

Java 2 Micro Edition for Wireless Enterprise

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INTRODUCTION

For the last couple of years, the wireless industry has been experiencing tremendous growth. Wireless devices have become more intelligent and are providing a new notion of communication. It is now possible to conduct business using the wireless network that will greatly improve the speed and quality of the business. Examples of business decisions across the wireless Internet include:

- A sales manager will be able to browse and download the latest price and stock availability of products during the journey to a client meeting.
- Support engineers, couriers, and delivery services will be able to manage their schedules better by organizing their orders on their cell phones. The headquarters will also be able to monitor their workers in the field.

This article will discuss the issues concerning the development of wireless applications using Java 2 Micro Edition (J2ME). This article will also explain what J2ME is and discuss the guidelines and technical aspects to implement wireless enterprise applications using J2ME.

BACKGROUND

Introduction to Java 2 Micro Edition

Java 2 Micro Edition (J2ME), from Sun Microsystems, is designed to run on consumer devices and electronic appliances, including wireless devices such as cell phones and Palm PDAs (Raju, 2000). J2ME provides a way to exploit the processing power on the mobile device better by running the code on the device itself. Therefore, it provides better network implementation, better graphical user interface, and local database management.

The Java virtual machine for consumer devices is known as the Kilo Virtual Machine (KVM), which is a complete Java runtime environment for small devices. KVM was designed to be small, with a static memory

footprint of 40 – 80 kilobytes. KVM is derived from a research system called Spotless at Sun Microsystems Laboratories.

J2ME Profiles and Configurations

J2ME is divided into *configurations* and *profiles* (Ashri et.al., 2001). Configurations are specifications that detail a virtual machine and a base set of APIs that can be used with a certain class of device. A profile builds on a configuration but adds more specific APIs to make a complete environment for building applications. While a configuration describes a JVM and a basic set of APIs, it does not by itself specify enough detail to build complete applications.

Configurations

Mobile devices such as cell phones, pagers, organizers, etc., are diverse in form, functionality, and features. For these reasons, the J2ME supports minimal configurations of the Java Virtual Machine and APIs that capture the essential capabilities of each kind of device (Feng & Zhu, 2001). J2ME configuration defines a set of horizontal APIs for a family of products that have similar requirements.

Profiles

A profile is a set of vertical APIs that reside on top of the configuration to provide domain specific capabilities. Currently, there is one profile defined and implemented, the Mobile Information Device Profile (MIDP) (Sun Microsystems, 2001). Other profiles, which are in the works, include the PDA profile and the RMI profile.

Table 1 shows the current and anticipated configurations, profiles, and APIs.

Comparison of J2ME versus WAP in Enterprise Application

Phone.com (now Open Wave), a merged venture with Software.com, first introduced the Wireless Application Protocol (WAP) in 1995. WAP is an open standard that

Figure 1. Java technology map

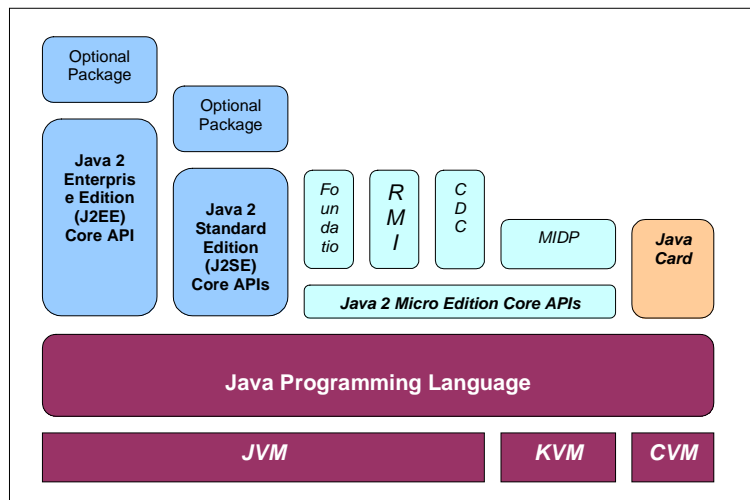


Table 1. J2ME profiles and APIs

Configurations		
JSR 30	CLDC 1.0	Connected, Limited Device Configuration
JSR 139	CLDC 1.1	Connected, Limited Device Configuration 1.1
JSR 36	CDC	Connected Device Configuration
Profiles		
JSR 37	MIDP 1.0	Mobile Information Device Profile
JSR 118	MIDP 2.0	Mobile Information Device Profile 2.0
JSR 75	PDAP	PDA Profile
JSR 46	FP	Foundation Profile
JSR 129	PBP	Personal Basis Profile
JSR 62	PP	Personal Profile
JSR 134		Game Profile
APIs		
JSR 66		RMI Optional Package
JSR 80		Java USB API
JSR 82		Java APIs for Bluetooth
JSR 120		Wireless Messaging API
JSR 135	MMAPI	Mobile Media API
JSR 169		JDBC Optional Package for CDC/FP
JSR 179		Location API for J2ME
JSR 180		SIP API for J2ME
JSR 184		Mobile 3D Graphics API for J2ME

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