Using DCEVM and Hotswap for rapid turnaround

DCEVM and Hotswap enable rapid turnaround by allowing almost any class change to the running VM. It offers an experience very similar to JRebel for WebObjects developers. With this tool, you usually do not have to restart your application after code change.

DCEVM and Hotswap Agent for Java 17

JRE patched with the DCEVM

The Jetbrains JDK releases are unofficial but they provide JREs patched with the DCEVM. They are available at https://github.com/JetBrains /JetBrainsRuntime/releases . These instructions were tested with Release 17_0_3-b164.4, architecture osx-x64, JBR with JCEF (DCEVM), jbrsdk. They should also work with architecture osx-aarch64.

```
curl -OL https://cache-redirector.jetbrains.com/intellij-jbr/jbrsdk_jcef-17.0.3-osx-x64-b469.32.tar.gz
tar -zxf jbrsdk_jcef-17.0.3-osx-x64-b469.32.tar.gz
sudo mv jbrsdk_jcef-17.0.3-x64-b469 /Library/Java/JavaVirtualMachines/
```

Hotswap Agent

Copy the latest version of Hotswap Agent from https://github.com/HotswapProjects/HotswapAgent/releases

```
curl -OL https://github.com/HotswapProjects/HotswapAgent/releases/download/1.4.2-SNAPSHOT/hotswap-agent-1.4.2-
SNAPSHOT.jar
sudo mkdir /Library/Java/JavaVirtualMachines/jbrsdk_jcef-17.0.3-x64-b469/Contents/Home/lib/hotswap
sudo mv hotswap-agent-1.4.2-SNAPSHOT.jar /Library/Java/JavaVirtualMachines/jbrsdk_jcef-17.0.3-x64-b469/Contents
/Home/lib/hotswap/hotswap-agent.jar
```

Install in Eclipse 2021-09

In "Help > Eclipse Marketplace" install "Java 17 Support for Eclipse 2021-09 (4.21)" (accept default packages). This should not be needed for Eclipse 2021-12.

In "Eclipse > Preferences > Java > Installed JREs" click [Add...] (next) [MacOS X VM] (next)

   JRE Home: /Library/Java/JavaVirtualMachines/jbrsdk_jcef-17.0.3-x64-b469/Contents/Home

   JRE name: jetbrains dcevm 17

   Default VM arguments: -XX:HotswapAgent=fatjar --add-exports=java.base/sun.security.action=ALL-UNNAMED

   [Finish]

The "--add-exports" is not required for hotswap but is required to run WebObjects applications in Java 17.

Troubleshooting

a. Some versions of macOS may prevent this java from running because of security quarantining. Try removing quarantine from java folder.

```
sudo xattr -r -d com.apple.quarantine /Library/Java/JavaVirtualMachines/jbrsdk_jcef-17.0.3-x64-b469
```

b. In the "Project" menu, "Build Automatically" should be selected for hot swap to work.

DCEVM and Hotswap Agent for Java 8

Prerequisites

- A JRE patched with the DCEVM
- The Hotwsap agent to handle the WebObjects caches.

Patching the VM

DCEVM is the patch that enable the enhanced class redefinition in the VM. Download the installer for your JRE version and install the alternative VM. The patch is not always available for the latest update of the JRE, you may try the latest update available but it may not works. At the time I write this, the patch for Java 1.8 update 92 works as expected.
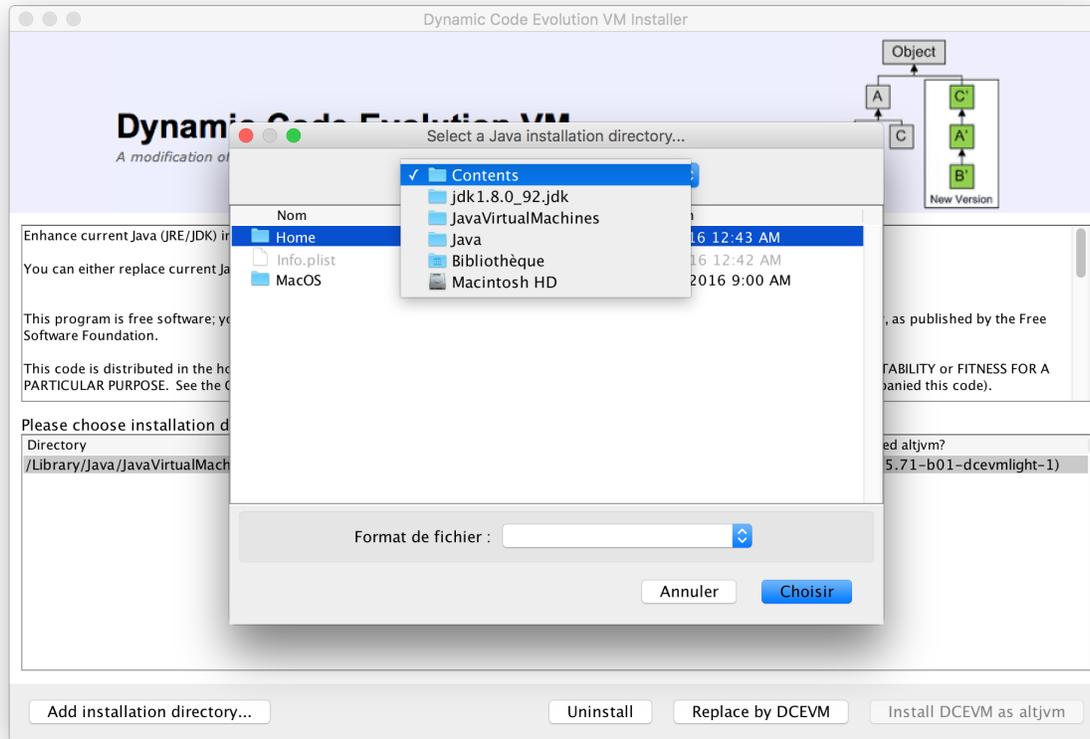
DCEVM download site: **http://dcevm.github.io**

Launch the installer as root

sudo java -jar DCEVM-light-8u92-installer.jar

(As of November 1, 2018 DCEVM-8u181-installer.jar is available)

Click "Add installation directory..." and select your JRE Home.

Click "Install DCEVM ad altvm"
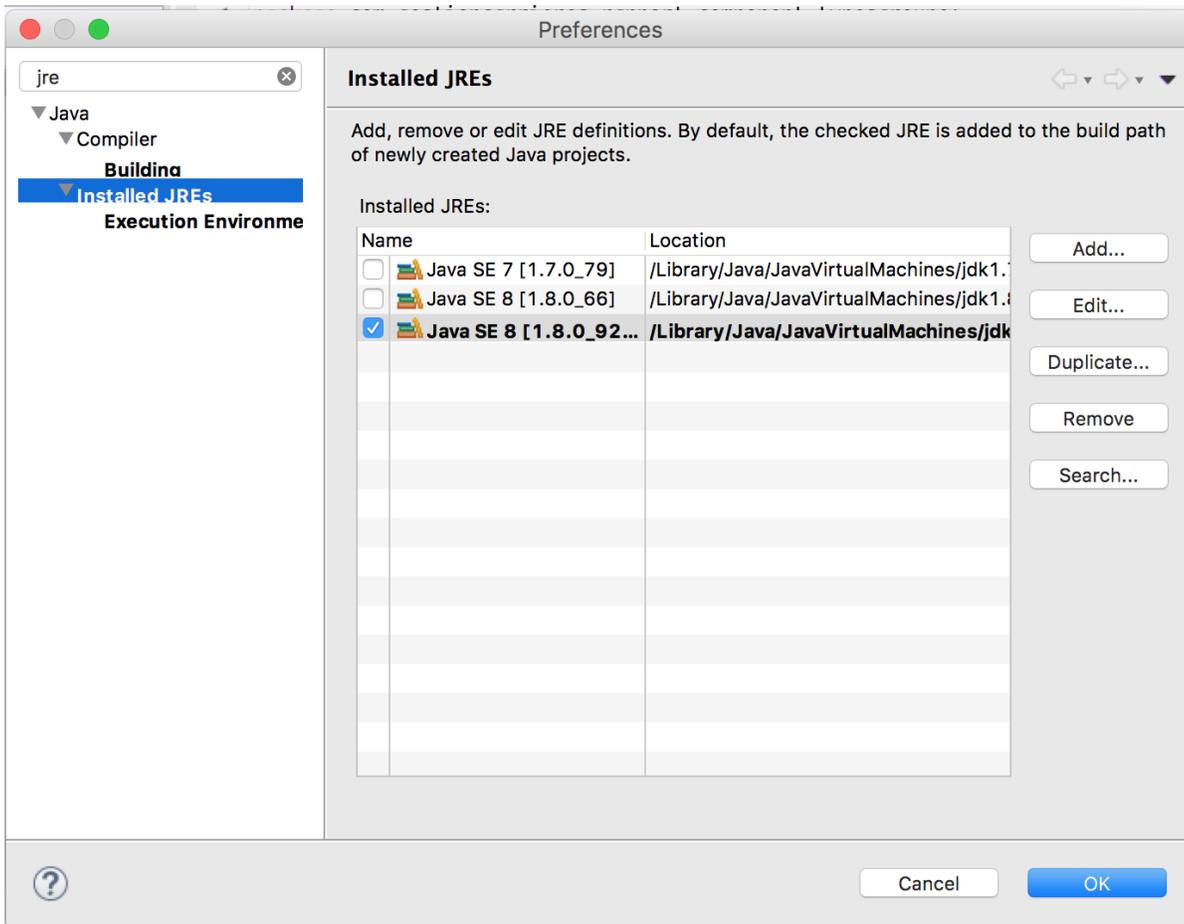
Quit the installer by closing the window.

Downloading the Hotswap agent

Hotswap agent allows plugins to react to class redefinition events. These plugins are similar to the the JRebel plugins and add frameworks specific code to make sure they handle correctly to the class changes.

Download the hot swap agent jar from https://github.com/HotswapProjects/HotswapAgent/releases to an easy to type location, you will need the location to enable it.
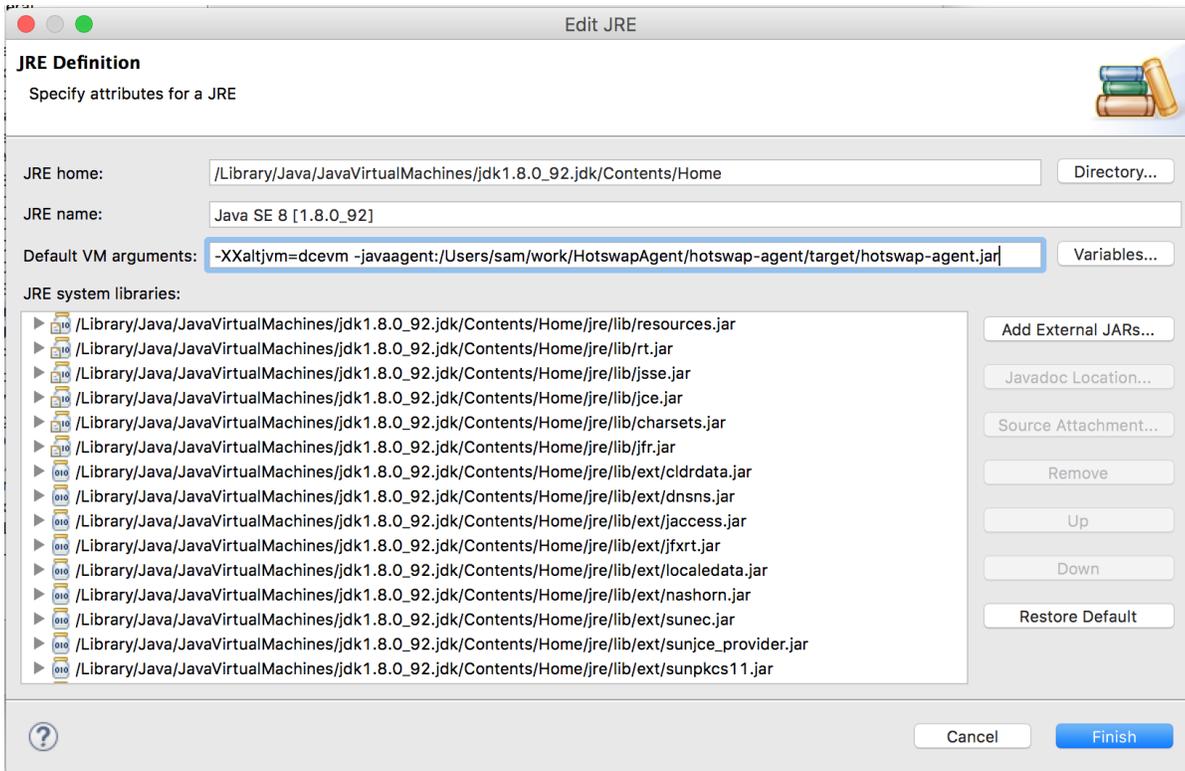
Activate the tools

To enable HotSwap for all java launches, go to Installed JREs in Eclipse Preferences, select your active JRE and click Edit...

Add the following text to the Default VM arguments:

-XXaltjvm=dcevm -javaagent:/replace_with_correct_path/hotswap-agent.jar

Close the windows and now all your launches will have DCEVM and Hotswap enabled,

If you prefer to enable per project basis, add the same arguments to the VM argument section of your project's Run configuration.

Known limitations

- Change of superclass is not supported by DCEVM.