

Sun Certified Mobile Application Developer (311-110)
Sun Microsystems, Inc.

Exam Notes
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Table of Contents

Goals and Characteristics of JTWI	3
Mandatory Specifications	3
Conditionally Required Specifications.....	3
Minimum Configuration Specifications	3
Relationship between JTWI and other Specifications	3
Resource Minimums	5
Preferred MIME names	6

Chapter 1 JTWI (JSR 185)

Identify the goals and characteristics of the JTWI specification (JSR 185), including the mandatory specifications, conditionally required specifications, and the minimum configuration. Compare the relationship and differences between JTWI and other wireless Java technologies.

Goals and Characteristics of JTWI

The goal of JTWI specification is to improve the compatibility, interoperability, and completeness of J2ME technology implementations in mobile phones.

- The specification specifies a set of component specifications that must or should be implemented by compliant devices.
- The specification mandates some of the optional sections of the component specifications to improve compatibility.
- The specification clarifies some portions of the component specifications.

Mandatory Specifications

- These specifications must be implemented for a device to be JTWI compliant.
- MIDP 2.0 (JSR-118) and WMA 1.1 (JSR-120) fall under this category.

Conditionally Required Specifications

- These specifications are required based on a condition. For example, if a specific feature is going to be provided by the device, then a specification must be implemented by the device fully. If the feature is not going to be provided, then the device need not implement the specification.
- MMAPI (JSR-135) falls under this category.

Minimum Configuration Specifications

- These specifications are the minimal specifications needed for a JTWI compliant device to run.
- CLDC 1.0 (JSR-030) falls under this category.

Relationship between JTWI and other Specifications

- JTWI specification is a specification on top of specification. It is used to clarify the other specifications and to mandate some of the optional elements in the other specifications.
- Future versions of the given set of specifications are also acceptable for JTWI compliance. For example, a device may implement CLDC 1.1 and still be JTWI 1.0 compliant.
- JTWI version obtained from the `microedition.jtwi.version` must be 1.0.

Specification	Required?	Details
MIDP 2.0	Yes	Some specifications clarified. Some optional specs mandated.
WMA 1.1	Yes	JTWI does NOT mandate specific underlying technology to implement (GSM/CDMA). GSM/CDMA (UMTS) phones must support the GMS SMS service and must also support Push Registry mechanism. If a security mechanism is not present, then the SMS push function must not be allowed without explicit user permission.
MMAPI 1.1	No	Mandates media types to be supported. Separate requirements have been specified for audio-only devices and audio-video devices. If implemented, 1.1 must be the minimum version. MIDI file playback and tone sequence format must be supported. VolumeControl must be implemented. If video image capture is supported, JPEG encoding in video snapshots must be supported.
CLDC 1.0	Yes	JTWI uses this as the minimum configuration.

Develop portable applications that are compatible with the requirements and restrictions an application programmer must adhere to, in order to ensure compatibility with a JTWI-compliant device, including resource minimums (eg. standard-size application), clock resolution, and the use of preferred MIME names as applicable to CLDC 1.0/1.1, MIDP 2.0, WMA 1.1, and MMAPI 1.1).

Resource Minimums

Resource	Method to use	Minimum Requirements
Screen Width	<code>Canvas.getWidth()</code>	125 pixels
Screen Height	<code>Canvas.getHeight()</code>	125 pixels
Color depth	<code>Display.numColors()</code>	4096 colors (8 bits)
Pixel aspect ratio		1:1
Volatile memory for runtime		256 KB
JAR size		64 KB (at least upto this size)
JAD size		5 KB (at least upto this size)
RMS data size	MIDlet-Data-Size property can be used for specifying a minimum reservation.	30 KB (at least upto this size)
Minimum app. thread count		10
Minimum clock resolution	<code>System.currentTimeMillis()</code>	40ms (the least difference between two calls 80% of the time)
Record Stores		5 (at least)
Media Content		HTTP 1.1
Image Formats		ISO/IEC JPEG or JFIF must be supported to be JTWI compliant. PNG must be supported to be MIDP 2.0 compliant.
UI		Selection of phone numbers from a phone book for the <code>TextField.PHONENUMBER</code>
Timers		5 (at least)

Preferred MIME names

- Implementations must support at least the preferred MIME names as defined by IANA for the supported character encodings. Some examples are
 - US-ASCII
 - ISO-646
 - UTF-16
- Compliant implementations must provide support at least “Basic Latin” and “Latin-1 Supplement” encoding. Other encodings may be supported optionally.

Content Type	MIME Name
JAR file	application/java-archive
JAD file	text/vnd.sun.j2me.app-descriptor
MIDI file	audio/midi
Tone Sequence	audio/x-tone-seq
MP3	audio/x-mpeg
AU	audio/basic
PNG	image/png
JPEG	image/jpeg
MPEG	video/mpeg
WML	text/vnd.wap.wml