



## Specify Collections Consortium Members Should Replace Oracle Java SE with Amazon Corretto on all Specify 6 Workstations

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Specify 6 software is written in Java and requires software known as the Java Runtime Environment (JRE) to operate. Until the end of January 2019, the Oracle JRE (also referred to as "Java SE") was available for public use at no cost. At the end of January, Oracle Corp. changed their licensing terms for their Java SE 8 package, requiring most institutional users to pay a fee for usage and for updates. From the Oracle web site:

Java SE 8 is going through the [End of Public Updates process](#) for legacy releases. Oracle will continue to provide free public updates and auto updates of Java SE 8, until at least the end of December 2020 for Personal Users, and January 2019 for Commercial Users.

Individuals can still download and use Oracle SE version 8 for personal use, but commercial users cannot. Here is Oracle's definition of Commercial Users:

Commercial Users are entities other than Oracle Customers that use Java SE for free for business, commercial or production purposes as part of a Java application delivered by a third party or developed internally.

That definition includes museums that run Specify 6 software on workstations for collections databases. Many universities, agencies, and free-standing museums do not have campus-wide Oracle licenses that entitle them to continue to use and receive updates of the Oracle SE 8 package. As of February 1, 2019, Oracle is entitled to license payments from institutions using Oracle Java SE 8. We know of large universities that are purging campus computers of Oracle Java SE software in order to avoid that financial obligation. Other education and research institutions are likely responding in a similar way.

Most Specify 6 installations currently run with Oracle's Java SE 8. There are more recent versions of the Oracle Java SE package--SE 9, 10, and 11. Versions 9 and 10 were short-term releases and are no longer supported. Version 11 is Oracle's the long-term successor to version 8; it currently does not require payment for use and updates, but may in the future. (Specify is compatible with Oracle SE 11.)

Fortunately, Amazon has stepped in to fill the gap created by Oracle's licensing changes and it has made available a 100% compatible alternative to Oracle Java SE. Amazon "Corretto" (<https://aws.amazon.com/corretto/>) is a no-cost, multiplatform, production-ready distribution of the Open Java Development Kit (OpenJDK), the same code source from which Oracle produces its Java SE software.

Amazon is offering its Java Corretto package at no cost with free long-term support for security patches and updates.

Long Term Support includes Amazon’s commitment to provide performance enhancements and security updates at no cost until at least the specified date for the relevant release version (e.g., June 2023 for Corretto 8). Updates are planned to be released quarterly. Amazon also plans to apply urgent fixes (including security) outside of the regular quarterly cycle when they are available and ready to use.

After 2023 it is fully expected that Corretto will update to a newer version and that free use and update support will continue indefinitely. Amazon offers Corretto installer packages for each of the free desktop operating systems, Windows, macOS, and Linux:

<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/windows-7-install.html>

<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/macos-install.html>

<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/generic-linux-install.html>

Institutional and campus IT departments may already have a strategy for this migration--if you enjoy centralized IT systems support, consult with IT staff to know how your institution is responding. There may be other applications on your workstation that have campus licenses to run Oracle Java, before removing Oracle's Java SE package from desktop computers running Specify you should check with your systems administrators. Because Corretto is designed to be 100% compatible with Oracle's Java SE package, all existing Windows applications requiring Java should run fine with 32-bit or 64-bit Corretto.

We provide an installation guide below for the Amazon Corretto. It is easy to download and install, no specialized computer systems administration expertise is required for self-managed computers.

Amazon's user guide for Corretto is here: <https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/corretto-8-ug.pdf>

## Installing Amazon Corretto and Replacing Oracle's Java SE package for Specify 6

### **For new Specify 6 installations on Windows computers**

1. Download and run the MySQL Community Server MSI Installer from the MySQL download page (<https://dev.mysql.com/downloads/windows/installer/8.0.html>). See the discussion of installation and configuration options for installing MySQL and for setting up MySQL user accounts, on the Specify Collections Consortium web site.
2. Download the appropriate version of the Corretto MSI Installer (Win, macOS, or Linux) from the Amazon download web page. (<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/downloads-list.html>). Open the Corretto MSI installer package and follow the prompts to complete the installation.

For Windows computers, choose the one of the two Corretto .msi files listed, either for Windows x64 (64-bit), or Windows x86 (32-bit) architectures. You must choose the version that corresponds to the version of Specify you intend to install, 32- or 64-bit. We recommend 64-bit installations as most PCs run a 64-bit version of Windows. If you are unsure whether to install

32- or 64-bit software, first determine if your version of Windows is 64-bit enabled. If it is, 64-bit versions of Corretto and Specify will use hardware more efficiently.

3. Reboot your computer. Do not skip this step.
4. Download the Specify 6 installer from the Specify Consortium web site and follow the prompts to install Specify. See documentation on the Specify web site for setup options.

#### **For new Specify 6 installations on Linux computers**

1. Download and install MySQL, see configuration options discussion on Specify Consortium web site.
2. Download the Linux x64 .rpm file from the Corretto Downloads page.  
(<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/downloads-list.html>)
3. Install the downloaded .rpm file using yum localinstall. Example:  
`sudo yum localinstall java-1.8.0-amazon-corretto-devel-1.8.0_202.b08-2.x86_64.rpm`
4. Download and install a Specify.sh file from the Specify Consortium web site.

#### **For new Specify 6 installations on macOS computers**

1. Download and run the MySQL Community Server MSI Installer from the MySQL download page (<https://dev.mysql.com/downloads/windows/installer/8.0.html>). See the discussion of installation and configuration options for installing MySQL and for setting up MySQL user accounts, on the Specify Collections Consortium web site.
2. Download the Mac .pkg file from the Corretto Downloads page.  
(<https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/downloads-list.html>)
3. Double click the downloaded file to start the installation wizard. Follow the steps in the wizard.
4. Once the wizard completes, Amazon Corretto 8 will be installed in  
`/Library/Java/JavaVirtualMachines/`.
5. You can run the following command in a terminal to get the complete installation path.  
`/usr/libexec/java_home -verbose`
6. Optionally, run the following commands in the terminal to set the JAVA\_HOME variable.  
`export JAVA_HOME=/Library/Java/JavaVirtualMachines/amazon-corretto-8.jdk/Contents/Home`
7. Reboot your computer. Do not skip this step.

8. Download the Specify 6 installer from the Specify Consortium web site and follow the prompts to install Specify. See documentation on the Specify web site for setup options.

### **For Existing Specify installations**

1. If you have centralized IT support, contact your systems support office to determine if the institution has a plan to make this change from Oracle Java SE to Amazon Corretto.
2. Follow steps 2 and 3 above for each Specify 6 workstation. Java is not required on servers running MySQL but not Specify 6. Specify does not use the Java web browser plug-in. Linux workstation users may optionally use an install command to obtain the openjdk-8-jre package. (<https://openjdk.java.net/install/>)

### **Windows Installation Notes**

1. The Amazon Corretto Installer changes the Windows Path environment variable, by pre-pending the directory path to the Corretto JDK directory, before entries to the Oracle Java path. Specify will then find and use the Corretto JRE. The Amazon installer does not delete the Oracle JRE Path variable; uninstalling Oracle Java will do that. The Corretto MSI installer will also set the JAVA\_HOME variable:

JAVA\_HOME=C:\Program Files (x86)\Amazon Corretto\jdk1.8.0\_202 (32-bit Corretto)

JAVA\_HOME=C:\Program Files\Amazon Corretto\jdk1.8.0\_202 (64-bit Corretto)

2. If you are running an obsolete version of Specify 6 for Windows, after installing Corretto, trying to start Specify will generate this error:

No JVM could be found on your system. Please define EXE4J\_JAVA\_HOME ...

You need to upgrade Specify to the latest release. Choose to update the existing installation if prompted by the Specify 6 installer.