

mBedded Server CLDC Edition

The massive market penetration of mobile devices in the last decade has faced mobile operators and service providers with new challenges. They often need to update software or to deliver service applications to multiple devices on a many-at-a-time basis. Today, the majority of Java-enabled devices, such as mobile phones, are based on the J2ME Connected Limited Device Configuration (CLDC) and the Mobile Information Device Profile (MIDP). Such devices usually do not have the conventional capabilities for remote and dynamic installation of components.

mBedded Server CLDC Edition is the solution that enables remote and dynamic installation and configuration of software components utilizing the benefits of the OSGi technology ported on MIDP devices. The edition offers a CLDC OSGi Framework that scales down the OSGi platform to fit to the resource-limited CLDC/MIDP runtime environment of mobile devices.

The product combines the advantages of the J2ME CLDC platform with the rich feature set of the OSGi platform in order to enhance mobile devices with a sophisticated service delivery framework.

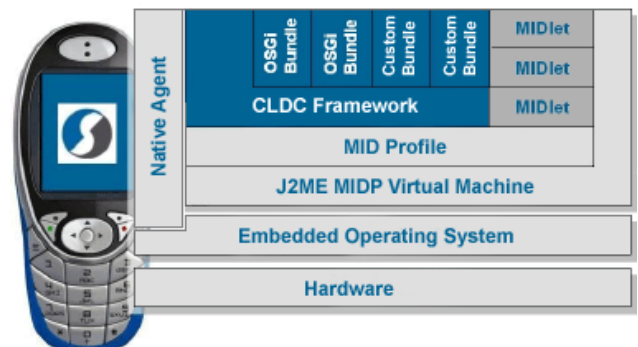
Features

- Lightweight OSGi implementation, specially designed to run on CLDC/MIDP platforms
- Wide range of target CLDC/MIDP devices:
 - ✓ Support for any CLDC/MIDP Java virtual machine, independent from the concrete device
 - ✓ Tight collaboration with the native environment; available for Linux, Windows, and Nokia Series 60 and 80

Benefits

- High-performance production-quality runtime environment, optimized and running on today's mobile hardware
- Capabilities for dynamic and remote installation of service applications on CLDC/MIDP devices
- Independence of the service applications from the target device configuration
- Small memory footprint (less than 230 KB) and minimal system requirements

The CLDC Framework is a lightweight OSGi Framework implementation with lower startup time, process memory heap memory usage compared to a standard OSGi framework implementation. It provides most of the standard OSGi capabilities, so that users and developers could benefit from the advantages of the OSGi architecture despite the limitations of the MIDP environment.



CLDC Framework Architecture



mBedded Server running on Nokia SDK

Architecture Components

- CLDC Framework - implements the OSGi R3, adopted for CLDC/MIDP.
- OSGi Bundles – provide core OSGi services and user application services. The supported OSGi services are Log Service, Configuration Admin, User Admin, and Start Level.
- Console Administration – CLDC Framework can be conveniently administered by using text commands. The user can remotely monitor the runtime results coming from framework and installed bundles.
- Admin MIDlet - provides user interface for interaction with the CLDC Framework. The user can: view framework's startup time and heap memory usage; view bundle state and perform bundle lifecycle operations - stop, start, uninstall, install, update; restart the Framework.
- Native Agent – handles specific operations, which cannot be performed by the CLDC Framework due to the limitations of the CLDC/MIDP platform. The MIDP JVMs have no support for separate class loaders and this imposes the use of the native agent as framework launcher in order to perform install, update and uninstall operations on bundles.

Persistent storage

The CLDC Framework stores persistent data and

works with persistent device storage through the javax.microedition.rms API.

OSGi Specification R3 Services Support

- Log Service
- Configuration Admin Service
- Device Access Service
- User Admin Service
- Start Level Service

OSGi Services and Features Not Supported

Due to the limitations of the CLDC/MIDP platform, some characteristics services and features from OSGi Release 3 are not available:

- Package Admin Service
- Separate class loader per bundle (MIDP allows the use only of a single system class loader)
- Permission Admin Service
- Native libraries - the CLDC framework uses a workaround for some JVM with support for native libraries (like J9 2.2 MIDP profile)
- Bundle sub-archives support
- Security Manager and Security
- Management of URL Stream Handlers and Content Handlers

Additional capabilities and packages of mBedded Server and other ProSyst products are explained in the data sheets available for each product.

If you have any further questions, we are happy to assist. Please contact us via info@prosyst.com or visit our Developer Zone at dz.prosyst.com