



## OpenJDK 8

### Configuring OpenJDK 8 for RHEL





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## Abstract

OpenJDK is a Red Hat offering on the Red Hat Enterprise Linux platform. The Configuring OpenJDK 8 on RHEL guide provides an overview of this product and explains how to configure the software.

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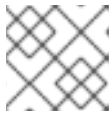
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# CHAPTER 1. INTERACTIVELY SELECTING A SYSTEM-WIDE OPENJDK VERSION ON RHEL

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 an 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           1:1.8.0.242.b08-0.el8_1           @rhel-8-
appstream-rpms
java-1.8.0-openjdk-headless.x86_64 1:1.8.0.242.b08-0.el8_1           @rhel-8-
appstream-rpms
java-11-openjdk.x86_64             1:11.0.6.10-0.el8_1              @rhel-8-
appstream-rpms
java-11-openjdk-headless.x86_64    1:11.0.6.10-0.el8_1              @rhel-8-
appstream-rpms
javapackages-filesystem.noarch     5.3.0-1.module+el8+2447+6f56d9a6 @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 2 programs which provide 'java'.

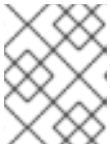
Selection  Command
-----
*+ 1      java-1.8.0-openjdk.x86_64 (/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.242.b08-
0.el8_1.x86_64/jre/bin/java)
  2      java-11-openjdk.x86_64 (/usr/lib/jvm/java-11-openjdk-11.0.6.10-
0.el8_1.x86_64/bin/java)
```

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 "1.8.0_242"
OpenJDK Runtime Environment (build 1.8.0_242-b08)
OpenJDK 64-Bit Server VM (build 25.242-b08, mixed mode)
```



#### 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 the **Java**, 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 an 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 8, use `java-1.8.0-openjdk`.

```
# PKG_NAME=java-1.8.0-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 "1.8.0_242"
OpenJDK Runtime Environment (build 1.8.0_242-b08)
OpenJDK 64-Bit Server VM (build 25.242-b08, mixed mode)
```



### NOTE

A similar approach can be followed for **javac**.

## 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-8` was installed using **yum**:  
**\$ JAVA\_HOME=/usr/lib/jvm/java-8-openjdk**



#### NOTE

The symbolic link `java-8-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: 1.8.0_242, vendor: Oracle Corporation, runtime: /usr/lib/jvm/java-1.8.0-
openjdk-1.8.0.242.b08-0.el8_1.x86_64/jre
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "4.18.0-147.3.1.el8_1.x86_64", arch: "amd64", family: "unix"
```

- Launch the application specifying the **JAVA\_HOME** variable:

```
$ JAVA_HOME=/usr/lib/jvm/java-8-openjdk mvn --version

Apache Maven 3.5.4 (Red Hat 3.5.4-5)
Maven home: /usr/share/maven
Java version: 1.8.0_242, vendor: Oracle Corporation, runtime: /usr/lib/jvm/java-8-
openjdk-1.8.0.242.b08-0.el8_1.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.4.12-200.el8_1.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 8, 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/jdk-1.8.0**
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/jdk-1.8.0
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/jdk-1.8.0
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/jdk-1.8.0/bin:\$PATH"**

### Additional resources

- For more information about the exact meaning of **JAVA\_HOME**, 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](#).