

# Java™ 2 Platform, Micro Edition

The Java™ platform for consumer and embedded devices.



The Java™ 2 Platform, Micro Edition (J2ME™) is the Java platform for consumer and embedded devices such as mobile phones, PDAs, TV set-top boxes, in-vehicle telematics systems, and a broad range of embedded devices. Like its enterprise (J2EE™), desktop (J2SE™) and smart card (Java Card™) counterparts, the J2ME platform is a set of standard Java APIs defined through the Java Community Process™ program by expert groups that include leading device manufacturers, software vendors and service providers.

The J2ME platform delivers the power and benefits of Java technology tailored for consumer and embedded devices — including a flexible user interface, robust security model, broad range of built-in network protocols, and support for networked and disconnected applications. With J2ME, applications are written once for a wide range of devices, are downloaded dynamically, and leverage each device's native capabilities.

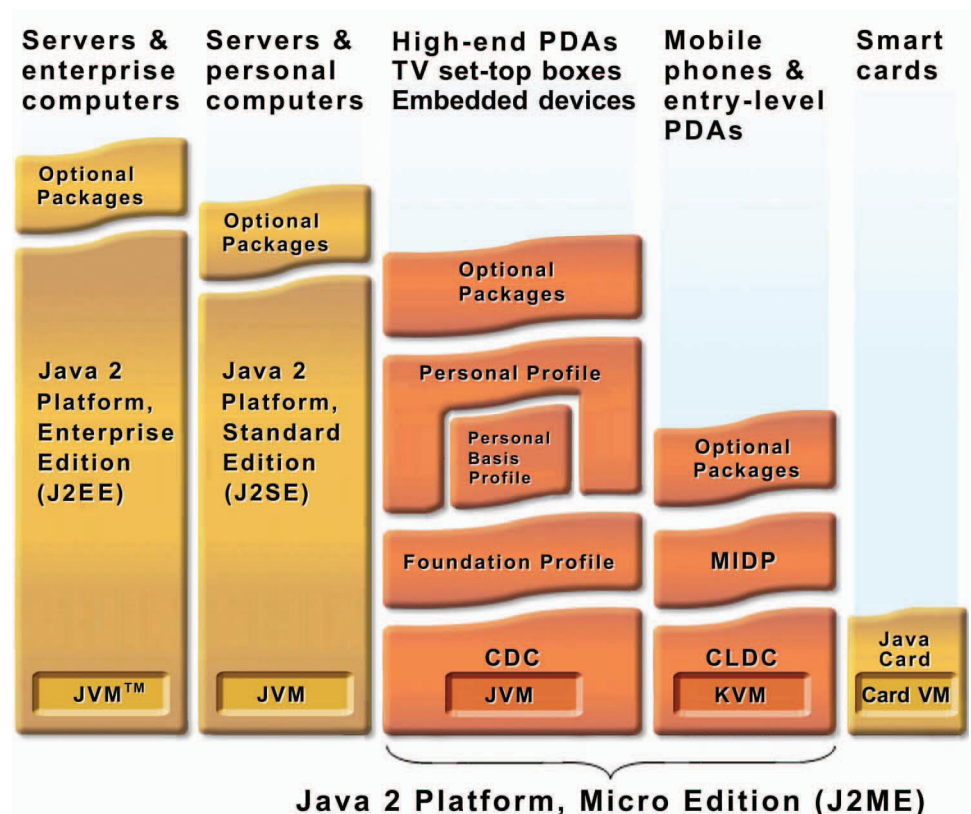
The J2ME platform is deployed on millions of devices — from mobile phones, to PDAs, to automotive devices — supported by leading Java technology tools vendors, and used by companies worldwide. In short, it is the platform of choice for today's consumer and embedded devices.

## The J2ME Architecture

The J2ME architecture defines configurations, profiles and optional packages as elements for building complete Java runtime environments that meet the requirements for a broad range of devices and target markets. Each combination is optimized for the memory, processing power, and I/O capabilities of a related category of devices. The result is a common Java platform that fully leverages each type of device to deliver a rich user experience.

## Configurations

Configurations are composed of a virtual machine and a minimal set of class libraries. They provide the base functionality for a particular range of devices that share similar characteristics, such as network connectivity and memory footprint. Currently, there are two J2ME configurations: the Connected Limited Device Configuration (CLDC), and the Connected Device Configuration (CDC).



### CLDC

CLDC is the smaller of the two configurations, designed for devices with intermittent network connections, slow processors and limited memory – devices such as mobile phones, two-way pagers and PDAs. These devices typically have either 16- or 32-bit CPUs, and a minimum of 128 KB to 512 KB of memory available for the Java platform implementation and associated applications.

### CDC

CDC is designed for devices that have more memory, faster processors, and greater network bandwidth, such as TV set-top boxes, residential gateways, in-vehicle telematics systems, and high-end PDAs. CDC includes a full-featured Java virtual machine, and a much larger subset of the J2SE platform than CLDC. As a result, most CDC-targeted devices have 32-bit CPUs and a minimum of 2MB of memory available for the Java platform and associated applications.

### Profiles

In order to provide a complete runtime environment targeted at specific device categories, configurations must be combined with a set of higher level APIs, or profiles, that further define the application life cycle model, the user interface, and access to device specific properties.

#### Mobile Information Device Profile

The Mobile Information Device Profile (MIDP) is designed for mobile phones and entry-level PDAs. It offers the core application functionality

required by mobile applications, including the user interface, network connectivity, local data storage, and application management. Combined with CLDC, MIDP provides a complete Java runtime environment that leverages the capabilities of handheld devices and minimizes both memory and power consumption.

#### Foundation Profile

CDC profiles are layered so that profiles can be added as needed to provide application functionality for different types of devices. The Foundation Profile (FP) is the lowest level profile for CDC. It provides a network-capable implementation of CDC that can be used for deeply embedded implementations without a user interface. It can also be combined with Personal Basis Profile and Personal Profile for devices that require a graphical user interface (GUI).

#### Personal Profile

The Personal Profile (PP) is the CDC profile aimed at devices that require full GUI or Internet applet support, such as high-end PDAs, communicator-type devices, and game consoles. It includes the full Java Abstract Window Toolkit (AWT) libraries and offers Web fidelity, easily running Web-based applets designed for use in a desktop environment. PP replaces PersonalJava™ technology and provides PersonalJava applications a clear migration path to the J2ME platform.

#### Personal Basis Profile

The Personal Basis Profile (PBP), a subset of PP, provides an application environment for network-connected devices that support a basic level of graphical presentation or require the use of specialized graphical toolkits for specific applications. Devices include TV set-top boxes, in-vehicle telematics systems, and information kiosks. Both PP and PBP are layered on top of CDC and FP.

#### Optional Packages

The J2ME platform can be further extended by combining various optional packages with CLDC, CDC, and their corresponding profiles. Created to address very specific market requirements, optional packages offer standard APIs for using both existing and emerging technologies such as Bluetooth, Web services, wireless messaging, multimedia, and database connectivity. Because optional packages are modular, device manufacturers can include them as needed to fully leverage the features of each device.

#### Resources on the Web

To learn more about MIDP, please visit:

- J2ME: <http://java.sun.com/j2me>
- Wireless Developer Portal: <http://wireless.java.sun.com>
- Java Community Process: <http://jcp.org>

A technical white paper on the J2ME platform is available on the Web at:

<http://java.sun.com/j2me/docs>