IBM

**5.7**

**CLDC/MIDP Installation Guide for Palm OS devices**

# Contents

# Chapter 1. Introduction

## About this document

This document can help you install the **Cldc1.1** and **Midp2.0** configuration that you need to run a J9 VM executable on your Palm OS mobile device.

**Note:** This document assumes a certain level of knowledge about working with Palm OS mobile devices. For example, if you need further information on how to install files on your device, please refer to the Palm OS documentation.

## About J9 runtimes

**What is a J9 runtime?**

A complete J9 runtime consists of:

- A J9 virtual machine executable

  This is a Java™ 2 Micro Edition (J2ME™) application that is built to run on a "virtual machine" (VM) without regard to the processor or operating system of the device it is running on. By isolating the software from these considerations, it is perfectly suited to meet the unique needs of devices with an embedded environment.

- A collection of shared library files

  For each supported platform and device, an appropriate runtime environment must be created to allow the J9 application to run. Which library files must be included in your runtime environment is determined by:

  - Which processor your device uses
  - Which class library configuration(s) your operating system requires
  - Whether the runtime environment is created with command line tools or the workbench

## About J9 class libraries

**Which J9 class libraries are available for a Palm OS device?**

The following J9 class libraries are available for your Palm device:

- `jclCldc1.1 for Palm OS` is an implementation of the *J2ME Connected Limited Device Configuration 1.1* (JSR-46), based on the *Connected Limited Device Configuration 1.0* (JSR-030).
- `jclMidp2.0 for Palm` is an implementation of the *J2ME Mobile Information Device Profile 2.0* (JSR-118), based on the *Midp 1.0* specification (JSR-37).

## About PRC packages

**What is a PRC package?**

The PRC package is a collection of files packaged together to apply to the Palm OS devices.

The following installer packages are available for your device:

| Type of package | PRC name & description | Space required to Run it / Install it |
|---|---|---|
| Runtime package | *J2ME Connected Limited Device Configuration 1.1* (JSR-46)<br><br>*J2ME Mobile Information Device Profile 2.0* (JSR-118)<br><br>These runtime packages include the:<br>• J9 VM runtime<br>• Cldc 1.1/Midp 2.0 Class Libraries<br><br>The installer for the VM itself and other required components. This is required to be installed in order to run Java applications.<br><br>Filename: **J9JavaVMMidp20.prc** | |
| Developer package | j9pref.prc<br><br>The developer preferences panel must be installed in orderto debug Java applications. | |

# Chapter 2. Tasks

This chapter provides tasks for installing and removing Palm OS 5 runtime components.

## Installing Palm OS 5 runtime components

In order to begin using IBM WebSphere Everplace Micro Environment, you must first install the correct runtime components on your Palm OS 5 handheld or Palm OS 5 Simulator. The runtime components consist of PRC files, which can be found in the `prc\ARM` and `prc\IA32` directories of this distribution. For Palm OS 5devices, use the PRC files in the `prc\ARM` directory. For Simulator, use the PRC files in the `prc\IA32` directory.

The files for use on devices are:
* `J9JavaVmmidp20.prc`

  The installer for the VM itself and other required components. This is required to be installed in order to run Java applications.
* `J9pref.prc`

  The developer preferences panel. This must be installed in order to debug Java applications.

For instructions on how to install PRC files, see the documentation that came with your handheld or Simulator.

Once installed, you will see one additional application in your Launcher, MIDlet HQ. This application is the Java application management system (AMS). An additional option, IBM Java VM, will also appear in the Preferences area. You can further confirm that the installation was successful by selecting Info from the Launcher's drop-down menu. The names of the application components are:
* Palm database name
* IBM Java VM
* J9 Exchanger
* J9 Java Launcher
* J9 Java VM
* J9 MIDP Bundle
* MIDlet HQ

The next step is to install a Java application that has been packaged as a PRC file. Note that only applications that have been specifically packaged for this version of WebSphere Micro Environment will work correctly. You will find sample applications that have been correctly packaged in the samples directory of this distribution.

**Note:** `J9JavaVMMidp20.prc` is an installer application that assembles the required components from a single PRC file. Limitations in Palm HotSync prevent code segment sizes greater than 64 kB from being synchronized on or off the device. Due to this limitation the runtime components are not backed up. If you must hard reset your device, the `J9JavaVMMidp20.prc` must be manually reinstalled.

## Installing on Palm OS 5 Simulator

On the simulator you must install all PRCs in the `prc/IA32` directory. You will also need to copy `\prc\IA32\J9JavaVMMidp20.dll` to the Simulator directory (i.e., where `PalmSim.exe` resides) in order for the runtime to work correctly. Otherwise, you will receive an error message stating that the file could not load.

# Removing Palm OS 5 runtime components

Prior to removing the runtime, make sure any MIDlets downloaded over the air ("OTA")with MIDlet HQ have been deleted from the device. If MIDlets are still present in theMIDlet HQ, they cannot be removed after the runtime has been deleted. From the Palm OS launcher, select **App>Delete...** and delete the following runtime components:.

- Palm database name
- IBM Java VM
- J9 Exchanger
- J9 Java Launcher
- J9 Java VM
- J9 MIDP Bundle
- MIDlet HQ

For detailed instructions on how to remove applications, see the documentation that came with your handheld or Simulator.

# Chapter 3. J9 command options

## Common options

The following table contains common J9 v2.2 command line options.

```
J9 - VM for the Java(TM) platform, Version 2.2
(c) Copyright IBM Corp. 1991, 2004 All Rights Reserved
Target: 20040107_1222 (Windows XP 5.1 build 2600 Service Pack 1 x86)

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Usage: j9 [options] classname [args...]
Usage: j9 [options] -jxe:<jxeFile> [args...]

[options]
    -classpath <path>
    -cp <path>        set classpath to <path>.
    -jxe:<jxeFile>    run the named jxe file.
    -D<prop>=<val>    set the value of a system property.
    -debug:<options>  enable debug, JDWP standard <options>.
    -jcl:<config>[:options]
                  specify which JCL DLL to use (e.g. cdc, cldc, ...).
    -verbose[:class,gc,stack,sizes]
                  enable verbose output(default=class).
    -verify           enable class file verification.
    -X                          print help on non-standard options.
```

Refer to the following table for a more detailed description of each of these options:

| Syntax | Description |
|---|---|
| -Dprop=<val> | This command option sets the value of the system property. <br><br> For example, `-Dmy.property=some.value` sets the value of `my.property` to `some.value`. `-Dprop` sets the valueto null. <br><br> You can use multiple instances of this option by repeating the option statement separated with only a space. **Example:** <br> `j9 -Dprop1=val1 -Dprop2=val2 -Dprop3=val3` <br><br> **Note:** Spacing is important in this option's syntax. There is never a space between the initial -D, its property argument, the equals sign, or the value argument. |
| -debug:<options> | This command enables debug, **Java Debug Wire Protocol** (JDWP) standard <options> |
| -verbose[:class, :gc, :stack, :sizes] | This command option turns one of the following: <br> • `:class` displays each fully-qualified class name as it is loaded (that is, enable verbose class loading). *This is the default value.* <br> • `:gc` displays garbage collection information. <br> • `:stack` displays stack information. <br> • `:sizes` displays default VM sizes. |

| Syntax | Description |
|--------|-------------|
| -verify | This command option enables CLASS file verification. The -verify option is on by default. To disable bytecode verification specify -noverify. |
| -X | This command option prints help on non-standard options. |

## Advanced options

The following options are non-standard and subject to change without notice:

```
-Xbootclasspath:<path>     set bootstrap classpath to <path>
-Xbootclasspath/p:<path>   prepend <path> to bootstrap classpath
-Xbootclasspath/a:<path>   append <path> to bootstrap classpath


-Xrun<dll>[:options]       start JUMPI profiling


-Xint          run interpreted only (equivalent to -Xnojit -Xnoaot)
-Xnojit        disable to JIT
-Xnoaot        do not run precompiled code
-Xfuture       enable strictest checks, anticipating future default


Arguments to the following options are expressed in bytes.
Values suffixed with "k" (kilo) or "m" (mega) will be factored accordingly.
    -Xmca<x>          set RAM class segment increment to <x>
       -Xmco<x>          set ROM class segment increment to <x>
    -Xmn<x>           set new space size to <x>
    -Xms<x>           set old space size to <x>
    -Xms<x>           same as -Xms<x>
    -Xmoi<x>          set old space increment to <x>
    -Xmx<x>           set memory maximum to <x>
    -Xmr<x>           set remembered set size to <x>
    -Xmso<x>          set OS thread stack size to <x>
    -Xiss<x>          set initial java thread stack size to <x>
    -Xss<x>           set maximum java thread stack size to <x>


-Xdbg:<options>             enable debug, JDWP standard options
-Xrunjdwp:<options>         enable debug, JDWP standard options
-Xdbginfo:<symbol file path>  enable debug info server
-Xrdbginfo:<host><port>       enable remote debug info server
```

Refer to the following tables for a more detailed description of each of these options:

| Syntax | Description |
|--------|-------------|
| -Xint | This command option runs interpreted only. <br> **Note:** This is equivalent to *-Xnojit -Xnoaot.* |
| -Xnojit | This command option disables the JIT. |
| -Xgcpolicy:optthruput | This command option sets no scavenger and no concurrent mark. This is the default. |
| -Xgcpolicy:optavgpause | This command option sets scavenger and concurrent mark. |
| -Xfuture | This command option enables the strictest checks, anticipating a future default. |

Arguments to the following options are expressed in bytes (″k″ for kilo,″ m″ for mega.)

| Syntax | Description |
| --- | --- |
| -Xmca\<x> | This command line option sets the RAM class segment increment to \<x>. |
| -Xmco\<x> | This command line option sets the ROM class segment increment to \<x>. |
| -Xmn\<x> | This command line option sets the new space size to \<x>. **Note:** This sets the size of the *NewSpace* and *SurvivorSpace*. This command is only relevant if *-Xgcpolicy:optavgpause* is set. |
| -Xmnx40M\<x> | This command line option sets the maximum new space size to \<x>. |
| -Xmjit\<x> | This command line option enables the micro JIT. **Note:** The micro JIT is not enabled by default. You must explicitly enable the micro JIT on platforms that support it or J9 will run in interpreted mode only. |
| -Xms\<x> | This command line option sets the initial memory size to \<x>. **Note:** This option is the same as *-Xmo\<x>*. |
| -Xmo\<x> | This command line option sets the initial memory size to \<x>. **Note:** This option is the same as *-Xms\<x>*. |
| -Xmoi\<x> | This command line option sets the old space increment to \<x>. |
| -Xmx\<x> | This command line option sets the object memory maximum to \<x>. |
| -Xmr\<x> | This command line option sets the remembered set size to \<x>. |
| -Xmso\<x> | This command line option sets the OS thread stack size to \<x>. |
| -Xiss\<x> | This command line option sets the initial java thread stack size to \<x>. |
| -Xss\<x> | This command line option sets the maximum java thread to \<x>. |

Refer to the following table for a more detailed description of each of the debug options:

| Syntax | Description |
| --- | --- |
| -Xdbg:\<options> | This command line option enables standard Java Debug Wire Protocol (JDWP) debug options. |
| -Xrunjdwp:\<options> | This command line option enables standard JDWP debug options. **Note:** Start a JDWP server. For more information on the JDWP options, see the *Connection and Invocation Details* web site. |
| -Xdbginfo:\<symbol file path> | This command line option enables the debug info server. |
| -Xrdbginfo:\<host>:\<port> | This command line option enables the remote debug info server. |

| Syntax | Description |
| --- | --- |
| vmOption: -DLcduiHighResolution=true | This command line option enables high resolution mode. The MIDlet will be compatible on higher density displays(greater than 160 x 160 pixels) |
| vmOption: -XstdoutOnVFS. | This command line option sends debug information to the memory card. Any debug information reported by your MIDlet (i.e. standard out and standard error) will bestored on your device's SD card |

The following table shows a detailed description of the deprecated commands:

| Syntax | Description |
| --- | --- |
| -Xgc:verbose | Use the *-verbose:gc* option instead of this one. |

# Appendix. Additional information

## Further Information

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**In all other countries**, you can submit your questions on the web at:http://www-306.ibm.com/software/pervasive/support/questions.shtml

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