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02/22/2021

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Install Adobe Experience Manager Locally

Introduction

Development on Adobe Experience Manager (AEM) typically occurs on a local author service with the quickstart jar. Typical AEM deployments consist of two services, an author service and a publish service. These services are identical in terms of installed software but an author service is for internal content creation and a publish service is for public content delivery. To develop for AEM, you must install a local author service and, optionally, a publish service.

Objectives

After completing this course, you will be able to:

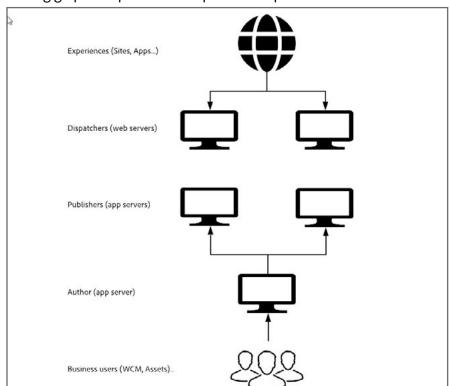
- · Understand local installation fundamentals
- Install AEM as a Cloud Service Locally
- Install AEM 6.5.x Locally
- Install a service pack

Local Install

Local quickstart runtime: The quickstart file runs a local version of AEM. You can use this quickstart jar to run either an Author Service or Publish Service locally.

- Author: A Service used to create, upload, and edit content and administer the website. After the
 content is ready to go live, it is replicated to the publish Service. A developer might install a
 publish service to check component layout and design on the final endpoint for content.
- Publish: A Service that serves the published content to the public.

The following graphic depicts an example AEM implementation:



4

Note: The Dispatcher is a static web server, such as Apache httpd and Microsoft IIS, augmented with the Dispatcher module. It caches webpages produced by the publish Service to improve performance.

Installation Prerequisites

To install locally, you need:

- · AEM quickstart JAR file
- A valid AEM license key properties file (only needed for AEM 6.5 and earlier)
- Java 11
- · Approximately 4 GB of free space per Service
- · Minimum 4 GB of RAM

During installation, you will notice that the JAR file creates a root folder on your system called crx-quickstart.

Note: Windows users may need to ensure their system's environment variables are set appropriately to run Java 11 before installing AEM. Open a command prompt and type **java -version** to ensure Java is set up properly. When you run the command, it should show the following result (java version "11.0.6") or higher:

```
C:\Users\prpurush>java -version
java version "11.0.6" 2020-01-14 LTS
Java(TM) SE Runtime Environment 18.9 (build 11.0.6+8-LTS)
Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.6+8-LTS, mixed mode)
```

You can download Java 11 for your system from the following link:

• https://downloads.experiencecloud.adobe.com/content/software-distribution/en/general.html

Installing the quickstart jar

Installation is done using command line method. The installation takes approximately 5-7 minutes the first time, depending on your system's capabilities.

When you use the command line method to install and start AEM, you can provide additional performance-tuning parameters to the Java Virtual Machine (JVM) and perform other administrative tasks. On Windows, MacOS X or *x, you can increase the Java heap size during the installation, which improves performance.

Prior to installation, you may want to know which parameters are available to configure quickstart. Type the following command in the command prompt to display a complete list of optional parameters:

```
java -jar aem-sdk-quickstart.jar -h
```

```
C:\adobe\AEM\author>java -jar aem-author-4502.jar -h
Loading quickstart properties: default
Loading quickstart properties: instance
Setting properties from filename 'C:/adobe/AEM/author/aem-author-4502.jar'
Option '-quickstart.server.port' set to '4502' from filename aem-author-4502.jar
Adobe Experience Manager Quickstart (build 20190328)
Usage:
Use these options on the Quickstart command line.
```

The quickstart installer will show all the available command-line options without starting the server.

Few command-line options:

-debug <port>

Enable Java Debugging on port number; forces forking

-gui

Show GUI if running on a terminal

-nobrowser (-quickstart.nobrowser)

Do not open browser at startup

-unpack

Unpack installation files only, do not start the server (implies -verbose)

-v (-verbose)

Do not redirect stdout/stderr to files and do not close stdin

-nofork

Do not fork the JVM, even if not running on a console

-fork

Force forking the JVM if running on a console, using recommended default memory settings for the forked JVM.

In addition, you can optionally add java parameters depending on your local server requirement needs. You can start your Service (author or publish) by using the following parameters:

-Xms --> assigns the initial heap size

Default value	64 MB for a JVM running on 32-bit machines, or 83 MB for 64-bit machines
Recommended	Specific to physical memory available and expected traffic
Syntax	-Xms512m (sets the initial heap size to 512 MB)

-Xmx --> assigns the maximum size to which the heap can grow

	·
Default value	64 MB for a JVM running on 32-bit machines, or 83 MB for 64-bit machines
Recommended	Specific to physical memory available and expected traffic, but should be equal or greater than the initial size. To run AEM, it is recommended to allocate at least 1024 MB of heap size.
Syntax	-Xmx1024m (sets the maximum size for the heap. In the example, we are letting it grow to 1024 MB. However, in production, this should be higher because AEM consumes a lot of resources).

You can start AEM by using the following command:

java -jar aem-sdk-quickstart.jar -p 4502 -r author,dev -gui

A dialog box similar to the following (also known as the GUI) will pop up:



After AEM starts, your default browser will open a new tab automatically, pointing to the start URL (where the port number is the one you defined on installation).

Runmodes

A run mode is a collection of configuration parameters that allow you to tune your Service for a specific purpose. Run modes that are defined typically include the service (author and publish) and the environment (dev, stage, prod).

Examples:

- Author Service for a Dev environment
 r author, dev
- Author Service for a Stage environment
 -r author, prod
- Publish Service for a Dev environment
 r publish, dev
- All Author Services
 r author

The syntax to specify multiple run modes is:

```
-r runmodel, runmodel, ...

Examples:

java -jar aem-sdk-quickstart.jar -r author,dev -gui

java -jar aem-sdk-quickstart.jar -r author,prod -gui

java -jar aem-sdk-quickstart.jar -r publish,prod -gui
```

Note the use of the -r parameter. This starts the quickstart jar with the specified runmode. The -gui option turns on the GUI mode that shows local server window on your system.

Updating the QuickStart Jar for Cloud Service

Adobe Experience Manager as a Cloud Service releases daily updates and, thus, it is important for local development to be developing against QuickStart Jar version that is near to what is deployed to the Adobe Experience Manager as Cloud Service environments. It is recommended the local QuickStart JAR used for local development be refreshed at least biweekly to match the version of Experience Manager on the Production environment.

Exercise 1: Install the SDK Quickstart Jar



Note: You will perform this exercise only if you are using AEM Cloud Service.

Scenario: As a developer or administrator, you need to work with Adobe Experience Manager locally, using the quickstart JAR file and license.properties.

In this exercise, you will install and start an author dev service on port 4502. In typical development, you will want to download the latest build of the SDK from the public repo.

Location of SDK builds: https://downloads.experiencecloud.adobe.com/content/software-distribution/en/ aemcloud.html

Note: In order to use this URL, your organization needs to be provisioned with Cloud Service and your IMS user needs to be added to the product profile in the Admin Console. If you do not have access to this location, your instructor will provide the SDK.

Prerequisite: Make sure you have Java 11 installed and set up on your system. The SDK requires Java 11 SDK to support the development tooling.



■ Note: You can repeat the exact steps below to also start a Publish Service. Simply replace "author" with "publish" throughout this exercise.

1. If you are using ReadyTech, the SDK has already been downloaded for you under C:/adobe/aem-sdk/.

4,

Note: If you are using local machine, then after downloading/receiving the SDK zip, move the .zip file to a location from where you want to start your AEM service. For example, in:

Windows: C:/adobe/aem-sdk/

MacOS X: \Applications\adobe\aem-sdk\ or *x: \opt\adobe\aem-sdk\

2. Extract the Quickstart jar file from the AEM SDK zip file. For example: C:/adobe/aem-sdk/aem-sdk-<nnnn>/



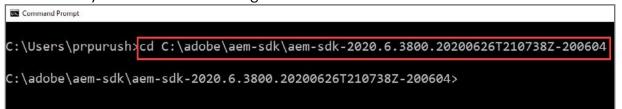
- 3. Rename the folder aem-sdk-<nnnn> to author-<nnnn>.
- 4. Open the renamed **author-<nnnn>** folder to find the quickstart jar **aem-sdk-quickstart-** <**nnnn>.jar**.
- 5. Rename the file **aem-sdk-quickstart-<nnnn>.jar** to **aem-sdk-quickstart.jar**. For simplicity, remove the build number from the jar file.
 - a. aem = Application
 - b. sdk-quickstart = Local Cloud quickstart
 - c. 2020.6.3800.20200626T210738Z-200604 = the build of this SDK

Note: Only change the jar file name for convenience. Optionally you could keep the build number in the file name. Keeping the build number helps quickly understand what build you are currently using. In this training, we keep the build number in the parent folder.

6. Open a Command Prompt and navigate to the directory on your machine where you unzipped the SDK and your new folder exists:

cd C:\adobe\aem-sdk

7. Start typing **cd aem** and press <TAB>. This will auto-complete the **aem-sdk-<NNNN>** folder name for you. Press <Enter> to navigate to the folder.





Note: If you are using a ReadyTech Service, this directory should be **C:\adobe\aem-sdk\aem-sdk\-<nnnn>** where nnnn is the build number.

8. Execute the following command to verify you are in the correct directory where the SDK quickstart jar and the licence.properties file resides.

Windows: dir

Mac: ls

```
Command Prompt
C:\adobe\aem-sdk\aem-sdk-2020.6.3800.20200626T210738Z-200604}dir
Volume in drive C is OSDisk
Volume Serial Number is A27D-0B0C
Directory of C:\adobe\aem-sdk\aem-sdk-2020.6.3800.20200626T210738Z-200604
07/17/2020 02:56 PM
                        <DIR>
07/17/2020 02:56 PM
                       <DIR>
04/28/2020 08:29 AM
                            8,107,917 aem-sdk-dispatcher-tools-2.0.22-unix.sh
                           6,535,942 aem-sdk-dispatcher-tools-2.0.22-windows.zip
04/28/2020 08:29 AM
                          392,614,749 aem-sdk-quickstart.jar
06/29/2020 07:21 PM
08/26/2019 12:19 PM
                                  236 license.properties
              4 File(s)
                           407,258,844 bytes
               2 Dir(s) 24,837,652,480 bytes free
```

9. In the command line, run the command below to see the different parameters that you can use to run the quickstart:

```
java - jar aem-sdk-quickstart.jar -h
```

10. To install and start your author service, use the following command:

```
java -jar aem-sdk-quickstart.jar -p 4502 -r author,dev -gui
```



Note: In the above command:

- -p specifies the port number for the local aem quickstart
- -r specifies the runmode that you are running locally
- -gui opens the GUI window on your desktop.

If no port number is specified, the first available port from the following list is used:

1) 4502, 2) 8080, 3) 8081, 4) 8082, 5) 8083, 6) 8084, or a random port.

```
C:\adobe\aem-sdk\aem-sdk\2020.6.3800.20200626T210738Z-200604>java -jar aem-sdk-quickstart.jar -p 4502 -r author,dev -gui
Loading quickstart properties: default
Loading quickstart properties: instance
Low-memory action set to fork

Jsing 64bit VM settings, min.heap=1024MB, min permgen=256MB, default fork arguments=[-Xmx1024m, -XX:MaxPermSize=256m]
The JVM reports a heap size of 3942 MB, meets our expectation of 1024 MB +/- 20
Setting properties from filename 'C:/adobe/aem-sdk/aem-sdk-2020.6.3800.20200626T210738Z-200604/aem-sdk-quickstart.jar'
Setting 'sling.run.modes' to 'author,dev' from command line.
/erbose option not active, closing stdin and redirecting stdout and stderr
Redirecting stdout to C:\adobe\aem-sdk\aem-sdk-2020.6.3800.20200626T210738Z-200604\crx-quickstart\logs\stdout.log
```

•

Tip: Be patient, as it may take up to two minutes for the installation gui window to appear.

11. Verify your author service has started. The command window will show startup details and the GUI window will show progress. Installation will take approximately 5–7 minutes depending on your system's capabilities. After the Author Service has started successfully, the start-up screen (the GUI) will change to something similar to the following:



You have now completed the local install of Adobe Experience Manager as a Cloud Service.



Note: To stop the service, click the **ON/OFF** toggle icon at the lower left corner of the server GUI.

12. Each time you want to run your author Service, use the same command in step 9 to start it. However, this time, the startup will be as fast as one minute or less, as the initial installation task has been performed.

In addition, after AEM starts, your default browser will automatically open to the start URL (where the port number is the one you defined on installation). For example: http://localhost:4502
A Sign in screen is displayed as shown below:



- 13. Enter your user name and password, and click **Sign In**. If you are using a ReadyTech machine or local installation, use the following credentials to sign in:
 - a. User name: adminb. Password: admin
- 14. Instead of using the GUI to stop your author service, use the command window you used to initially launch the quickstart. For Windows, type CTRL+C in the command window to stop your author service.

Exercise 2: Install 6.5 Quickstart Jar and Service Pack



Note: You will perform this exercise only if you are using AEM 6.5.

Scenario: As a developer or administrator, you need to work with Adobe Experience Manager locally, using both the quickstart JAR file and command line method.

In this exercise, you will install the 6.5 Quickstart jar and a Service Pack. You will then start your author Instance on port 4502.



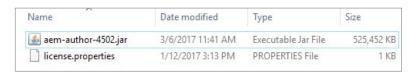
Note: If you are attending a v/ILT class using ReadyTech, steps 1 through 3 below were completed for you. Skip ahead to step 4.



Note: You can repeat the exact steps below to also start a Publish Instance. Simply replace "author" with "publish" in the directions below to install a publish instance.

To install an author Instance:

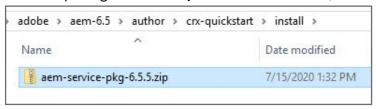
- 1. Create a folder structure on your file system where you will store, install, and start your author instance. For example, in:
 - a. Windows: C:/adobe/aem-6.5/author
 - b. MacOS X: /Applications/adobe/aem-6.5/author or *x: /opt/adobe/aem-6.5/author
- 2. If not already present in the /author folder, copy the aem-quickstart-6.5.0.jar and license. **properties** files, from the location provided by your instructor, to your newly created directory.
- 3. Rename the aem-quickstart-6.5.0.jar file to aem-author-4502.jar:
 - a. aem = Application
 - b. author = Web Content Management (WCM) mode AEM will run in (in this case, author)
 - c. 4502 = Port AEM will run in



You can, therefore, control the way AEM is installed by defining properties in a filename.

To include the Service Pack for AEM 6.5:

- 4. Navigate to /adobe/aem-6.5/author folder, create crx-quickstart within the author folder.
- 5. Open the **crx-quickstart** folder and create **install** folder within it.
- 6. Place the package into ../crx-quickstart/install folder, as shown:



Note: Once AEM is installed, it recognizes this install directory and automatically installs the service pack..

Use the command line to install AEM:

- 7. Open a Command Prompt and navigate to the directory that contains the jar and license file: cd C:\adobe\aem-6.5\author
- 8. In the command line, run the command below to see the different parameters that you can use to run the quickstart:

```
java -jar aem-author-4502.jar -h
```

```
C:\adobe\aem-6.5>java -jar aem-author-4502.jar -h
Loading quickstart properties: default
Loading quickstart properties: instance
Setting properties from filename 'C:/adobe/aem-6.5/aem-author-4502.jar'
Option '-quickstart.server.port' set to '4502' from filename aem-author-4502.jar
Adobe Experience Manager Quickstart (build 20190328)
Usage:
Use these options on the Quickstart command line.
help (--help,-h)
         Show this help message
 quickstart.server.port (-p,-port) <port>
         Set server port number
 contextpath (-c,-org.apache.felix.http.context path) <contextpath>
         Set context path
 debug (port)
         Enable Java Debugging on port number; forces forking
```

9. To start your AEM quickstart, use the following command:

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



Note: In the above command:

- -p specifies the port number for the local aem quickstart
- -r specifies the runmode that you are running locally
- -gui opens the GUI window on your desktop.

If no port number is specified, the first available port from the following list is used: 1) 4502, 2) 8080, 3) 8081, 4) 8082, 5) 8083, 6) 8084, or a random port.



Note: You can also double-click the **aem-author-4502.jar** file to start the author instance. But double-clicking does not add the dev runmode to the instance.

10. The command line input contained -gui parameter that shows the installation GUI. At this point you should see it installing the quickstart.



11. Installing base 6.5 will take anywhere from 5-7 minutes. You will see this loading on the Gui that appears and the browser UI open. At this point the service pack is installed. This will take an additional 5-7 minutes. In total, your author instance should be ready to use in 10-14 minutes.



Note: To stop the author instance, click the ON/OFF toggle icon at the lower left corner of the server GUI.

12. Each time you want to run your author instance, use the same command in step 6 to start it. However, this time, the startup will be as fast as one minute or less, as the initial installation task has been performed.



Note: Each time you want to run your author instance, use the same command in step 6 to start it.

However, this time, the startup will be as fast as one minute or less, as the initial installation task has been performed.

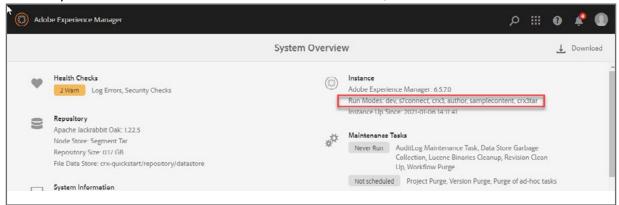
When the login screen appears, your author instance is ready. To login:

- 13. Enter your user name and password, and click **Sign In**. If you are using a ReadyTech machine or local installation, use the following credentials to sign in:
 - a. User name: **admin** b. Password: **admin**
- 14. Navigate to **Tools > Operations > System Overview** in your author instance. The **System Overview** screen appears.

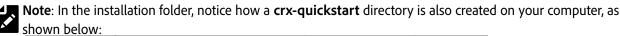


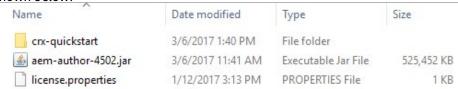
Note: A Product Navigation pop-up window may appear. If it appears, select the "Don't show this again" checkbox and click **Close** to ensure it no longer appears when you are on this page.

15. Verify the Run Modes for the Service in the **Instance** area, as shown:



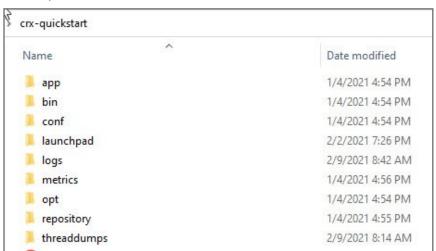
16. Instead of using the GUI to stop your author instance, use the command window you used to initially launch AEM. For Windows, type CTRL+C in the command window to stop your author instance.





This is the extracted repository that is created upon installation.

17. Open the author instance folder and navigate to **crx-quickstart** folder. Notice all the files/folders written by the server:



Local Log Files

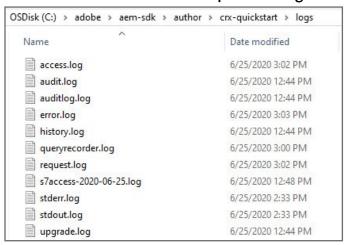
The logging framework in AEM is based on Apache Sling. The root logger defines the global settings for the logging system. The root logger is configured by using Apache Sling Logging Configuration. The org. apache.slng.commons.log bundle manages the logging system. This bundle helps:

- Implement the OSGi log service specification and register the LogService and LogReader services
- Export four commonly used APIs:
 - Apache Commons Logging
 - Simple Logging Façade for Java (SLF4J)
 - → Log4j
 - Java.util.logging

Types of Log Files available:

- · Audit.log: Registers all modern actions
- Error.log: Registers all error messages
- Request.log: Registers all access requests along with their responses
- Stderr.log: Holds error messages generated during startup
- Upgrade.log: Provides a log of all upgrade operations
- Access.log: Registers all access requests sent to AEM and the repository

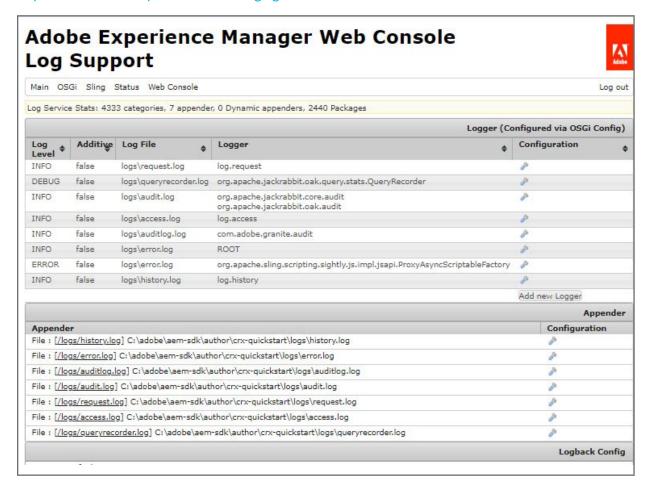
These files are available in the /crx-quickstart/logs installation directory.



By default, the error, access, history, and request logs rotate once per day. When this occurs, the existing log files are appended with a timestamp and a new file is created.

If you are doing local development, you can also view the log files through the Web Console at:

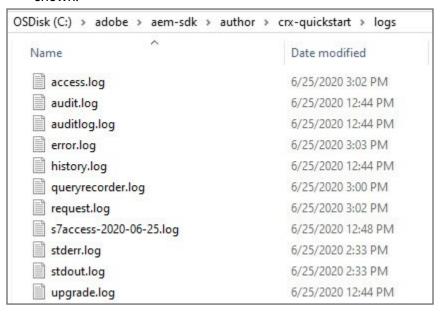
http://localhost:4502/system/console/slinglog



Exercise 3: Observe the local log files

In this exercise, you will observe the local log files created after the installation..

1. Open the author instance folder and navigate to \crx-quickstart\logs\. The list of log files is shown:



2. Observe the log files.



Note: During development, any logs your code produces will automatically be filtered into the error.log file. Simply filter for your project name to find the logging results.

References

You can use the following link for more information on:

• <u>Installation</u>