Liberica JDK 8u513+5
Installation Guide

Liberica JDK
8u513
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bellsoft

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1. Introduction

This guide describes how to install the Liberica product on Microsoft Windows, Linux, and macOS computers. The type of installation you choose depends on your requirements and the platform you use.

There are several Liberica distribution variants:

- JDK Standard — use it to run, compile, and debug applications;
- JDK Full — includes LibericaFX and an extended set of VMs;
- JDK Lite — install it if you are looking for a smaller footprint, yet fully functional JDK;
- JRE Standard — use it to run Java applications;
- JRE Full — includes LibericaFX and an extended set of VMs.

Some Liberica JDK 8 distributions are also available with the following additional API and components:

- Liberica JDK Performance Edition
- Liberica JDK with OpenWebStart

You can download Liberica from either the Liberica JDK Download Center or, as a support-plan customer, via a link on the support portal. After you log in to the support portal, you can see a direct link to the version of Liberica product you requested under Technologies. If you use the Liberica Download Center page, scroll down and select the OS, package type, and the distribution variant (JDK/JRE). After the download is completed, you can verify the downloaded file by comparing its size on your drive to the size on the Downloads page.

You can also use the command line to download the necessary installation packages as described further in this document.

Choose the OS below for specific installation instructions. Note that Liberica JDK is used for all examples below, but you can substitute it with Liberica JRE if necessary.

> **Note:**
>
> The installer screens are provided for information purpose only and may vary in different releases.

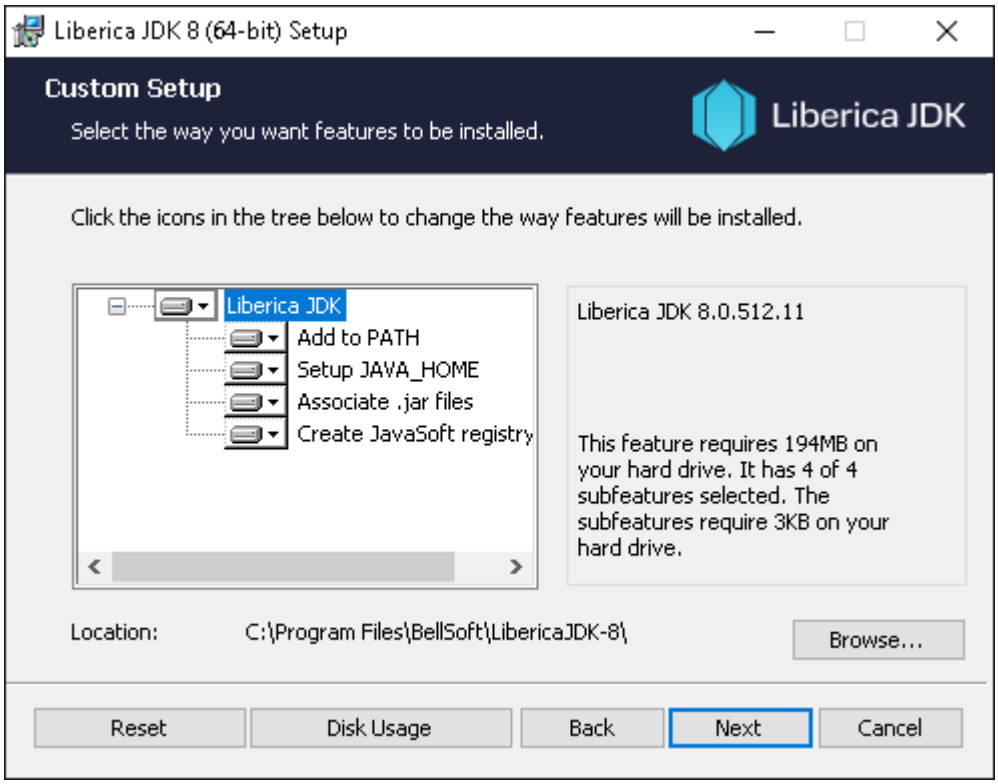
- Microsoft Windows
- Apple macOS
- Linux
- Solaris
- Troubleshooting

2. Microsoft Windows

Installing Liberica JDK using .msi file

Interactive mode

1. Double-click the Windows installation file you downloaded to run the installer. This opens the Liberica JDK Setup Wizard.
2. Click 'Next' on the **Welcome** screen.
3. In the **Custom Setup** window, choose the features you need. Select a feature to see its description. In most cases, you can use the default setup. Click **Disk Usage** to see the available and required space on your disk. Click 'Next'.



4. The package is ready to install, press 'Install'. If you see the User Account Control warning, verify

the publisher (BELLSOFT) and click **Yes**.

5. After the installation is complete, click 'Finish' to quit the Liberica JDK Setup Wizard.

Silent installation using .msi file

If you want to install Liberica JDK silently without any user interaction, open the command line and run the following command:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64.msi /qn /quiet /norestart /l*v
"Liberica_install.log"
```

Where

- `/i` - install the specified software;
- `/qn` - no UI;
- `/quiet` - quiet mode without any user interaction;
- `/norestart` - does not restart the computer after the installation is complete;
- `/l*v "Liberica_install.log"` - verbose logging of all messages to the specified log file.

For the list of installation flags and options, run `msiexec /help` from the command line.

> **Note:**
>
> Use an administrator account to run the installation in silent mode.

.msi installation command line options

To specify the installation directory from the command line, use the `INSTALLDIR` property:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64.msi
INSTALLDIR="C:\LibericaJDK\JDK8u513"
```

The Windows Installer provides several properties to directly control the features you install. The following are the most useful properties listed in order of precedence:

Feature	Description
`ADDLOCAL`	List of features to install
`REMOVE`	List of features to uninstall
`ADDDEFAULT`	List of features to set to their default state
`REINSTALL`	List of features to repair

You can provide the list of features on the command-line as follows:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64.msi ADDLOCAL=FeatureA1;FeatureB
REMOVE=FeatureC ADDDEFAULT=FeatureD REINSTALL=FeatureE;FeatureF
```

You can also use the keyword `ALL` to indicate all features. For example, the following command installs all the features in the MSI package:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64.msi ADDLOCAL=ALL
```

Keep in mind that properties lower in the list overwrite the items higher in the list. Thus, in the following command, all the features are set to their default state:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64.msi ADDDEFAULT=ALL
ADDLOCAL=FeatureA REMOVE=FeatureB
```

The order of the properties on the command-line is irrelevant. Because `ADDEFAULT` is later in the original list, it overwrites `ADDLOCAL` and `REMOVE`.

The names of features are case sensitive. For example, "FeatureA" is different from "featureA" and "Featurea".

Liberica JDK provides the following features that can be specified using the properties described above:

Feature	Description
`JavaWebStart`	Install Liberica OpenWebStart
`SetupPath`	Add Liberica JDK runtime to `PATH`

Feature	Description
`SetupJavaHome`	Point `JAVA_HOME` to Liberica JDK runtime
`AssociateJarFiles`	Associate .jar files with Liberica JDK runtime
`CreateJavaSoft`	Create JavaSoft registry keys

For the full list of configurable MSI CLI properties, see Windows Installer Property Reference.

OpenWebStart Proxy Configuration

If your installation package of the Liberica JDK includes OpenWebStart, you can configure the initial OpenWebStart proxy settings in the Installation Wizard. These settings can be changed later using the Liberica JDK OpenWebStart Control Panel, that you can launch either using the shortcut on the Windows Start Menu or by executing `javaws-settings` in the command line.

You can also specify the default values for the proxy configuration in the command line during the installation as follows:

```
msiexec /i bellsoft-jdk8u513+5-windows-amd64-openwebstart.msi PROXYTYPE=0
```

Command line properties related to OpenWebStart proxy configuration are listed in the following table:

Property	Description
`PROXYTYPE`	Specify a proxy type. Allowed values are: • `0` - no proxy • `1` - manual proxy configuration • `2` - automatic proxy configuration • `4` - use system proxy (the default value)

Property	Description
`SAMEPROXY`	Set to `true` to use the same proxy for all protocols; set to `false` to use specific addresses for each protocol (HTTP, HTTPS, FTP, SOCKS); default value is `true`.
`PACURL`	Set the URL address for automatic proxy configuration.
`PROXYADDRESS`	Specify the address for HTTP proxy; used for all protocols if `SAMEPROXY=true`.
`PROXYPORT`	HTTP proxy port; used for all protocols if `SAMEPROXY=true`
`HTTPSPROXYADDRESS`	HTTPS proxy address.
`HTTPSPROXYPORT`	HTTPS proxy port.
`FTPPROXYADDRESS`	FTP proxy address.
`FTPPROXYPORT`	FTP proxy port.
`SOCKSPROXYADDRESS`	SOCKS proxy address.
`SOCKSPROXYPORT`	SOCKS proxy port.

Installing a standalone package from an archive

1. To install Liberica JDK as a standalone package on your computer, download the `.zip` package file and unpack it to a folder. You can also use Windows PowerShell to download and unpack the zip file as follows:

   ```
   Invoke-WebRequest "https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-windows-amd64.zip"
   Expand-Archive bellsoft-jdk8u513+5-windows-amd64.zip -DestinationPath .
   ```

   The commands above download the archive from the BELLSOFT public domain and unpack

Liberica JDK to the current directory. If you are a support-plan customer, log in to the support portal, copy the link to the Liberica product under Technologies and paste this link to the `Invoke-WebRequest` command above.

2. Add `<Liberica JDK installation dir>/bin` subdirectory to the PATH and `<Liberica JDK installation dir>` to the JAVA_HOME environment variables as follows.

   a. On the desktop or in File Explorer, right-click the Computer icon (This PC) and choose **Properties** on the context menu.

   b. Click **Advanced system settings**.

   c. Click **Environment Variables**.

   d. Select 'Path' in **System variables** and click **Edit**.

   e. Click **New** and type the path to the `bin` subdirectory, for example:

      ```
      C:\LibericaJDK\JDK8u513\bin\
      ```

      Click **OK** when finished.

   f. Select 'JAVA_HOME' in **System variables** and click **Edit**.

   g. Delete the variable's current value and type the path to the `<Liberica JDK installation dir>` subdirectory.

      > **Note:**
      >
      > If you do not have the JAVA_HOME variable, click **New** under **System variables** and type JAVA_HOME in **Variable name** and type the path in **Variable value**.

   h. Click **OK** in open dialog boxes to save the changes and reopen Command prompt window for the changes to take effect.

To run your application, use the following command:

```
java -jar <your_application.jar>
```

Verifying your installation

To verify your installation, open a command-line interface, such as PowerShell or cmd, and run the following command:

```
java -version
```

You should see an output similar to the following:

```
openjdk version "1.8.0_513"
OpenJDK Runtime Environment (build 1.8.0_513-b05)
OpenJDK 64-Bit Server VM (build 25.513-b05, mixed mode)
```

Uninstalling Liberica JDK

Windows installer

If you installed Liberica JDK using Windows installation file (.msi), use the following procedure:

1. From the Windows **Control Panel**, open **Programs** > **Programs and Features** and select Liberica package you want to remove.
2. Click **Uninstall**.

Standalone package

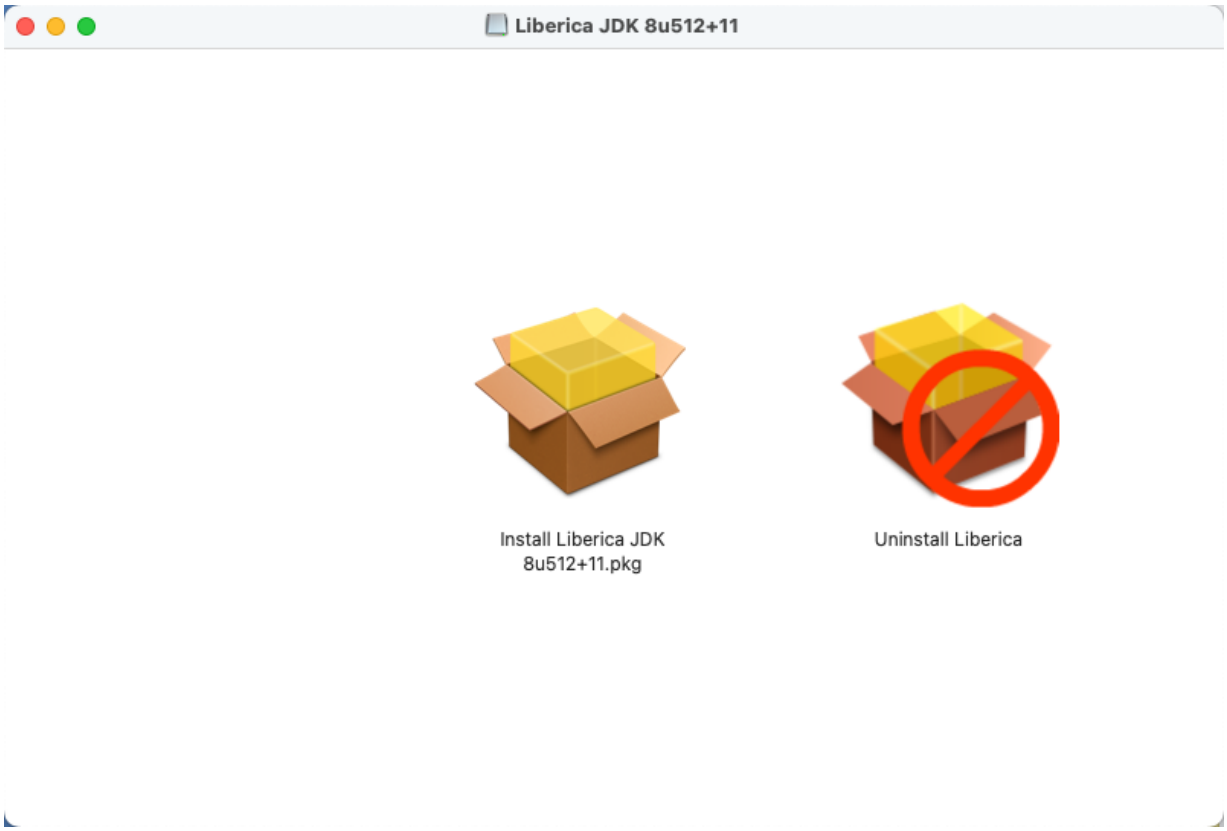
To uninstall a standalone Liberica JDK package, remove its directory and related environmental variables in the **Environment Variables** dialog box.

3. Apple macOS

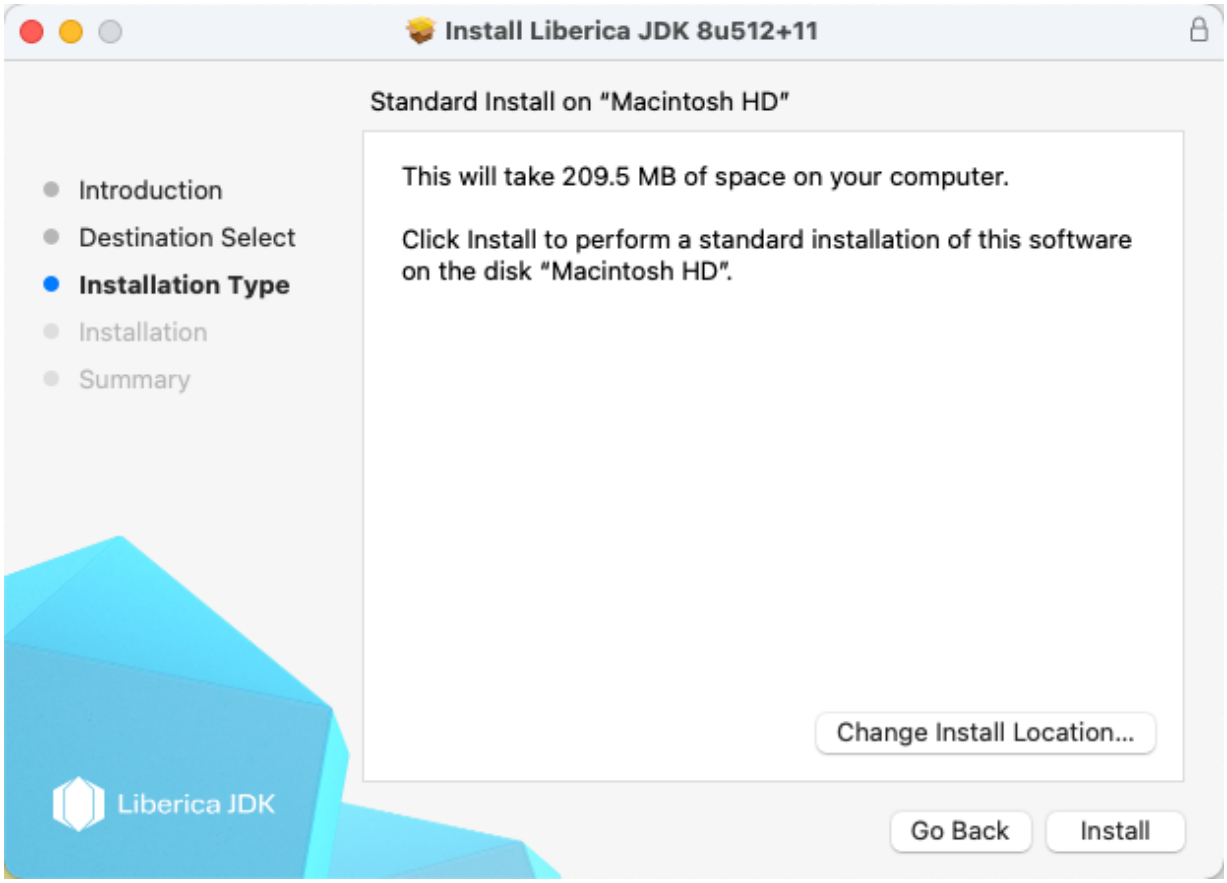
Installing Liberica JDK

To install Liberica JDK, perform the following:

1. Run the installer by double-clicking the `.dmg` file you downloaded.
2. Double-click the **Install Liberica JDK 8u513+5.pkg** icon to run the installation wizard.



3. Click Continue on the Welcome screen.
4. Click 'Install' to proceed with the default location.



Optionally, you can change the installation location by clicking **Change Install Location** (if available) on the **Installation Type** screen and selecting the location to install Liberica JDK.

If you chose to change the installation location, select the destination drive and click 'Continue'.

5. Confirm new software installation. The file copying starts immediately.

6. Observe the installation progress.
7. Once the installation is complete, click 'Close' to quit the installation wizard.

Installing a standalone package from an archive

To install Liberica JDK as a standalone package, download the `.zip` file and unpack it as in the following example.

```
wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-macos-amd64.zip
unzip bellsoft-jdk8u513+5-macos-amd64.zip
```

The commands above download the archive from the BELLSOFT public domain and unpack Liberica JDK to the current directory. If you are a support-plan customer, log in to the support portal, copy the link to the Liberica product under Technologies and paste this link to the `wget` command above.

Include the path to the `<Liberica installation dir>/bin` subdirectory when running your Java application as in the following example:

```
/Library/Java/JavaVirtualMachines/liberica-jdk-8.jdk/bin/java -jar <your_application.jar>
```

You can add the `<Liberica installation dir>/bin` subdirectory to the $PATH and `<Liberica installation dir>` to the JAVA_HOME environment variables for the current terminal session if

necessary

```
export PATH=<Liberica installation dir>/bin:$PATH
export JAVA_HOME=<Liberica installation dir>
```

and run Liberica JDK as follows.

```
java -jar <your_application.jar>
```

Verifying your installation

To verify your installation, open the terminal and run the following command:

```
java -version
```

You should see an output similar to the following:

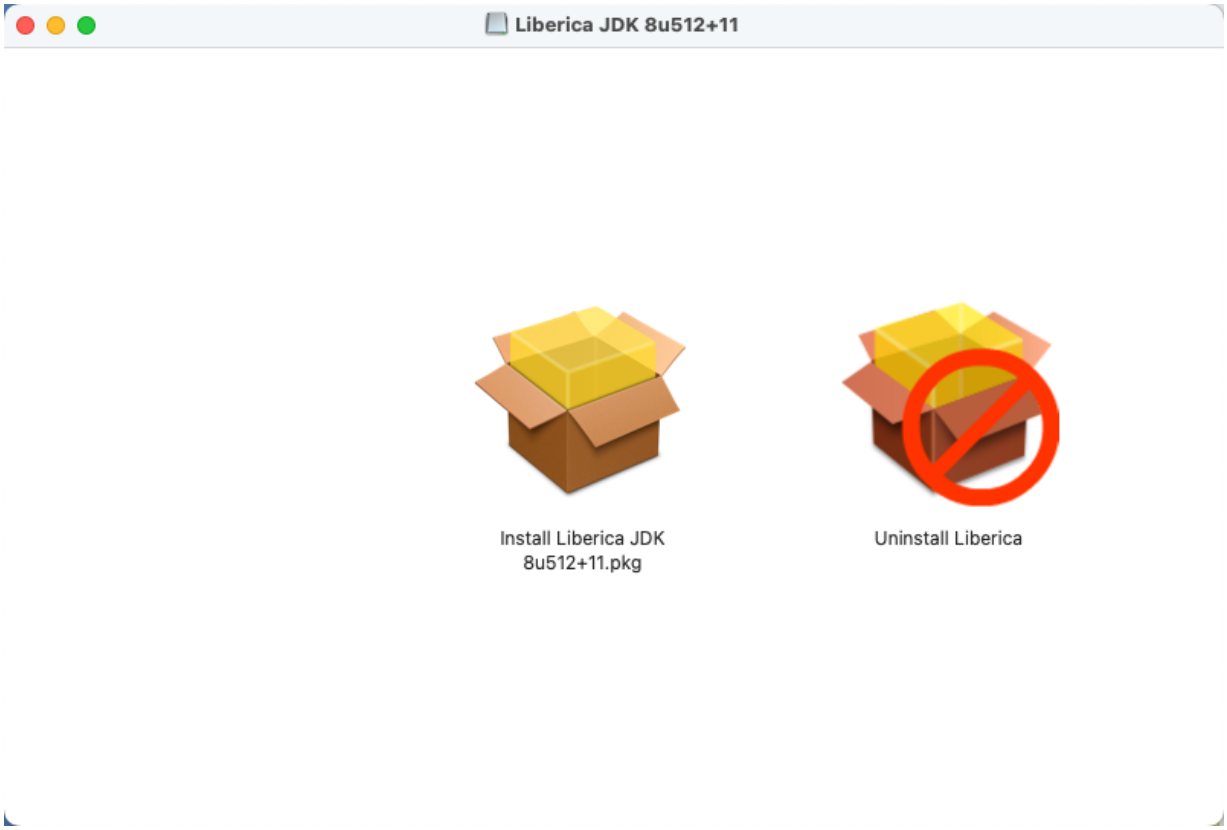
```
openjdk version "1.8.0_513"
OpenJDK Runtime Environment (build 1.8.0_513-b05)
OpenJDK 64-Bit Server VM (build 25.513-b05, mixed mode)
```

Uninstalling Liberica JDK

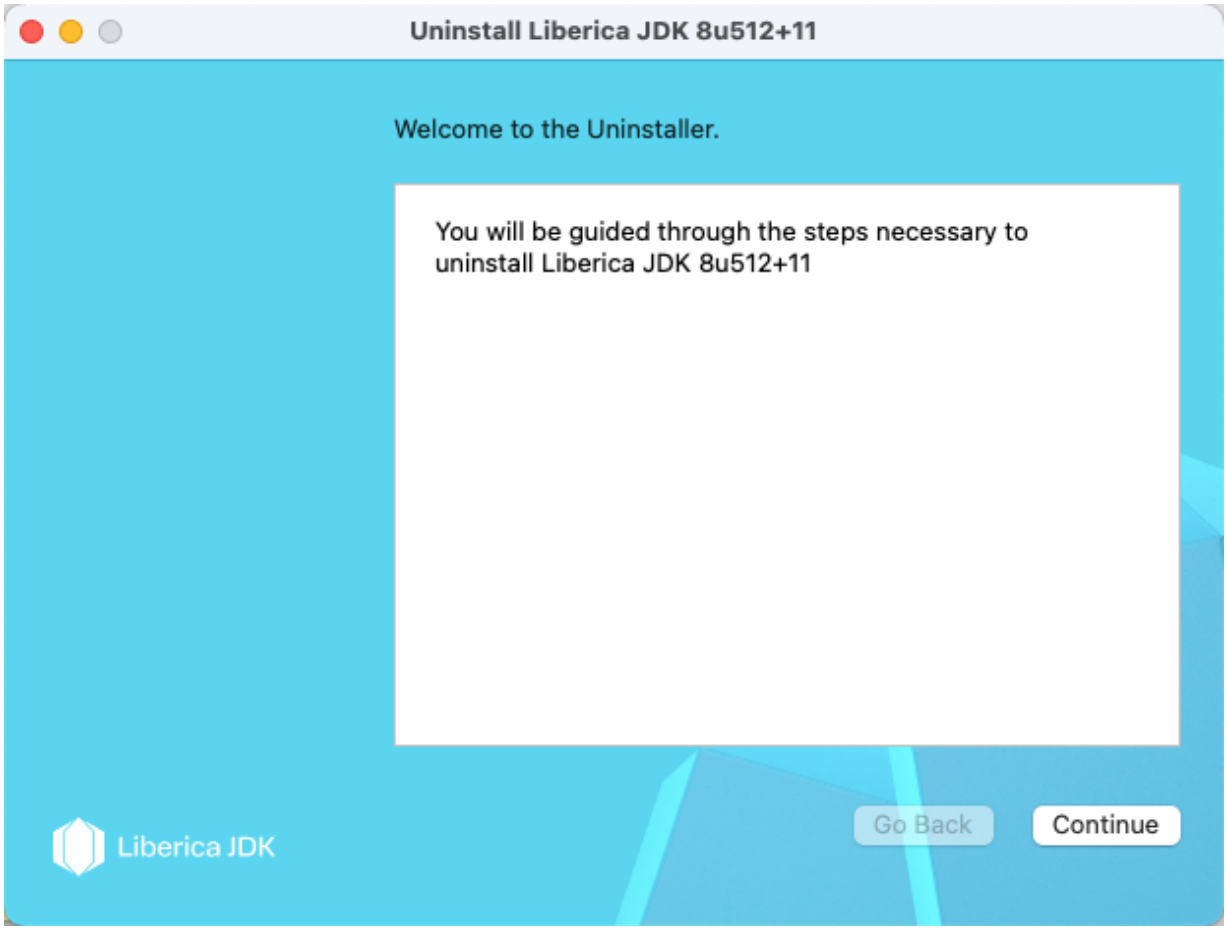
Package installer

To uninstall Liberica JDK using the package installer, perform the following:

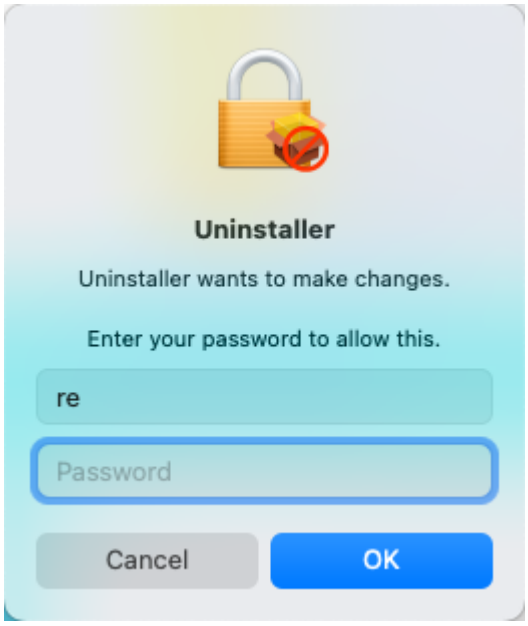
1. Run the installer by double-clicking the `.dmg` file you downloaded.
2. Double-click the **Uninstall Liberica** icon.



3. Click **Continue** on the Welcome screen.



4. Select the Liberica installation you want to remove and click **Continue**.
5. Provide authentication information if necessary and click **OK**.



Once the uninstallation is completed, click **Exit** to quit the wizard.

Command line

To uninstall Liberica application using the Terminal, do the following (assuming that you installed Liberica using the default location on the boot volume (/)).

- To uninstall Liberica JRE, run the following commands in the terminal:

```
sudo pkgutil --volume / --forget com.bell-sw.liberica.jre8
sudo rm -rf /Library/Java/JavaVirtualMachines/liberica-jre-8.jre
```

- To uninstall Liberica JDK, run the following commands in the terminal:

```
sudo pkgutil --volume / --forget com.bell-sw.liberica.jdk8
sudo rm -rf /Library/Java/JavaVirtualMachines/liberica-jdk-8.jdk
```

> **Note:**
>
> For Liberica JDK lite or full versions add `-lite` or `-full` respectively to the name, such as `liberica-jdk-8-full.jdk`.

Standalone package

To uninstall a standalone Liberica JDK package, remove its directory. Related environment variables set with the `export` command are only valid for the current terminal session and they are removed once you close the terminal.

4. Linux

On most Linux versions, you can install new software using a repository, which is a storage location hosted on remote servers from which the system retrieves and installs software and updates. If the repository is not available or due to some other considerations, you can download and install new software manually.

Installing from repository

Alpine Linux Repository

To install Liberica JDK, perform the following.

1. Set up the repository.

   ```
   echo "https://apk.bell-sw.com/main" | sudo tee -a /etc/apk/repositories
   sudo wget -P /etc/apk/keys/ https://apk.bell-sw.com/info@bell-sw.com-
   5fea454e.rsa.pub
   ```

   > **Note:**
   >
   > sudo command may require entering administrator password.

2. Install packages.

   ```
   apk add bellsoft-java8
   ```

The following packages are available:

- bellsoft-java8 contains the optimal build for most desktops/servers;
- bellsoft-java8-lite includes Liberica JDK with compressed modules and Server VM, without any extra packages;
- bellsoft-java8-runtime includes Liberica JRE only.

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

APT Repository (.deb-based Linux distributions)

To install Liberica JDK, perform the following.

1. Add BELLSOFT official GPG key and set up the repository. Adding the GPG key is required only once on a computer.

   If you are running an Ubuntu prior to version 20, use the following command:

   ```
   wget -q -O - https://download.bell-sw.com/pki/GPG-KEY-bellsoft | sudo apt-key add -
   echo "deb https://apt.bell-sw.com/ stable main" | sudo tee /etc/apt/sources.list.d/bellsoft.list
   ```

   If you are running an Ubuntu version 20 or later, perform the following:

   a. For versions prior to Debian 12 and Ubuntu 22.04, first create a directory.

      ```
      mkdir -m 0755 -p /etc/apt/keyrings/
      ```

   b. Add the key.

      ```
      wget -q -O - https://download.bell-sw.com/pki/GPG-KEY-bellsoft | gpg --dearmor | sudo tee /etc/apt/keyrings/GPG-KEY-bellsoft.gpg > /dev/null
      echo "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/GPG-KEY-bellsoft.gpg] https://apt.bell-sw.com/ stable main" | sudo tee /etc/apt/sources.list.d/bellsoft.list
      ```

      > **Important:**
      >
      > If you are installing Liberica JDK in a container, make sure all necessary tools are added to your container image, such as GPG, Wget, and so on. For example, to install GPG, run the following command: `sudo apt-get install gpg`.

   Liberica JDK repositories contain all Linux architectures supported in the release: amd64, i386, arm64, armhf, ppc64le.

2. Update repositories and install packages. Type `Y` if a warning message about the installed packages appears.

```
sudo apt-get update
sudo apt-get install bellsoft-java8
```

The following packages are available:

- bellsoft-java8 contains the optimal build for most desktops/servers;
- bellsoft-java8-lite includes Liberica JDK with compressed modules and Server VM, without any extra packages;
- bellsoft-java8-full contains the full Liberica JDK, including LibericaFX and a variety of JVMs for platforms which support it;
- bellsoft-java8-runtime includes Liberica JRE only;
- bellsoft-java8-runtime-full contains the full Liberica JRE, including LibericaFX.

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

YUM Repository (.rpm-based Linux Distributions)

To install Liberica JDK, perform the following.

1. Set up the repository.

   ```
   echo | sudo tee /etc/yum.repos.d/bellsoft.repo > /dev/null << EOF
   [BELLSOFT]
   name=BELLSOFT Repository
   baseurl=https://yum.bell-sw.com
   enabled=1
   gpgcheck=1
   gpgkey=https://download.bell-sw.com/pki/GPG-KEY-bellsoft
   priority=1
   EOF
   ```

   Liberica JDK repositories contain all Linux architectures supported in the release.

2. Install packages.

   ```
   sudo yum install bellsoft-java8
   ```

The following packages are available:

- bellsoft-java8 contains the optimal build for most desktops/servers;

- bellsoft-java8-lite includes Liberica JDK with compressed modules and Server VM, without any extra packages;
- bellsoft-java8-full contains the full Liberica JDK, including LibericaFX and a variety of JVMs for platforms which support it;
- bellsoft-java8-runtime includes Liberica JRE only;
- bellsoft-java8-runtime-full contains the full Liberica JRE, including LibericaFX.

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

YaST/Zypper Repository (SUSE Linux)

To install Liberica JDK, perform the following.

1. Set up the repository.

   ```
   echo | sudo tee /etc/zypp/repos.d/repo-bellsoft.repo > /dev/null << EOF
   [BELLSOFT]
   name=BELLSOFT Repository
   baseurl=https://yum.bell-sw.com
   enabled=1
   gpgcheck=1
   gpgkey=https://download.bell-sw.com/pki/GPG-KEY-bellsoft
   priority=1
   EOF
   ```

2. Update repositories and install packages.

   ```
   sudo zypper up
   sudo zypper in bellsoft-java8
   ```

The following packages are available:

- bellsoft-java8 contains the optimal build for most desktops/servers;
- bellsoft-java8-lite includes Liberica JDK with compressed modules and Server VM, without any extra packages;
- bellsoft-java8-full contains the full Liberica JDK, including LibericaFX and a variety of JVMs for platforms which support it;
- bellsoft-java8-runtime includes Liberica JRE only;

- bellsoft-java8-runtime-full contains the full Liberica JRE, including LibericaFX.

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

Manual installation

The terminal commands in the examples below download an installation package from the BELLSOFT public domain. If you are a support-plan customer, log in to the support portal, copy the link to the Liberica product under Technologies and paste this link to the `wget` command.

Alpine Linux

To install Liberica JDK, download the .apk package and install it with the following commands in the terminal.

1. Download the .apk package with the following command in the terminal.

   ```
   wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-linux-x64-musl.apk
   ```

   Or open the downloads page in the browser, scroll down, and download the required package.

2. Install the BELLSOFT official key as in the following example.

   ```
   sudo wget -P /etc/apk/keys/ https://apk.bell-sw.com/info@bell-sw.com-5fea454e.rsa.pub
   ```

3. Install this package with the following command.

   ```
   apk add bellsoft-jdk8u513+5-linux-x64-musl.apk
   ```

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

Ubuntu and other DEB-based OS's

To install Liberica JDK, download the .deb package and install it with the following command in the terminal.

```
wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-linux-amd64.deb
sudo apt install ./bellsoft-jdk8u513+5-linux-amd64.deb
```

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

This command automatically picks LibericaFX or DeviceIO dependencies if compiled into the JDK.

Red Hat Linux and other RPM-based OS's

To install Liberica JDK, download the .rpm package and run the rpm tool as in the following example.

```
wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-linux-amd64.rpm
sudo yum install ./bellsoft-jdk8u513+5-linux-amd64.rpm
```

The commands above install Liberica JDK 8 package, including LibericaFX.

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

This command automatically picks LibericaFX or DeviceIO dependencies when compiled into the JDK.

Manual RPM installation

1. Obtain BELLSOFT official GPG key and then import it as in the following example. Adding the GPG key is required only once on a computer.

   ```
   wget https://download.bell-sw.com/pki/GPG-KEY-bellsoft
   sudo rpm --import ./GPG-KEY-bellsoft
   ```

2. Download a package using the 'wget' command and install it as follows in the terminal.

   ```
   wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-linux-amd64.rpm
   sudo rpm --install bellsoft-jdk8u513+5-linux-amd64.rpm
   ```

To use Liberica JDK, run the following command.

```
java -jar <your_application.jar>
```

Installing a standalone JDK package on GNU/Linux from archive

To install Liberica JDK, download the .tar.gz package and unpack it as follows.

```
wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-linux-amd64.tar.gz
tar -zxf bellsoft-jdk8u513+5-linux-amd64.tar.gz
```

The commands above unpack Liberica JDK to the current directory. To run your Java application, use the following command:

```
<Liberica installation dir>/bin/java -jar <your_application.jar>
```

You can add the `<Liberica installation dir>/bin` subdirectory to $PATH and `<Liberica installation dir>` to JAVA_HOME for the current terminal session if necessary.

```
export PATH=<Liberica installation dir>/bin:$PATH
export JAVA_HOME=<Liberica installation dir>
```

After that, run your Java application as follows.

```
java -jar <your_application.jar>
```

Verifying your installation

To verify your installation, open a command-line interface and run the following command.

```
java -version
```

You should see an output similar to the following:

```
openjdk version "1.8.0_513"
OpenJDK Runtime Environment (build 1.8.0_513+b05)
OpenJDK 64-Bit Server VM (build 25.513+b05, mixed mode)
```

Uninstalling Liberica JDK

Alpine Linux

Run the following command.

```
sudo apk del <bellsoft-package-name>
```

Ubuntu and other DEB-based OS's

Run the following command.

```
sudo apt remove <bellsoft-package-name>
```

Red Hat Linux and other RPM-based OS's

Run the following command.

```
sudo yum remove <bellsoft-package-name>
```

Removing manually installed standalone packages

To uninstall a standalone Liberica JDK package, remove its directory. Related environment variables set with the `export` command are only valid for the current terminal session, and they are removed once you close the terminal.

5. Solaris

Installing standalone package on Solaris

To install Liberica JDK, download the .tar.gz package and unpack it as follows.

```
wget https://download.bell-sw.com/java/8u513+5/bellsoft-jdk8u513+5-solaris-
x64.tar.gz
tar -zxf bellsoft-jdk8u513+5-solaris-x64.tar.gz
```

The commands above unpack Liberica JDK to the current directory. To run your Java application, use the following command.

```
<Liberica installation dir>/bin/java -jar <your_application.jar>
```

Uninstalling standalone package

To uninstall Liberica JDK, remove its directory.

6. Verifying downloaded files

It is a good practice to verify the downloaded installation file by comparing its size on your drive to the size on the Downloads page.

A more advanced approach is to obtain the checksum of the downloaded file in a command-line interface and compare it to the one you can find next to the Liberica JDK link on the Downloads page. Check the OS-specific commands below.

Windows

To get the checksum of the downloaded file in the command-line, run the following command in Windows PowerShell. To run PowerShell, open the **Start** menu or press the Windows key + R, type powershell in the **Run** dialog box, and click **OK**.

```
(Get-FileHash .\bellsoft-jdk8u513+5-windows-amd64.msi -Algorithm SHA1).Hash
```

Apple macOS

To get the checksum of the downloaded file, use the following command.

```
shasum -a 1 bellsoft-jdk8u513+5-macos-amd64.dmg
```

Linux

To get the checksum of the downloaded file, use the following command. The installation file extension depends on the Linux version.

```
shasum -a 1 bellsoft-jdk8u513+5-linux-amd64.apk
```

7. Troubleshooting

This segment provides instructions to resolve some of the most common installation issues.

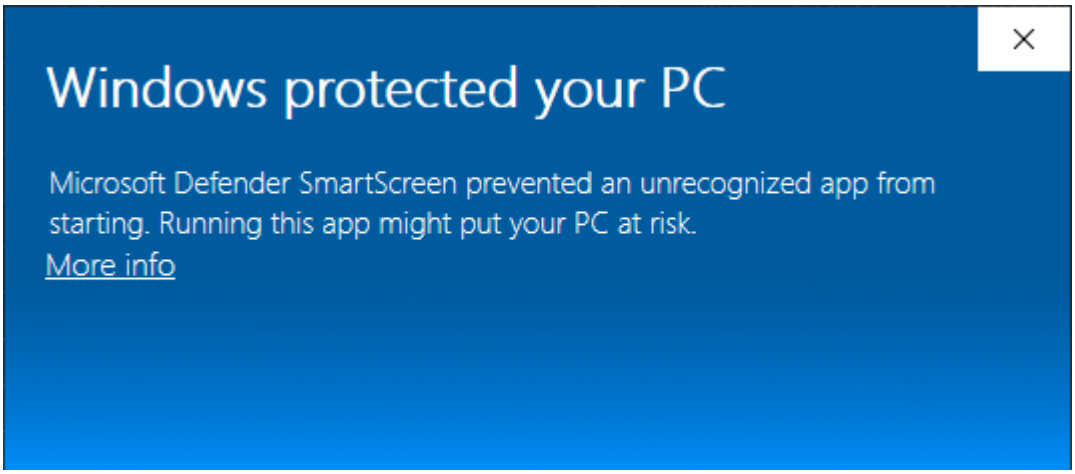
Checking system requirements

The JDK code can run on a number of platforms, using different compilers and build tools. We recommend checking your system compatibility and requirements on the Supported System Configurations page before installing Liberica product.

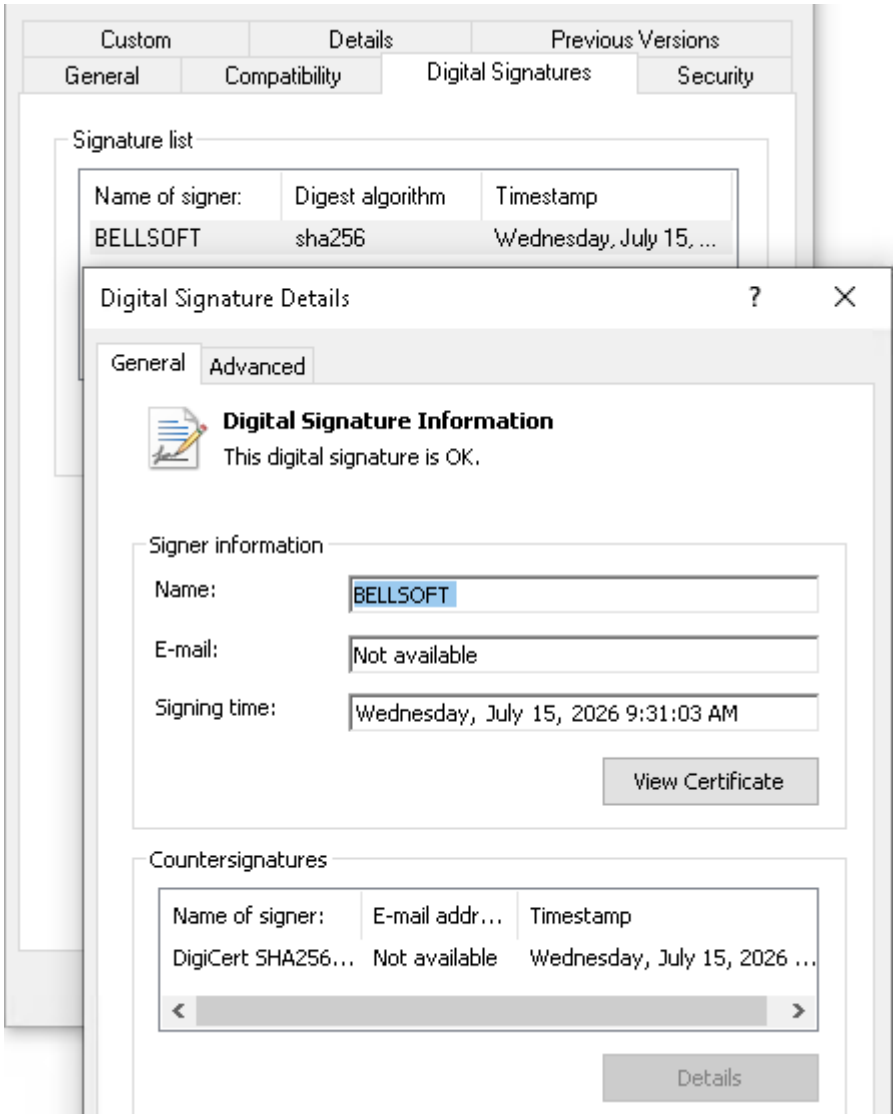
Microsoft Defender SmartScreen warnings

To ensure the security of the user's computer, Microsoft Defender SmartScreen sometimes prevents running the downloaded files and triggers warnings while installing software.

If Microsoft Defender SmartScreen prevents installing the Liberica product and shows a message similar to the one below, follow the instructions in this section.



1. Verify the downloaded Liberica installation file as described in Verifying downloaded files.
2. Ensure that the installation file is signed by BELLSOFT by checking the details of the **Digital Signatures** in the Liberica installation file **Properties**.



3. Depending on the verification results, do the following:
   - If the size and checksum of the downloaded file matches those on the Downloads page and the file is signed by BELLSOFT, click **More info** on the Microsoft Defender SmartScreen window and then click **Run anyway**.
   - If any of the verified information is not correct, delete the file and download the Liberica installation file again.

Browser warnings

If your browser prevents saving the downloaded Liberica installation file, click the **Downloads** icon and either click **Keep** or click **More actions** next to the downloaded file and, depending on the browser,

select **Keep** or **Download** to save the file.

Silent installation on Windows

If after running a silent installation the software is not installed, check your log file for error messages. If the log contains a message similar to the following, the issue is the lack of administrator rights of the account running the installation:

```
Error 1925. You do not have sufficient privileges to complete this installation
for all users of the machine. Log on as administrator and then retry this
installation.
```

Use administrator account for running silent installation.

Unreachable linux repositories due to outdated certificate

If you install Liberica JDK from a repository and encounter an error similar to the following:

```
Certificate verification failed: The certificate is NOT trusted. The
certificate issuer is unknown.  Could not handshake: Error in the certificate
verification.
```

Make sure your Linux distribution contains the current root and intermediate ca-certificates. You can verify this by running:

```
openssl s_client -connect download.bell-sw.com:443 -showcerts </dev/null
2>/dev/null
```

If updating the system CA bundle (ca-certificates) is not possible, you can manually install the missing certificates. For example, if your system is missing the current Sectigo certificate, install it as follows:

1. Download the certificates

   ```
   mkdir -p /tmp/sectigo-certs && cd /tmp/sectigo-certs
   wget --no-check-certificate https://sectigo.tbs-
   certificats.com/SectigoPublicServerAuthenticationCAOVR36.crt
   wget --no-check-certificate https://sectigo.tbs-
   certificats.com/SectigoPublicServerAuthenticationRootR46.crt
   ```

2. Verify that the downloaded certificates are correct:

   ```
   openssl x509 -in SectigoPublicServerAuthenticationCAOVR36.crt -noout
   ```

```
-subject

subject=C = GB, O = Sectigo Limited, CN = Sectigo Public Server
Authentication CA OV R36
openssl x509 -in SectigoPublicServerAuthenticationRootR46.crt -noout
-subject

subject=C = GB, O = Sectigo Limited, CN = Sectigo Public Server
Authentication Root R46
```

3. Install the new certificates into the operating system trust store:

```
cp -v *.crt /usr/local/share/ca-certificates/
update-ca-certificates
```

Expected output:

```
<...>
2 added, 0 removed; done.
<...>
```

4. Verify that the Sectigo root and intermediate certificates are now available in the system and that the web server's certificate chain validates successfully:

```
openssl s_client -connect download.bell-sw.com:443 </dev/null 2>/dev/null |
grep "Verify return code"

Verify return code: 0 (ok)
```

Reverting to a previous Liberica product version on Windows

> **Important:**
>
> We do not recommend installing previous versions of Liberica products, because they may contain security issues resolved in the latest release.

If you have the latest version of a Liberica product installed and need to install some previous version of exactly the same product, first uninstall the current version and after that, install the version you need.

Liberica JDK 8u513+5

Installation Guide

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