OpenJDK 17

Configuring OpenJDK 17 on RHEL

Last Updated: 2022-03-22

Legal Notice

Abstract

OpenJDK is a Red Hat offering on the Red Hat Enterprise Linux platform. The Configuring OpenJDK 17 on RHEL guide provides an overview of this product and explains how to configure the software.

Table of Contents

MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright's message.

PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

We appreciate your feedback on our documentation. To provide feedback, you can highlight the text in a document and add comments.

This section explains how to submit feedback.

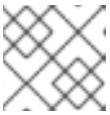
Prerequisites

- You are logged in to the Red Hat Customer Portal.
- In the Red Hat Customer Portal, view the document in **Multi-page HTML** format.

Procedure

To provide your feedback, perform the following steps:

1. Click the **Feedback** button in the top-right corner of the document to see existing feedback.



NOTE

The feedback feature is enabled only in the **Multi-page HTML** format.

2. Highlight the section of the document where you want to provide feedback.
3. Click the **Add Feedback** pop-up that appears near the highlighted text.
   A text box appears in the feedback section on the right side of the page.
4. Enter your feedback in the text box and click **Submit**.
   A documentation issue is created.
5. To view the issue, click the issue tracker link in the feedback view.

CHAPTER 1. INTERACTIVELY SELECTING A SYSTEM-WIDE OPENJDK VERSION ON RHEL

If you have multiple versions of OpenJDK installed on RHEL, you can interactively select the default OpenJDK version to use system-wide.

NOTE

If you do not have root privileges, you can select a OpenJDK version by configuring the **JAVA_HOME** environment variable.

Prerequisites

- You must have root privileges on the system.
- Multiple versions of OpenJDK were installed using the **yum** package manager.

Procedure

1. View the OpenJDK versions installed on the system.
   $ yum list installed "java*"

   A list of installed Java packages appears.

```
Installed Packages
java-1.8.0-openjdk.x86_64                1:1.8.0.302.b08-0.el8_4          @rhel-8-
appstream-rpms
java-11-openjdk.x86_64                   1:11.0.12.0.7-0.el8_4            @rhel-8-appstream-
rpms
java-11-openjdk-headless.x86_64          1:11.0.12.0.7-0.el8_4            @rhel-8-
appstream-rpms
java-17-openjdk.x86_64                   1:17.0.0.0.35-4.el8              @rhel-8-appstream-
rpms
java-17-openjdk-headless.x86_64          1:17.0.0.0.35-4.el8              @rhel-8-
appstream-rpms
```

2. Display the OpenJDK versions that can be used for a specific **java** command and select the one to use:

```
$ sudo alternatives --config java
There are 3 programs which provide 'java'.

  Selection    Command
-----------------------------------------------
   1           java-11-openjdk.x86_64 (/usr/lib/jvm/java-11-openjdk-11.0.12.0.7-
0.el8_4.x86_64/bin/java)
*  2           java-1.8.0-openjdk.x86_64 (/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.302.b08-
0.el8_4.x86_64/jre/bin/java)
 + 3           java-17-openjdk.x86_64 (/usr/lib/jvm/java-17-openjdk-17.0.0.0.35-
4.el8.x86_64/bin/java)



Enter to keep the current selection[+], or type selection number: 1
```

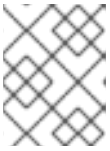
-

- The current system-wide OpenJDK version is marked with an asterisk.
- The current OpenJDK version for the specified **java** command is marked with a plus sign.

3. Press **Enter** to keep the current selection or enter the **Selection** number of the OpenJDK version you want to select followed by the **Enter** key.
The default OpenJDK version for the system is the selected version.

4. Verify that the chosen binary is selected.

```
$ java -version
openjdk version "17" 2021-09-14
OpenJDK Runtime Environment 21.9 (build 17+35)
OpenJDK 64-Bit Server VM 21.9 (build 17+35, mixed mode, sharing)
```



NOTE

This procedure configures the **java** command. Then **javac** command can be set up in a similar way, but it operates independently.

If you have OpenJDK installed, **alternatives** provides more possible selections. In particular, the **javac** master alternative switches many binaries provided by the **-devel** sub-package.

Even if you have OpenJDK installed, **java** (and other JRE masters) and **javac** (and other OpenJDK masters) still operate separately, so you can have different selections for JRE and JDK. The **alternatives --config java** command affects the **jre** and its associated slaves.

If you want to change OpenJDK, use the **javac alternatives** command. The **--config javac** utility configures the **SDK** and related slaves. To see all possible masters, use **alternatives --list** and check all of the **java**,**javac**, **jre**, and **sdk** masters.

CHAPTER 2. NON-INTERACTIVELY SELECTING A SYSTEM-WIDE OPENJDK VERSION ON RHEL

If you have multiple versions of OpenJDK installed on RHEL, you can select the default OpenJDK version to use system-wide in a non-interactive way. This is useful for administrators who have root privileges on a Red Hat Enterprise Linux system and need to switch the default OpenJDK on many systems in an automated way.

NOTE

If you do not have root privileges, you can select a OpenJDK version by configuring the **JAVA_HOME** environment variable.

Prerequisites

- You must have root privileges on the system.
- Multiple versions of OpenJDK were installed using the **yum** package manager.

Procedure

1. Select the major OpenJDK version to switch to. For example, for OpenJDK 17, use **java-17-openjdk**.

```
# PKG_NAME=java-17-openjdk
# JAVA_TO_SELECT=$(alternatives --display java | grep "family $PKG_NAME" | cut -d' ' -f1)
# alternatives --set java $JAVA_TO_SELECT
```

2. Verify that the active OpenJDK version is the one you specified.

```
$ java -version
openjdk version "17" 2021-09-14
OpenJDK Runtime Environment 21.9 (build 17+35)
OpenJDK 64-Bit Server VM 21.9 (build 17+35, mixed mode, sharing)
```

CHAPTER 3. SELECTING AN INSTALLED OPENJDK VERSION FOR A SPECIFIC APPLICATION

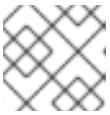
Some applications require a specific OpenJDK version to run. If multiple versions of OpenJDK are installed on the system using the **yum** package manager or portable bundle, you can select a OpenJDK version for each application where necessary by setting the value of the **JAVA_HOME** environment variable or using a wrapper script.

Prerequisites

- Multiple versions of OpenJDK installed on the machine.
- Ensure that the application you want to run is installed.

Procedure

1. Set the **JAVA_HOME** environment variable. For example, if OpenJDK 17 was installed using **yum**:
   $ JAVA_HOME=/usr/lib/jvm/java-17-openjdk

   NOTE

   The symbolic link **java-17-openjdk** is controlled by the **alternatives** command.

2. Do one of the following:
   - Launch the application using the default, system-wide configuration.

     ```
     $ mvn --version
     Apache Maven 3.5.4 (Red Hat 3.5.4-5)
     Maven home: /usr/share/maven
     Java version: 11.0.9, vendor: Oracle Corporation, runtime: /usr/lib/jvm/java-11-openjdk-11.0.9.10-0.el8_0.x86_644/jre
     Default locale: en_US, platform encoding: UTF-8
     OS name: "linux", version: "4.18.0-144.el8.x86_64", arch: "amd64", family: "unix"
     ```

   - Launch the application specifying the **JAVA_HOME** variable:

     ```
     $ JAVA_HOME=/usr/lib/jvm/java-17-openjdk-17.0.0.0.35-4.el8.x86_64/ mvn --version

     Apache Maven 3.5.4 (Red Hat 3.5.4-5)
     Maven home: /usr/share/maven
     Java version: 17, vendor: Red Hat, Inc., runtime: /usr/lib/jvm/java-17-openjdk-17.0.0.0.35-4.el8.x86_64
     Default locale: en_US, platform encoding: UTF-8
     OS name: "linux", version: "4.18.0-305.19.1.el8_4.x86_64", arch: "amd64", family: "unix"
     ```

CHAPTER 4. SELECTING A SYSTEM-WIDE ARCHIVE OPENJDK VERSION

If you have multiple versions of OpenJDK installed with the archive on RHEL, you can select a specific OpenJDK version to use system-wide.

Prerequisites

- Know the locations of the OpenJDK versions installed using the archive.

Procedure

To specify the OpenJDK version to use for a single session:

1. Configure **JAVA_HOME** with the path to the OpenJDK version you want used system-wide.
   $ export JAVA_HOME=/opt/jdk/openjdk-17.0.0.0.35

2. Add **$JAVA_HOME/bin** to the **PATH** environment variable.
   $ export PATH="$JAVA_HOME/bin:$PATH"

To specify the OpenJDK version to use permanently for a single user, add these commands into ~/**.bashrc**:

```
export JAVA_HOME=/opt/jdk/openjdk-17.0.0.0.35
export PATH="$JAVA_HOME/bin:$PATH"
```

To specify the OpenJDK version to use permanently for all users, add these commands into **/etc/bashrc**:

```
export JAVA_HOME=/opt/jdk/openjdk-17.0.0.0.35
export PATH="$JAVA_HOME/bin:$PATH"
```

NOTE

If you do not want to redefine **JAVA_HOME**, add only the PATH command to **bashrc**, specifying the path to the Java binary. For example, **export PATH="/opt/jdk/openjdk-17.0.0.0.35/bin:$PATH"**.

Additional resources

- Be aware of the exact meaning of **JAVA_HOME**. For more information, see Changes/Decouple system java setting from java command setting.

CHAPTER 5. CONFIGURING THE JAVA_HOME ENVIRONMENT VARIABLE ON RHEL

Some applications require you to set the **JAVA_HOME** environment variable so that they can find the OpenJDK installation.

Prerequisites

- You know where you installed OpenJDK on your system. For example, **/opt/jdk/11**.

Procedure

1. Set the value of **JAVA_HOME**.

```
$ export JAVA_HOME=/opt/jdk/11
```

2. Verify that **JAVA_HOME** is set correctly.

```
$ printenv | grep JAVA_HOME
JAVA_HOME=/opt/jdk/11
```

NOTE

You can make the value of **JAVA_HOME** persistent by exporting the environment variable in **~/.bashrc** for single users or **/etc/bashrc** for system-wide settings. Persistent means that if you close your terminal or reboot your computer, you do not need to reset a value for the **JAVA_HOME** environment variable.

The following example demonstrates using a text editor to enter commands for exporting **JAVA_HOME** in **~/.bashrc** for a single user:

```
> vi ~/.bash_profile

export JAVA_HOME=/opt/jdk/11
export PATH="$JAVA_HOME/bin:$PATH"
```

Additional resources

- Be aware of the exact meaning of **JAVA_HOME**. For more information, see Changes/Decouple system java setting from java command setting.

CHAPTER 6. CONFIGURING THE HEAP SIZE FOR OPENJDK APPLICATION ON RHEL

You can configure OpenJDK to use a customized heap size.

Procedure

- Add the maximum heap size option to the **java** command when running your application. For example, to set the maximum heap size to 100 megabytes, use the **-Xmx100m** option:

```
$ java -Xmx100m <your_application_name>
```

Additional resources

- For more information about the **Xmx** option, see **-Xmxsize** in the Java documentation.

Revised on 2022-03-22 17:36:21 UTC