Java™ MicroEdition Connected Limited Device Configuration 8 (CLDC 8) – JSR-360

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About this JSR

• CLDC has been the Java platform for connected devices including feature phones for many years. It is a platform for devices with very limited memory and CPU power.

• JSR360 Scope:
  – update of the CLDC platform with support for Java 8 language features, align APIs with Java SE and provide new library APIs.
  – core platform of Java MicroEdition 8 and the common runtime for other JSRs (e.g. JSR 361)
  – targets small embedded devices such as wireless modules, smart meters, feature phones, healthcare monitoring, sensors and other M2M devices.
Introduction

• Target platform: Java ME 8

• JSR 360 is a follow up of JSR 139 (CLDC 1.1)
• JSR 360 consolidates the Generic Connection Framework (GCF) among CDC 1.1.2, MIDP and JSR 197.

• Tailored for small footprint devices (1-10 MB)
Java ME Platform Architecture

Vertical Specific APIs
- Device Access
- Wireless Messaging
- SATSA
- Vector Graphics
- Content Handler
- Vertical Specific APIs
- Bluetooth
- Media
- 3D Graphics
- Sensors
- Location
- Contactless Communication
- XML
- OpenGL 1.1
- Personal Info

On-Device I/O
- Peripheral I/O API
- Peripheral I/O API

Application Environment
- Java ME Embedded Profile (aka IMP – NG+)

Java VM
- CLDC 8 (with Support for Java 8 Language Features)

(*) not yet a JSR proposal
History

- JSR Submitted: JavaOne San Francisco September 2012

- Stages so far:
  - EG Kickoff February 15th

- Current JCP stage:
  Early Draft Review April 15th - May 14th
Technical Scope and Features

• CLDC 8 is an evolutionary update for CLDC 1.1.1 to bring the VM, Java Language and libraries in alignment with Java SE 8

• Key Features
  • Synchronize with Java SE 5/6/7/8 Language Features into ME
  • Introduce requested Java SE API Library Features
  • Virtual Machine Update
  • Remain as small as possible - footprint optimizations

• Specification Requirements
  • CLDC 8 to be an extended strict subset of Java SE 8
  • Consolidated Generic Connection Framework
  • Backward compatibility
CLDC 8 architecture

CLDC 8

GCF

javax.microedition.io

HTTP  HTTPS  Multicast (*)  Socket  ...  Datagram

java.io  java.lang  java.net (*)  subset  (Exceptions)  java.nio (*)  subset

javax.microedition.pki (*)

java.security  java.util  java.util

Java VM

(*) New in CLDC 8
Sample target device

- MCBSTM32F200
- Core: STM32F207IG ARM Cortex™-M3
- Frequency: 120MHz
- On-Chip Memory: 1MB Flash & 128KB RAM
- External Memory: 8MB NOR Flash, 512MB NAND Flash, 2MB SRAM, 8KB I²C EEPROM with NFC interface
- Display: 2.4 inch Color QVGA TFT LCD with resistive touchscreen
- Power: via USB (micro) connectors or Power jack (8V-12V)
- Peripherals: Ethernet, USB 2.0 & USB Host, CAN, Serial UART, MicroSD, 5-position Joystick, 3-axis digital Accelerometer, 3-axis digital Gyroscope, ADC Input, Audio Line-In/Out, Digital Microphone, Digital VGA Camera
- Debug Interface: JTAG

Source: http://www.keil.com/mcbstm32f200/
The JSR 360 Expert group

Spec Leads
- Michael Lagally  Oracle
- Roger Riggs  Oracle

Expert Group
- Stefano Andreani
- Yagamy Huang  Aplix Corporation
- Werner Keil
- Thomas Lampart  Cinterion Wireless Modules GmbH
- Hernan Perrone  TOTVS
- Erkki Rysä  North Sixty-One Ltd (Nokia JSRs)
- Thiago Galbiatti Vespa
- Yimin Ye  Nokia Corporation
EG logistics / working model

• **EG Working model:**
  • Regular EG phone conferences (1-2 hours, weekly / biweekly)

• All CLDC 8 EG documents are hosted on [java.net](http://java.net)

• The Downloads archive is available at: [http://java.net/projects/jsr360/downloads](http://java.net/projects/jsr360/downloads)

• EG Mailing List with technical discussions and meeting minutes: [jsr360-experts@jsr360.java.net](mailto:jsr360-experts@jsr360.java.net)

• An issue tracker is available at: [http://javafx-jira.kenai.com/browse/MESPEC/component/10660](http://javafx-jira.kenai.com/browse/MESPEC/component/10660)
Publicity

• Oracle Open World / JavaOne San Francisco 2012
  – "CON4247 – CLDC: The Java Platform for Feature Phones and Low-Footprint Embedded Devices"

• Session proposed for Oracle Open World / JavaOne San Francisco 2013
Collaboration with other community groups

• Close collaboration with
  – JSR-361 “ME - Embedded Profile”
  – Peripheral I/O API – new JSR
Schedule

• Public Review: August 2013
• PR Vote: October 2013
• Final Draft: November 2013
• Final Release: March 2014
RI and TCK development

- RI and TCK are developed by Oracle engineering
Participation and transparency

• JSR page on JCP.org

All specification work, specification drafts and all expert group communication are hosted as a java.net project.
[https://java.net/projects/jsr360/pages/Home](https://java.net/projects/jsr360/pages/Home)

All EG communication is copied to the observer alias:
[jsr360-observers@jsr360.java.net](jsr360-observers@jsr360.java.net)
Issue tracker

• The JSR 360 issue tracker is at: http://javafx-jira.kenai.com/browse/MESPEC/component/10660

• Total number of EG issues: 4, (2 new, 2 in progress)
Thank you!
http://jcp.org