Manually install and troubleshoot Java on Wowza Streaming Engine

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Wowza Streaming Engine™ media server software is a powerful Java server. When you install Wowza Streaming Engine 4.2.0 and later, the software automatically installs the required server version of Java that it needs, making it easy to get up and running. For optimal performance and stability, we recommend using the version of Java that installs by default with Wowza Streaming Engine. However, if you can’t or don’t want to use the version of Java that installs with Wowza Streaming Engine you can manually install and use a different version of Java.

**Important:** Wowza Streaming Engine version 4.7.8 and later requires OpenJDK Java SE JRE 9.0.4 at a minimum, but supports up to Java version 12. Earlier versions of Java aren’t supported. Previous versions of Wowza Streaming Engine (version 4.7.7) required Java 8.

About Wowza Streaming Engine and Java

When you install Wowza Streaming Engine 4.2.0 or later, Wowza Streaming Engine installs the server version of Java that it requires.

If you can’t or don’t want to use the version of Java that installs with Wowza Streaming Engine, you can use Java version 9 - 12. Earlier versions of Java are not supported.

For optimal performance and to use Transcoder, you *must* deploy Wowza Streaming Engine on a 64-bit operating system with the a 64-bit version of Java.

Determine which version of Java your Wowza Streaming Engine instance is using
In Wowza Streaming Engine Manager, click **Server** in the menu bar and then click **About** in the contents panel.

The **About Wowza Streaming Engine** page displays the **Java Version**, **Java VM Version**, **Java Architecture**, and other details about the Java version that’s in use.

**Download and install Java**

**Note**: For your convenience, we’ve provided the OpenJDK Java SE JRE 9.0.4 files as a zip on the **Downloads** tab of your Wowza account. If using this to update your Java installation, you must unzip the package, select the folder that matches your Operating System, and then copy and paste the contents into your Wowza Streaming Engine `[install-dir]/jre` directory.
If you want to use a different version of Java than the one you currently have, follow these steps:

1. Go to the OpenJDK Java Archive page and download a 64-bit version of a Java 9 - 12 JDK or Server JRE. If you're using Wowza Streaming Engine Manager, Java versions 9 is required.

   **Note:** The only time you should install a 32-bit version of Java is if you're running Wowza Streaming Engine or Wowza Media Server on 32-bit Windows.

2. Follow the instructions to install the Java environment.
3. Confirm that Wowza Streaming Engine is using the new version. See Determine which version of Java your Wowza Streaming Engine instance is using, above.
4. If Wowza Streaming Engine isn't using the right version of Java, point it to the version you installed. See Instruct Wowza Streaming Engine to use a specific version of Java, below.

### Instruct Wowza Streaming Engine to use a specific version of Java

**Instruct Wowza Streaming Engine on Windows 10 to use a specific version of Java**

On Windows, Wowza Streaming Engine 4.2.0 and later use the `WMSJAVA_HOME` environment variable to determine which Java environment in which to run. If you have problems starting Wowza Streaming Engine on Windows, make sure that `WMSJAVA_HOME` points to the installed Java environment. If you change or upgrade your Java environment and the installation path changes, be sure to update `WMSJAVA_HOME` to point to the new location. The `WMSJAVA_HOME` environment variable should point to the base folder of the Java installation; the base folder is the folder that contains the `bin` folder.

1. In Control Panel, click **System and Security**.
2. Select **System** and then click **Advanced system settings** in the left column.
3. On the **Advanced** tab of the **System Properties** window, click **Environment Variables**.
4. In the **Environment Variables** window, in the **System variables** list, select **WMSJAVA_HOME**, and then click **Edit**.

**Note:** For Wowza Streaming Engine 4.1.2 and earlier, select the **JAVA_HOME** variable.

5. Change the **Variable value** to the path of the Java version you want to use.

**Note:** Paths should point to a 64-bit version of Java at **C:\Program Files\Java**. Paths to **C:\Program Files (x86)\Java** point to a 32-bit version of Java.

6. Save your changes.

**Instruct Wowza Streaming Engine on macOS to use a specific version of Java**

Update the Wowza Streaming Engine symbolic link (symlink) to point to the specific version of Java.

- For Wowza Streaming Engine 4.2.0 and later, update the symbolic link at **/Library/WowzaStreamingEngine/java** to point to the new Java version. For example, if the new Java version is installed at **/usr/lib/jvm/jdk9.0.4**, execute the following commands:

  ```bash
  rm -rf /Library/WowzaStreamingEngine/java ; ln -sf /usr/lib/jvm/jdk9.0.4/bin/java
  ```
For Wowza Streaming Engine 4.1.2 and earlier, update the symbolic link at /usr/bin/java to point to the new Java version. For example, if the new Java version is installed at /usr/lib/jvm/jdk9.0.4, execute the following commands:

rm -rf /usr/bin/java ; ln -sf /usr/lib/jvm/jdk9.0.4/bin/java /usr/bin/java

Instruct Wowza Streaming Engine on Linux to use a specific version of Java

Update the Wowza Streaming Engine symbolic link (symlink) to point to the specific version of Java.

For Wowza Streaming Engine 4.2.0 and later, update the symbolic link at /usr/local/WowzaStreamingEngine/java to point to the new Java version. For example, if the new Java version is installed at /usr/lib/jvm/jdk9.0.4, execute the following commands:

rm -rf /usr/local/WowzaStreamingEngine/java ; ln -sf /usr/lib/jvm/jdk9.0.4/ /usr/local/WowzaStreamingEngine/java

Troubleshooting

Get Java installation details and start Wowza Streaming Engine in console mode

If you run into problems when starting Wowza Streaming Engine, use the following commands to print the Java variables and start the software in console mode. The information you print may provide clues about the problem and provide context to
help troubleshoot your installation, and the **startup** command will get Wowza Streaming Engine running.

**Windows**

- For Wowza Streaming Engine 4.2.0 and later, open a Command Prompt window and type:

```
  echo %WMSJAVA_HOME%
  "$WMSJAVA_HOME%/bin/java -version
  echo %WMSAPP_HOME%
  echo %WMSCONFIG_HOME%
  cd %WMSAPP_HOME%/bin
  startup.bat
```

- For Wowza Streaming Engine 4.1.2 and earlier, open a Command Prompt window and type:

```
  echo %JAVA_HOME%
  "$JAVA_HOME%/bin/java -version
  echo %WMSAPP_HOME%
  echo %WMSCONFIG_HOME%
  cd %WMSAPP_HOME%/bin
  startup.bat
```

**macOS**

- For Wowza Streaming Engine 4.2.0 and later, open a Terminal window and type:

```
  [install-dir]/WowzaStreamingEngine/java/bin/java -version
  cat [install-dir]/WowzaMediaServer/bin/setenv.sh
  cd [install-dir]/bin
  sudo ./startup.sh
```

- For Wowza Streaming Engine 4.1.2 and earlier, open a Terminal window and type:

```
  which java
  java -version
  cat [install-dir]/WowzaMediaServer/bin/setenv.sh
  cd [install-dir]/bin
  sudo ./startup.sh
```
Linux (Ubuntu/Debian/Fedora)

- For Wowza Streaming Engine 4.2.0 and later, open a Terminal window and type:
  ```bash
  [install-dir]/WowzaStreamingEngine/java/bin/java -version
  cat [install-dir]/WowzaMediaServer/bin/setenv.sh
  cd [install-dir]/bin
  sudo ./startup.sh
  ```

- For Wowza Streaming Engine 4.1.2 and earlier, open a Terminal window and type:
  ```bash
  which java
  java -version
  cat [install-dir]/WowzaMediaServer/bin/setenv.sh
  cd [install-dir]/bin
  sudo ./startup.sh
  ```

For further troubleshooting, post a question to the forum or open a Support ticket. (Technical support is included with all active subscriptions and maintenance and support contracts.) In the Support ticket form, be sure to share the Java variables you printed in your detailed problem description.

Instruct Wowza Streaming Engine to use the Java "en" locale

Wowza Streaming Engine may not start or may not run after starting when the Java environment points to certain locales, such as Turkish. To address this problem, instruct Wowza Streaming Engine to run under the "en" locale by editing the `VMOption` variable in the `Tune.xml` file.

1. Open `[install-dir]/conf/Tune.xml` in a text editor and find the following line:

2. Uncomment the line by removing the `#` from the end of the line, as follows:

   ```xml
   -Duser.language=en -Duser.country=US -Dfile.encoding=Cp1252
   ```

3. Save your changes and restart Wowza Streaming Engine.
4. Confirm that the settings have taken effect by opening the latest access log at `[install-dir]/logs/wowzastreamingengine_access.log.YYYY-MM-DD` and looking for following entries:
Don't configure the Java GCM to be 'concurrent' if using Java 11

If running Wowza Streaming Engine with Java 11, there is a known issue with the **concurrent** setting for the Java garbage collection behavior. We recommend using the G1 (Garbage First) collector. For more information about configuring the Java garbage collection behavior, see [Tune Java settings](#).