolder/staging/testOutputServiceWF
	/etc/fd/watchfolder/config/testOutputServiceWF

40. Click Edit on your /content/dam/sitebasic filter.

Note: This should be an assets folder.

- 41. Click Add rule.
- 42. Select exclude.
- 43. Enter .+\.jpg to exclude all jpg files.
- 44. Click **Done**. You will see that your filter now has a rule.

Edit	/content/dam/sitebasic	
	exclude .+\.jpg	

- 45. Click Save.
- 46. Click **Edit**.
- 47. Select Dependencies.
- 48. Since this application was only tested on your version of the AEM Forms add-on package, add a dependency by clicking the **+ button**.

Edit Package		
General Filters	Dependencies Advanced Screenshots	
Depends on:	adobe/cq650/servicepack:aem-service-pkg:6.5.7	

49. Enter the groupId, name, and version of the dependency.

adobe/cq650/servicepack:aem-service-pkg:6.5.11

- 50. Click Save.
- 51. Click **Build** to build your package.

You will see all the action in the Activity Log. This is a truncated version

Build Package: /etc/packages/my_packages/formsExampleJames-1.zip Tue Oct 16 2018 10:59:48 GMT-0400 (Eastern Daylight Time)

Building package Embedding thumbnail... A META-INF A META-INF/MANIFEST.MF A META-INF/vault A META-INF/vault/config.xml A META-INF/vault/filter.xml A META-INF/vault/nodetypes.cnd A META-INF/vault/properties.xml A /.content.xml A /.conf A /.conf A /.conf/.content.xml A /.conf/Templates-SD

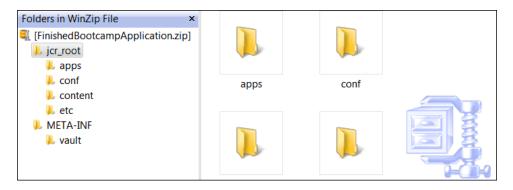
A META-INF/vault/definition/thumbnail.png

Package built in 704ms.

Exercise: Examine the Package

An AEM package contains the following folders:

- jcr_root: the actual content from the JCR.
- META-INF: Metadata about node definitions and the filter.xml file. This metadata is used by FileVault.
- 52. Download the package you just created.
- 53. Use WinZip or a similar program to unzip the package.



54. Open the **filter.xml** file located here.

\META-INF\vault\filter.xml

This XML shows the filters you just created.

```
<workspaceFilter version="1.0">
    <filter root="/apps/siteBasicSmartDoc"/>
    <filter root="/content/siteBasicSmartDoc"/>
    <filter root="/etc/designs/siteBasic"/>
    <filter root="/content/forms/af/smartdoc-master-forms"/>
    <filter root="/content/dam/formsanddocuments/smartdoc-master-forms"/>
    <filter root="/conf/Templates-SD"/>
    <filter root="/etc/clientlibs/fd/themes/smartdoc"/>
    <filter root="/content/dam/formsanddocuments-themes/smartdoc"/>
    <filter root="/content/dam/sitebasic">
    <exclude pattern=".+\.jpg"/>
    </filter>
    <filter root="/etc/clientlibs/smartdocjs"/>
    <filter root="/conf/global/settings/workflow/models/processFormSubmission"/>
    <filter root="/var/workflow/models/processFormSubmission"/>
</workspaceFilter>
```

Batch Load Packages

Note: You do not have access to do these steps on a SmartDoc Sandbox Servers. You can only create one of these folders when you have physical access to your AEM Forms Server.

The install directory is created by default on a JEE server. As you can see in the illustration below, Adobe uses this folder to auto-install packages on a JEE server.

<drive>:\Adobe\Adobe_Experience_Manager_Forms\crx-repository\install

📙 🕑 📙 🖛 install			– 🗆 X
File Home Share View			~ 🕐
\leftarrow \rightarrow \checkmark \uparrow \bigcirc crx-repository $>$ install $>$	✓ Ö Search install		م
V Adobe	Name	Date modified	Туре
Adobe_Experience_Manager_Forms	adobe-aemfd-win-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
> 📙 configurationManager	adobe-lc-forms-lccontent-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
✓ crx-repository	腸 adobe-lc-landingpage-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
> bedrock	腸 adobe-Ic-processreporting-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
> fonts	adobe-lc-workspace-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
> install	🔋 adobe-rightsmanagement-indexer-pkg.zip	7/2/2019 8:11 AM	Compressed (zipped) Folder
> 🔄 launchpad			

You can add also an install directory to your OSGi server to support batch loading of packages. Follow these steps if you have physical access to your own AEM Server.

- 55. Open your crx-quickstart directory.
- 56. Create this folder if it does not exist.

/crx-quickstart/install

57. Your folder should look like this.

📙 🛃 🥃 🗸 crx-quickstart					ı ×
File Home Share View					~ 🕐
← → · ↑ 📙 > This PC > DATA (D:) >	aem > author > crx-quic	kstart > √ Ĉ	Search crx-quickstar	t	Ą
✓ 🔒 aem	^ Name ^	Date modified	Туре	Size	
AEM-6.5-OSGi	app	10/26/2020 12:06	File folder		
✓ author	bedrock	10/26/2020 12:46	File folder		
> 📙 AEM-FORMS-REFSITE-DB	bin	10/26/2020 12:06	File folder		
✓ crx-quickstart	conf	10/26/2020 12:06	File folder		
арр	fonts	11/15/2020 12:37	File folder		
> bedrock	🔜 install	2/23/2021 12:23 PM	File folder		
J Dearbert	launchpad	1/25/2021 8:56 AM	File folder		

58. You can now move packages to this folder, and they will be automatically uploaded and installed.

Note: Packages placed in the install folder will be automatically installed in alphabetical order. If you need to install many packages and the order of installation is not important, this is an effective method. The packages will be installed immediately, and this method does NOT require a server reboot.

- 59. Go to your Student Files and locate the jptHelloWorld-<version>.zip file.
- 60. Copy it and paste it on your install folder.
- 61. Go back to Package Manager and you will see the package has been installed.

OSGi Configurations & Run Modes

You already learned how to configure OSGi bundles with the Web Console. These configuration settings are not portable to other instances unless you replicate the same steps in the Web Console. You will learn some new techniques in this chapter to create OSGi configurations that are portable.

You also learned about run modes during installation. In this section, we will learn more about how you can use run modes to configure your AEM instances.

OSGi Configurations

In addition to the Web Console, OSGi configurations can also be found in these two areas.

- In configuration nodes in CRX.
- In configuration files (*.config) in the /launchpad directory of your crx-quickstart folder.

OSGi Configuration Nodes in CRXDE Lite

OSGi configuration nodes enable you to create server configurations that are portable and easy to archive. By combining run modes with OSGi configuration nodes, you can create 1 comprehensive package for multiple server configurations. This package will be portable and easy to archive.

Starting with version 6.4, this is the recommended best practice from Adobe. You will create these types of OSGi Configuration nodes in the exercises of this chapter. This is the syntax for these nodes:

/apps/config.author.dev /apps/config.publish.de

	8									
i i i i i i i i i i i i i i i i i i i	+	Properties	Aco	cess Control		Replication	Cons	50 🔸		
i 💭 config		Name 🔺		Туре	Va	alue		Prote		
😑 🥥 config.publish	1	jcr:created		Date	20	18-08-20T21:07:19.973		true		
com.day.cq.commons.servlets.RootMappingServlet	2	jcr:createdBy		String	ac	Imin		true		
🖃 🥥 config.publish.de	3	jcr:primaryType		Name	sli	ng:OsgiConfig		true		
🗄 🛃 com.day.cq.commons.servlets.RootMappingServlet	4	rootmapping.target		String	/co	ontent/we-retail/de/de.html	0	false		
⊕ 🥥 content ⊕ 🥥 gui ⊕ 🥥 i18n								>		
u	Na	me		Type String		Value Mult	ti	»		

This method enables your configurations to be portable and shared among different instances of AEM. Like the settings you did in Web Console, any changes you make to these configurations are immediately live without requiring a server reboot. Here are your key steps.

- Create a folder in /apps for each run mode like config.author and config.publish.
- Create a node of type sling:OsgiConfig for each configuration you need.
- Name the node with the Persistent Identity (PID) of the service.
- Create the parameters as properties and values of the node.

You can also modify existing configurations by copying them from the /libs folder to the /apps folder. For instance, the configurations in /apps/system/config will override the configurations in /apps/system/config.

Configuration Files

As mentioned, AEM uses configuration files found in the \crx-quickstart\launchpad\config folder but it is NOT recommended for you to create or edit any configurations found here.

Name	Date modified	Туре	Size
📙 com	8/20/2018 9:03 PM	File folder	
📙 org	8/20/2018 9:03 PM	File folder	
📙 we	12/13/2018 8:58 A	File folder	
ACMExtensionsMessages.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_de.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_de_DE.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_en_US.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_fr.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_fr_FR.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_ja.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
ACMExtensionsMessages_ja_JP.config	8/21/2018 9:43 AM	XML Configuration File	3 KB
org_apache_felix_cm_impl_DynamicBindings.config	1/15/2019 11:00 A	XML Configuration File	6 KB

Run Modes

You have already seen an example of an author run mode and a publish run mode. You can also create other types of run modes and set configuration parameters for each run mode. Here are a few examples.

- By Environment: dev, test, prod
- **By Location:** us (United States), ca (Canada), de (Germany)
- **By Company or Organization:** internal, partner, customer

You can combine run modes in a configuration folder like this.

/apps/weretail/config.publish.de

Configurations from multiple folders will be applied if they match the run mode. For instance, if your instance is started with these run modes: **publish**, **dev**, and **ca**, then configurations from all these folders will be applied.

- /apps/*/config.ca
- /apps/*/config.publish.dev
- /apps/*/config.publish.ca.dev

If there are multiple configurations for the same PID in these folders, the configuration with the highest number of matching run modes is applied. In the above case, it is **config.publish.ca.dev**.

In the instance shown above with these run modes: **publish**, **dev**, and **ca**, the configurations from these folders will be ignored.

- /apps/*/config.publish.emea
- /apps/*/config.publish.emea.dev

Resolution Rules for Configurations

The following are the resolution rules for the different configurations.

Resolution at Startup

When you start up your system, this is resolution order with #1 having the highest priority.

- 1. Nodes of type sling:OsgiConfig under /apps
- 2. Nodes of type sling:OsgiConfig under /libs
- 3. Config files under AEM quickstart folder

Resolution at Runtime

At runtime, any change you make in Web Console will take precedence.

- 1. Modifications made in the Web Console
- 2. Modifications made in /apps
- 3. Modifications made in /libs

Exercises

Create configuration nodes in CRXDE Lite

Follow these steps to create a configuration node in CRXDE Lite. This configuration node will cause your Author instances to default to AEM Forms.

Note: The name of your configuration node must match the Persistent Identity (PID) of the configuration in the Web Console.

1. Open Web Console and select Configuration.

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

- 2. Search for Day CQ Root Mapping to locate the AEM Root Mapping for this instance.
- 3. Click Edit the configuration values (the pencil icon) on the Day CQ Root Mapping.
- 4. Highlight the Persistent Identity (PID) com.day.cq.commons.servlets.RootMappingServlet

Day CQ Root Mapping							
rootmapping.desc							
Target Path	/ <u>aem</u> /start.html rootmapping.target.desc (rootn	napping.target)					
Configuration In	formation						
Persistent Identity	(PID) com.da	y.cq.commons.servlets.RootMappingServlet					
Configuration Bind	ing Unbour	d or new configuration					

5. Right-click and select **Copy**.

6. Open **CRXDE Lite** in a different tab of the same browser. Keep at least 2 tabs open, 1 for Web Console **(A)** and 1 for CRXDE **(B)** (*see illustration*). You will move back and forth between the tabs.

http://<servername>:4502/crx/de

- 14	Ad	lobe	Expe	rience	Manage	🤹 CRXDE L	ite	R	×	+			
					▲ Not secure						/com.day.cq	.mailer.Defau	ltMailService
ß		С	R)	K DE	Lite		2		•••				
æ	Sa	ive /	All •	• •	Create 🔹 Del	ete Copy	Paste	Move	Rena	ame Over	ay Node	Mixins	Tools 🔹
-													

- 7. Select the tab with **CRXDE Lite**.
- 8. Right-click on the apps directory and select Create Create Folder.
- 9. Enter config.author for the folder name.
- 10. Click **OK**.
- 11. Click Save All.
- 12. Right-click on the apps/config.author directory and select Create Create Node.
- 13. Paste your PID (com.day.cq.commons.servlets.RootMappingServlet) for the Name.
- 14. Select sling:OsgiConfig for the Type.
- 15. Click **OK**.
- 16. Click Save All.
- 17. Switch to the tab with **Web Console Configuration**.
- 18. Copy the property name within the parentheses (see illustration).

Day CQ Root Mapping							
rootmapping.desc							
Target Path / <u>aem</u> /start.html rootmapping.targ		t.desc (<mark>rootmapping.target</mark>)					
Configuration Inf	ormation						
Persistent Identity (PID)		com.day.cq.commons.servlets.RootMappingServlet					
Configuration Binding		Unbound or new configuration					

 Create a new property on the com.day.cq.commons.servlets.RootMappingServlet node with these values. Name: rootmapping.target Type: String Value: /aem/forms.html

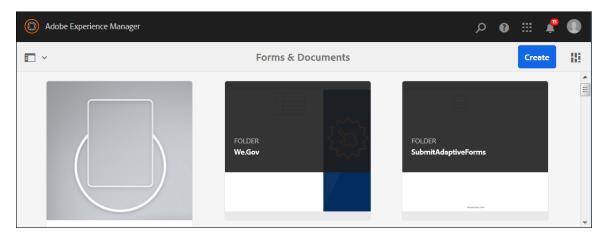
										8
	Pr	operties	Access Cor	itrol	Replication	Console	Build Info			
		Name 🔺		Туре	Value		Protected	Mandatory	Multiple	
	1	jcr:created		Date	2020-04-28T14:52:51.2	248-04:00	true	false	false	
	2	jcr:createdBy		String	admin		true	false	false	
	3	jcr:primaryType		Name	sling:OsgiConfig		true	true	false	
•										•
N	an	rootmapping.ta	rget	Type Stri	ing 🔽 Valu	le /aem/forms.html	I	Multi	🗿 Add	»

- 20. Click Add.
- 21. Click Save All.
- 22. Open a new browser and navigate to this author instance. Note: This should be a different browser than the one you are currently using.

http://<servername>:4502

23. Enter your admin credentials and click Sign In.

Your browser will open to the Forms & Documents section.



View your Run Mode

Follow these steps in the new browser to view your run mode.

24. Open Web Console.

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

25. Select Status – Sling Settings.

Your run modes appear at the bottom.



Run Modes = [s7connect, crx3, author, samplecontent, crx3tar]

Create a Custom Run Mode

Follow these steps to create a custom run mode.

- 26. Shut down your Author instance.
- 27. Run CMD as Administrator.
- 28. Navigate to the directory of your aem-author-4502.jar file.
- 29. Enter this command to start AEM.

java -jar aem-author-4502.jar -r dev -gui

Note: The **-***r* **dev** parameter means your runmode will be dev. The **-***gui* parameter means your AEM instance will have a graphical user interface.



- 30. When your instance comes up, enter your admin credentials.
- 31. Click Sign In.
- 32. Select Adobe Experience Manager Tools.
- 33. Select Operations Web Console.
- 34. Select Status Sling Settings.

You should now see the **dev** custom run mode.

Run Modes = [dev, s7connect, crx3, author, samplecontent, crx3tar]



Create an OSGi Configuration for your Run Mode

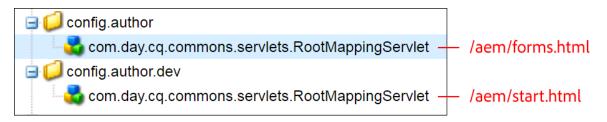
Follow these steps to create an OSGi Configuration for your new run mode.

- 35. Go to CRXDE Lite.
- 36. Right-click on the apps folder and select Create Create Folder.
- 37. Enter config.author.dev for the folder name.
- 38. Click **OK**.
- 39. Click Save All.
- 40. Copy the **com.day.cq.commons.servlets.RootMappingServlet** from your *config.author* folder and paste it in your new *config.author.dev* folder. Note: This will save you some steps.



- 41. Click Save All.
- 42. Select the configuration node in the config.author.dev folder so you can see its properties.
- 43. Change the Value for the rootmapping.target property for this new node from /aem/forms.html to /aem/start.html.
- 44. Click Save All.

You should now have two configuration nodes that are targeting author environments, but one of them is targeting a dev, author environment. This illustration shows the results you should expect for each of these runmodes.



45. Open a new browser and navigate to this author instance.

http://<servername>:4502

46. Enter your credentials and click Sign In.

Your browser will open with the default screen. This is the **aem/start.html** screen because this is an **author**, **dev** runtime instance.

© A	Adobe Experience Manager		🏓 🏭 ۹ م	
Ø		Navigation	Close	
٨				
	-	F		^
	.		E E	
	Projects	Sites	Experience Fragments	~

Note: If this did not work for you, make sure you have the dev run mode. Start your server from a CMD prompt with this command: **java -jar aem-author-4502.jar -r dev -gui**

Note: You may see this message: libs/granite/ui/components/shell/header/user/User has been compiled by a more recent version of the Java Runtime (class file version 53.0), this version of the Java Runtime only recognizes class file versions up to 52.0. This is **a java.lang.UnsupportedClassVersionError**. I have seen this issue with AEM Forms 6.5.2 running on Java 1.8.0_181. You can solve it by running Java 11.0.7.

Create an OSGi Configuration for the Publish run mode

As mentioned earlier, in addition to being a specific instance of AEM, your Publish server is also a specific Publish run mode in AEM. You can create OSGi configurations for a publish run mode and they will take precedence on a Publish server. You can also create a country specific Publish run mode. In this exercise, you will create a country-specific Publish run mode will set the Publish home page to the German page in Adobe's sample We-Retail application. Follow these steps.

- 47. Go to CRXDE Lite.
- 48. Navigate to apps weretail.
- 49. Right-click on the weretail node and select Create Create Folder.
- 50. Enter config.publish.de for the folder name.
- 51. Click **OK**.
- 52. Click Save All.
- 53. Expand the **weretail config.publish** folder.
- 54. Right-click on the **com.day.cq.commons.servlets.RootMappingServlet** in the *config.publish* folder and select **Copy**.

55. Right-click the config.publish.de folder and select Paste.

😑 💋 weretail					8
	+	Properties	Access Control	Replication	Conso 🔶
🕣 📁 config		Name 🔺	Туре	Value	Prote
😑 🣁 config.publish	1	jcr:created	Date	2018-08-20T21:07:19.973-	true
and a com.day.cq.commons.servlets.RootMappingServlet	2	jcr:createdBy	String	admin	true
😑 📁 config.publish.de	3	jcr:primaryType	Name	sling:OsgiConfig	true
🗄 💑 com.day.cq.commons.servlets.RootMappingServlet	4	rootmapping.target	String	/content/we-retail/de/de.htr	nl 🜔 false
⊕ 🥥 content ⊕ 💭 gui ⊕ 🤪 i18n ⊕ 🤪 install		C			>
🗉 🣁 workflow	Nar	me	Type Strin	ng 🔽 Value M	ulti »

- 56. Click Save All.
- 57. Select the configuration node in the config.publish.de folder so you can see its properties.
- 58. Double-click the Value field for the rootmapping.target property in the Properties tab.
- 59. Change the Value for the rootmapping.target property from to /content/we-retail/de/de.html.
- 60. Click Save All.

Replicate a Configuration Package to the Publish Server

You will now create a package for your config.publish.de configuration. You will also use the command line to start up a German (de) Publish server. Once this Publish server is running, you will replicate your package to the Publish server. Follow these steps.

- 61. Select Package Manager on Author.
- 62. Click Create Package.
- 63. Enter Publish-Server-Configuration-for-Germany for the Name.
- 64. Enter 1.0 for the Version.
- 65. Click OK.
- 66. Click Edit.
- 67. Enter A package of an OSGi Configuration for the Description.
- 68. Click Browse next to Thumbnail.
- 69. Locate the germanThumbnail.png in your Student files and click Open.
- 70. Select the Filters tab.
- 71. Click Add filter.
- 72. Click the Select Path icon to the right of the Root path field.
- 73. Create a path to your **config.publish.de** configuration.

/apps/weretail/config.publish.de/com.day.cq.commons.servlets.RootMappingServlet

74. Click Done.

- 75. Click Save.
- 76. Click Build and Build again.

Your package will now look like this.

🍣 🛛 Search pa	ckages 🕗 🥝 Create Package Upload Package	Administrator@crx.default -							
	Publish-Server-Configuration-for-Germany-1.0.zip Version: 1.0 Build: 1 Last built 14:17 admin Packaging an OSGi Configuration	Chare 60.5 KB							
	Edit Build Install Download Share More -								
	Package: Publish-Server-Configuration-for-Germany								
	Download:Publish-Server-Configuration-for-Germany-1.0.zip (60.5 KB)								
	Group: my_packages								
	Filters: /apps/weretail/config.publish.de/com.day.cq.commons.servlets.RootMappingServlet								
		•							

- 77. If your Publish server is not running, start it up before you replicate.
- 78. On your Author instance, select More Replicate and click Replicate.

Note: You must first replicate your package before you start up your server with a German runmode.

You will see this message in the Activity Log.

```
      Activity Log
      X X

      Replicate Package: /etc/packages/my_packages/Publish-Server-Configuration-for-Germany-1.0.zip

      Tue Apr 27 2021 12:05:54 GMT-0400 (Eastern Daylight Time)

      Replicating package

      Package is replicated asynchronously in 219ms.
```

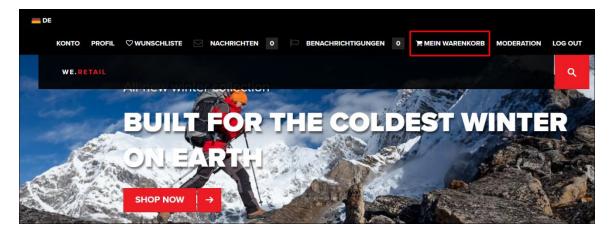
- 79. After your package replicates, shut down your Publish server. You will need to start it with the **config.publish.de** run mode.
- 80. Navigate to the directory of your aem-publish-4503.jar file. It will be something like this.

C:\aem\publish

- 81. Copy the path.
- 82. Run CMD as Administrator.
- 83. Change directories to your publish directory. You can enter cd and then paste your path.
- 84. Enter this command to start the Publish Server.

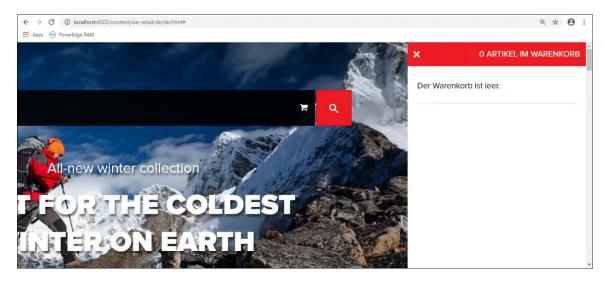
java -jar aem-publish-4503.jar -r publish, de –gui

You should see your Publish Server start up with the German page.



http://<servername>:4503/content/we-retail/de/de.html

- 85. Click the Shopping cart MEIN WARENKORB (see illustration above).
- 86. You should see some translated text.



Create an OsgiConfig for an SMTP Server

You will now create a **sling:OsgiConfig** configuration node for an SMTP Server. The Persistent Identity (PID) can be found using the Web Console. When you finish, it should look something like this.

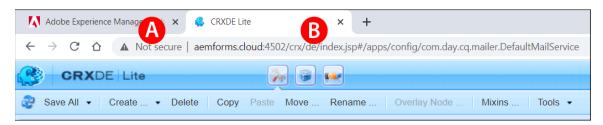
P	operties	Access Control		Replication	Console		Build Info			
	Name 🔺	Туре	Valu	le		Protected	Mandatory	Multiple	Auto Created	
1	debug.email	Boolean	false	Э		false	false	false	false	
2	from.address	String	sma	rtdoctechllc@gmail.com		false	false	false	false	
3	jcr:created	Date	202	0-04-28T15:14:45.904-04	1:00	true	false	false	true	
4	jcr:createdBy	String	adm	in		true	false	false	true	
5	jcr:primaryType	Name	sling	g:OsgiConfig		true	true	false	true	
6	smtp.host	String	smt	o.gmail.com		false	false	false	false	
7	smtp.password	String	****	****		false	false	false	false	
8	smtp.ssl	Boolean	true			false	false	false	false	
9	smtp.starttls	Boolean	false	Э		false	false	false	false	
10	smtp.user	String	sma	rtdoctechllc@gmail.com		false	false	false	false	

Note: The name of your configuration node must match the Persistent Identity (PID) of the configuration in the Web Console.

87. Open Web Console and select Configuration.

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

- 88. Search for Day CQ Mail to locate the service configuration properties.
- 89. Click Edit the configuration values (the pencil icon) on the Day CQ Mail Service.
- 90. Select the Persistent Identity (PID) com.day.cq.mailer.DefaultMailService.
- 91. Right-click on the PID and select Copy.
- 92. Paste the PID into NotePad or a similar Text Editor.
- 93. Open **CRXDE Lite** in a different tab of the same browser. Keep at least 2 tabs open, 1 for Web Console **(A)** and 1 for CRXDE Lite **(B)** (*see illustration*). You will move back and forth between the tabs.



- 94. If you don't have an apps/config folder, right-click on /apps and select Create Create Folder.
- 95. Enter config for the Name and click OK.
- 96. Click Save All.
- 97. Right-click on the apps/config folder and select Create Create Node.
- 98. Paste your PID (com.day.cq.mailer.DefaultMailService) for the Name.
- 99. Select sling:OsgiConfig for the Type.
- 100. Click **OK**.

101. Click Save All.

Adobe Experience Manage A × & CRXDE Lite B × +
$\leftarrow \rightarrow C \Delta$ A Not secure aemforms.cloud:4502/crx/de/index.jsp#/apps/config/com.day.cq.mailer.DefaultMailService
CRXDE Lite
Save All • Create • Delete Copy Paste Move Rename Overlay Node Mixins Tools •
/apps/config/com.day.cq.mailer.DefaultMailService
🔠 « Mome
🖃 💭 apps
in Common Commons
aemforms-fragment-commons
Community-components
🖃 💭 config
Enter search term to search the repository
🕀 🥥 config.author

102. Switch to the tab with Web Console Configuration (A).

103. Copy the first property **smtp.host**. Note: The property name is contained within parentheses (see illustration).

Day CQ Mail Service							
The mail service can be used to send emails.							
SMTP server host name	smtp.gmail.com The mailer uses this SMTP server to send messages (smtp.host)	11					
SMTP server port	465 Port number to use to connect to the SMTP server (smtp.port)	11					

- 104. Switch to the tab with **CRXDE Lite** (B).
- 105. Paste smtp.host as the Name of a new property of your OSGi configuration node. The Type should be String.
- 106. Enter **smtp.gmail.com** or another suitable SMTP Server as the Value.
- 107. Click Add and Save All.
- 108. Follow this process to add the remaining properties and values. This table shows the values for Google's SMTP mail service.

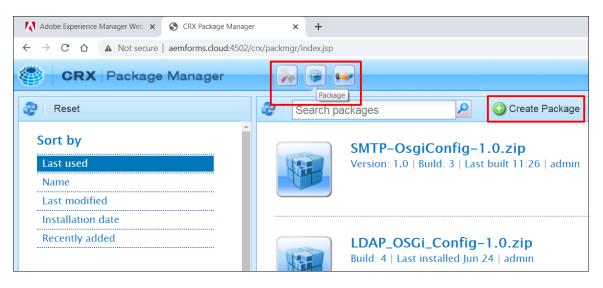
Property	Туре	Value
smtp.port	String	465
smtp.user	String	A Gmail address, like smartdoctechllc@gmail.com
smtp.password	String	******
from.address	String	A Gmail address, like smartdoctechllc@gmail.com
smtp.ssl	Boolean	true

smtp.starttls	Boolean	false
debug.email	Boolean	false

109. When you are done, you can create a package and replicate it to your Publish Server.

110. Click Package to open Package Manager.

111. Click Create Package.



- 112. Enter SMTP-OsgiConfig for the Package Name.
- 113. Enter 1.0 for the Version.
- 114. Click OK.
- 115. Click the package title: SMTP-OsgiConfig-1.0.zip to open the details panel.
- 116. Click **Edit**.
- 117. Enter A package with an OSGi configuration node for an SMTP mail configuration as the Description.
- 118. Click Browse next to Thumbnail.
- 119. Locate the smtpEmailThumbnail.png in your Student files and click Open.
- 120. Select the Filters tab.
- 121. Click Add filter.
- 122. Click Browse to the right of the Root path field.
- 123. Select /apps/config and select your configuration node (see illustration).

Select Path	×
 □ □ / □ □ apps □ □ aemforms-fragment-commons □ □ clientlibs □ □ community-components 	
☐ ☐ config ☐ ☐ config ☐ com.day.cq.mailer.DefaultMailService	
🗄 🧰 config.author	-
Filter tree	
OK	el

- 124. Click **OK**.
- 125. Click Done and Save.
- 126. Click **Build** and **Build** again to build your new package.
- 127. Your packages should now look like this.

SMTP-OsgiConfig-1.0.zip Version: 1.0 Build: 1 Last built 14:42 admin A package with an OSGi configuration node for an SMTP mail config		Share 17.3 KB
Edit Build	Install Download Share	More -
Package:	SMTP-OsgiConfig	
Download:	SMTP-OsgiConfig-1.0.zip (17.3 KB)	
Group:	my_packages	
Filters:	/apps/config	

- 128. Click **Replicate** to replicate your package to your Publish Server. Note: Your Publish Server must be running, and your Replication Agent must be properly configured.
- 129. Open Web Console Configuration on your Publish Server.

http://localhost:4503/system/console/configMgr

- 130. Search for Day CQ Mail Service.
- 131. Click Edit the Configuration Values (the pencil icon) on the Day CQ Mail Service.
- 132. You will see the configuration values you created and packaged on Author are now on Publish.

Day CQ Mail Service	Day CQ Mail Service				
The mail service can be	e used to send emails.				
SMTP server host name	smtp.amail.com The mailer uses this SMTP server to send messages (smtp.host)				
SMTP server port	smartdoctechllc@gmail.com Port number to use to connect to the SMTP server (smtp.port)				
SMTP user	smartdoctechllc@gmail.com A The user for authentication through SMTP (smtp.user)				
SMTP password	The password for authentication through SMTP. The password can either be provided plain text				
"From" address	(smtp.password) smartdoctechllc@gmail.com				
SMTP use SSL	The email address to use in the "From:" field of messages sent by the mailer (from.address)				

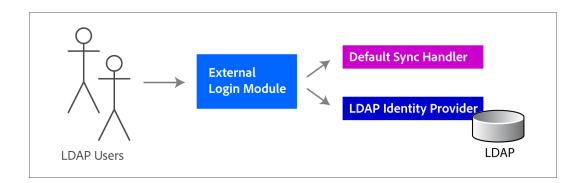
133. Close Web Console Configuration.

LDAP Integration

In this section, you will integrate AEM with LDAP users and groups. The benefit of this approach is you will capitalize on your existing LDAP system for the creation and authentication of users and groups. AEM will still be used to authorize users and groups for specific roles and permissions.

The Services

You need to create configurations for all these services in the Web Console Configuration.



- The External Login Module

This service will define the *Default Sync Handler* and the *LDAP Identity Provider* for the login. For instance, in the demo, the *External Login Module* will define **activeDirectory** as the *Sync Handler* and **IdapActiveDirectory** as the *LDAP Identity Provider*.

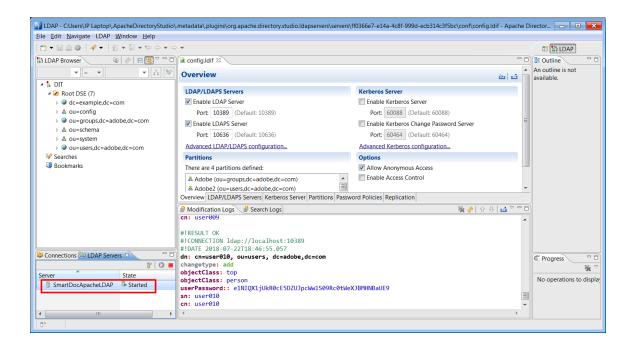
The Default Sync Handler This service defines how the users and groups will be handled.

The LDAP Identity Provider
 This service defines how users are retrieved from the LDAP.

We will use the Web Console Configuration in the demo so the values that you enter will be immediately applied to your server's configuration. We will use OSGi configuration nodes for the exercise.

LDAP

We will install a sample LDAP with existing users and groups.



AEM Integration

We will install a Package with OSGi configuration nodes.

Pr	operties Acce	ss Control	Replication Co	onsole	Build Info			
	Name 🔺	Туре	Value	Protected	Mandatory	Multiple	Auto Created	
1	bind.dn	String	uid=admin,ou=system	false	false	false	false	
2	bind.password	String	secret	false	false	false	false	
3	group.baseDN	String	ou=groups,dc=adobe,dc=com	n false	false	false	false	
4	group.extraFilter	String		false	false	false	false	
5	group.makeDnPath	Boolean	false	false	false	false	false	
6	group.memberAttribute	String	uniquemember	false	false	false	false	
7	group.nameAttribute	String	cn	false	false	false	false	
8	group.objectclass	String[]	groupOfUniqueNames	false	false	true	false	
9	host.name	String	localhost	false	false	false	false	
10	host.noCertCheck	Boolean	false	false	false	false	false	
11	host.port	String	10389	false	false	false	false	

Microsoft Active Directory

Active Directory is somewhat of an umbrella title referring to directory-based identity services in Windows Server operating systems. A Windows Server that runs the Active Directory Domain Service is a domain controller for a Windows network. The server will authenticate and authorize all users and computers in the network. It does much more, but for our purposes, we can think of it as a great source for user and group organization and information.

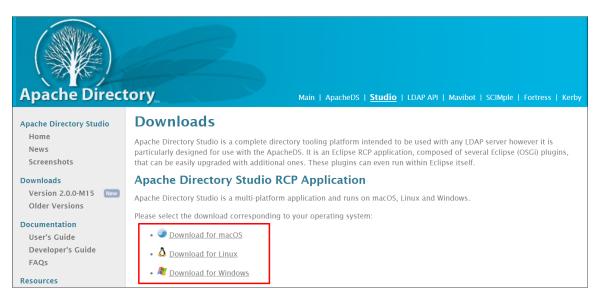
Exercises

Install a Sample LDAP Server

Follow these steps to install the Apache LDAP Server and the sample users and groups for the exercises.

1. Download the ApacheDirectoryStudio for your environment.

https://directory.apache.org/studio/downloads.html



- 2. Double-click the installer to launch.
- 3. Click Next and click I agree.
- 4. Enter your Destination Folder path and click Next.
- 5. Enter your Java Home Directory and click Install.
- 6. Click Next and Finish.
- 7. Open Apache Directory Studio.



- 8. Close the Welcome message.
- 9. Select the LDAP Servers tab (see illustration).
- 10. Click the New Server icon.

11. Select ApacheDS 2.0.0.

	New LDAP Server – C X Create an LDAP Server Please choose the type of server and specify a name to create a new server.	
	Select the server type: Type filter here	
	ApacheDS 1.5.3 ApacheDS 1.5.4 ApacheDS 1.5.5 ApacheDS 1.5.6 ApacheDS 1.5.7 ApacheDS 1.5.7 ApacheDS 2.0.0 V	
Connections LDAP Servers Server State	Server Name: ApacheDS 2.0.0	※ ☆ ☆ ↓ △ ▼ □ □ ^
Server State	⑦ Einish Cancel	~

- 12. Enter SmartDocApacheLDAP as the Server Name.
- 13. Click **Finish**.
- 14. Double-click the SmartDocApacheLDAP server.

LDAP - C:Users\JP Laptop\.ApacheDirectoryStudio	,.metadata\.plugins\org.apache.directory.studio.ldapservers\servers\	ff0366e7-e14a-4c8f-999d-ecb314c3f5bc\conf\config.ldif - Apach	he Dir	ector 👝 🗉 💌
Eile Edit Navigate LDAP Window Help				
1 📬 🕶 🔝 🚔 🚀 🕶 🖆 🕶 🖗 🖛 🤤	> •			🖹 🔛 LDAP
😫 LDAP Browser 🛛 👰 🖉 🗖 🗖	e config.ldif 🛛	C	- 0	🗄 Outline 🛛 🗖
	Overview	~ 신		An outline is not available.
▲ 🔓 DIT ▲ 🖉 Root DSE (7)	LDAP/LDAPS Servers	Kerberos Server		
Koot DSE (7) Ø dc=example,dc=com	Enable LDAP Server	Enable Kerberos Server		
Accessing acc	Port: 10389 (Default: 10389)	Port: 60088 (Default: 60088)		
ou=groups,dc=adobe,dc=com	Fnable LDAPS Server	Enable Kerberos Change Password Server	=	
b & ou=schema	Port: 10636 (Default: 10636)	Port: 60464 (Default: 60464)		
⊳ & ou=system				
ou=users,dc=adobe,dc=com	Advanced LDAP/LDAPS configuration	Advanced Kerberos configuration		
Searches	Partitions	Options		
Sap DOOKINGINS	There are 4 partitions defined:	Allow Anonymous Access		
	& Adobe (ou=groups,dc=adobe,dc=com)	Enable Access Control		
	a Adobez (ou=users,dc=adobe,dc=com)		-	
	Overview LDAP/LDAPS Servers Kerberos Server Partitions Passw			
	Addification Logs Search Logs	🍇 🔗 🗘 🖓 🖬 🗸		
	cn: user009		•	
	#!RESULT OK			
	<pre>#!CONNECTION ldap://localhost:10389</pre>			
Connections 🕼 LDAP Servers 🛛 🖓 🗖	#!DATE 2018-07-22T18:46:55.057			
P 0	<pre>dn: cn=user010, ou=users, dc=adobe,dc=com changetype: add</pre>			C Progress
Server State	objectClass: top			<u> </u>
SmartDocApacheLDAP Started	objectClass: person			No operations to display
	<pre>userPassword:: e1NIQX1jUkR0cE5DZUJpcWw1S09Rc0tWei sn: user010</pre>	KJBMHNBaUE9	-	
	cn: user010		=	
۰ III ۲	•	•		
□◆				

15. You will see the **config.ldif** overview tab opened with the default configuration as shown in the screenshot above.

Note: If your SmartDocApacheLDAP server is not able to start, it may be because port 10389 is already in use. Open a CMD window and issue a netstat –a command to see if port 10389 is already in use. If your AEM server is running, it may already be connected to this port.

- 16. Click the Advanced Partitions configuration link.
- 17. Click Add to enter a partition for groups.

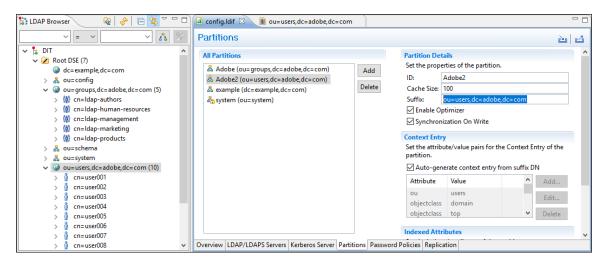
- 18. Enter Adobe for the ID.
- Enter ou=groups,dc=adobe,dc=com for the Suffix.
- 19. Click Add again to enter a partition for users.
- 20. Enter Adobe2 for the ID.
- 21. Enter ou=users,dc=adobe,dc=com for the Suffix.
- 22. Select File Save All to save the partitions created for groups and users.
- 23. **Stop** the server if it is not already stopped.
- 24. **Start** it by selecting it and clicking the green arrow.

🕼 Cor	nnections 🐻 LDAP	Servers 🛛	_		🗐 Modification Logs 🛛 🗐 Search Logs
			Ê	0	
Server	^	State			
8	SmartDocApacheLD	🖡 Starting			
					<
∎≎	Start Server 'S	SmartDocApack	neLDAF	D'	

- 25. Switch to the **Connections** tab.
- 26. Right-click and select New Connection.
- 27. Enter these details:
- Connection name: SMARTDOCAPACHELDAP
- Hostname: localhost
- Port: 10389
- Encryption Method: No encryption
- Provider: Apache Directory LDAP Client API
 Note: This property may not appear on newer versions of the software.
- 28. Click Next.
- 29. Fill in the authentication information:
- Bind DN or user: uid=admin,ou=system
- Bind password: **secret**
- 30. Click Finish.
- 31. Right-click the SMARTDOCAPACHELDAP connection in the bottom right and choose Import > LDIF Import.
- 32. Click Browse and browse to the users-groups-adobe.ldif file in your Student Files.
- 33. Click Open.
- 34. Select Overwrite existing logfile.
- 35. Click Finish.
- 36. Expand the **ou=groups,dc=adobe,dc=com** node.

37. Expand the ou=users,dc=adobe,dc=com node.

You can now see the users and groups from the ldif file in the LDAP server.



Integrate AEM

- 1. Go to your Author instances of AEM.
- 2. Go to Package Manager in CRX.
- 3. Click Upload Package.
- 4. Click Browse and locate the LDAP_OSGi_Config-1.1.zip package in your Student Files.
- 5. Select the file and click **Open**.
- 6. Click OK.
- 7. Click Install and Install again.
- 8. Select Develop in CRXDE Lite.
- 9. Select **apps/system/config.author**. You will see 3 configuration nodes. These nodes are for the *LDAP Identity Provider*, the *Default Sync Handler*, and the *External Login Module* respectively.

😑 🥥 system
🕀 🥥 config
a 🔁 config.author
😑 💑 org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider-20feb37b-c180-4a12-88d4-43452f93734f
ia 💑 org.apache.jackrabbit.oak.spi.security.authentication.external.impl.DefaultSyncHandler-2874bc86-f8ed-4ab4-87be-f8424964171e
🗄 💑 org.apache.jackrabbit.oak.spi.security.authentication.external.impl.ExternalLoginModuleFactory-35b4d078-f6fb-4c6c-b74a-8663ea8c2895

- 10. Go to the Web Console.
- 11. Go to **Configuration Manager**.
- 12. Search for LDAP. This will show you the configuration for the LDAP IDP. This came from the nodes you saw in CRXDE Lite.
- 13. View the properties for the LDAP Identity Provider. You will see the values from the OSGi configuration nodes.

Apache Jackrabbit	Dak LDAP Identity Provider	X
Description for org.ap	ache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider	
LDAP Provider	dap	11
Name	Name of this LDAP provider configuration. This is used to reference this provider modules. (provider.name)	
LDAP Server	localhost	11
Hostname	Hostname of the LDAP server (host.name)	
LDAP Server Port	10389	11
	Port of the LDAP server (host.port)	

- 14. Search for DefaultSyncHandler. You may see a few of these. View the properties.
- 15. Search for External Login Module. You may see a few of these. View the properties.

Factory Methods

A plus icon in Configuration stands for Create new factory configuration. This is an indication that you can create more than 1 of these configurations.

	Apache Jackrabbit Oak LDAP Identity Provider	+
•	org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider 43452f93734f	Create new factory configuration
	10 1021007011	a

The top line is the Factory. Clicking **Create new factory configuration** (*the plus icon*).will create another entry below. You can view the properties for each instance.

Testing User Logins 1

Make sure your LDAP is started. Follow these steps.

- 16. Open Apache Directory Studio.
- 17. Go to the LDAP Servers tab.
- 18. Click the Green start button.
- 19. Go to the **Connections** tab.
- 20. Right-click the Connection and select **Open Connection**. You should see these users and groups (*see illustration*).

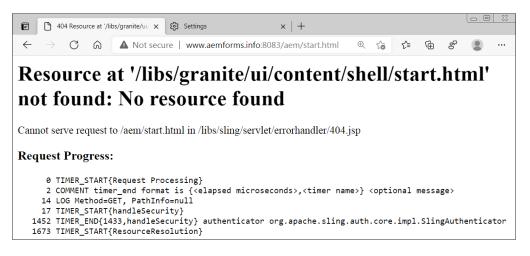


21. Login to AEM with a new browser that is NOT already logged in as Admin.

http://<server>:<port>/aem/start.html

- 22. Enter user007 for the User name.
- 23. Enter 1234 for the password.
- 24. Click Sign In.

You should see this error because the LDAP users and groups do not have any privileges yet.



Your user007 was authenticated through LDAP but user007 is not authorized to view anything on AEM.

Trouble-Shooting

If you don't get the white error page and get the "User name and password do not match" message, try the following troubleshooting steps.

- Go to Apache Directory Studio and relaunch the server and re-open the connection
- Go to CRXDE Lite and uninstall, delete, and reinstall the Adobe package: LDAP_OSGi_ Config-1.0.zip.

Welcome to Adobe	Sign In
Experience Manager	user007
An Adobe Experience Cloud solution: All the	This connection is not secure. Logins entered here could be compromised. Learn More
tools you need to solve these complex digital business challenges. Learn More	View Saved Logins
Public S charcing as Economic	User name and password do not match
	Sign In

Provide Authorization

We received the error message because the user does not have access to any resources in the repository because we have not yet defined permissions for the user or group that came over from the LDAP system. However, the user and group information for user007 were imported into AEM.

All the users are part of the authors group. So, if you assign permissions to the ldap-authors group, all users will be able to read content in AEM. This is the architecture of the LDAP.

Idap-authors

Idap-marketing user002 user008 Idap-human-resources user001 user006 user009 Idap-products user004 user007 user010 Idap-managment user003 user005

We will add *ldap-authors* to the *Contributors* group. The *Contributors* group is a built-in AEM group that has the *jcr:read* permission at the root level of the repository. This is the ACL for the *Contributors* group.

Path	Permission	Privileges	Restrictions
/	allow	jcr:read	empty
1	deny	jcr:read	rep:glob="libs/*/config/*"
1	deny	jcr:read	rep:glob="libs/*/install/*"
/	deny	jcr:read	rep:glob="apps/*/config/*"
1	deny	jcr:read	rep:glob="apps/*/install/*"
/conf	allow	jcr:read	rep:glob=""
/etc	allow	jcr:read	rep:glob=""
/etc	allow	jcr:read	rep:glob="/jcr:primaryType"
/etc/blueprints	allow	jcr:read	empty
/etc/docs	allow	jcr:read	empty
/etc/importers	allow	jcr:read	rep:glob=""/etc
/importers	allow	jcr:read	rep:glob="/jcr:primaryType"
/etc/linkchecker	allow	jcr:read	empty
/etc/livefyre	allow	jcr:read	rep:glob=""
/etc/livefyre	allow	jcr:read	rep:glob="/jcr:primaryType"
/etc/mobile	allow	jcr:read	empty
/etc/scaffolding	allow	jcr:read	empty
/home/groups/c/contributor	allow	jcr:read	empty
/libs/wcm/scaffolding/content/scaffolding	allow	jcr:read	empty

TouchUI

Follow these steps in the TouchUI.

- 25. Go back to your browser that is logged in to AEM as admin.
- 26. Select Adobe Experience Manager Tools Security.
- 27. Click Permissions.
- 28. Select **Users** in the drop-down.
- 29. Enter **user007** in the search field.
- 30. Double-click the record for user007.

You will see that *user007* was authenticated through LDAP but is not authorized to view anything on AEM. user007 only has access to his or her user file in the **/home/users** directory.

Q user007 ×	cn=user007,ou=users,dc	=adobe,do	=com		Ad	
Users v	Access Control List					
cn=user007,ou=u dc=adobe,dc=com cn=user007,ou=users,dc=adobe,dc=com	Access Control Entries (ACEs) PATH	PERMISSION	PRIVILEGES	RESTRICTIONS		
	/home/users/U/UKmbYBqLJi6y-88d8wpj	 allow 	jcr:all			×

- 31. Select Adobe Experience Manager Tools Security.
- 32. Click Users.
- 33. Click Search and enter user007.
- 34. Click user007.

Adobe Experience	ce Manager 🔎 🏭 😗 🗳	
× Location: Users	User007	×
User007		

35. Notice this message about the user being managed by LDAP.

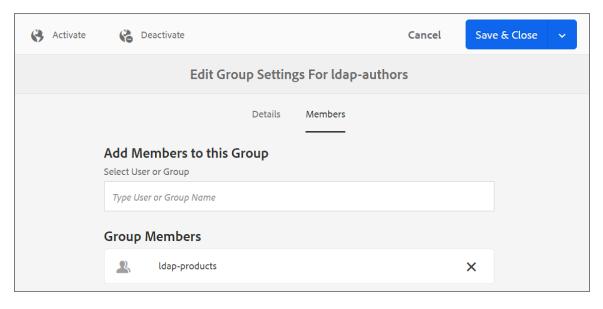
• INFO This user is managed by an external entity. Some of the profile values may be reset during the next synchronization.

36. Select the **Groups** tab. Notice that **user007** is a member of 3 groups.

Groups	s that this user is a member of	
2	everyone	×
2	ldap-authors	×
2	ldap-products	×

- 37. Click **Cancel** and **Close** (*the X in the upper-right*).
- 38. Select Adobe Experience Manager Tools Security.
- 39. Click Groups.
- 40. Click Search and enter ldap-authors.
- 41. Click the **ldap-authors** group.
- 42. Select the Members tab.

43. Notice that *ldap-products* is a member of *ldap-authors*.



Since *user007* is a member of *ldap-products* and *ldap-products* is a member of *ldap-authors*, we can simply add *ldap-authors* to the *Contributors* group.

- 44. Click **Cancel** and **Close** (the X in the upper-right).
- 45. Click Search and enter Contributors.
- 46. Click the **Contributors** group.

Adobe Experienc	e Manager	Q	 •	ê 🚺
× Location: Groups	contributors			×
Contributors				

- 47. Select the Members tab.
- 48. Enter **Idap-authors** in the Select User or Group field and click Enter.
- 49. Select Idap-authors.

Select User or Group	
ldap-authors	
Idap-autho	rs
× ldap-authors	

50. Click Save & Close.

Because access rights are automatically inherited to child nodes, all members of the *ldap-authors* group are now part of the *Contributors* group and have *jcr:read* access to all nodes in the CRX repository.

Testing User Logins 2

- 51. Login to AEM with a new browser that is NOT already logged in as Admin. Note: If you still have your browser session with the error that resulted from the user007 login, you can simply click Refresh.
- 52. Enter user007.
- 53. Enter password: 1234.

You should now see AEM.

0	Adobe Experience Manager		9 # 9		•
Ø		Navigation		Clo	se
~					
	.		Ð		
	Projects	Sites	Experience Fragments		

- 54. Click User in the upper-right and select Sign-Out.
- 55. Enter user002.
- 56. Enter password: 1234.

Demo

The instructor will execute these steps to configure the Default Sync Handler and the External Login Module in the SmartDoc network. Note: A modified version of these steps will work in your environment if you use Microsoft Active Directory.

Follow these steps to configure the Default Sync Handler and the External Login Module.

1. Open Web Console Configuration.

http://<server>:<port>/system/console/configMgr

Configure the External Login Module

- 2. Search for External Login Module.
- 3. You will see a plus icon to the right of the *Apache Jackrabbit Oak External Login Module*. This plus icon indicates that it is a factory configuration, and you can create more than one.

- 4. Click Create new factory configuration (the plus icon).
- 5. You will see a panel for an Apache Jackrabbit Oak External Login Module configuration.

Apache Jackrabbit O	pache Jackrabbit Oak External Login Module							
${\tt Description\ for\ org.apache.jackrabbit.oak.spi.security.authentication.external.impl.ExternalLoginModuleFactory}}$								
JAAS Ranking	150							
	Specifying the ranking (i.e. sort order) of this login module entry. The entries are sorted in a descending order (i.e. higher value ranked configurations come first). (jaas.ranking)							
JAAS Control Flag	SUFFICIENT							
	Property specifying whether or not a LoginModule is REQUIRED, REQUISITE, SUFFICIENT or OPTIONAL. Refer to the JAAS configuration documentation for more details around the meaning of these flags. (jaas.controlFlag)							
JAAS Realm								
	▲ The realm name (or application name) against which the LoginModule is be registered. If no realm name is provided then LoginModule is registered with a default realm as configured in the Felix JAAS configuration. (jaas.realmName)							

- 6. Enter 149 for the JAAS Ranking.
- 7. Enter IdapActiveDirectory for the Identity Provider Name.
- 8. Enter **activeDirectory** for the Sync Handler Name.
- 9. Click Save.

Configure the DefaultSyncHandler

- 10. Search for **DefaultSyncHandler**.
- 11. You will see a plus icon to the right of the *Apache Jackrabbit Oak Default Sync Handler*. This plus icon indicates that it is a factory configuration, and you can create more than one.
- 12. Click **Create new factory configuration** (the plus icon).
- 13. You will see a panel for an Apache Jackrabbit Oak Default Sync Handler configuration.

Apache Jackrabbit Oak Default Sync Handler						
Description for org.apache.jackrabbit.oak.spi.security.authentication.external.impl.DefaultSynch						
Sync Handler Name	default					
	A Name of this sync configuration. This is used to reference this handler by the login modules. (handler.name)					
User Expiration	1h 🦼					
Time	Duration until a synced user gets expired (eg. '1h 30m' or '1d'). (user.expirationTime)					
User auto	(+) -					
membership	List of groups that a synced user is added to automatically (user.autoMembership)					

- 14. Enter **activeDirectory** for the Sync Handler Name.
- 15. Enter **contributor** for the User auto membership.

Note: By entering contributor you will ensure that your synchronized user has some authorization rights to AEM. If they are not authorized at all, they can successfully authenticate but will see a message that says, "Resource at 'libs/cq/core/content/projects.html not found".

- 16. Click the plus icon in *User property mapping* to enter a new field.
- 17. Enter profile/nt:primaryType="nt:unstructured" in the new field.
- 18. Click the plus icon in User property mapping again to enter another new field.
- 19. Enter profile/givenName= givenName in the new field.
- 20. Click the plus icon in User property mapping again five times to enter five more values.
- 21. Enter these mappings in the new fields.

profile/familyName=sn profile/email=mail profile/phoneNumber=homePhone profile/jobTitle=title profile/mobile=mobile

Your User property mapping values should now look like this.

User property	rep:fullname=cn	11	+	-
mapping	profile/nt:primaryType="nt:unstructured"	li.	+	
	profile/givenName= givenName	11	+	-
	profile/familyName=sn	11	+	-
	profile/email=mail	11	+	-
	profile/phoneNumber=homePhone	li	+	-
	profile/jobTitle=title	11	+	-
	profile/mobile=mobile	1	+	-

- 22. Optional Step (see note below). Enter /smartdoc for the User Path Prefix.
- 23. Enter 1 for User membership nesting depth.
- 24. Optional Step (see note below). Enter /smartdoc for the Group Path Prefix.
- 25. Click Save.

Note: The User Path Prefix and Group Path Prefix are optional. I use this on my servers to keep all synchronized users in a rep:AuthorizableFolder called sdcloud. This helps me organize and backup my systems.

Configure the LDAP Identity Provider

- 26. Search for LDAP.
- 27. You will see a plus icon to the right of the *Apache Jackrabbit Oak LDAP Identity Provider*. This plus icon indicates that it is a factory configuration, and you can create more than one.
- 28. Click Create new factory configuration (the plus icon).
- 29. You will see a panel for an Apache Jackrabbit Oak LDAP Identity Provider configuration.

Apache Jackrabbit O	pache Jackrabbit Oak LDAP Identity Provider						
Description for org.apa	${\sf Description}\ {\sf for\ org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider}$						
LDAP Provider	ldap	11					
Name	A Name of this LDAP provider configuration. This is used to reference this provider by the I modules. (provider.name)	ogin					
LDAP Server	localhost	11					
Hostname	A Hostname of the LDAP server (host.name)						
LDAP Server Port	389	11					
	A Port of the LDAP server (host.port)						
Use SSL							

Gather your LDAP values

If you are using a SmartDoc Sandbox Server, you can use the values detailed here. However, if you are syncing AEM with your own Active Directory, you need to use a tool like the Softerra LDAP Browser to retrieve your values.

30. Open the Softerra LDAP Browser.



31. Expand your LDAP (see illustration).

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: <u>F</u> ile	<u>E</u> dit	<u>V</u> iew	F <u>a</u> vorite:	Se <u>r</u> ver	E <u>n</u> try	Sche <u>m</u> a	Re <u>p</u> orts	<u>T</u> ools	Window	<u>H</u> elp
Scope P	Scope Pane 🔷 🔻 🕂 🗙							ŢХ		
÷	Softerra LDAP Browser							^		
 	CN=Builtin									
	🛅 ດບ	=Domain	Controller	s						

32. Select a group name. You will see the values for the group.

Name	Value	Туре
objectClass	top	Attribute
objectClass	group	Attribute
E a	Honolulu	Attribute
🗉 member	CN=Jeanie Hioki,CN=Users,DC=smartdoctech,DC=com	Attribute
distinguishedName	CN=Honolulu,CN=Users,DC=smartdoctech,DC=com	Attribute
instanceType	[Writable]	Attribute
whenCreated	7/1/2019 7:00:07 PM	Attribute
whenChanged	3/6/2020 2:11:48 PM	Attribute
uSNCreated	15647808	Attribute
uSNChanged	29137146	Attribute
🖃 name	Honolulu	Attribute
sAMAccountName	Honolulu	Attribute
sAMAccountType	< samGroupObject >	Attribute
groupType	[GlobalScope, Security]	Attribute
objectCategory	CN=Group,CN=Schema,CN=Configuration,DC=smartdoctech,DC=com	Attribute
dSCorePropagationData	1/1/1601	Attribute
objectGUID	{FF56B79B-13DA-4A0F-BFFA-BF82640ACE21}	Binary Attribute
objectSid	S-1-5-21-3374335622-3702993713-632219675-2225	Binary Attribute

33. Select a user name. You will see the values for the user.

Name	Value	Туре
objectClass	top	Attribute
objectClass	person	Attribute
objectClass	organizationalPerson	Attribute
objectClass	user	Attribute
Ξα	Jeanie Hioki	Attribute
≡ sn	Hioki	Attribute
description	gold	Attribute
physicalDeliveryOfficeName	Honolulu2019	Attribute
亘 givenName	Jeanie	Attribute
distinguishedName	CN=Jeanie Hioki,CN=Users,DC=smartdoctech,DC=com	Attribute
instanceType	[Writable]	Attribute
whenCreated	3/6/2020 2:10:03 PM	Attribute
whenChanged	3/6/2020 2:11:22 PM	Attribute
🗉 displayName	Jeanie Hioki	Attribute
uSNCreated	29137032	Attribute
memberOf	CN=Honolulu,CN=Users,DC=smartdoctech,DC=com	Attribute
uSNChanged	29137118	Attribute
🖃 department	Form Development	Attribute
🖃 company	Honolulu	Attribute
🖃 name	Jeanie Hioki	Attribute

userAccountControl	[NormalAccount, NoPasswordExpiration]	Attribute
badPwdCount	1	Attribute
codePage	0	Attribute
countryCode	0	Attribute
badPasswordTime	5/9/2020 12:51:40 PM	Attribute
≡ lastLogoff	unspecified	Attribute
🗉 lastLogon	unspecified	Attribute
pwdLastSet	3/6/2020 2:10:03 PM	Attribute
primaryGroupID	513	Attribute
accountExpires	never	Attribute
🗉 logonCount	0	Attribute
sAMAccountName	jeanie	Attribute
sAMAccountType	< samUserAccount >	Attribute
userPrincipalName	jeanie@smartdoctech.com	Attribute
objectCategory	CN=Person,CN=Schema,CN=Configuration,DC=smartdoctech,DC=com	Attribute
dSCorePropagationData	1/1/1601	Attribute
🖃 mail	jeanie@smartdoctech.com	Attribute
💷 objectGUID	{A562E34B-7FC0-4734-A9CE-FD602217F4AD}	Binary Attribute
📼 objectSid	S-1-5-21-3374335622-3702993713-632219675-2317	Binary Attribute

Configure your Service

34. Enter these values if you are using a SmartDoc Sandbox Server.

Name	Property	Value
LDAP Provider Name	(provider.name)	ldapActiveDirectory
LDAP Server Hostname	(host.name)	localhost or the IP address of the LDAP Server. 192.168.16.133
LDAP Server Port	(host.port)	389
Bind DN	(bind.dn)	CN=Administrator, CN=Users, DC=smartdoctech, DC=com
Bind Password	(bind.password)	******
User base DN	(user.baseDN)	DC=smartdoctech,DC=com
User object classes	(user.objectclass)	user
User id attribute	(user.idAttribute)	sAMAccountName
Group base DN	(group.baseDN)	DC=smartdoctech,DC=com
Group object classes	(group.objectclass)	group
Group name attribute	(group.nameAttribute)	cn
Group member attribute	(group.memberAttribute)	member

35. Click Save.

JAAS and JMX

Open Web Console and follow these steps to synchronize your users.

36. Select Main – JAAS. This will open the Java Authentication and Authorization Service console.

Adobe Experie Configuration	ence Manager Web Console	ļ	Ada
Main OSGi Sling Status Web	Console	Log	0
Adobe Granite Login Tokens Closed User Groups Migration Tool ConfMgr Crypto Support Disk Benchmark	ng. s, please review the list of deprecated configurations by checking the OSGi Configurations State Bundle	onfiguratio Actions	>n
HTTP Service	-	🖍 🔿 1	ŵ
JAAS			÷
JMX Product Information Profiler	DE JS		
Repository Check			Û

37. Confirm that your external login module appears as a Registered LoginModule. You should see something like this.

149 org.apache.jackrabbit.oak.spi.security.authentication.external.impl.ExternalLoginModuleFactory(23135)

- 38. Select Main JMX.
- 39. Search for External Identity.
- 40. Locate your External Login Module and click it.
- 41. Click syncAllExternalUsers().

Attribute Name		\$	Attribute Value	\$
IDPName			IdapActiveDirectory	
SyncHandlerName			activeDirectory	
Operations				
Return Type 🗢	Name			\$
[Ljava.lang.String;	<u>syncAllExternalUsers()</u> Operation exposed for management			
[Ljava.lang.String;	<u>syncAllUsers(boolean p1)</u> Operation exposed for management			
[Ljava.lang.String;	<u>listOrphanedUsers()</u> Operation exposed for management			
[Ljava.lang.String;	<u>purgeOrphanedUsers()</u> Operation exposed for management			
[Ljava.lang.String;	syncUsers([Ljava.lang.String; p1, book Operation exposed for management	<u>ean_p2)</u>		
[Ljava.lang.String;	syncExternalUsers([Ljava.lang.String; Operation exposed for management	<u>p1)</u>		

42. Click Invoke.

43. You should see a listing of synchronized users.

[Ljava.lang.String	; syncAllExternalUsers()
{op:"add",uid:"for	umadmin",eid:"CN=forum admin,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"ywa	ng",eid:"CN=ywang,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"kil	ey",eid:"CN=Kiley Simpson,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"don	ny",eid:"CN=Donny Chau,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"kav	itha",eid:"CN=Kavitha Jothiprakasam,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"jac	k",eid:"CN=Jack Tong,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"sco	tt",eid:"CN=Scott Yuan,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"cry	stal",eid:"CN=Crystal Bessem,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"tar	a",eid:"CN=Tara Pomrenski,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"kar	el",eid:"CN=Karel Heck,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}
{op:"add",uid:"pau	<pre>l",eid:"CN=Paul Trottier,CN=Users,DC=smartdoctech,DC=com;ldapActiveDirectory"}</pre>

Login as a Synchronized User

44. Open AEM with a new browser.

http://<server>:<port>/aem/start.html

Note: Your authentication is stored at the browser level. So, if you are currently logged in as an Administrator, you cannot use this same browser for testing the authentication of a new user.

- 45. Login as one of the Active Directory users.
- 46. Click User in the upper-right and select Profile.
- 47. Select the **Groups** tab.

You should see the user's groups.

					Cano	:el	Save & Close	~
		Edit User Set	ttings For	Cam Ahmac	ł			
		Details	Groups	Keystore				
G	Groups th	nat this user is a me	ember of					
	2	Contributors			×			
	2	Boeing			×			
	2	everyone			×			

Operations

We will do the following in this module.

- Use AEM Health Reports to analyze and improve security.
- Use AEM Maintenance to perform daily and weekly tasks.
- Execute Tar Compaction on the segmentstore.

HTTPS

The first place to start is your Administrator Inbox. Adobe provides important messages about a new AEM instance in your Administrator's Inbox. The first High priority message advises you to review and apply the online *AEM Security Checklist*. The second High priority message advises you to configure HTTPS. We will do this in the exercises.

	Configure Analytics & Targeting	Medium	You can opt in for Analytics and Targeting by selecting your configuration and then adding it to your pages.	administrators	٩
Ê	Apply the AEM Security Checklist	High	It is strongly recommended to Apply the official AEM Security Checklist on production systems. Please review	administrators	
Ê	Enable Aggregated Usage Statistic	Medium	You can opt in for aggregated usage statistics collection by enabling it for all users	administrators	Ø
S	Configure HTTPS	High	It is highly recommended to configure HTTPS for production systems. Please log in as the admin user and use the SSL	administrators	0

Operations

You can access AEM's *Operations* dashboard by selecting *Tools – Operations*. The *Operations* dashboard enables you to monitor AEM system health with built-in visual tools. We will work with Health Reports and Maintenance in this module, and we will use the Backup operations in a later module.

Workflow	
Operations	*0
Sites	
Assets Health Reports Maintenance Ba	Backup
Get information on the health of an AEM View and track recommended Ca Resources instance through Sling health checks maintenance tasks scheduled for periodic execution execution	Carry out backup tasks

Health Reports

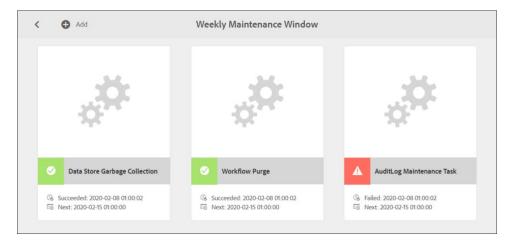
You can view the health of your AEM system with Health Reports (see illustration).

	Health Reports	
/\	/	//
Security Checks	System Maintenance	Active Bundles
Status: WARN	Status: OK	Status: OK

We will execute several security checks and improvements in the exercises. For instance, we will update the replication agents to use the replication-receiver account instead of the Admin account. We will not execute all the security suggestions. For instance, we will not disable CRXDE Support.

Maintenance

You can view and track scheduled maintenance tasks with **Maintenance**. We will review the timing and details of *Daily* and *Weekly* Maintenance tasks. The weekly tasks will take the most work because without proper configuration, some of these weekly tasks will fail. We will properly configure the *Workflow Purge* task and the *AuditLog Maintenance* task.



Tar Compaction

When you update or delete data in the JCR, the existing data remains. It is never directly overwritten in a TAR file. Over time, your TAR files will become numerous and large. You can optimize your TAR files in the segmentstore with TAR Compaction. This example shows a segment store before (1) and after (2) a compaction. After a compaction is complete, you can move the *.bak files to an archive.

vame	Date modified	Туре	Size	Name	Date modified	Туре	Size
data00016a.tar.bak	7/30/2019 9:27 PM	BAK File	109,667 KB	data00016a.tar.bak	7/30/2019 9:27 PM	BAK File	109.667 K
data00018a.tar.bak	8/5/2019 4:41 PM	BAK File	111,863 KB	data00018a.tar.bak	8/5/2019 4:41 PM	BAK File	111.863 K
data00034a.tar.bak	8/21/2019 4:33 PM	BAK File	262,285 KB	data00034a.tar.bak	8/21/2019 4:33 PM	BAK File	262.285 k
data00055a.tar.bak	9/19/2019 4:28 PM	BAK File	3,184 KB	data00055a.tar.bak	9/19/2019 4:28 PM	BAK File	3.184 1
data00061a.tar.bak	9/24/2019 4:59 PM	BAK File	222,072 KB	data00053a.tar.bak	9/24/2019 4:59 PM	BAK File	222.072
data00087a.tar.bak	12/15/2019 4:59 PM	BAK File	3,321 KB	data00007a.tar.bak	12/15/2019 4:59 PM	BAK File	3.321 1
data00096a.tar	12/22/2019 3:00 AM	TAR File	262,897 KB	data00007a.tar.bak	12/25/2019 9:14 PM	BAK File	62,593
data00097a.tar.bak	12/25/2019 9:14 PM	BAK File	62,593 KB	data00097a.tar.bak	2/12/2020 8:58 PM	TAR File	263.5491
data00111a.tar	1/22/2020 3:00 AM	TAR File	11,901 KB	data00125a.tar	2/12/2020 8:59 PM	TAR File	7,5671
data00112a.tar	1/23/2020 2:20 PM	TAR File	64,934 KB	gc.log	2/12/2020 8:59 PM	Text Document	1,00,1
data00113a.tar	1/25/2020 1:00 AM	TAR File	51,870 KB	journal.log	2/12/2020 8:59 PM	Text Document	11
data00114a.tar	1/26/2020 3:00 AM	TAR File	34,764 KB	manifest	2/12/2020 8:59 PM	File	11
data00115b.tar	1/26/2020 3:00 AM	TAR File	25 KB		7/15/2019 11:57 AM	LOCK File	01
data00116a.tar	2/1/2020 1:00 AM	TAR File	203,410 KB	repo.lock	7/15/2019 11:57 AM	LUCK File	01
data00117a.tar	2/2/2020 3:00 AM	TAR File	33,079 KB				
data00119a.tar	2/8/2020 1:00 AM	TAR File	187,885 KB	3	1		1
data00120a.tar	2/9/2020 3:00 AM	TAR File	32,875 KB	Name	Date modified	Туре	Size
data00122a.tar	2/12/2020 8:44 PM	TAR File	121,262 KB	data00124a.tar	2/12/2020 8:58 PM	TAR File	263,549 k
data00123a.tar	2/12/2020 8:51 PM	TAR File	870 KB	data00125a.tar	2/12/2020 8:59 PM	TAR File	7,567 k
gc.log	1/22/2020 3:00 AM	Text Document	1 KB	gc.log	2/12/2020 8:59 PM	Text Document	. 11
journal.log	2/12/2020 8:51 PM	Text Document	19,249 KB	journal.log	2/12/2020 8:59 PM	Text Document	1 k
manifest	2/12/2020 8:45 PM	File	1 KB	manifest	2/12/2020 8:58 PM	File	1 1
repo.lock	7/15/2019 11:57 AM	LOCK File	0 KB	repo.lock	7/15/2019 11:57 AM	LOCK File	0 K

Exercises

The first place to start is your Administrator Inbox. Adobe provides important messages about a new AEM instance in your Administrator's Inbox.

Configure HTTPS

It is a best practice to configure HTTPS for production systems.

Note: The certificate and private key in the Student folders are configured for localhost.

- 1. Open AEM.
- 2. Select Inbox View All.
- 3. Select **Configure HTTPS** and click Open. This will open the SSL Wizard. You can also access the SSL Wizard by selecting *Tools Security SSL Configuration*.

✓ (Complete 🤱 Re-assign	🖋 Open				1 selecte	ed (escape) 🗙
	,			Inbox			Ē
-	Title	Priority	Description	Assignee	Status	Start Date	Due Date
Ê	Configure Analytics & Targeting	Medium	You can opt in for Analytics and Targeting by selecting your configuration and then adding it to your pages.	administrators	٩		
0	Configure HTTPS	High	It is highly recommended to configure HTTPS for production systems Please log in as the admin user and use the SSL	administrators	C		

4. Enter **password** for all of the following.

Store Credentials (1/3)		Cancel
Store Credentials		
Key Store Password *	1	
Trust Store Password *	•	

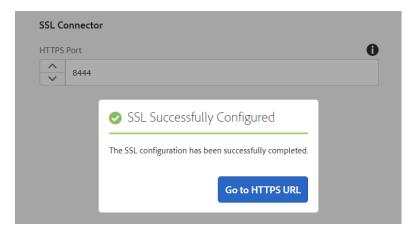
- 5. Click Next.
- 6. Click Select the Private Key File.
- 7. Select the Private Key localhostprivate.der in your Student Files.
- 8. Click Open.
- 9. Click Select Certificate File.
- 10. Select the certificate localhost.crt in your Student Files.
- 11. Click **Open**. Note: These certificates are for the domain name localhost. You should create or purchase a certificate for your specific domain name.

•	Key & Certificate (2/3)	Back Next
Key & Certificate		
Private Key * Select Private Key File localhostprivate.der	•	
Certificate * Select Certificate File localhost.crt	•	

12. Click Next.

Note: The certificate and private key in the Student folders are configured for localhost.

- 13. Enter localhost as your server name or your server's domain name.
- 14. Enter 8444 because it's possible that the JEE version will already be using port 8443.
- 15. Click Done.



- 16. Click Go to HTTPS URL.
- 17. Click ADVANCED.
- 18. Click Proceed to localhost (unsafe).

- 🗆 ×
☆ 😩 :
P

You can also see the updated properties in Web Console Configuration. Follow these steps.

19. Login to Web Console Configuration.

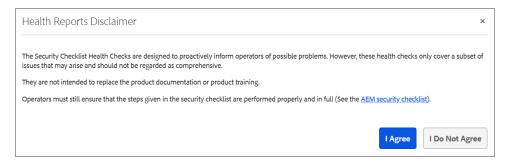
http://localhost:4502/system/console/configMgr

- 20. Search for Granite SSL.
- 21. Click Edit the configuration values (the pencil icon) on the Adobe Granite SSL Connector Factory.
- 22. You will see these properties and values.

Granite Ssl Connector	r Factory		×				
Factory for the Granite	Ssl Connector						
HTTPS Port 8444							
	Port to listen on for HTTPS requests. Defaults to 8443. (com.adobe.granite.jetty.ssl.port)						
Keystore User	ssl-service		11				
	The userID of the Keystore user (com.adobe.granite.jetty.ssl.keystore.user)						
Keystore Password	•••••						
	Password to access the Keystore. (com.adobe.granite.jetty.ssl.keystore.password)						
Excluded cipher	^.*_RSA*_(MD5 SHA SHA1)\$ //	+	-				
suites	SSL_DHE_DSS_WITH_DES_CBC_SHA //	+					
	SSL_DHE_DSS_EXPORT_WITH_DES40_CBC_SHA //	+	-				
	^.*_RC4*	+	-				
	^.*_DES* //	+	-				
List of cipher suites that should be excluded. Default is none. (com.adobe.granite.jetty.ssl.ciphersuites.excluded)							

View Health Reports

- 1. Navigate to Tools Operations Health Reports Security Checks.
- 2. You may see the Health Reports Disclaimer.
- 3. If so, click I Agree or otherwise close the Disclaimer by collapsing the panel.



- 4. Many of the cards in the Security Checklist dashboard show a WARN status in yellow (see illustration).
- 5. Click the **Sling Get Servlet** card to see a diagnosis and hints for solutions.



- 6. Notice the diagnosis is a warning that The default XML renderer is enabled (see illustration).
- 7. Notice the green INFO panel says the default XML renderer of the Sling Get Servlet should be disabled.
- 8. Notice the blue **HINT** is a link that will open the Configuration Manager (*Web Console Configuration*) where you can change this configuration.
- 9. Click the link.

<	(☆	Configure	Sling Get Servlet
) IN	NFO T	The default HTML, pla	ain text and XML renderers of the Sling Get Servlet should be disabled. Otherwise, the system might be exposed to DoS attacks.
	н н	INT <u>Y</u>	/ou can configure the	Sling GET Servlet via the configuration manager.
	🕨 ні	INT <u>(</u>	Theck the 'Configuring	<u>g Sling to Prevent DoS' section of the security guidelines.</u>
St	atus:	: WAR	۱N	Message
[V	VARN	۷]		The default XML renderer is enabled.

The Apache Sling GET Servlet configuration is opened in Web Console Configuration.

10. Deselect Enable XML.

Note: The default HTML, plain text and XML renderers of the Sling Get Servlet should be disabled. Otherwise, the system might be exposed to DoS attacks.

- 11. Click Save.
- 12. Navigate back to Tools Operations Health Reports Security Checks.
- 13. Click on the Sling Get Servlet card.

The Sling Get Servlet card is now green.

< 🏘 Configure	Sling Get Servlet
• INFO The default HTML, plain text	and XML renderers of the Sling Get Servlet should be disabled. Otherwise, the system might be exposed to DoS attacks.
Status: OK	Message
[DEBUG]	The Sling Get Servlet is configured properly.

DavEx Heath Check and CRXDE Lite

- 14. Navigate to Tools Operations Health Reports Security Checks.
- 15. Click CRXDE Support.
- 16. Notice that the recommendation is to disable the CRX Development Bundles on production systems.

17. DO NOT MAKE ANY CHANGES.

These are the CRX bundles and for various reasons and considerations, you may or may not want to disable these bundles on production systems. You should seriously weigh the pros and cons before making this decision.

239	Adobe Granite CRX Explorer (com.adobe.granite.crx-explorer)	Active	• \$ \$ 1
240	Adobe Granite CRX Package Manager (com.adobe.granite.crx-packagemgr)	Active	• \$ 7
241	Adobe Granite CRXDE Lite (com.adobe.granite.crxde-lite)	Active	• ¢ 🕈 🗑

18. Navigate to Tools - Operations - Health Reports - Security Checks.

19. Click DavEx Health Check.

20. Notice that the recommendation is to disable the Sling DavEx bundle on production system.

K 🄅 Configure	DavEx Health Check
INFO The Sling DavE	bundle should NOT be available and active on a production environment.
HINT Check the section	on about the Sling DavEx bundle and servlet in the security guidelines.
Status: WARN	Message
[WARN]	The Sling DavEx bundle is active.

21. Open Web Console Bundles.

http://localhost:4502/system/console/bundles

- 22. Search for the Apache Sling Simple WebDAV Access to repositories bundle.
- 23. Click **Stop** to change the status from Active to Resolved.

▶ Apache Sling Settings (org.apache.sling.settings)	Active	• • • •
▶ Apache Sling Simple WebDAV Access to repositories (org.apache.sling.jcr.webdav)	Active	• • •
Apache Sling Startup Filter (org.apache.sling.startupfilter)	Active	Stop

- 24. Search for the **Apache Sling JCR DavEx** bundle.
- 25. Click **Stop** to change the status from Active to Resolved.
- 26. Navigate to Tools Operations Health Reports Security Checks.
- 27. Click DavEx Health Check.
- 28. Notice that the DavEx Health Check Status is now OK.

/	//	
CRXDE Support	OavEx Health Check	Sling Get Servlet
Status: WARN	Status: OK	Status: OK

- 23. Open CRX by clicking **Tools General CRXDE Lite**.
- 24. Notice that the Repository tree could not be loaded. This is because the WebDav bundles are no longer active.

Repository tree could not be loaded					
Ţ)	If this is a production environment, CRX DE could be disabled for security reasons. If this is the case, you can choose to re-enable it by following the steps described <u>here</u> .				
	ОК				

29. Open Web Console Bundles

http://localhost:4502/system/console/bundles

- 30. Search for the **Apache Sling JCR DavEx** bundle.
- 31. Click **Start** to change the status from *Resolved* to *Active*.
- 32. Search for the Apache Sling Simple WebDAV Access to repositories bundle.
- 33. Click Start to change the status from Resolved to Active.
- 25. Open CRX by clicking Tools General CRXDE Lite.
- 26. Notice that the Repository tree is now loaded successfully.

CRXDE Lite		
😂 Save All 🝷 🛛 Create	 Delete 	Copy Paste Move Rename Overlay Node Mixins Tools •
/apps		
	₩ ≪	🚱 Home
🚊 🛃 /		
🗄 🥥 apps		
 ⊕		CRX DE Lite

Enhance Security with replication-receiver

By default, the standard account that is used by the replication agents is the admin account. It is considered a best practice for AEM Security to replace this default admin account with a specific user.

- 1. Navigate to Tools Operations Health Reports Security Checks on your Author instance.
- 2. Select Replication and Transport Users.
- 3. Notice the diagnosis is a warning that the transport user is the admin account (see illustration).
- 4. Notice the green INFO panel says replication agents should not use the default 'admin' as a transport user.
- 5. Notice the blue **HINT** on top is a link that will open the Replication page where you can change this configuration.
- 6. Click the link.

O HINT You can change the tran	sport user by editing the agent settings in the Replication page.
INFO Replication agents should be added a sho	ld not use the default 'admin' as a transport user.
HINT <u>Check the 'Configure Re</u>	plication and Transport Users' section of the security guideline.
Status: WARN	Message
[WARN]	Transport user is admin for replication agent [Reverse Replication Agent].
[WARN]	Transport user is admin for replication agent [Screens Replication Agent].

7. Keep this browser tab open and open an additional browser tab with your Publish server. You need to be logged into your Publish server as an administrator.

http://localhost:4503/crx/packmgr/index.jsp

8. Change the application path to launch useradmin.

http://localhost:4503/useradmin

- 9. Enter **replication** in the search field on the left.
- 10. Double-click the **replication-receiver** user.
- 11. Select the **Permissions** tab on the right. You will see this user's permissions.

a replication-receiver								Help
Properties Groups Members Permissions	Impersonators	Prefe	rences					
Save			Enter	search q	uery			×Р
Path	Read	Modify	Create	Delete	Read ACL	Edit ACL	Replicate	
e 🚞	*	V	V	V	V	V	\checkmark	<u>Details</u>
🗉 🧰 META-INF	\checkmark	V	V	V	V	\checkmark	\checkmark	<u>Details</u>
🗉 🧰 apps	▼ *!	V	V	V	V	V	\checkmark	<u>Details</u>
🛅 bin	\checkmark	1	1	1	\checkmark	\checkmark	\checkmark	<u>Details</u>
🗉 🧰 conf	▼ *!	√ *!	√ *!	√ *!	▼ *!	▼ *!	▼ *!	<u>Details</u>
🗉 🧰 content	▼ *!	√ *!	√ *!	√ *!	▼ *!	▼ *!	▼ *!	<u>Details</u>
🗉 🧰 etc	▼ *!	√ *!	√ *!	√ *!	√ *!	▼ *!	√ *!	<u>Details</u>
🗉 🧰 home	▼ *!	V	V	V	V	\checkmark	V	<u>Details</u>
🗉 🧰 libs	▼ *!	V	V	V	V	V	V	Details
🛅 oak:index	\checkmark	V	V	V	V	V	V	Details
🗉 🧰 system	\checkmark	V	V	V	V	v	V	<u>Details</u>
🗉 🧰 tmp	▼ *!	√ *!	√ *!	√ *!	▼ *!	▼ *!	▼ *!	Details
🗉 🧰 var		V	V	V	V			Details

- 12. Select the **Groups** tab. You will see this user is part of the administrators group.
- 13. Select your URL and copy it to a new browser tab.
- 14. Change the application path to AEM.

http://localhost:4503/aem/start.html

- 15. Select Tools Security Users.
- 16. Click Search and enter Replication.
- 17. Select **Replication-receiver**.
- 18. Hover over the lock icon and click **Enable** (locked).
- 19. Click **OK**.

× Location: Users Replication\-receiver				×
	Search Results	Select All	1 of 1	111
replication-receiver	▲ Enable users Are you sure you want to enable or	ne user? Cancel OK		

20. Select the **replication-receiver** and click **Properties** in the Action bar.

- 21. Click Change Password.
- 22. Enter **password** as the New password and then Retype Password.
- 23. Enter your Admin password.
- 24. Click Save and then click Save & Close.
- 25. Go back to your browser tab with your **AEM Author** instance.
- 26. Select Tools Deployment Replication to view the Replication page.
- 27. Click Agents on author.
- 28. Select Default Agent (publish).
- 29. Click Edit.

AEM	
	Default Agent (publish) Agent that replicates to the default publish instance.
	Agent is enabled. Replicating to http://localhost:4503/bin/receive?sling:authRequestLogin=1
	Queue is idle
	View log
	Test Connection
	Test Connection
Setting	Edit

- 30. Select the **Transport** tab.
- 31. Enter **replication-receiver** for the User.
- 32. Enter **password** for the password.
- 33. Click **OK**.
- 34. Click Test Connection.

You should see a success message.

Replication test succeeded

<pre>0.10.2018 10:08:30 - Create new HttpClient for Default Agent 30.10.2018 10:08:30 - * Huth User: admin 30.10.2018 10:08:30 - adding header: Action:Test 30.10.2018 10:08:30 - adding header: Action:Test 30.10.2018 10:08:30 - adding header: Attal:content 30.10.2018 10:08:30 - adding header: Handle:/content 30.10.2018 10:08:30 - adding header: Randle:/content 30.10.2018 10:08:30 - adding header: Randle:/content 30.10.2018 10:08:30 - adding header: Randle:/content 30.10.2018 10:08:30 - deserialize content for delivery 30.10.2018 10:08:30 - sending Post request to http://localhost:4503/bin/receive?sling:authRequestLogin=1 30.10.2018 10:08:30 - sending message to localhost:4503 30.10.2018 10:08:30 - sending message to local 14:08:30 GMT 30.10.2018 10:08:30 - sending message to local 14:08:30 GMT 30.10.2018 10:08:30 - sending message to local 14:08:30 GMT 30.10.2018 10:08:30 - sending message to local 14:08:30 GMT 30</pre>	Replication test to http://localhost:4503/bin/receive? sling:authRequestLogin=1
Replication test succeeded	<pre>30.10.2018 10:08:30 - * Auth User: admin 30.10.2018 10:08:30 - * Auth Version: 1.1 30.10.2018 10:08:30 - adding header: Path:/content 30.10.2018 10:08:30 - adding header: Handle:/content 30.10.2018 10:08:30 - deserialize content for delivery 30.10.2018 10:08:30 - Sending PoST request to http://localhost:4503/bin/receive?sling:authRequestLogin=1 30.10.2018 10:08:30 - Sending message to localhost:4503 30.10.2018 10:08:30 - << HTTP/1.1 200 0K 30.10.2018 10:08:30 - << Content-Length: 0 30.10.2018 10:08:30 - << Content-Type: application/octet-stream 30.10.2018 10:08:30 - << Content-Type: text/plain; charset=UTF-8 30.10.2018 10:08:30 - << Content-Type: text/plain; charset=UTF-8 30.10.2018 10:08:30 - << Content-Length: 26 30.10.2018 10:08:30 - << ReplicationAction TEST ok. 30.10.2018 1</pre>

Configure Daily Maintenance Tasks

Follow these steps to configure the Daily Maintenance tasks.

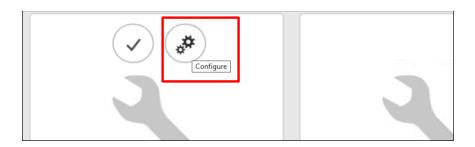
- 1. Select Adobe Experience Manager Tools Operations Maintenance.
- 2. Click the Daily Maintenance Window card.
- 3. You can see that the **Revision Clean Up** and **Lucene Binaries Cleanup** are already running at night.

Succeeded: <Date> <Time>

Next: <Date> <Time>

< Add	
Revision Clean Up	Lucene Binaries Cleanup
 ⊗ Succeeded: 2019-01-17 08:59:18 № Next: 2019-01-18 02:00:00 	 ⊗ Succeeded: 2019-01-17 08:59:20 ➡ Next: 2019-01-18 02:00:00

- 4. Go back to the Maintenance page by clicking the back arrow in the upper-left.
- 5. Hover over the Daily Maintenance Window card so you can see the Configure icon (the icon with two gears).



- 6. Click the **Configure** icon.
- 7. Review the schedule.
- 8. Modify the start time to **3:00**.

Configure N	Maintenance Window	×
Name	Daily Maintenance Window	
Recurrence	Daily Weekly Monthly	
Start	03/00	
End	05:00	
		Save Cancel

- 9. Click Save.
- 10. Click the Daily Maintenance Window card so you go back to the Revision Clean Up card.
- 11. Hover over the **Revision Clean Up** card to show the icons (*see illustration*).
- 12. Click Run. The Revision Clean Up will change to a Currently Running status (yellow).

Run &	
C Revision Clean Up	Lucene Binaries Cleanup
 Currently Running Next: 2021-05-02 03:00:00 	Succeeded: 2021-05-01 03:00:02 Next: 2021-05-02 03:00:00

13. Let it run. After it completes, the status will change to Succeeded *(green)* and it will show you the next scheduled run time.

Configure Weekly Maintenance Tasks

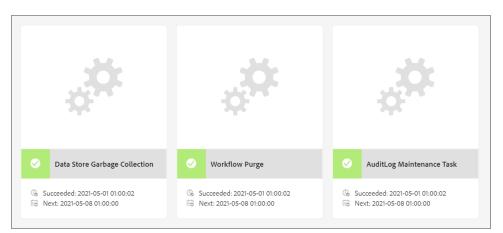
14. Click back to return to the Maintenance page. You can also follow this path to see the Maintenance page.

Adobe Experience Manager – Tools – Operations – Maintenance

- 15. Click the Weekly Maintenance Window.
- 16. Hover over the Weekly Maintenance Window card so you can see the Configure icon (the icon with two gears).
- 17. Click the **Configure** icon. You will see the *Weekly Maintenance Window*. This is the time when your weekly tasks will run. You should avoid doing a system backup during this window.

Configure Maintenance Window ×						×
Name	Weekly Maintenance Window					
Recurrence	Daily • Weekly	Monthly				
Start	Saturday	~	01:00	C		
End	Saturday	~	02:00	\bigcirc	Save	Cancel

- 18. Click Cancel to close the window.
- 19. Click the Weekly Maintenance Window card to view the tasks.
- 20. Your goal is to make sure all these weekly tasks succeed. The Data Store Garbage Collection does not need any configuration, but the other two do.



Configure the Workflow Purge task

- 21. Navigate to Adobe Experience Manager Tools Operations Health Reports.
- 22. Click System Maintenance.
- 23. Click the Maintenance Task WorkflowPurgeTask.

< 🌣	Configure	Mainten	ance Task WorkflowPurgeTask	
• HINT	To find out mo	<u>re, check 'Workfl</u>	ow Purge' in the Maintenance section of the Operations Dash	board.
Status: OK		Λ	lessage	

Note: Minimizing the number of workflow instances increases the performance of the workflow engine. It is a best practice to purge completed workflow instances from the repository. You may also want to put a time limit on running workflow instances. You can purge workflow instances of all models or of a specific model.

In this exercise, you will create a weekly workflow purge that will purge all completed workflows in the repository. Follow these steps.

- 24. Navigate to Adobe Experience Manager Tools Workflow Archive.
- 25. You will see all the archived workflows. If this is a new AEM server, the Archive may be empty which indicates that no workflow instances have run. This illustration shows a Workflow Archive with archived instances.

		Workflow Archive			
Status	Initiator	Start Time	End Time	Model	Payload
COMPLETED	workflow- service (replication- service)	4/29/20, 10:20 AM	4/29/20, 10:20 AM	ActivationModel	/content/forms/fp/admin/submit/metadata/PA2ISBRXGB2IV42IQKQE67BZ5M
COMPLETED	workflow- service (replication- service)	4/29/20, 10:20 AM	4/29/20, 10:20 AM	ActivationModel	/content/forms/fp/daniel.boudrot%40hilti.com/submit/data/32T3ISW2AB3TEG
COMPLETED	workflow- service (replication- service)	4/29/20, 10:20 AM	4/29/20, 10:20 AM	ActivationModel	/content/forms/fp/daniel.boudrot%40hilti.com/submit/data/T2WPHQ6XX4BLR

26. Navigate to Adobe Experience Manager – Tools – Operations – Maintenance.

- 27. Click the Weekly Maintenance Window card.
- 28. Hover over the Workflow Purge task and click Hint (the icon with an i).

ţ.	V O G *	
Contraction Data Store Garbage Collection	C Workflow Purge	C AuditLog Maintenance Task
Unknown: Did not run yet Next: 2019-04-06 01:00:00	 Ge Unknown: Did not run yet Ge Next: 2019-04-06 01:00:00 	Cuknown: Did not run yet

The hint tells you to add workflow models to the workflow-purge configuration.

đ	Workflow Purge	×
W	NT: Please add workflow models to be deleted to the workflow-purge configuration ich is available under Adobe Granite Workflow Purge Configuration under Web Cor nfiguration-Manager.	

- 29. Click X in the upper-right corner to close the Info window.
- 30. Navigate to Adobe Experience Manager Tools Operations Web Console.
- 31. Search for **Purge Configuration** to locate the **Adobe Granite Workflow Purge Configuration**.
- 32. Click + (Create new factory configuration).

The OSGi configuration shown here does not have any values for Job Name so there are currently no jobs scheduled to be purged.

Adobe Granite Work	flow Purge Configuration			
Add configurations for	different purges to execute during maintenance			
Job Name				
	A Enter a descriptive name for this scheduled pu	urge (scheduledpurge.name)		
Workflow Status	COMPLETED			
	lacest Choose which status of WorkFlows to purge (s	cheduledpurge.workflowStatus)		
Models To Purge				
	A Enter model id for models to purge. Leave blank for all models (scheduledpurge.modelIds)			
Workflow Age	30			
	A Enter how old workflows are before they are purged (scheduledpurge.daysold)			
Configuration Info	mation			
Persistent Identity (P	ID)	[Temporary PID replaced by real PID upon save]		
Factory Persistent Identifier (Factory PID)		com.adobe.granite.workflow.purge.Scheduler		
Configuration Binding		Unbound or new configuration		
		Cancel		

33. Select the Factory Persistent Identifier (Factory PID), right-click and select Copy.

com.adobe.granite.workflow.purge.Scheduler

- 34. Paste the Factory PID into NotePad or a similar Text Editor.
- 35. Add -WEEKLY to the end. It should now look like this.

com.adobe.granite.workflow.purge.Scheduler-WEEKLY

36. Open **CRXDE Lite** in a different tab of the same browser. Keep at least 2 tabs open, 1 for Web Console **(A)** and 1 for CRXDE Lite **(B)** (see illustration below). You will move back and forth between the tabs.



- 37. If you don't have an apps/config folder, right-click on /apps and select Create Create Folder.
- 38. Enter config for the Name and click OK.
- 39. Click Save All.
- 40. Right-click on the apps/config folder and select Create Create Node.
- 41. Paste your modified Factory PID (com.adobe.granite.workflow.purge.Scheduler-WEEKLY) for the Name.
- 42. Select sling:OsgiConfig for the Type.

Create Node		×
Please enter node r	name and select type.	
Name:	com. a dobe. granite. work flow. purge. Scheduler-WEEKLY	
Туре:	sling:OsgiConfig	~
	OK	;

- 43. Click OK.
- 44. Click Save All.
- 45. Switch to the tab with Web Console Configuration.
- 46. Copy the first property **scheduledpurge.name**. Note: The property name is always within the parentheses. The property names in this illustration are highlighted in blue.

Adobe Granite Work	Adobe Granite Workflow Purge Configuration					
Add configurations for	Add configurations for different purges to execute during maintenance					
Job Name	Weekly Purge					
	Enter a descriptive name for this scheduled purge (scheduledpurge.name)					
Workflow Status	COMPLETED					
	Choose which status of WorkFlows to purge (scheduledpurge.workflowStatus)					
Models To Purge						
	Enter model id for models to purge. Leave blank for all models (scheduledpurge.modelIds)					

- 47. Switch to the tab with **CRXDE Lite**.
- 48. Paste **scheduledpurge.name** as the Name of a new property of your OSGi configuration node. The Type should be **String**.
- 49. Enter Weekly Purge for the value.
- 50. Click Add and Save All.
- 51. Follow this process to add the remaining properties and values. This table shows the properties and values you need to add.

Name	Туре	Value
scheduledpurge.name	String	Weekly Purge
scheduledpurge.workflowStatus	String	COMPLETED
scheduledpurge.modellds	String[]	
scheduledpurge.daysold	Long	1 Note: You can also set it to 0 if you want to completely clean the archive.

Note: Make sure to click the Multi button to create the String Array.

Nam	е Туре	String	Value	Multi	🗿 Add	»
			Click Multi to create arra	ys		

Note: Ids as in scheduledpurge.modelIds are the models to purge. If you leave this empty, the instances of all workflow models will be purged. Note: Ids begins with an I like Indiana does.

Your properties and values should now look like this.

Pro	operties	Access Control	Replication	on	Console		Build 1	info		
	Name 🔺		Туре	Value		Protect	ted	Mandatory	Multiple	Auto Created
1	1 jcr:primaryType Name		Name	sling:OsgiConfig ti		true true		true	false	true
2	scheduledpurge.da	ysold	Long	1		false		false	false	false
3	scheduledpurge.me	odellds	String[]			false		false	true	false
4	scheduledpurge.na	me	String	Weekly Pure	ge	false		false	false	false
5	scheduledpurge.wo	orkflowStatus	String	COMPLETE	ED	false		false	false	false
	-				-					
Nam	e scheduledpurg	e.daysold Type	Long	💙 Valu	e				1 🤤 Multi	😳 Add 🛛 😳

This table describes the properties we just set.

Property Name (Web Console)	OSGi Property Name	Description
Job Name	scheduledpurge.name	A descriptive name for the scheduled purge.
Workflow Status	scheduledpurge.workflowStatus	The status of the workflow instances to purge. The following values are valid: COMPLETED: Completed workflow instances are purged.
WOIKILOW Status	scheduledpurge.workitowstatus	RUNNING: Running workflow instances are purged.
		COMPLETED: Completed workflow instances are purged.
Models To Purge	scheduledpurge.modellds	The ID of the workflow models to purge. The ID is the path to the model node, for example /etc/workflow/models/dam/update_asset/jcr:content/model. Specify no value to purge instances of all workflow models. To specify multiple models, click the + button in the Web Console.
Workflow Age	scheduledpurge.daysold	The age of the workflow instances to purge, in days.

Purge Configuration Parameters

- 52. Click Save All when you are done.
- 53. Switch to the tab with Web Console Configuration and Refresh the page.
- 54. Search for Purge Configuration.
- 55. Click **Edit the configuration values** (*the pencil icon*) and you will see the new configuration you created in the OSGi Configuration node.

com.adobe.granite.	.workflow.core.offloading.WorkflowOffloadingJobConsumer~default		(-)				
Adobe Granite Workflow	Adobe Granite Workflow PayloadMoveListener						
Adobe Granite Workflow	/ Publish Configuration		(-)				
Adobe Granite Workflow	Purge Configuration	+					
com.adobe.granite.	.workflow.purge.Scheduler~WEEKLY		(F)	•			
Adobe Granite Work	flow Purge Configuration				x		
Add configurations for	different purges to execute during maintenance				_		
Job Name	Weekly Purge			11			
	Enter a descriptive name for this scheduled purge (scheduledpurge.name)						
Workflow Status	COMPLETED			•			
	Choose which status of WorkFlows to purge (scheduledpurge.workflowStatus)						
Models To Purge		//	+) -)			
	Enter model id for models to purge. Leave blank for all models (scheduledpurge.modelIds)						

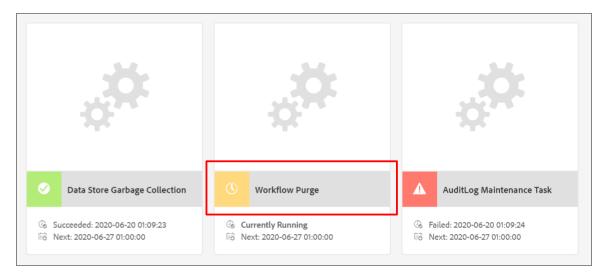
56. Notice that the Job Name and Workflow Age properties now have values.

Run the Workflow Purge task

57. Return to the Weekly Maintenance Window.

Adobe Experience Manager – Tools – Operations – Maintenance – Weekly Maintenance Window.

58. Hover over the **Workflow Purge** task and select **Run**. The status will change to **Currently Running**. This will be yellow until it completes when it will change to green (*see illustration*).



59. If you have a lot of workflows to purge, this could take a while. When it is completed, you will see the status of the card change to *Succeeded* and the color will be green.

	*	*
Oata Store Garbage Collection	Workflow Purge	AuditLog Maintenance Task
ි Succeeded: 2020-04-25 01:00:01 ම Next: 2020-05-02 01:00:00	 G₂ Succeeded: 2020-04-29 11:06:17 G₂ Next: 2020-05-02 01:00:00 	 General Content in the second second

60. Navigate back to the Workflow Archive page: Adobe Experience Manager - Tools - Workflow - Archive.

You will no longer see any completed workflows older than 1 day.

о С	Adobe Exp	perience Manag	ger				م	€ Ⅲ	P
				Workfl	low Archiv	е			
	Status	Initiator	Start Time	End Time	Model	Payload	Comment	Title	Version
				There	e is no item.				

Configure the AuditLog Maintenance Task

- 61. Navigate to **Tools Operations Health Reports**.
- 62. Click System Maintenance.
- 63. Click the Maintenance Task AuditLog Maintenance Task. Note: This may be called Maintenance Task com.day.cq.audit.impl.AuditLogMaintenanceTask.
- 64. Click Configure. You will see the Pages Audit Log Purge Rule configuration.
- 65. Enter trimAuditLog or some other meaningful name as the *Rule Name*.
- 66. Enter /content for the Content path.
- 67. Enter **7** for the Minimum age so the audit log will be kept for 7 days.
- 68. Select all the options for Audit log Pages event types.

Minimum age	7	
	How long the audit logs needs to be	e kept (in days) (auditlog.rule.minimumage)
Audit log Pages event types	 Page Created Page Modified Page Moved Page Deleted Page Version Created Page Restored Page Rolled Out Page Valid Page Invalid 	
	The audit log Pages event types (a	uditlog.rule.types)
Configuration Info	ormation	
Persistent Identity (PID)		com.adobe.cq.audit.purge.Pages
Configuration Binding		Unbound or new configuration

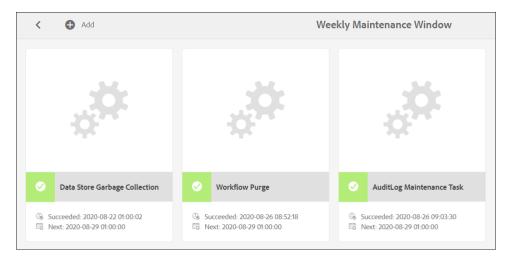
69. Click Save.

Run the AuditLog Maintenance Task

70. Return to the Weekly Maintenance Window.

Adobe Experience Manager – Tools – Operations – Maintenance – Weekly Maintenance window.

71. Hover over the AuditLog Maintenance task and select Run. The status will change to Currently Running and then to Succeeded.



Create a Package for the Weekly Maintenance Tasks.

Follow these steps to create an OSGi configuration node and a package. You will be able to migrate your weekly task configurations to a new server.

- 72. Navigate to your **apps/config** folder. You should already have an OSGi configuration node called com.adobe.granite.workflow.purge.Scheduler-WEEKLY).
- 73. Open **Web Console Configuration** in a different tab of the same browser. Keep at least 2 tabs open, 1 for Web Console **(A)** and 1 for CRXDE Lite **(B)** (*see illustration below*). You will move back and forth between the tabs.

Adobe Experience Manage X & CRXDE Lite B X +
$\leftarrow \rightarrow C \Delta$ Mot secure aemforms.cloud:4502/crx/de/index.jsp#/apps/config/com.day.cq.mailer.DefaultMailService
CRXDE Lite
Save All • Create • Delete Copy Paste Move Rename Overlay Node Mixins Tools •

- 74. Switch to the tab with Web Console Configuration.
- 75. Search for the Pages audit Log Purge Rule configuration.
- 76. Click Edit the configuration (the pencil icon) on the Pages audit Log Purge Rule.
- 77. Copy the **PID**.

com.adobe.granite.workflow.purge.Scheduler~WEEKLY

- 78. Switch to the tab with CRXDE Lite.
- 79. Right-click on **apps/config** and select **Create Create Node**.
- 80. Paste the PID in the Name field.
- 81. Select sling:OsgiConfig for the Type.
- 82. Click OK and Save All.
- 83. Switch to the tab with **Web Console Configuration**.
- 84. Copy the first property **auditlog.rule.name**.
- 85. Switch to the tab with CRXDE Lite.
- 86. Paste **auditlog.rule.name** as the Name of a new property of your OSGi configuration node. The Type should be String.
- 87. Enter trimAuditLog for the value.
- 88. Click Add and Save All.
- 89. Follow this process to add the remaining properties and values. This table shows the properties and values you need to add.

Name	Туре	Value
auditlog.rule.name	String	trimAuditLog
auditlog.rule.contentpath	String	/content
auditlog.rule.minimumage	String	7
auditlog.rule.types	String[]	"PageCreated","PageModified","PageMoved","PageDeleted ","VersionCreated","PageRestored","PageRolled\ Out","PageValid","PageInvalid"

Note: Make sure to click the Multi button to create the String Array. You need the double quotes around the values in the String Array.

Name	Туре	String	*	Value	Multi	📀 Add	»
					 -		

Click Multi to create arrays

- 90. Select Package Manager.
- 91. Select Create Package.
- 92. Enter <yourname>-WeeklyTaskConfigurations as the Package Name.
- 93. Click **OK**.
- 94. Click Edit.
- 95. Enter 1.0 for the Version number.
- 96. Enter This package contains our weekly task configurations as the Description.
- 97. Click Browse next to Thumbnail.
- 98. Locate the task-icon.png in your Student files and click Open.
- 99. Click Save.

Your package should now look like this.

SmartDoc-WeeklyTaskConfigurations-1.0.zip Build new Version: 1.0 This package contains our weekly task configurations						
Edit Build	Install Download Share	More -				
Package:	SmartDoc-WeeklyTaskConfigurations					
Group:	my_packages					
Filters:						

- 100. Click Edit (see illustration above).
- 101. Select Filters.
- 102. Click Add filter.
- 103. Click the Select Path icon to the right of the Root path field.
- 104. Navigate to /apps/config/com.adobe.cq.audit.purge.Pages and select it.
- 105. Click OK and Done.
- 106. Click Add filter.
- 107. Click the Select Path icon to the right of the Root path field.
- 108. Navigate to /apps/config/ com.adobe.granite.workflow.purge.Scheduler-WEEKLY and select it.
- 109. Click OK and Done.
- 110. Click Save.
- 111. Click **Build** and **Build** again to build your package.
- 112. Click More Replicate to migrate these configurations to your Publish Server.

Note: You can also download this package and install these configurations on other servers.

TAR Compaction and Offline Revision Clean-up

When you update data in the JCR, the existing data is never directly overwritten in a TAR file. So, your repository will get larger. To manage the repository's growth, AEM uses a garbage collection mechanism that reclaims disk space by removing obsolete data from the repository. This is referred to as **Revision Cleanup** and as **Compaction**.

Note: Make sure to back up your repository files located here: \crx-quickstart\repository\segmentstore

You can streamline your repository with TAR compaction. This example shows a segment store before (1) and after (2) a compaction. After compaction is complete, you can move the *.bak files to an archive.

Name	Date modified	Туре	Size	Name	Date modified	Туре	Size
📄 data00016a.tar.bak	7/30/2019 9:27 PM	BAK File	109,667 KB	data00016a.tar.bak	7/30/2019 9:27 PM	BAK File	109,667 K
📄 data00018a.tar.bak	8/5/2019 4:41 PM	BAK File	111,863 KB	data00018a.tar.bak	8/5/2019 4:41 PM	BAK File	111.863 K
📄 data00034a.tar.bak	8/21/2019 4:33 PM	BAK File	262,285 KB	data00034a.tar.bak	8/3/2019 4:41 PM	BAK File	262.285 K
data00055a.tar.bak	9/19/2019 4:28 PM	BAK File	3,184 KB	data00055a.tar.bak	9/19/2019 4:33 PM	BAK File	202,203 K 3.184 k
data00061a.tar.bak	9/24/2019 4:59 PM	BAK File	222,072 KB	data00055a.tar.bak	9/19/2019 4:28 PM	BAK File	,
data00087a.tar.bak	12/15/2019 4:59 PM	BAK File	3,321 KB	-		BAK File	222,072
data00096a.tar	12/22/2019 3:00 AM	TAR File	262,897 KB	data00087a.tar.bak	12/15/2019 4:59 PM		3,321 1
data00097a.tar.bak	12/25/2019 9:14 PM	BAK File	62,593 KB	data00097a.tar.bak	12/25/2019 9:14 PM	BAK File	62,593 k
data00111a.tar	1/22/2020 3:00 AM	TAR File	11,901 KB	data00124a.tar	2/12/2020 8:58 PM	TAR File	263,549 1
data00112a.tar	1/23/2020 2:20 PM	TAR File	64,934 KB	data00125a.tar	2/12/2020 8:59 PM	TAR File	7,567 1
data00113a.tar	1/25/2020 1:00 AM	TAR File	51.870 KB	gc.log	2/12/2020 8:59 PM	Text Document	11
data00114a.tar	1/26/2020 3:00 AM	TAR File	34,764 KB	journal.log	2/12/2020 8:59 PM	Text Document	11
data00115b.tar	1/26/2020 3:00 AM	TAR File	25 KB	i manifest	2/12/2020 8:58 PM	File	1 k
data00116a.tar	2/1/2020 1:00 AM	TAR File	203.410 KB	repo.lock	7/15/2019 11:57 AM	LOCK File	0 k
data00117a.tar	2/2/2020 3:00 AM	TAR File	33.079 KB				
data00119a.tar	2/8/2020 1:00 AM	TAR File	187.885 KB	3			
data00120a.tar	2/9/2020 3:00 AM	TAR File	32,875 KB	Name	Date modified	Туре	Size
data00122a.tar	2/12/2020 8:44 PM	TAR File	121,262 KB	data00124a.tar	2/12/2020 8:58 PM	TAR File	263,549 k
data00123a.tar	2/12/2020 8:51 PM	TAR File	870 KB	data00125a.tar	2/12/2020 8:59 PM	TAR File	7,567 k
gc.log	1/22/2020 3:00 AM	Text Document	1 KB	gc.log	2/12/2020 8:59 PM	Text Document	. 11
journal.log	2/12/2020 8:51 PM	Text Document	19,249 KB	journal.log	2/12/2020 8:59 PM	Text Document	1 K
manifest	2/12/2020 8:45 PM	File	1 KB	manifest	2/12/2020 8:58 PM	File	1 K
repo.lock	7/15/2019 11:57 AM	LOCK File	0 KB	repo.lock	7/15/2019 11:57 AM	LOCK File	0 K

Follow these steps to determine your version of Oak and download the Oak Run tool.

1. Open **CRXDE Lite** to determine your version of Apache Jackrabbit Oak.

This illustration shows Apache Jackrabbit Oak 1.10.2.

CRX DE Lite	Content Repository Extrem	ne Development Environment Lite
Enter search term to search the repository	2	Repository Information Apache Jackrabbit Oak 1.10.2 by The Apache Software Foundation
		Developer Resources Documentation Developer Blog Knowledge Base

- 2. Download the oak-run jar for your version by following these steps.
- 3. Search Google for download oak-run jar.

Note: This is a best practice even if you don't use it now. If CRXDE Lite access ever fails, and you need to run oak-run to correct your segment store, you will already have oak-run available on your server.

4. You will see various options. The Central Repository is a good one to choose.



5. Locate and download the correct JAR file for your version of Apache Jackrabbit Oak. For instance, this is the version for AEM Forms 6.5.7.

oak-run-1.22.9.jar

Before you can use the Oak Run tool, you must shut down your AEM Server. Follow these steps.

- 6. Shut down your AEM Server.
- 7. Open Windows File Explorer.
- 8. Make a backup of your repository folder.

\crx-quickstart\repository\segmentstore

- 9. Open your AEM Folder.
- 10. Create a new folder named oakrun.

c:\aem\oakrun

- 11. Move the oak-run-<version>.jar file into your oakrun folder.
- 12. Copy the file path of your oakrun folder. It will likely be something like this.

c:\aem\oakrun

13. Review your current segmentstore by opening this folder.

\aem\author\crx-quickstart\repository\segmentstore

- 14. Run CMD as Administrator.
- 15. Change directory to the location of the **oak-run-<version>.jar** file.

c:\aem\oakrun

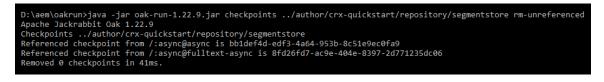
16. Before we can clean up the revisions in the oak repository, we need to find all the checkpoints to the segments. Run this in the command prompt. Update this with your version of oak-run.

java -jar oak-run-<version>.jar checkpoints ../author/crx-quickstart/repository/segmentstore

```
D:\aem\oakrun>java -jar oak-run-1.22.9.jar checkpoints ../author/crx-quickstart/repository/segmentstore
Apache Jackrabbit Oak 1.22.9
Checkpoints ../author/crx-quickstart/repository/segmentstore
- bb1def4d-edf3-4a64-953b-8c51e9ec0fa9 created 2022-03-14 16:37:35.54 expires 2024-12-08 15:37:35.54
- 8fd26fd7-ac9e-404e-8397-2d771235dc06 created 2022-03-14 16:37:35.54 expires 2024-12-08 15:37:35.54
Found 2 checkpoints
```

17. Once we've found all the checkpoints, we need to delete any unreferenced checkpoint.

java -jar oak-run-<version>.jar checkpoints ../author/crx-quickstart/repository/segmentstore rm-unreferenced



18. Run this command to compact the segment store.

java -jar -Dsun.arch.data.model=32 oak-run-<version>.jar compact ../author/crx-quickstart/repository/segmentstore

🖬 Administrator: Command Prompt – 🗆	×
Tue Jul 16 02:00:06 EDT 2019, data00004a.tar	\wedge
Tue Jul 16 15:31:51 EDT 2019, data00009a.tar	
Mon Jul 15 14:25:05 EDT 2019, data00001a.tar	
Wed Jul 17 11:54:34 EDT 2019, manifest	
Tue Jul 16 02:00:06 EDT 2019, gc.log	
Mon Jul 15 20:32:13 EDT 2019, data00002a.tar	
Tue Jul 16 15:53:29 EDT 2019, data00010a.tar	
Mon Jul 15 11:57:43 EDT 2019, repo.lock	
Tue Jul 16 02:00:00 EDT 2019, data00003a.tar	
Mon Jul 15 14:03:49 EDT 2019, data00000a.tar	
Tue Jul 16 14:37:20 EDT 2019, data00005a.tar	
Tue Jul 16 15:14:18 EDT 2019, data00008a.tar	
size 303.4 MB (303428313 bytes)	
-> compacting	
-> cleaning up	
-> writing new journal.log: 4146bc96-4d52-4325-ae02-f303bdd5e43c:886 root 1563379001508	
after	
Wed Jul 17 11:56:41 EDT 2019, gc.log	
Mon Jul 15 11:57:43 EDT 2019, repo.lock	
Wed Jul 17 11:56:41 EDT 2019, data00012a.tar	
Wed Jul 17 11:56:41 EDT 2019, journal.log	
Wed Jul 17 11:56:36 EDT 2019, manifest	
size 113.1 MB (113067284 bytes)	
removed files [data00000a.tar, data00006a.tar, data00008a.tar, data00001a.tar, data00009a.tar, data00005a.tar, data	a0
0004a.tar, data00010a.tar, data00002a.tar, data00003a.tar, data00007a.tar, data00011a.tar]	
added files [data00012a.tar]	
Compaction succeeded in 6.793 s (6s).	
	_

You should see a message like this one.

Compacting .. \author64\crx-quickstart\repository\segmentstore with enforced regular access mode

before

Tue Apr 02 16:41:19 EDT 2019, data00004a.tar Mon Apr 01 13:48:22 EDT 2019, data00000a.tar Mon Apr 01 13:58:16 EDT 2019, data00001a.tar Tue Apr 02 10:59:28 EDT 2019, data00003a.tar Tue Apr 02 11:00:00 EDT 2019, manifest Mon Apr 01 13:18:28 EDT 2019, repo.lock Tue Apr 02 16:41:19 EDT 2019, journal.log Tue Apr 02 02:00:09 EDT 2019, data00002a.tar Tue Apr 02 02:00:10 EDT 2019, gc.log

size 307.5 MB (307471648 bytes)

-> compacting

-> cleaning up

-> writing new journal.log: 6a4d0fa7-b60f-4e0b-a190-28a14d43349d:1166 root 1

554239153662

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removed files [data00000a.tar, data00001a.tar, data00004a.tar, data00002a.tar, data00003a.tar] added files [data00005a.tar] Compaction succeeded in 9.699 s (9s).

19. Review your compacted segmentstore by opening this folder.

\aem\author\crx-quickstart\repository\segmentstore

20. Remove or archive any *.bak files.

Run a DataStore Consistency Check

21. Login as an Administrator to the CRX Explorer.

http://<servername>:4502/crx/explorer/index.jsp

	nt Repository Extreme 1.22.9 83 Compliant Repository	
Main Console	Repository Configuration	
UserID: ano Workspace	nymous Workspace: crx.default Log In crx.default Y	
User	admin	
Password	[
	Submit	

- 22. Select Repository Configuration.
- 23. Select Check Repository.
- 24. Select Data store consistency check and click Run.
- 25. Be patient and keep this browser session open until you receive a message. This tool does not write to a log file by default, but it will display messages in the page.

UserID: admin Workspace: crx.default <u>Log Out</u> <u>Switch Workspace</u> <u>Impersonate</u>
Traversal check Fix inconsistencies Cog each node
✓ Data store consistency check
Check nodes below: /
Run
Performing data store consistency check Traversed 522652 nodes, 0 errors found

Log Files

AEM log files provide detailed information about the current system state. The system log files are available by default. You can also create custom log files to track messages produced by your applications. The benefit of custom log files is that they contain specific messages about your target and limit the non-relevant information contained in the default log entries.

The logging system in AEM is based on Simple Logging Facade for Java (SLF4J). The system includes

- A logging logger
- A logging writer

The logging logger collects data from different components in AEM, filters them by requested severity level, and redirects the output to a configured logging writer. The logging writer persists the data to a location. There is no need to configure a logging writer unless you need to change the default log file size or change the maximum number of log files before rotation begins.

The Default Log Files

Here are the default log files. They are also known as the Apache Sling Commons Logs.

- request.log: HTTP requests and responses
- access.log: Sign-in and sign-out activity
- error.log: Errors and unfiltered log messages
- stdout.log: startup activity
- stderr.log: startup activity errors
- **audit.log:** user-generated repository changes (i.e., create a template)
- **history.log:** Author activity with timestamps and user information
- upgrade.log: upgrade operations

This line in a JSP file will log a message to the stout.log file.

System.out.println("Some string");

The stdout.log file is located here.

C:\aem\author\crx-quickstart\logs\stdout.log

Custom Logs

You can also create custom logs for a specific OSGi service. For instance, you can create a custom log to monitor the LDAP synchronization you created in an earlier exercise.

DEBUG V ERROR WARN		logs\myquery.log	org.apache.jackrabbit.oak.query com.day.cq.search class org.apache.jackrabbit.oak.plugins
INFO DEBUG TRACE	false	logs\audit.log	org.apache.jackrabbit.core.audit org.apache.jackrabbit.oak.audit
OFF	false	logs\access.log	log.access
DEFAULT	false	logs\project- smartdocTraining.log	com.smartdoctech.smartdocTraining
INFO	false	logs\auditlog.log	com.adobe.granite.audit

We will set some of our loggers to a DEBUG level. Although this is OK for training, you will want to change the setting to ERROR when you finish your exercise. Consider the Log Level Hierarchy.

- TRACE (includes DEBUG, INFO, WARN, and ERROR)
- DEBUG (includes INFO, WARN, and ERROR)
- INFO (includes WARN and ERROR)
- WARN (includes ERROR)
- ERROR

Exercises

View Logging Defaults

In this exercise, you will view the *Apache Sling Logging Configuration* and view important details about the AEM Default logs which are also known as the *Apache Sling Commons Logs*.

- 1. Open AEM.
- 2. Select Tools Operations Web Console.
- 3. Click the **OSGi** menu and select **Configuration**.
- 4. Search for Apache Sling Logging Configuration.
- 5. Click **Edit the configuration values** (*the pencil icon*) on the Apache Sling Logging Configuration.

You will see the default settings for an Author instance including the name and location of the error.log and thresholds for log files.

Apache Sling Logging Configuration							
Global configuration set	ip for the Sling OSGi LogService implementation. See http://sling.apache.org/site/logging.html for more detailed documentation and description.						
Log Level	Off						
	Root Logger log level setting. (org.apache.sling.commons.log.level)						
Log File	logs/error.log						
	The name and path of the log file. If this is empty, logging goes to standard output (the console). If this path is relative it is resolved below \${sling.home}. (org.apache.sling.commons.log.file)						
Number of Log Files	7						
	The number of log files to keep. When the threshold of the log file reaches the configured maximum (see Log File Threshold), the log file is copied and a new log file is created. This setting specifies how many generations (incl. the active log file) should be kept. This is a positive numeric value. The default value is 5. This property is ignored if the Log File Threshold property specifies time/date controlled log file rotation. (org.apache.sling.commons.log.file.number)						
Log File Threshold	.'yyyy-MM-dd						
	Controls the rotation of the log file by setting a maximum file size or a time/date schedule at which to rotate the log file. A size limit can be specified setting a pure number indicating the number of bytes or a number with a size indicator KB, MB, or GB (case is ignored). A time/date schedule can be specified as a java.util.SimpleDateFormat pattern. The default is ".'yyyy-MM-dd" (daily log rotation). (org.apache.sling.commons.log.file.size)						
Message Pattern	{0,date,dd.MM.yyyy HH:mm:ss.SSS} *{4}* [{2}] {3} {5} // 2						
	Message Pattern for formatting the log messages. For complete details refer to http://logback.qos.ch/manual/layouts.html#ClassicPatternLayout (org.apache.sling.commons.log.pattern)						
Logback Config File							
	A The name and path of the Logback Config file. If this is empty, then default configuration would be used. If this path is relative it is resolved below \${sling.home}. See http://logback.qos.ch/manual/ for details. (org.apache.sling.commons.log.configurationFile)						
Packaging Data	8						
	Include the packaging data which provide details about jar name and version of jar from which the class is loaded as part of stacktrace. See http://logback.qos.ch/reasonsToSwitch.html#packagingData (org.apache.sling.commons.log.packagingDataEnabled)						
Max Caller Depth	7						
	▲ The stack data depth computed during caller data extraction. See http://logback.qos.ch/manual/layouts.html#caller (org.apache.sling.commons.log.maxCallerDataDepth)						
Max Count of files	3						
in dump	A Maximum number of old rolled over files for each active file to be included while generating the dump as part of Status zip support (org.apache.sling.commons.log.maxOldFileCountInDump)						
Number of lines	10000						
	Number of lines from each log files to include while generating the dump in 'txt' mode. If set to -1 then whole file would be included (org.apache.sling.commons.log.numOfLines)						
Configuration Inform	nation						
Persistent Identity (PII	D) org.apache.sling.commons.log.LogManager						
Configuration Binding	slinginstall:C:\aem\author6_4\crx-quickstart\\aunchpad\startup\1\org.apache.sling.commons.log-5.1.0.jar						
	Apache Sling Commons Log (org.apache.sling.commons.log), Version 5.1.0						
	Cancel Reset Delete Unbind Save						

6. Click Cancel.

- 7. Notice the **Apache Sling Logging Logger Configuration** is a factory configuration. This is indicated by the plus icon (*see illustration*).
- 8. Notice the logs that are already created. They are the Apache Sling Commons Logs.

	Apache Sling Logging Logger Configuration		+
~	▶ logs/access.log: INFO	Apache Sling Commons Log	Create new factory configuration
~	▶ logs/aem-forms-migration.log: debug	Apache Sling Commons Log	× + 1
~	▶ logs/audit.log: INFO	Apache Sling Commons Log	
*	▶ logs/auditlog.log: INFO	Apache Sling Commons Log	

9. Scroll to the top and select **Status – Log Files**.

You can download the log files from AEM servers if you don't have access to the local drive.

Adobe Experience Manager Web Console Log Files

Main OSGi Sling Status Web Console Log out Date: June 24, 2020 at 2:20:31 PM EDT Download As Text Download As Zip Download Full Text Summary -----1. aem-forms-migration.log - aem-forms-migration.log, 0 B, 2020-06-22 12:37:39 2. project-we-retail.log project-we-retail.log, 0 B, 2020-06-22 12:11:06 3. history.log - history.log, 52.6 kB, 2020-06-22 17:54:38 4. error.log - error.log, 9.7 MB, 2020-06-24 13:58:28 - error.log.2020-06-23, 13.4 MB, 2020-06-23 18:06:13 - error.log.2020-06-22, 35.0 MB, 2020-06-22 18:13:15 5. aem-forms-transaction.log aem-forms-transaction.log, 0 B, 2020-06-22 12:37:39 auditlog.log - auditlog.log, 0 B, 2020-06-22 12:06:07 7. audit.log - audit.log, 0 B, 2020-06-22 12:06:07

If you do have access to the server's drive, you can find the log files in this folder.

\crx-quickstart\logs

Create Custom Loggers

This exercise demonstrates how to create custom loggers.

Create a custom myquery.log

Follow these steps.

10. Select Sling – Log Support.

Main	OSGi	Sling Statu	s Web Console
Confic	uration A	Authenticato	or
conngulation		Bundle Resource Provider	
		Context-Aware Configuration	
? Name Features			
✓	ACMExte	File System	Class Loader
		Jobs	
ACMEX		Log Support	
•			

Note: The list of all default logs in an AEM author instance are displayed here along with their log levels.

11. Click **Add New Logger** (the button on the bottom-right of the table).

Δ

E	RROR	false	logs\error.log	$org. {\tt apache.sling.scripting.sightly.js.impl.jsapi.ProxyAsyncScriptableFactory}$	P
I	NFO	false	logs\history.log	log.history	P
					Add new Logger

- 12. Select **DEBUG** for the Log Level.
- 13. Enter logs\myquery.log for the Log File.
- 14. Click the plus button to the right of the logger field (see illustration below) twice so you can enter 3 loggers.
- 15. Enter class org.apache.jackrabbit.oak.plugins as your first logger.
- 16. Enter org.apache.jackrabbit.oak.query as your second logger.
- 17. Enter **com.day.cq.search** as your third logger.

INFO	false	logs\access.log	log.access	<i>&</i>
INFO	false	logs\project-we-retail.log	org.apache.jackrabbit.oak.query	P
INFO	false	logs\auditlog.log	org.apache.jackrabbit.oak.query.ast	din and a start and a start a
INFO	false	logs\error.log	org.apache.jackrabbit.oak.query.ast.AstElementFactory org.apache.jackrabbit.oak.guery.ast.SelectorImpl	ø
INFO	false	logs\upgrade.log	org.apache.jackrabbit.oak.query.FilterIterators	d ^e r
ERROR	false	logs\error.log	org.apache.jackrabbit.oak.query.QueryEngineImpl org.apache.jackrabbit.oak.query.QueryImpl	Factory 🤌
INFO	false	logs\history.log	org.apache.jackrabbit.oak.query.SQL2Parser	do
INFO	false	logs\aem-forms-transaction.log	org.apache.jackrabbit.oak.query.stats	do
DEBUG 💊	•	logs\myquery.log	org.apache.jackrabbit.oak.query.stats.QueryRecorder	+ - Save Cancel
			org.apache.jackrabbit.oak.guery	+ -

18. Click Save.

19. Navigate to: \crx-quickstart\logs in your file system. You should see the myquery.log file.

File					
~	\rightarrow \checkmark \uparrow \blacksquare \rightarrow This PC \Rightarrow D	ATA (E:) > aem > author > crx-q	uickstart > logs		
^	Name	Date modified	Туре	Size	^
	myquery.log	8/26/2020 12:33 PM	Text Document	0 KB	
	access.log	Type: Text Document	Text Document	308 KB	
	request.log	Size: 0 bytes	Text Document	129 KB	
	error.log	Date modified: 8/26/2020 12:33 PM	Text Document	10,667 KB	
	upgrade.log	8/26/2020 12:29 PM	Text Document	14 KB	
	error.log.2020-08-25	8/25/2020 11:59 PM	2020-08-25 File	15,661 KB	
*	📄 access.loα.2020-08-25	8/25/2020 11:59 PM	2020-08-25 File	1.278 KB	*

Note: You can use this log to examine indexing and querying activity.

- 20. Right-click on myquery.log and open it in Notepad or Notepad++.
- 21. You should see messages like these.

12.02.2020 12:06:18.704 *DEBUG* [0:0:0:0:0:0:0:0:0:1 [1581527178700] GET /mnt/overlay/granite/ui/content/shell/header/actions/pulse.data.json HTTP/1.1] org.apache.jackrabbit.oak.query.QueryEngineImpl Parsing JCR-SQL2 statement: SELECT * FROM [granite:InboxItem] AS s where s.assignee IS NOT NULL AND (s.status='ACTIVE') ORDER BY s.startTime DESC

12.02.2020 12:06:18.705 *DEBUG* [0:0:0:0:0:0:0:0:1 [1581527178700] GET /mnt/overlay/granite/ui/content/shell/header/actions/pulse.data.json HTTP/1.1] org.apache.jackrabbit.oak.query.QueryImpl cost using filter Filter(query=SELECT * FROM [granite:InboxItem] AS s where s.assignee IS NOT NULL AND (s.status='ACTIVE') ORDER BY s.startTime DESC, path=*, property=[assignee=[is not null], status=[ACTIVE]])

12.02.2020 12:06:18.705 *DEBUG* [0:0:0:0:0:0:0:1 [1581527178700] GET /mnt/overlay/granite/ui/content/shell/header/actions/pulse.data.json HTTP/1.1] org.apache.jackrabbit.oak.query.QueryImpl cost for reference is Infinity

12.02.2020 12:06:18.705 *DEBUG* [0:0:0:0:0:0:0:1 [1581527178700] GET /mnt/overlay/granite/ui/content/shell/header/actions/pulse.data.json HTTP/1.1] org.apache.jackrabbit.oak.query.QueryImpl cost for property is Infinity

- 22. Navigate back to Web Console Configuration and select Sling Log Support.
- 23. Click the wrench icon to edit the log you just created.
- 24. Set the log level to ERROR.
- 25. Click Save.

Note: If the logger is not set back to ERROR or to INFO, its size will grow very large and can impact your system storage capacity. It's a best practice to only use DEBUG level to examine a single query, then immediately set the logging level back to INFO, WARN, or ERROR.

Create a Replication Log

- 26. Click Add new Logger.
- 27. Select DEBUG for the Log Level.
- 28. Enter logs\replication.log for the Log File.
- 29. Enter com.day.cq.replication for the Logger.

INFO	false	logs\audit.log	org.apache.jackrabbit.core.audit org.apache.jackrabbit.oak.audit	
INFO	false	logs\access.log	log.access	
INFO	false	logs\myquery.log	com.day.cq.replication	
			com.day.cq.replication.Agent	
INFO	false	logs\auditlog.log	com.day.cq.replication.Agent.dynamic_media_replication	
INFO	false	logs\error.log	com.day.cq.replication.Agent.flush	
INFO	false	logs\upgrade.log	com.day.cq.replication.Agent.publish	
			com.day.cq.replication.Agent.publish.queue	
ERROR	false	loas\error.loa	com.day.cq.replication.Agent.publish_reverse	Factory
		5, 5	com.day.cq.replication.Agent.publish_reverse.queue	ractory
INFO	false	logs\history.log	com.day.cq.replication.Agent.s7delivery	
INFO	false	logs\aem-forms-transaction.log	com.day.cq.replication.Agent.scene7	
DEBUG 🗸		logs\replication.log	com.day.cg.replication	+

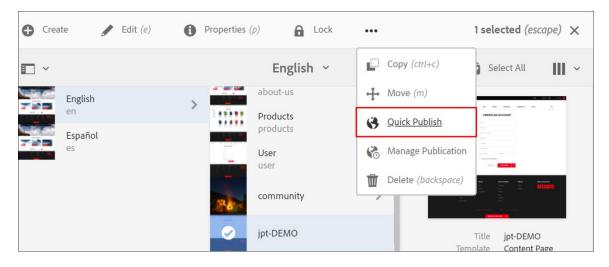
30. Click Save.

- 31. Start your Publish instance if it is not already started.
- 32. After your Publish Server is running, open your Author on a different tab.
- 33. Open **Sites** on your Author instance.

Adobe Experience Manager – Navigation – Sites

		1	
Projects	Sites	Experience Fragments	Assets
		I	

- 34. Select We.Retail United States English.
- 35. Click Create and select Page.
- 36. Select Content Page and click Next.
- 37. Enter <**yourname>-Demo** for the Title and the Name.
- 38. Click Create.
- 39. Click Done.
- 40. Select the <yourname>-Demo page and click Quick Publish (see illustration).



- 41. Click Publish.
- 42. Go to your **replication.log** and search for **<yourname>-Demo**.
- 43. You should see many messages including DEBUG and INFO messages. Here is 1 example.

24.06.2020 15:11:16.631 *DEBUG* [100.1.251.123 [1593025876433] POST /bin/replicate HTTP/1.1] com.day.cq.replication.Agent.publish.queue Creating replication job (action: ReplicationAction{type=ACTIVATE, path[0]='/content/we-retail/us/en/jpt-Demo', time=1593025876435, userId='admin', revision='null'}) with content ReplicationContentFacade{path='/var/replication/data/2b638c9d-6c4a-4f46-9533-7e8e6c6d763a/7c/7c9c9c83-5774-4f06-a8c0-bd1dad33ec21', contentType='application/cq5-replication-durbo', contentLength=1830}

Create a Custom Logger with a sling:OsgiConfig node

Follow these steps to create a custom logger as a sling:OsgiConfig node.

44. Open **Web Console Configuration** in one tab **(A)** and **CRXDE Lite** in a different tab **(B)** (*see illustration below*). You will move back and forth between the tabs.



45. Select the tab with CRXDE Lite.

http://<servername>:<port>/crx/de

- 46. Right-click on /apps/weretail and select Create Folder.
- 47. Enter config.author for the Name.
- 48. Click **OK**.
- 49. Click Save All.
- 50. Switch to the tab with **Web Console Configuration**.
- 51. Select OSGi Configuration if Web Console Configuration is not your current page.
- 52. Search for **Logging Logger** to locate the *Apache Sling Logging Logger Configuration* panel. Notice it is a factory configuration which means you can create more than 1 logger.

	Apache Sling Logging Logger Configuration	-	+
*	▶ logs/access.log: INFO	Apache Sling Commons Log	Create new factory configuration
*	▶ logs/aem-forms-migration.log: debug	Apache Sling Commons Log	* =
*	▶ logs/audit.log: INFO	Apache Sling Commons Log	
*	▶ logs/auditlog.log: INFO	Apache Sling Commons Log	✓ ←

- 53. Click Create new factory configuration (the plus icon).
- 54. Select the Factory Persistent Identifier (*Factory PID*) org.apache.sling.commons.log.LogManager.factory.config and click Copy.

- 55. Paste the Factory PID into NotePad or a similar Text Editor.
- 56. Add -TRAINING to the end of your Factory PID. Your PID should now look like this.

org.apache.sling.commons.log.LogManager.factory.config-TRAINING

Note: When you configure a logging factory (multiple configurations for an OSGi Component), you need to add a unique identifier to the end of the Factory PID to differentiate it from the others.

- 57. Switch to the tab with **CRXDE Lite**.
- 58. Right-click on the /apps/weretail/config.author folder and select Create Create Node.
- 59. Paste your PID (org.apache.sling.commons.log.LogManager.factory.config-TRAINING) for the Name.
- 60. Select sling:OsgiConfig for the Type.
- 61. Click **OK**.

Create Node		X
Please enter node r	name and select type.	
Name:	org. a pache. sling. commons. log. Log Manager. factory. config-TRAINING	
Туре:	sling:OsgiConfig	·
	OK Cancel	

- 62. Click Save All.
- 63. Switch to the tab with **Web Console Configuration**.
- 64. Copy the first property org.apache.sling.commons.log.level.
- 65. Switch to the tab with CRXDE Lite.
- 66. Paste org.apache.sling.commons.log.level as the Name of a new property of your OSGi configuration node.
- 67. Select String for the Type.
- 68. Enter info as the Value.
- 69. Click Add and Save All.
- 70. Follow this process to add the remaining properties and values.

Property	Туре	Value
org.apache.sling.commons.log.level	String	info
org.apache.sling.commons.log.file	String	logs/training.log
org.apache.sling.commons.log.pattern	String	{0,date,dd.MM.yyyy HH:mm:ss.SSS} *{4}* [{2}] {3} {5}
org.apache.sling.commons.log.names	String[]	org.apache.felix, com.day
org.apache.sling.commons.log.additiv	Boolean	false

Note: Make sure to click the Multi button to create the String Array.

Name	Type String	Value	Multi 📀 Add 🛛 🚿
		Click Multi to cre	ate arrays

71. Click Save All.

Your properties should look like this.

Pr	operties Access Control	Replicat	tion Console Build Info
	Name 🔺	Туре	Value
1	jcr:primaryType	Name	sling:OsgiConfig
2	org.apache.sling.commons.log.additiv	Boolean	false
3	org.apache.sling.commons.log.file	String	logs/training.log
4	org.apache.sling.commons.log.level	String	info
5	org.apache.sling.commons.log.names	String[]	org.apache.felix, com.day
6	org.apache.sling.commons.log.pattern	String	{0,date,dd.MM.yyyy HH:mm:ss.SSS} *{4}* [{2}] {3

- 72. Navigate to: /crx-quickstart/logs in your file system. You should see the training log.
- 73. Right-click on training.log and open it in Notepad. It is likely empty or may have very little data.
- 74. Go back to AEM and open Sites.
- 75. Select We.Retail United States English Women and click Edit.
- 76. You will see a page.



77. Go back to your training.log and you should see messages like these.

12.02.2020 12:37:59.446 *INFO* [sling-cq-polling-importer-5-myDataSource] com.day.cq.polling.importer.impl.PollingImporterImpl importData: Importing data from livefyreRightsImporter:myDataSource to /etc/importers/polling/livefyre-poller/jcr:content as polling-importer-service by com.adobe.social.integrations.livefyre.livefyreAssetImporter.impl.LivefyreRightsRequestPoller@756afd1a 12.02.2020 12:38:25.928 *INFO* [100.1.251.123 [1581529105833] GET /libs/wcm/core/content/components.1581528927825.json HTTP/1.1] com.day.cq.wcm.core.impl.components.ComponentServlet provided components.

Note: The dates in the log file correspond to the DD.MM.YYYY pattern that you set in the **org.apache.sling.commons.log.pattern** pattern.

78. Go back to your OSGi Configuration node in CRX.

Pr	operties Access Control	Replication	Console Build Info		
	Name 🔺	Туре	Value	Protected	Mandatory
1	jcr:primaryType	Name	sling:OsgiConfig	true	true
2	org.apache.sling.commons.log.file	String	logs/training.log	false	false
3	org.apache.sling.commons.log.level	String	info	false	false
4	org.apache.sling.commons.log.names	String[]	org.apache.felix, com.day	false	false
5	org.apache.sling.commons.log.pattern	String	{0,date,dd.MM.yyyy HH:mm:ss.SSS} *{4}* [{2}] {3}	{5} false	false

- 79. Change info to error. You can also decide to delete this logger whenever you want.
- 80. Click Save All.

Create a Custom Log File for LDAP

Follow these steps to create a custom log file to record LDAP error messages.

Get the PID of the Package

1. Open Web Console Configuration.

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

- 2. Search for **ldap**.
- 3. Click Edit the configuration values (the pencil icon) on any of the Apache Jackrabbit Oak LDAP Identity Providers.
- 4. Scroll to the bottom of the *LDAP Identity Provider*.

Apache Jackiabble o	ak LDAP Identity P	rovider	3
Description for org.apa	che.jackrabbit.oak.se	curity.authentication.ldap.impl.LdapIdentityProvider	
LDAP Provider	ldap		11
Name	Name of this LDAP	provider configuration. This is used to reference this provider by the login modules. (provider.name)	
LDAP Server	localhost		1
Hostname	Hostname of the L	DAP server (host.name)	
LDAP Server Port	10389		11
	Port of the LDAP s	erver (host.port)	
Configuration Infor	mation		
Persistent Identity (P		org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider~20feb37b-c180-4a	3
	entifier (Factory PID)	org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider	
Factory Persistent Ide			

5. Copy the Factory PID and paste it in NotePad.

org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider

- 6. Select **Cancel** to close the LDAP Identity Provider.
- 7. Follow the same approach and copy the Factory PIDs for the *External Login Module* and the *Default Sync Handler*. They will be similar to these strings.

org.apache.jackrabbit.oak.spi.security.authentication.external.impl.ExternalLoginModuleFactory org.apache.jackrabbit.oak.spi.security.authentication.external.impl.DefaultSyncHandler

- 8. Select **Cancel** to close any open panel.
- 9. Scroll to the top of the Web Console.

Create the Loggers

10. Select Sling – Log Support.

Main	OSGi	Sling Status Web Console
Confi	guration A	Authenticator
	J	Bundle Resource Provider
		Context-Aware Configuration
?	Name	Features
~	ACMExte	File System Class Loader
		Jobs
*	ACMExte	Log Support

- 11. Click Add new Logger.
- 12. Enter **TRACE** for the Log Level.
- 13. Enter log\ldapErrors.log for the log file name.
- 14. Enter the Factory PID of the *LDAP Identity Provider* as your first Logger.

org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider

15. Click Save. You now have your first logger.

		xperience port	e Manager Web Console		
Main O	SGi Sling	Status Web Console			Log ou
Log Servi	ice Stats: 6	806 categories, 10 append	er, 0 Dynamic appenders, 3749 Packages		
			Logge	er (Conf	igured via OSGi Config)
Log Level	Additiye	Log File	¢ Logger	¢	Configuration 4
INFO	false	logs\request.log	log.request		Þ
DEBUG	false	logs\aem-forms- migration.log	com.adobe.forms.foundation.addon.migration		æ
TRACE	false	log\ldapErrors.log	org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider		æ

- 16. Click Add new Logger.
- 17. Enter **TRACE** for the Log Level.
- 18. Enter log\externalLoginModule.log for the log file name.
- 19. Enter the Factory PID of the External Login Module as your second Logger.

org.apache.jackrabbit.oak.spi.security.authentication.external.impl.ExternalLoginModuleFactory

- 20. Click Save. You now have your second logger.
- 21. Click Add new Logger.
- 22. Enter **TRACE** for the Log Level.
- 23. Enter log\defaultSyncHandler.log for the log file name.
- 24. Enter the Factory PID of the *Default Sync Handler* as your third Logger.

org.apache.jackrabbit.oak.spi.security.authentication.external.impl.DefaultSyncHandler

25. Click **Save**. You now have a logger for each LDAP service. It is highly likely that your ldapErrors.log will record the most information.

		Experience N port	lanager Web Console	Maco
Main O	SGi Sling	Status Web Console		Log ou
.og Serv	ice Stats: 6	806 categories, 10 appender, 0	Dynamic appenders, 3749 Packages	
			Logger (Conf	igured via OSGi Config)
Log Level	Additiye	Log File 🔶	Logger ¢	Configuration
INFO	false	logs\request.log	log.request	din anti-
DEBUG	false	logs\aem-forms- migration.log	com.adobe.forms.foundation.addon.migration	d ^a
INFO	false	logs\training.log	com.day org.apache.felix	æ
TRACE	false	logs\externalLoginModule.log	org. a pache. jackrabbit. oak. spi. security. authentication. external. impl. External Login Module Factory and the security of the security	P
TRACE	false	logs\defaultSyncHandler.log	org. a pache. jackrabbit. oak. spi. security. authentication. external. impl. DefaultSyncHandler and the security of the sec	P
INFO	false	logs\project-we-retail.log	we.retail	do la construcción de la constru
TRACE	false	log\ldapErrors.log	org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider	þ

26. Open AEM with a different browser.

27. Login with an LDAP user that you haven't used previously (i.e., user001, password=1234).

	Kabe
Welcome to Adobe Experience Manager	Sign In
An Adobe Experience Cloud solution: All the tools you need to solve these complex digital business challenges. Learn More	•••• Sign In

28. Open your IdapErrors.log in NotePad.

12.02.2020 14:10:00.816 *ERROR* [HealthCheck Default Login Accounts] org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider Error while connecting to the Idap server.

org.apache.directory.ldap.client.api.exception.InvalidConnectionException: Cannot connect to the server: Connection refused: no further information

12.02.2020 14:13:48.265 *ERROR* [qtp2134887098-2815]

org.apache.jackrabbit.oak.security.authentication.ldap.impl.LdapIdentityProvider Error while connecting to the Idap server.

org.apache.directory.ldap.client.api.exception.InvalidConnectionException: Cannot connect to the server: Connection refused: no further information

Set your Log Levels to INFO

If any loggers to a DEBUG level. Although this is OK for training, you will want to change the setting to INFO when you finish your exercise.

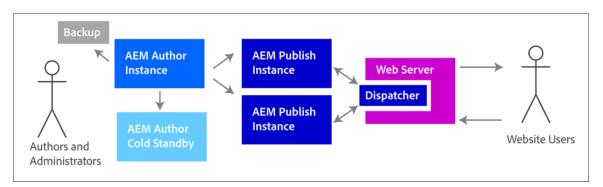
29. Open Web Console and select Sling - Log Support.

Main	OSGi	Sling Status	Web Console
Confi	guration /	Authenticator	
		Bundle Resour	ce Provider
		Context-Aware	Configuration
?	Name	Features	
~	ACMExte	File System Cla	ass Loader
		Jobs	
*	ACMExte	Log Support	

30. If any of your loggers are set to a DEBUG level, change them to an ERROR level.

Deployment Scenarios

You should build redundancy into your implementation for fail-over support. We will take two positive steps towards that in the exercises. We will create an online backup of AEM and the complete repository. An online backup is a one-time backup of your live system. We will also configure a Tar Cold Standby of the Author instance. This Tar Cold Standby will be an automatic backup of your live system where changes to the primary repository are automatically replicated to the cold standby repository. The configuration of multiple Publish instances and Dispatcher is covered in the Publish AEM Forms course.



Online Backup

AEM includes an online backup tool. You can create a backup of your entire system without shutting the server down. The backup includes the repository and AEM and you can later restore from these files if your repository ever becomes corrupted. This method works for TAR repositories, which is AEM's default persistence technology. This is a one-time, non-recurring backup. Initially, you will see a file called backupInProgress.txt (*see illustration*). When the backup is complete, the file will go away.

\leftarrow \rightarrow \checkmark \uparrow \frown \rightarrow This PC \rightarrow DAT	ſA (D:) → aem-b	ackup-class		
> 👳 Y on JPLAPTOP7710	^	Name	Date modified	Туре
> 🏪 OS (C:)		🛓 aem-author-8083.jar	4/29/2021 2:43 PM	Executable Jar File
🗸 🔤 DATA (D:)		backupInProgress.txt	4/29/2021 2:43 PM	Text Document
> 🔜 aem				
> aem-backup				
aem-backup-class				

Note: Do not run an online AEM backup while you are running other services like a workflow purge or a datastore garbage collection.

Single Tar Instance

So far, we have been using a single Tar instance runs on a single server.

Advantages

- Simple
- Easy maintenance
- Good performance

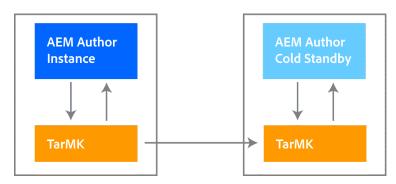
Disadvantages

- Only scalable to the limits of server capacity
- No failover capacity

Tar Cold Standby

A Tar Cold Standby instance is designed for high availability Author instances. If you need a high availability Publish instance with Tar, Adobe recommends using a Publish farm. A Tar Cold Standby is a live *standby* copy of the master *primary* repository. You will be able to quickly switch to this standby when the primary is unavailable.

In this scenario, one Tar instance acts as the primary instance. The repository from the primary is replicated to a standby failover system. You can also use the cold standby mechanism as a backup because the complete repository is constantly replicated to the failover server. The failover server is running in the cold standby mode, which means only the HttpReceiver of the instance is running.



Advantages

- Simplicity
- Maintainability
- Good performance
- Failover

Disadvantages

- Only scalable to the limits of server capacity
- One server idle most of the time
- Failover is not automatic (It must be detected externally before the failover system can start serving requests).

This article details the steps for creating a Cold Standby.

https://helpx.adobe.com/uk/experience-manager/6-5/sites/deploying/using/tarmk-cold-standby.html

You can only access the Web Console on a standby instance because the standby instance does not receive any request from these interfaces. It is only running in sync mode. You can access the Web Console to make sure your bundles are running, and your services are properly configured.

Important Properties

These are the important properties for the Tar Cold Standby.

Property	Primary	Standby
Mode	primary	standby
Port	8023	8023
Primary Host	127.0.0.1	127.0.0.1
Touch UI is available	Yes	No

MongoDB

MongoDB is a document database with the following features.

- scalability and flexibility
- querying and indexing

The core components in the MongoDB package are:

- mongod the core database process
- mongos the controller and query router for sharded clusters
- mongo the interactive MongoDB Shell

For most cases, a TarMK system with an active or a cold standby deployment is recommended for availability.

MongoDB should be considered in situations where the scaling requirements for your Author instances are more than what can be achieved with a single piece of hardware. If any of the following is true for your Author environment, you should consider installing your AEM Author instance on MongoDB.

- More than 1000 unique users per day
- More than 100 concurrent users
- High volumes of page edits

Publish instances should all be TarMK based.

For more information see this helpx web page.

https://helpx.adobe.com/in/experience-manager/6-5/sites/deploying/using/technical-requirements.html

For more information on the supported versions of Mongo for AEM 6.5, refer to this page.

https://helpx.adobe.com/in/experience-manager/6-5/sites/deploying/using/technical-requirements.html

Exercises

Create an Online Backup

Follow these steps to create an Online Backup of your system. This backup will be performed while the system is up and running.

1. Log in to AEM with Administration privileges.

2. Select Tools – Operations – Backup.

Ø			Tools	
Κ.	General			
	Workflow	_	Ð	
	<u>Operations</u>	©.		
	Sites			
	Assets	System Overview The status of your instance at a glance.	Backup Carry out backup tasks	
	Resources			

3. You may see files listed here. These are not necessarily backup files. As shown here, these 3 files that display on this panel are simply zip files that are in the parent directory of your AEM folder.

Backup				
	Backup	Date	Path	Size
	aem-service-pkg-6.5.4.zip	2020-07-01 18:00:04	D:\aem\aem-service-pkg-6.5.4.zip	239.9 MB
	AEM-FORMS-6.5.4.0-WIN.zip	2020-07-01 15:20:53	D:\aem\AEM-FORMS-6.5.4.0-WIN.zip	617.8 MB
	AEM-6.5-OSGi.zip	2019-06-25 11:28:24	D:\aem\AEM-6.5-OSGi.zip	557.3 MB

4. Click Create.

5. Enter d:/aem-backup/ for the Target Path and 10 (ms) for the Delay.

Note: This assumes that you want your backups stored in the d: drive. If you want them located on a different drive, simply update the Target Path.

Tai	rget Path
(d:/aem-backup/
	INFO Depending on whether this path ends with '.zip', the backup target is set to the specified zip file or directory. If the path is not absolute, it is interpreted relative to the parent of the crx- quickstart directory. If the path is blank, a default 'backup-YYYYMMDD-hhmm.zip' file is used.
De	elay (ms)
	1 0

6. Click Save.

- 7. Open the server drive of your backup target.
- 8. You will see a temporary file called backupinProgress.txt in your target folder.

\leftarrow \rightarrow \checkmark \uparrow \square \rightarrow This PC \rightarrow DA	ſA (D:) → aem-ł	backup-class		
> 👳 Y on JPLAPTOP7710	^	Name	Date modified	Туре
> 🏪 OS (C:)		🛓 aem-author-8083.jar	4/29/2021 2:43 PM	Executable Jar File
Y 🔜 DATA (D:)		backupInProgress.txt	4/29/2021 2:43 PM	Text Document
> 📊 aem				
> 🔄 aem-backup				
aem-backup-class				

When the backup is complete, the backupInProgress.txt file will be gone.

\leftarrow \rightarrow \checkmark \uparrow \square \Rightarrow This PC \Rightarrow DATA (D:) \Rightarrow are	m-backup >		
> 🛫 Y on JPLAPTOP7710	Name ^	Date modified	Туре
> 🏪 OS (C:)	AEM-FORMS-REFSITE-DB	4/14/2021 4:25 PM	File folder
✓ DATA (D:)	crx-quickstart	4/14/2021 4:25 PM	File folder
> aem	🕌 aem-author-4502.jar	5/29/2019 4:38 PM	Executable Jar File
> 🔄 aem-backup	bootstrap.log	3/29/2021 12:17 PM	Text Document
aem-backup-class			

Create a Tar Cold Standby

Create the Primary Instance

Follow these steps to create the primary instance.

- 1. Shut down your Author and Publish servers. We will create 2 new Author instances in this exercise.
- 2. Create two new folders in your aem directory. Name one folder **author-primary** and the other **author-standby**.
- 3. Put the AEM JAR file and the license.properties file into the author-primary folder.
- 4. Rename the JAR file as **aem-author-primary.jar**.
- 5. Open CMD and navigate to this folder.

C:\aem\author-primary

6. Start the primary instance with this command.

java -XX:+UseParallelGC -jar aem-author-primary.jar -p 4504 -r author

E:\aem\author-primary>java -XX:+UseParallelGC -jar aem-author-primary.jar -p 4504 -r author Loading quickstart properties: default Loading quickstart properties: instance Low-memory action set to fork Using 64bit VM settings, min.heap=1024MB, min permgen=256MB, default fork arguments=[-Xmx1024m, -XX:MaxPermSize=256m] The JVM reports a heap size of 7170 MB, meets our expectation of 1024 MB +/- 20 Setting properties from filename 'E:/aem/author-primary/aem-author-primary.jar' Setting 'sling.run.modes' to 'author' from command line. The admin password for this instance hasn't been defined yet.
The admin password for this instance hasn't been defined yet.
Please enter the desired admin password:

- 7. Enter **admin** as the password.
- 8. Re-enter **admin** as the password.

Note: This will take a little while because the crx-quickstart directory must be created. This will likely take 5 to 10 minutes so be patient and let is run.

9. When the server is up, you will see the login screen.



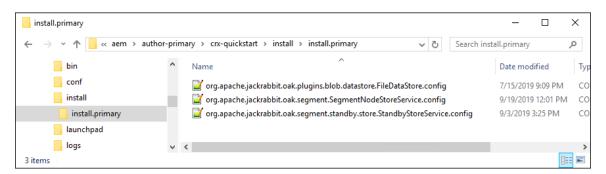
- 10. Enter admin for the User name and admin for the Password and click Sign In.
- 11. Go to the CMD window.
- 12. Enter Ctrl-C in CMD window to shut the server down.

Note: If Ctrl-C does not work, then close the command window.

13. Create this folder structure in your primary folder:

author-primary/crx-quickstart/install/

- 14. Open your Student Files folder.
- 15. Right-click on the install.primary folder and select Copy.
- 16. Open your author-primary/crx-quickstart/install/ folder and select Paste.



Here are the important properties in each file.

org.apache.jackrabbit.oak.plugins.blob.datastore.FileDataStore.config

Make sure you have a valid path.

org.apache.sling.installer.configuration.persist=B"false" path="./crx-quickstart/repository/datastore" minRecordLength=I"16384"

org.apache.jackrabbit.oak.segment.SegmentNodeStoreService.config

Make sure customBlobStore is set to "false". Set it to "true" if you are using an external data store.

org.apache.sling.installer.configuration.persist=B"false" customBlobStore=B"true | false" standby=B"false"

org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService.config

Make sure your mode is set to primary. The default port is 8023. This will be the port the StandbyStoreService uses. This is different from and should not be confused with the ports that are used by your AEM instances.

org.apache.sling.installer.configuration.persist=B"false"

mode="primary" port=I"8023"

17. Start the primary instance by specifying the primary runmode.

java -XX:+UseParallelGC -jar aem-author-primary.jar -p 4504 -r primary,crx3,crx3tar

- 18. When the instance is up, login with Administrator credentials (admin | admin).
- 19. Open the AEM Web Console Configuration.

http://<servername>:4504/system/console/configMgr

- 20. Search for standby.
- 21. Select **Edit the configuration values** (*the pencil icon*) on the *Apache Jackrabbit Oak Segment Tar Cold Standby Service* to view the properties.
- 22. Notice the Mode is set to primary.

ovides continuous backups of repositories based on Segment Tar					
Persist configuration					
	Must be always disabled to avoid storing the configuration in the repository (org.apache.sling.installer.configuration				
Mode	primary				
	TarMK Cold Standby mode (primary or standby) (mode)				
Port	8023				
	TCP/IP port to use (port)				
Primary Host	127.0.0.1				
	A Primary host (standby mode only) (primary.host)				

23. Copy the PID and paste it in NotePad.

org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService

- 24. Click **Cancel** to close the panel.
- 25. Scroll up to the top and select Sling Log Support.

Main	OSGi	Sling	Status	Web Console
Config	Configuration /		nticator	
				ce Provider Configuration
-	Name	Featu	res	2
~	ACMExte		ystem Cla	ass Loader
		Jobs		
*	ACMExte	Log Si	upport	

- 26. Click Add new Logger.
- 27. Enter DEBUG for the Log Level.
- 28. Enter logs\primarySegment.log for the Log File name.
- 29. Enter org.apache.jackrabbit.oak.segment for the Logger.
- 30. Click Save.
- 31. Click Add new Logger.
- 32. Enter DEBUG for the Log Level.
- 33. Enter logs\primaryStandbyStoreService.log for the Log File name.
- Enter org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService for the Logger. This is the PID you pasted into NotePad.
- 35. Click Save.

Your Log Support should now look like this.

INFO	false	logs\request.log	log.request
DEBUG	false	logs\primaryStandbyStoreService.log	org. a pache. jackrabbit. oak. segment. stand by. store. Stand by Store Service
INFO	false	logs\audit.log	org.apache.jackrabbit.core.audit org.apache.jackrabbit.oak.audit
INFO	false	logs\access.log	log.access
INFO	false	logs\project-we-retail.log	we.retail
DEBUG	false	logs\primarySegment.log	org.apache.jackrabbit.oak.segment

Create the Standby Instance

Follow these steps to create the standby instance.

- 36. Put the AEM JAR file and the license.properties file into the author-standby folder.
- 37. Rename the JAR file as **aem-author-standby.jar**.
- 38. Open CMD and navigate to this folder.

C:\aem\author-standby

39. Start the standby instance with this command.

java -XX:+UseParallelGC -jar aem-author-standby.jar -p 4506 -r author

- 40. Enter **admin** as the password.
- 41. Re-enter **admin** as the password.

Note: This will take a little while because the crx-quickstart directory must be created. This will likely take 5 to 10 minutes so be patient and let is run.

42. When the standby system comes up, open Web Console Configuration.

http://<servername>:4506/system/console/configMgr

Adob Log S			M	anager Web Cons	ole		Adobe
Main OSGi	Sling Sta	tus Web Console					Log out
Log Service S	Stats: 5499 d	ategories, 8 appender	; 0 Dyn	amic appenders, 2940 Packages			
					Logger	(Configured via OSGi	Config)
Log Leve	Additiv¢	Log File	\$	Logger	\$	Configuration	\$
INFO	false	logs\request.log		log.request		di	
INFO	false	logs\audit.log		org.apache.jackrabbit.core.audit org.apache.jackrabbit.oak.audit		B	

- 43. Select Sling Log Support.
- 44. Click Add new Logger.
- 45. Enter **DEBUG** for the Log Level.
- 46. Enter logs\standbySegment.log for the Log File name.
- 47. Enter org.apache.jackrabbit.oak.segment for the Logger.
- 48. Click Save.
- 49. Click Add new Logger.
- 50. Enter DEBUG for the Log Level.
- 51. Enter logs\standbyStandbyStoreService.log for the Log File name.
- 52. Enter org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService for the Logger.
- 53. Click Save.

Your Log Support should now look like this.

INFO	false	logs\request.log	log.request
DEBUG	false	logs\standbyStandbyStoreService.log	org. a pache. jackrabbit. oak. segment. stand by. store. Stand by Store Service
INFO	false	logs\audit.log	org.apache.jackrabbit.core.audit org.apache.jackrabbit.oak.audit
INFO	false	logs\access.log	log.access
INFO	false	logs\project-we-retail.log	we.retail
DEBUG	false	logs\standbySegment.log	org.apache.jackrabbit.oak.segment

- 54. Go back to the CMD window you used for the standby startup and enter Ctrl-C to shut down the standby server.
- 55. Create this folder structure in your standby folder:

author-standby/crx-quickstart/install

- 56. Copy the install.standby folder in your Student Files.
- 57. Paste it into your author-standby/crx-quickstart/install/ folder.

author-standby/crx-quickstart/install/install.standby

Here are the important properties in each file.

org.apache.jackrabbit.oak.plugins.blob.datastore.FileDataStore.config

Make sure you have a valid path.

org.apache.sling.installer.configuration.persist=B"false" path="./crx-quickstart/repository/datastore" minRecordLength=I"16384"

org.apache.jackrabbit.oak.segment.SegmentNodeStoreService.config

Make sure customBlobStore is set to "false". Set it to "true" if you are using an external data store.

org.apache.sling.installer.configuration.persist=B"false" name="Oak-Tar" service.ranking=I"100" standby=B"true" customBlobStore=B"false"

org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService.config

Make sure your mode is set to standby. The default port is 8023. This will be the port the StandbyStoreService uses. This is different from and should not be confused with the ports that are used by your AEM instances. Both the primary and standby will be set to this port.

org.apache.sling.installer.configuration.persist=B"false" mode="standby" primary.host="127.0.0.1" port=I"8023" secure=B"false" interval=I"5" standby.autoclean=B"true"

58. Open **CMD** and navigate to this folder.

C:\aem\author-standby

59. Start the standby instance with this command.

java -XX:+UseParallelGC -jar aem-author-standby.jar -p 4506 -r standby,crx3,crx3tar

When the instance starts up, you will see this expected error. Remember, the standby instance does not have all the AEM TouchUI tools.



60. Open the AEM Web Console Configuration of your standby system with this URL.

http://<servername>:4506/system/console/configMgr

- 61. Enter **admin** for the username and password.
- 62. Search for standby.
- 63. Open the Apache Jackrabbit Oak Segment Tar Cold Standby Service to view the properties.

Apache Jackrabbit Oa	k Segment Tar Cold Standby Service 🗱
Provides continuous bac	kups of repositories based on Segment Tar
Persist configuration	
	Must be always disabled to avoid storing the configuration in the repository (org.apache.sling.installer.configuration.persist)
Mode	standby
	TarMK Cold Standby mode (primary or standby) (mode)
Port	8023
	TCP/IP port to use (port)
Primary Host	127.0.0.1
	Primary host (standby mode only) (primary.host)
Sync interval	5
(seconds)	Sync interval in seconds (standby mode only) (interval)
Allowed IP-Ranges	
	Accept incoming requests for these host names and IP-ranges only (primary mode only) (primary.allowed-client-ip-ranges)
Secure	
	Use secure connections (secure)
Standby Read Timeout	60000
Timeout	A Timeout for requests issued from the standby instance in milliseconds (standby.readtimeout)
Standby Automatic Cleanup	8
	Call the cleanup method when the root segment Garbage Collector (GC) generation number increases (standby.autoclean)
Configuration Inform	
Persistent Identity (PII	 org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService
Configuration Binding	Unbound or new configuration
	Cancel Reset Delete Unbind Save

64. Click Cancel.

Note: You can check the role of an instance at any time by selecting Status – Sling Settings.

Test your Configuration

JMX Console Confirmation

You can confirm your system status in the JMX console and by reviewing the logs.

- 1. Open Web Console on the primary instance.
- 2. Select Main JMX in Web Console on your Primary instance.
- 3. Search for Standby.

- 4. Click on the Standby item. If you have more than 1 Standby item, click the one with this value {id=8023}.
- 5. You should see the Running attribute set to true.

Adobe JMX	Experience Manage	r Web Console	Adobe
Main OSGi Sling	g Status Web Console		Log out
	jackrabbit.oak: Status ("Standb management interface of the MBean	yy")	
Attribute Name	\$	Attribute Value	\$
Mode		primary	
Running		true	
Status		channel unregistered	
Operations			
Return Type 🗢	Name		\$
void	<u>start()</u> Operation exposed for management		
void	<u>stop()</u> Operation exposed for management		

- 6. Open Web Console on the standby instance.
- 7. Select Main JMX in Web Console on your Standby instance.
- 8. Search for Standby.
- 9. Click on the Standby item. You should see the Status set to running.

Adobe JMX	Experience Manage	r Web Console	<u></u>
Main OSGi Slin	g Status Web Console		Log out
	jackrabbit.oak: Status ("Stand management interface of the MBean	by")	
d = "1d36fc6a-a83 Attributes	6-4992-a7d1-e2d8f96bc8b4"		
Attribute Name		Attribute Value	¢
FailedRequests		0	
SyncEndTimestam	ιp	1567558435433	
SecondsSinceLast	Success	1	
SyncStartTimesta	mp	1567558435431	
Running		true	
Mode		client: 1d36fc6a-a836-4992-a7d1-e2d8f96bc8b4	
Status		running	
Operations			
Return Type 🌻	Name		\$
void	<u>cleanup()</u> Operation exposed for management		
int	calcFailedRequests() Operation exposed for management		
int	calcSecondsSinceLastSuccess() Operation exposed for management		
void	start() Operation exposed for management		
void	stop() Operation exposed for management		

Review the logs

You can also confirm your standby system is working by consulting these logs.

The primaryStandbyStoreService.log

You should see this message.

08.09.2019 15:11:15.055 *INFO* [FelixStartLevel] org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService Started primary on port 8023 with allowed IP ranges []

The standbyStandbyStoreService.log

You should see this message.

08.09.2019 15:13:43.465 *INFO* [FelixStartLevel] org.apache.jackrabbit.oak.segment.standby.store.StandbyStoreService Started standby on port 8023 with 5s sync frequency

The standbySegment.log

Search for .StandbyClientSyncExecution. You should see messages like this.

09.09.2019 02:01:21.557 *DEBUG* [standby-run-7764] org.apache.jackrabbit.oak.segment.standby.client.StandbyClientSyncExecution Inspecting segment 8e143eee-e328-49d0-a742-d2d81ef076d5

The primarySegment.log

Search for .CommunicationObserver. You should see messages like this.

09.09.2019 00:00:04.125 *DEBUG* [primary-9]

org.apache.jackrabbit.oak.segment.standby.store.CommunicationObserver Message 'get segment' received from client f5371650-cafc-4326-a9f2-cae519ca64b0

Monitor your Systems

Follow these steps to monitor your primary system.

- 10. Open Web Console on the primary instance.
- 11. Select Main JMX in Web Console on your Primary instance.
- 12. Search for Standby.
- 13. Click on the Standby item. You can monitor your primary instance on this page.

Main OSGi Sling Status Web Console		Log ou
org.apache.jackrabbit.oak: So nformation on the management interface of the d = "Client 087ba47c-6d8e-433f-9ed2-df9a8acc Attributes	MBean	
Attribute Name	Attribute Value	4
	51011	
RemotePort	64211	
RemotePort LastSeenTimestamp	64211 Thu Sep 19 17:33:23 EDT 2019	
LastSeenTimestamp	Thu Sep 19 17:33:23 EDT 2019	
LastSeenTimestamp TransferredSegments	Thu Sep 19 17:33:23 EDT 2019 48	
LastSeenTimestamp TransferredSegments TransferredSegmentBytes	Thu Sep 19 17:33:23 EDT 2019 48 466112	
LastSeenTimestamp TransferredSegments TransferredSegmentBytes TransferredBinaries	Thu Sep 19 17:33:23 EDT 2019 48 466112 0	
LastSeenTimestamp TransferredSegments TransferredSegmentBytes TransferredBinaries TransferredBinariesBytes	Thu Sep 19 17:33:23 EDT 2019 48 466112 0 0	

Trouble-Shooting

Touch UI does not display

You may not be able to see the Touch UI on the primary. If this is the case, follow these steps.

14. Shut down your primary instance.

- 15. Remove the install.primary folder from your author-primary/crx-quickstart/install folder.
- 16. Restart the primary instance with this command.

java -XX:+UseParallelGC -jar aem-author-primary.jar -p 4504 -r author

$\leftrightarrow \rightarrow c$	O localhost4504/aem/start.html
🔢 Apps 😁 Po	lowerEdge R440
Reso	urce at '/aem/start.html' not found: No resource found
Cannot ser	rve request to /aem/start.html in /libs/sling/servlet/errorhandler/404.jsp
Request	Progress:
3 CC 11 LC 19 TJ 2074 TJ 2434 TJ 2447 LC 2448 TJ 2454 TJ 5581 LC 5687 TJ 5617 TJ	<pre>IMRR_START{Request Processing} OMMENT timer_end format is {celapsed microseconds>,<timer name="">} <optional message=""> OM Method=GET, PathInfo=null IMRR_START{handLeSecurity} IMRR_START{handLeSecurity} IMRR_START{handLeSecurity} authenticator org.apache.sling.auth.core.impl.SlingAuthenticator@4dee4e80 returns true IMRR_START{handLeSecurity} IMRR_START{hesourceResolution} UTIRR_START{feresoluteSolution} UTIRE_START{feresoluteSolution} IMRR_START{feresoluteSolution} IMRR_START{feresoluteSolution} IMRR_START{feresoluteSolution} IMRR_START{feresoluteSolution} IMRR_START{feresolution} IMR_START{feresolution} IMR_START{feresolution} IMR_START{feresolution} IMR_START{feresolution} IMR_START{fe</optional></timer></pre>

Trouble-Shoot Errors

If the Status on the primary instance is initializing and the Running property is set to false, there may be other instances running on the required port.

Adobe E IMX	xperience Mai	nage	r Web Console	Adobe
Main OSGi Sling	Status Web Console			Log out
	ackrabbit.oak: Status (nanagement interface of the MBean	"Standt	οΥ¨)	
Attributes				
Attribute Name		\$	Attribute Value	\$
Attribute Name Mode		\$	primary	\$
Attribute Name Mode Running		\$	primary false	¢
Attribute Name Mode Running Status		\$	primary	4
Attribute Name Mode Running Status Operations	Name	\$	primary false	
Attribute Name Mode Running Status Operations Return Type void	Name start() Operation exposed for management	\$	primary false	¢ ¢

Review your log files. You might have a **java.net.BindException**.

Caused by: java.net.BindException: Address already in use: bind at java.base/sun.nio.ch.Net.bind0(Native Method) at java.base/sun.nio.ch.Net.bind(Net.java:461) at java.base/sun.nio.ch.Net.bind(Net.java:453)

Trouble Shooting

This section details some known issues and trouble-shooting steps.

Could not Install Package

This issue occurs when installing a package of AEM users on a new server. You can solve it by editing your package on your source server. Follow these steps below.



- 1. Open your package on the source server.
- 2. Click Edit and select the Filters tab.
- 3. Click Edit on your filter. Your screen should now look like this.

Edit Packag	je		
General	Filters	Dependencies Advanced Screenshots	
Add	filter		
Root pat	:h:	/home/users/smartdoc	P
Rules:		Add rule Done Cancel	

- 4. Click Add Rule.
- 5. Select **Exclude** and enter this line to exclude tokens.

/home/users/.*/.tokens

6. Click Done. Your new rule should now look like this.



7. Click Save and rebuilt your package.

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.

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