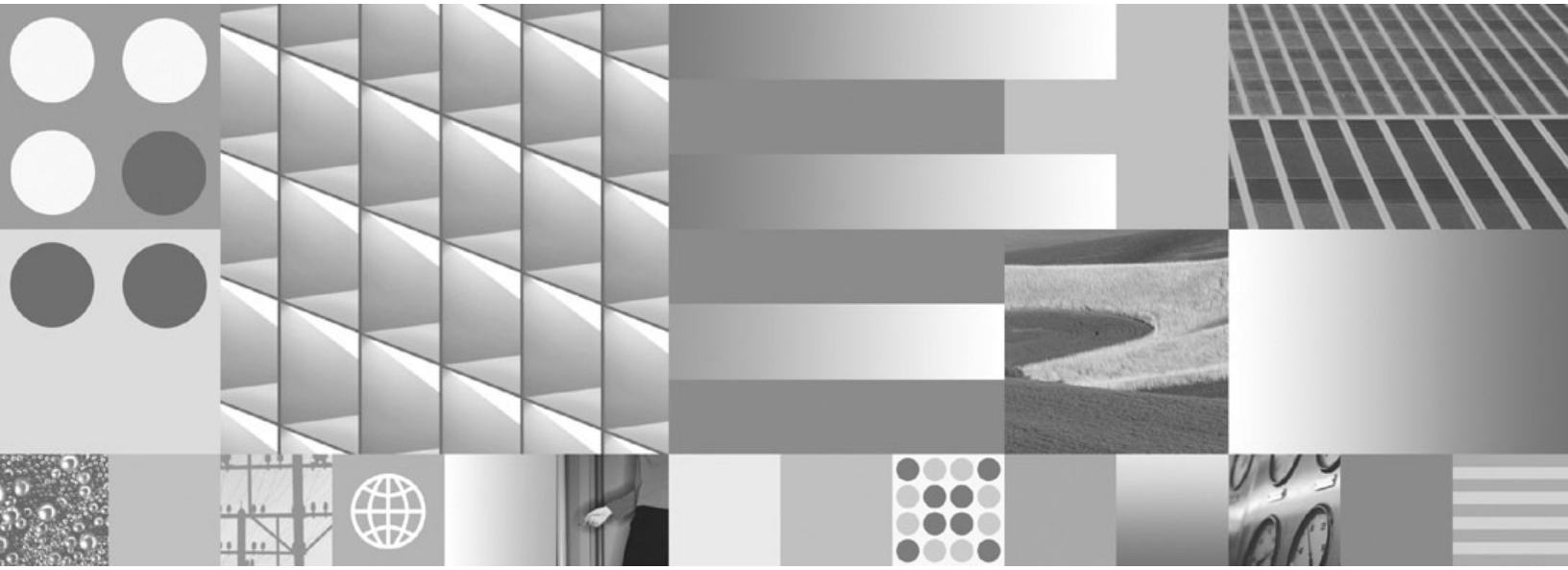
Workplace Micro Environment v5.7
Installation Guide for Sharp Zaurus Devices



Personal Profile Installation Guide For Sharp Zaurus Devices

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Chapter 1. Introduction

About this document

This document can help you install the **Personal Profile1.0** configuration that you need to run a J9 VM executable on your Sharp Zaurus mobile device.

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

About J9 runtimes

The J9 VM, the core of **WebSphere® Everyplace Micro Environment** (WEME), the IBM™ implementation of the **Java™ Virtual Machine Specification, Version 1.3**. A Java virtual machine executes machine instructions, known as bytecodes, typically compiled from Java language source code. For more on the Java Virtual Machine Specification, refer to http://java.sun.com/docs/books/vmspec/.

The J9 VM and **Java Class Libraries** (JCL) comprise the J9 runtime environment. The J9 runtime environment is **Java 2 Platform, Micro Edition** (J2ME™) compliant and contains **Connected Device Configuration** (CDC) based technologies. In addition, the **WebSphere Everyplace Custom Environment** (WECE) is a combination of the J9 VM and IBM custom libraries.

The WEME product is supported on a variety of:

- Operating systems (including Microsoft Windows, Linux, PalmOS, OSE, Rex, VxWorks, PocketPC, Symbian, QNX and Nucleus)
- Hardware architectures (including Intel x86, xScale. ARM, MIPS, SH4, and PowerPC)

WebSphere Everyplace Micro Environment is a certified Java Powered product, developed under an agreement between IBM and Sun Microsystems. Deployment of applications or devices with Workplace Client Technology requires an appropriate deployment license from IBM or one of IBM's partners.

About J9 class libraries

Which J9 class libraries are available for a Sharp Zaurus device?

This J9 class library is available for your device:

- `jclPPro10` is an implementation of the **J2ME Personal Profile 1.0** (JSR-62), based on the **CDC/Foundation Profile**.

About Installer packages

What is an installer package?

The Installer file contains the components of the IBM **Workplace Client Technology, Micro Edition** (WCTME) Personal Profile runtime for the Sharp Zaurus. Executing this file will start the InstallShield application which will guide the user through the install.

The following installer packages are available for your device:

Type of Package	File name	Component / Location	Space required to install
Runtime Package	Windows Environment - **weme-zaurus-arm-ppro10-5.7.0.exe** Linux Environment - **weme-zaurus-arm-ppro10-5.7.0.bin**	**J2ME Personal Profile 1.0** (JSR-62) This runtime package includes the: • J9 VM runtime • **Personal Profile** class libraries **Note:** An example **Personal Profile** ″Golf Tracker″ application is included and installed when you install this package.	12MB

About IPK files

What is an installer package?

The IPK file contains the components of the IBM **Workplace Client Technology, Micro Edition** (WCTME) Personal Profile runtime for the Sharp Zaurus.

Type of Package	File name	Component / Location
IPK File	weme-ppro10-zaurus_22_arm.ipk	• J9 VM - /home/QtPalmtop/j9/ppro10/bin • J9 PPro Class Library - /home/QtPalmtop/j9/ppro10/lib/jclPPro10 • j9ppro-golftracker (shortcut)- /home/QtPalmtop/bin/ • GolfScoreTrackerApp.jar - /home/QtPalmtop/golfppro/

Chapter 2. Tasks

Installing the runtime environment on your computer

Follow these steps to install a runtime environment on your development computer:

1. Run the installer that is appropriate for your operating system:
   a. **weme-zaurus-arm-ppro10-5.7.0.exe** for a Windows environment
   b. **weme-zaurus-arm-ppro10-5.7.0 bin** for a Linux environment

   Result: The installer launches. The first window displays information about the installer package.
2. Click **Next**.

   Result: The second installer window displays the license agreement.
3. Accept the license agreement and click **Next**.

   Result: The third installer window prompts for the location to install the runtime files.
4. Accept the default location, or enter an alternate location, and click **Next**.

   Result: The installer displays a verification prompt.
5. If the information is correct, click **Next**.

   Result: A**Successful Install** dialog box displays.
6. Click **Next**.

   Result: The dialog box displays instructions on installing the sync software, finding the IPK file and performing the synchronization manually.
7. Click **Next**.
8. Click **Finish** to complete the installation and close the installer.

Installing the runtime environment on your Sharp Zaurus

Follow these steps to install a runtime environment on your mobile device:

1. Find the appropriate IPK file:

Operating System	Installer file location
Windows	C:\Program Files\IBM\WEME\57\Zaurus\PPro10\bin\weme-ppro10-zaurus_22_arm.ipk
Linux	/opt/IBM/WEME/57/Zaurus/PPro/bin/weme-ppro10-zaurus_22_arm.ipk

2. Copy the appropriate installer file to your mobile device.
3. On the **Settings** tab, select **Add/Remove Software** to run the installer.
4. Are you installing the package over a network?
   - If yes, click **Install packages via networks.**
   - If no, click **Install packages**.
5. Select the package you wish to install. A dialog box prompts you to choose the install destination.
6. Select the desired destination and click **OK**.

Note: The install process may take 1 to 2 minutes. A completion dialog notifies you when the installation is complete.

7. Select **OK**, and close the installer by selecting **X** in the upper right hand corner of the install window.

Uninstalling packages from your computer

Follow these steps to remove packages installed on your development computer:

1. Launch the uninstaller appropriate for your operating system:

Operating System	Follow these steps to run the uninstaller
Windows	1. Select **Start |Programs |IBM WebSpere Everyplace Micro Environment 5.7** . 2. Select **Uninstall Zaurus-PPro packages**.
Linux	1. Select the **Panel > Programming Menu**. 2. Select **Uninstall Zaurus-PPro packages**. **Note:** You must be logged in as ″root″ on a Linux system.

2. At the first window, read the information about the installer and click **Next**.

   Result: The second uninstaller window displays summary information.
3. Click **Next**.

   Result: The third uninstaller window displays more summary information.
4. Click **Finish** to proceed with the uninstall.

   Note: The uninstaller removes the files but leaves the directories in place.

Uninstalling packages from your mobile device

Follow these steps to remove packages installed on your mobile device:

1. On the **Settings** tab, select **Add/Remove Software** to run the uninstaller.
2. Select **Uninstall Packages**.
3. Select the package you want to remove. A dialog box prompts you to confirm the removal.
4. Select **Yes** to proceed with the uninstall.

   Note: The uninstall process takes approximately 10 seconds. A completion dialog notifies you when the installation is complete.
5. Select **OK**, and close the installer by selecting the **X** in the upper right hand corner of the installer window.

Running Java applications, applets and xlets

The following procedures describe how to run applications, applets and xlets on your Sharp Zaurus device. This information is very useful when writing any run scripts you want to include in an installer package.

Note: Before performing these procedures, you must establish a network connection between the development machine and the device.

If you need help establishing a network connection to your device, please refer to your Sharp Zaurus user's manual.

Note: All references to `$IVEHOME` in these procedures refer to the directory (`/home/QtPalmtop/wme/ive`) where the WME for Sharp Zaurus runtime is installed on your device.

How to run a Java application

To run a Java application on your device, use the `startj9ppro` or `startj9foun` command from the command line or workbench.

You can modify the commands with the following options:

- `-classpath`— Use this option to specify the location of the jar or directory containing the main class. Use the main class name as a parameter. For example:

  ```
  $IVEHOME/bin/startj9ppro -classpath /path/to/SomeClass.jar  SomeClass
  ```

- `-jar`— Use this option to run a jar file with manifest information about the main class. For example:

  ```
  $IVEHOME/bin/startj9ppro -jar /path/to/SomeClassWithManifest.jar
  ```

- `-Dcom.ibm.oti.awt.FullScreenWindowBehavior=true`— Use this option to run a **Personal Profile** application using the full screen. For example:

  ```
  $IVEHOME/bin/startj9ppro -Dcom.ibm.oti.awt.FullScreenFrame=true
  -classpath /path/to/SomeClass.jar SomeClass
  ```

How to run a Java applet

Note: Java applets can be run with the **Personal Profile** application only.

To run Java applets on your device, run the appletviewer using the applet HTML file's URL as the parameter. For example:

```
$IVEHOME/bin/startj9ppro -appletviewer file:/path/to/SomeApplet.html
```

Note: For clarity, the `-appletviewer` option is used in this example, instead of the full parameter (`com.ibm.oti.appletviewer.AppletViewer`).

For HTTP retrieval, you could use:

```
$IVEHOME/bin/startj9ppro -appletviewer http://url/to/SomeApplet.html
```

To run the **GraphLayout** demo applet, type the following command:

```
$IVEHOME/bin/startj9ppro -appletviewer
file:/home/QtPalmtop/java/GraphLayout/graphlayout.html
```

How to run a Java xlet

Note: Java xlets can be run with the **Personal Profile** application only.

To run Xlets on your device, run the XletApplicationManager using the Xlet name (class name) and the classpath:

```
$IVEHOME/bin/startj9ppro -xlet -name:SomeXletName
-path:/path/to/XletClass.jar
```
Note: For clarity, the `-xlet` option is used in the example, instead of the full parameter (`com.ibm.oti.xlet.XletApplicationManager`).

Alternatively, you can run the XletApplicationManager without any parameters to load the xlets interactively:

```
$IVEHOME/bin/startj9ppro -xlet
```

Example of running an xlet:

To run the demo **XletTest**, type the following command:

```
$IVEHOME/bin/startj9ppro -xlet --name:XletTest
-path:/home/zaurus/xletbasic.jar
```

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: {Encoded Build Number} (Linux 2.4.20-13.7)

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trademarks of Sun Microsystems, Inc.

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>    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
-? or -help	This command option displays help

Syntax	Description
-classpath	This command option sets the class path for this invocation of J9. The final value of `-classpath` is determined by: 1. If the `-classpath` option is indicated, its value is used. 2. Otherwise, if the CLASSPATH environment variable is set, its value is used. 3. If both are unspecified, the value ″.″ is used. If the class path includes: • More than one class path entry, you should separate them with your operating system's path separators (for example, on Windows, use semicolons.) • A JAR, ZIP or JXE file, you should add the full name of the file to the class path. • CLASS files, you should specify the top-level directory of the CLASS file tree. **Example: (on windows)** `-classpath c:\ive\lib\classes.zip; c:\myclasses;c:\myjars\foo.jar` **CAUTION:** **The J9 class libraries (classes.zip) and the J9 VM are not compatible with other vendors' class libraries. It is possible that you might have more than one runtime environment installed on your host computer. You must make sure that you do not mismatch these libraries when specifying the class path.**
-cp <path>	Set classpath to <path> This is equivalent to **-classpath**.
-jxe:<jxeFile>	This command option reads the specified JXE file, looking for the classes in this file. All classes found in the JXE are placed at the end of the ″boot path.″ **Note:** When using the **-jxe** option, do not specify the startup class. **Example:** -jxe:hello.jxe **Note:** The **-jxe** option must be the last option on the command line. **CAUTION:** **The -jxe option is not the preferred way to run an application. It is best to use -classpath (where applicable) or -Xbootclasspath: (if the .jxe contains boot classes).**
-Dprop=<val>	This command option sets the value of a system property. For example, `-Dmy.property=some.value` sets the value of `my.property` to `some.value`. `-Dprop` sets the value to null. You can use multiple instances of this option by repeating the option statement separated with a space. **Example:** `j9 -Dprop1=val1 -Dprop2=val2 -Dprop3=val3` **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. **Example:** -Dname=″John Smith″

Syntax	Description
-debug:<options>	This command enables debug, **Java Debug Wire Protocol** (JDWP) standard <options>
-jcl:<config>	This command option specifies which JCL DLL to use (which JNI natives are used by the class library Java code.) If you use the **-jcl:<config>** without indicating a **-Xbootclasspath: <path>**, then the value for the **-Xbootclasspath: <path>** is assumed (`%JAVAHOME%/lib/jclLibraryName/classes.zip`). However, if the class libraries are stored in a non-default location, then you must include the **-Xbootclasspath: <path>** in order to direct the VM to the **classes.zip** file. **Note:** If the **-Xbootclasspath** and the -jcl VM options are mismatched, the VM will generate an ″Incompatible class library″ error. The possible library arguments are: • -jcl:foun10 (jclFoundation10 class library) • -jcl:ppro10 (jclPPro10 class library) • -jcl:midp20 (jclMidp2.0 class library) • -jcl:max (jclMax class library) • -jcl:rm (jclRM class library) **Note:** Not all these options are available for all platforms.
-verbose[:class, gc, stack, sizes]	This command option turns one of the following: • `class` displays each fully-qualified class name as it is loaded (that is, enable verbose class loading). This is the default value. • `gc` displays garbage collection information. • `stack` displays stack information. • `sizes` displays default VM sizes.
-verify	This command option enables bytecode 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]       Load helper libraries, such as those used with JVMPI
-Xint             run interpreted only 7
-Xnoaot           do not run precompiled code
-Xfuture          enable strictest checks, anticipating future default

-Xiss<x>          set initial java thread stack size to <x>
-Xss<x>           set maximum java thread stack size to <x>

Arguments to the following options are expressed as decimal numbers.
-Xgcthreads<x>          set number of GC threads
-Xnoclassgc             disable dynamic class unloading
-Xclassgc               enable dynamic class unloading
-Xalwaysclassgc         enable dynamic class unloading on every GC
-Xnocompactexplicitgc   disable compaction on a system GC
-Xcompactexplicitgc     enable compaction on a system GC
-Xcompactgc             enable compaction
-Xnocompactgc           disable compaction
-Xlp                    enable large page support

-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
-Xbootclasspath:<path>	This command option sets the bootstrap classpath to <path>. **Note:** When using this command line option, the **-jcl:LibraryName** option must be used to indicate which class library natives the application should use: `-Xbootclasspath:c:\ive\lib\jclCldc\classes.zip` If you use the **-jcl:<path>** without indicating a **-Xbootclasspath: <path>**, then the value for the **Xbootclasspath: <path>** is assumed (`%JAVAHOME%/lib/jclLibraryName/classes.zip`). However, if the class libraries are stored in a non-default location, then you must include the **-Xbootclasspath: <path>** in order to direct the VM to the **classes.zip** file.
-Xbootclasspath/p:<path>	This command option prepends <path> to the bootstrap classpath. **Note:** This option is useful for applying temporary fixes and/or adding to the bootstrap classpath.
-Xbootclasspath/a:<path>	This command option appends <path> to the bootstrap classpath. **Note:** This option is useful for applying temporary fixes to application classes and/or adding to the bootstrap classpath.
-Xrun<dll>[:options]	Load helper libraries, such as those used with JVMPI.

Syntax	Description
-Xint	This command option runs interpreted only.This disables both the JIT and AOT support.
-Xjit:<x>	This command option enables the JIT. JIT Default Options: • bcount=250 • classLoadPhaseInterval=50 • classLoadPhaseThreshold=2 • code=1024(KB) • count=1000 • data=1024 (KB) • mtcount=1 • samplingFrequency=10
-Xnoaot	This command option prevents running the precompiled code.
-Xgcpolicy:optthruput	This command option sets no scavenger and no concurrent mark. This is the default. This garbage collection policy delivers very high throughput to applications, but at the cost of occasional pauses, which can vary from a few milliseconds to many seconds, depending on the size of the heap and the quantity of garbage. Garbage collection cycles introduce occasional unexpected pauses in the execution of application code. Because applications grow in size and complexity, and heaps become correspondingly larger, this garbage collection pause time tends to grow in size and significance. This garbage collection policy is the default.
-Xgcpolicy:optavgpause	This policy enables two garbage collection technologies whose aim is to minimize pause times; namely scavenger and concurrent mark. Provided the weak hypothesis that most objects die young holds true then the scavenger helps reduce pause times by concentrating the garbage collection effort on the nursery since it is there that most recyclable space will be found. Rather than occasional but lengthy pause times to collect the entire heap, the nursery is collected more frequently and provided the nursery is small enough, pause times will be comparatively short. However, over time the tenure area may become full if too many objects live too long. So in order to minimize the pause time when a collection of the tenure area is necessary, concurrent mark is enabled to perform some garbage collection activities concurrently with normal program execution. The optavgpause option substantially reduces the time that is spent in these garbage collection pauses, in addition to limiting the effect of increasing heap size on the length of the garbage collection pause. This option is particularly relevant to configurations that have large heaps. However, with the reduced pause time, you might experience some reduction of application throughput, which varies from application to application. This command option sets scavenger and concurrent mark.

Syntax	Description
-Xfuture	This command option enables the strictest checks, anticipating a future default.
-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>.
-Xresman<x>	This command line option enables resource managed support with the **com.ibm.oti.vm.MemorySpace** class in **jclRM**.

Syntax	Description
-Xgcthreads<x>	This command line option sets the number of GC threads
-Xnoclassgc	This command line option disables dynamic class unloading
-Xclassgc	This command line option enables dynamic class unloading only on class loader changes (default)
-Xalwaysclassgc	This command line option enables dynamic class unloading during global collection
-Xnocompactexplicitgc	This command line option will disable compaction on a system GC.
-Xcompactexplicitgc	This command line option will enable compaction on every system GC.
-Xcompactgc	This command line option will enable compaction.
-Xnocompactgc	This command line option will disable compaction.
-Xlp	This command line option will enable large page support.

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.

Appendix. Additional information

Further Information

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http://www.ibm.com/software/pervasive/support/questions.shtml

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