



Implementation Guidelines

VSCL

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1 Introduction

As part of the Java Service to be launched by Vodafone Group, "VFX terminals" will be required to implement the VSCL API.

This document describes the features and behaviour of a handset related to VSCL implementation, as a supplementary to the TCD.

2 Platform Architecture Overview

The Java VM for VSCL is described based on the assumption that the VSCL Platform can be configured as shown in Figure 1 below;

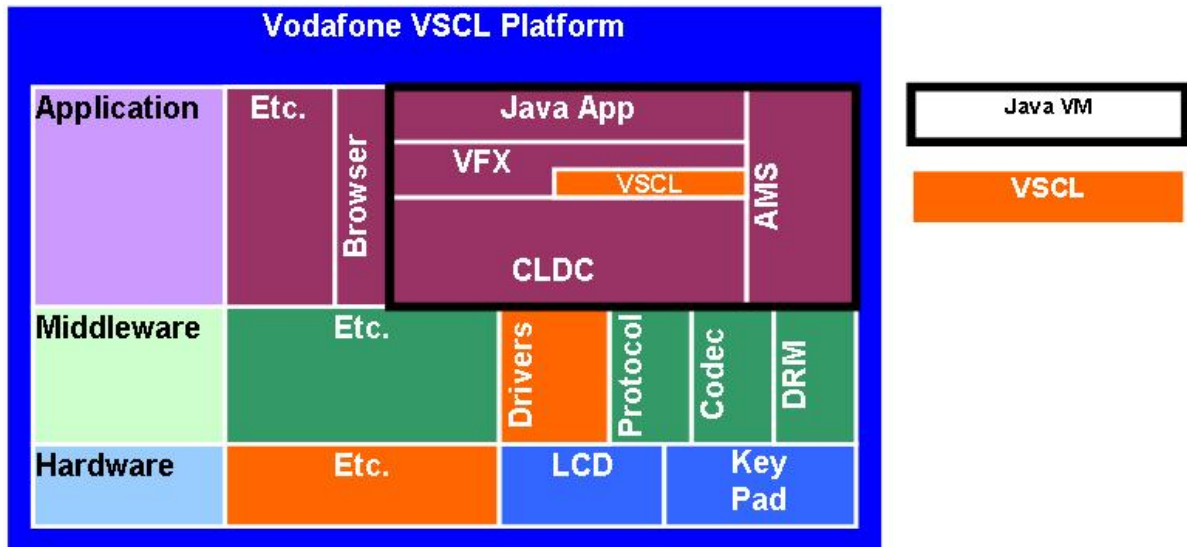


Figure 1 Platform Architecture Overview

The table below classifies and describes individual components and their functions.

<i>Item</i>	<i>Description</i>
AMS	AMS is an abbreviation of Application Management Software. This is Software which verifies Java Applications/controls execution.
CLDC	CLDC is an abbreviation of Connected Limited Device Configuration, which includes Virtual Machine (KVM) as well. The CLDC in this document refers to the CLDC1.1
VFX	VFX stands for "Vodafone effects", ("FX", sounds like "effects"). It is also an abbreviation of Vodafone VFX. VFX is a component of a variety of the Java Profiles defined by Vodafone.
VSCL	Vodafone Specific Class Library2.0/2.1. VSCL is a proprietary API which Vodafone specified, and is evolved from JSCL.

3 Resident Application

Resident application behaviour is performed only when Resident setting of the application via "MIDxlet-Resident:Y/S" attribute is set up by the user.

When not set up for Resident mode, it acts as normal application.

Handsets need to have the following resident application functions:

A resident application is an installed application that behaves in a similar manner to a "wallpaper" application. It is always activated (resident), though often in an idle state. The AMS must make this possible by controlling the activation, shutdown, suspension, resumption of a resident application. The following describes requirements for resident mode applications:

- (1) Maximum number of running resident applications
Only one resident application may be run at any one time.¹
- (2) Applications that can be "Resident Applications"
Only installed applications stored in the handset may be run by the AMS as resident applications if their MIDxlet-Resident attribute in the JAD file is "Y" or "S". (Java applications stored in memory card must not behave as resident applications)
- (3) Continuous resident application
If the MIDxlet-Resident attribute value in the JAD file is "S," it shall behave as a continuous resident application.
A continuous resident application differs from a normal resident application; it shall not be paused when the clamshell is closed or to save power.
- (4) Relationship between native wall paper and screen saver
Even if there is another wall paper or screen saver configured natively by the system, the Java Resident MIDlet application shall take precedence.
- (5) Resident application settings
Refer to (3.1)
- (6) Resident application execution control
Refer to (3.2)

3.1 Setting

The following table illustrates resident application configuration conditions. The items in the following table must be set when configuring a Java application to be displayed on the screen when it is in standby mode. The screen is deemed to be in "standby mode" when it would potentially be appropriate to display a screen saver:

Table 1 Resident Application Settings

Settings	Setting Description	Explanation	Scope
Resident application setting	On/Off	A set up of registration or cancel of the resident application.	MIDxlet-Resident: Y & MIDxlet-Resident: S
Time to Start Activation	<ul style="list-style-type: none"> - It shall be possible to set to 1 to 10 seconds in increments of one second - Default shall be three seconds 	<p>This is the time an inactivated/paused resident application takes to activate/resume. I.e., this is the time taken for inactivated/paused application to activate/resume after the screen changes to standby screen mode.</p> <p>When paused by another Java application, it shall be effective immediately after the user exits the other Java application.</p>	MIDxlet-Resident: Y & MIDxlet-Resident: S

If the time is not set for the phone (this is usually a native application, the clock application on the handset), then resident mode shall not be available.

¹ If a JAR contains a suite of MIDlets, and if the JAD parameter MIDxlet-resident is set to "Y" or "S", then only the first MIDlet in the suite, MIDlet-1, shall behave as a resident MIDlet.. The other MIDlets, MIDlet-2...MIDlet-n, shall not behave as resident.

3.2 Execution Control

Resident application execution control is described below.

(1) Execution control of resident application

Table 2 Execution control of resident application

State	Description	Scope
Start	This state is entered when the user turns on Resident application setting, or when the Resident application setting is set to "On" as described in Table 1.	MIDxlet-Resident: Y & MIDxlet-Resident: S
pause	Paused due to the user operating the phone (e.g. pushing a key)	MIDxlet-Resident: Y & MIDxlet-Resident: S
	Paused when another Java application is started.	MIDxlet-Resident: Y & MIDxlet-Resident: S
	Paused by the system (even if no key operation is made) E.g. when clamshell is folded, or to save power when there has been no user interaction for a certain period of time (1-5 minutes).	Only MIDxlet-Resident:Y
Resume	Handset screen has entered "standby mode", and the "Time to Start Activation" time has expired.	MIDxlet-Resident: Y & MIDxlet-Resident: S
Cancel	If the resident mode is cancelled (Resident application setting: OFF) via user changing the phone configuration, or as described in Figure 2, the resident application shall be shutdown.	MIDxlet-Resident: Y & MIDxlet-Resident: S
	If the clock setting of the handset is cancelled (if the handset has a function to cancel it), the resident application shall be cancelled.	MIDxlet-Resident: Y & MIDxlet-Resident: S
etc	Unless a Resident application setting is canceled, then if another Java application is stopped, then the previous Resident application must restart according to "Time to Start Activation setting".	MIDxlet-Resident: Y & MIDxlet-Resident: S

(2) Incoming call Control

While a Resident application is being executed, an incoming call processing shall be performing the following.

- Java VM must not noticeably delay execution of the application handling the call.
- If the MIDlet is playing a sound, this sound must be stopped. The handset must play the ringer tone set up by the incoming call application.

- The handset shall display incoming call information on the status area.

Handset must perform the following flow control at the time of the incoming call.

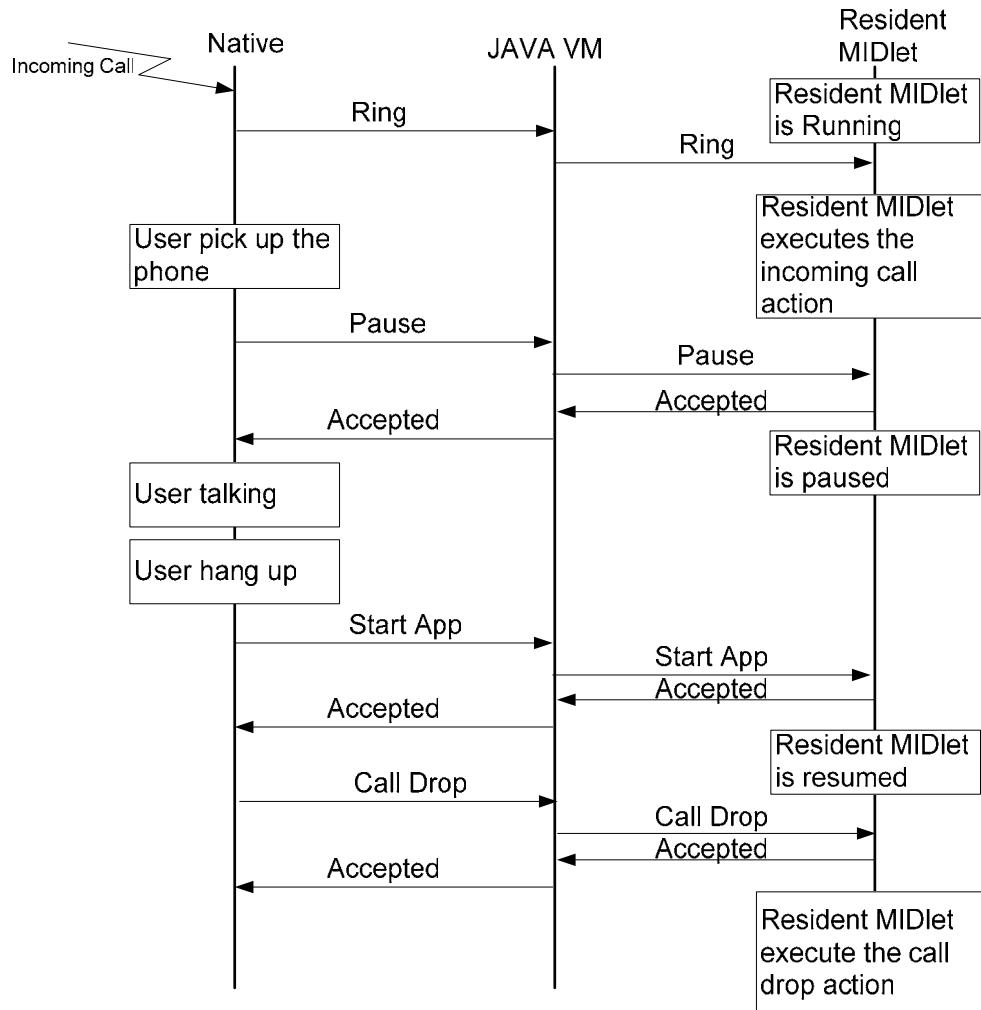


Figure 2 Incoming call flow control

4 Image Encoder

This implements a function to encode PNG and JPEG formats.

The size of data to be encoded shall not be limited, except as practically imposed by the native encoder capability or Java heap size.

When invoking the encoder it must designate a picture quality and format for encoding.

Table 3 Encode Type

Format	Compression level	Details	Conformance
Jpeg	6Kbyte	Perform jpeg compression to a data size of 6Kbyte or less	MUST
	12Kbyte	Perform jpeg compression to a data size of 12Kbyte or less	MUST
	30Kbyte	Perform jpeg compression to a data size of 10Kbyte or less	MUST
	100Kbyte	Perform jpeg compression to a data size of 200Kbyte or less	MUST
	200Kbyte	Perform jpeg compression to a data size of 300Kbyte or less	MUST
	300Kbyte	Perform jpeg compression to a data size of 300Kbyte or less	MUST
	Priority on picture quality	Perform jpeg compression with priority on picture quality (Up to a size that can be handled in a native data folder). Compression rate depends on the handset	MUST
Png	-	Perform png compression. Compression rate depends on the handset	OPTIONAL

Jpeg compression shall be re-tried until the optimal compression rate to compress to the target data size is found. It will be an error if it is not compressed to the target size after repeated retries.

5 References

Reference Description
TCD JAVA
"Vodafone Terminal Capability Definition Game & Java"
VFX Spec
"Vodafone VFX Specification": VFX Phase 1 and VFX Phase 2.