OSGi Mobile Device Profile

Confidential, Draft

11 Pages

Abstract

OSGi Mobile Profile specifies a minimum set of services that must be implemented in a compliant mobile terminal.

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0.2 Terminology and Document Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY" and "OPTIONAL" in this document are to be interpreted as described in [1].

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0.3 Revision History

The last named individual in this history is currently responsible for this document.

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Revision	Date	Comments
Initial	*Nov 18, 2004*	*Initial version* *Gábor Pécsy, Nokia gabor.pecsy@nokia.com*
0.2	*Jan 4, 2005*	*Minor updates addressing the comments from Boca Raton* *Gábor Pécsy, Nokia gabor.pecsy@nokia.com*

1 Introduction

OSGi Mobile Device Profile is a set of OSGi services that MUST be implemented by a compliant mobile device. The purposed of such profile is to avoid market fragmentation and provide a solid minimum platform for application developers. In the future, this set may be extended; therefore, the versioning of profiles is introduced. This document defines the 1.0 version of OSGi Mobile Device Profile.

As long as the profile is defined as a list of service or similarly high-level features, verify compliance to the profile is easy using the OSGi compliance program; it is enough to compare the list of supported services with the list provided in this RFC.

2 Application Domain

This section should be copied from the appropriate RFP(s). It is repeated here so it can be extended while the RFC authors learn more subtle details.

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3 Problem Description

This section should be copied from the appropriate RFP(s). It is repeated here so it can be extended while the RFC authors learn more subtle details.

4 Requirements

This section should be copied from the appropriate RFP(s)

5 Technical Solution

The following tables will list the services that an OSGi Mobile Device Profile 1.0 compliant device MUST implement. They also contain references to the detailed definition of the services. Notice, that some services may have mandatory and optional parts as well. This profile refers to the service only, which means that it is enough to implement the mandatory elements of a service to be compliant with the profile.

In OSGi, the services themselves are versioned. For each service, the version included in OSGi Release 4 specification should be referenced by OSGi Mobile Device Profile 1.0.

NOTE: RFC references should be replaced with a reference to the corresponding section of the OSGi specification, when it is compiles. RFC references are used for the time being.

NOTE: There are some RFCs defining modifications to existing services. Whenever an exiting service is referred, the reference is meant to target the new, modified version of the service, i.e. the one that will be included in R4. These references in this document are pointing to the corresponding chapter of R3 specification. This needs to be updated in the R4 spec.

5.1 Fundamental Services

The services listed in this section are essential to be able to meet the requirements that were specified in the MEG RFP's; therefore, their inclusion in the profile is considered automatic:

Service	Notes	Reference
OSGi Framework	This is mandatory part of all OSGi implementations. *NOTE: Framework is updated by a number of RFCs for R4. Even though MEG-defined extensions do not rely on all of these, there will be a single Framework specification in R4 which implies that all of the following RFCs must be included:* • *RFC-59 – Service Filter Changes in R4* • *RFC-70 – Bundle Class Loading Changes* • *RFC-71 – Framework API Changes* • *RFC-72 – Native Code Changes* • *RFC-73 – Permission Update* • *RFC-74 – Manifest Localization* • *RFC-79 – Framework Modularization* Corresponding Java API: org.osgi.framework	Chapter 4 of [3]
Package Admin Service	Bundles can export packages to other bundles. This exporting creates a dependency between the bundle exporting a package and the bundle using the package. When the exporting bundle is uninstalled or updated, a decision must be taken regarding any shared packages. The Package Admin service provides an interface to let the Management Agent make this decision. Required for: Deployment Admin Corresponding Java API: org.osgi.service.packageadmin	Chapter 5 of [3]
Permission Admin Service	Permission Admin Service enables Management Agent to manage policy. Required for: device management - policy management. Corresponding Java API: org.osgi.service.permissionadmin	Chapter 7 of [3]
Log Service	The Log Service provides a general-purpose message logger for the OSGi Service Platform. It consists of two services, one for logging information and another for retrieving current or previously recorded log information. Required for: device management – (remote) log search.	Chapter 9 of [3]

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Service	Notes	Reference
	Corresponding Java API: org.osgi.service.log	
Configuration Admin Service	The Configuration Admin service allows an Operator to set the configuration information of deployed bundles. Required for: device management – configuration management, declarative services, deployment Corresponding Java API: org.osgi.service.cm	Chapter 10 of [3]
Declarative Services	Currently a bundle has to be active in order to offer a service(s) to other bundles. An active bundle consumes system resources such as ClassLoaders, loaded classes, created objects, etc. It is desirable to minimize the amount of resources consumed by a bundle, when a service(s) offered by it is not being used. This RFC describes a declarative service model, which allows a bundle to delay instantiating the service object until they are needed, thus minimizing the resource consumption at any point of time. Required for: application model Corresponding Java API: org.osgi.service.component	RFC-80
Device Management Framework	An extensible management object model definition based on OMA DMT. Defined the mapping of different managed objects into DMT and the interface to interact with these managed objects (DMT Data and Exec plug-ins). It also defines an API for manipulating DMT. *NOTE: DMT Admin, and DMT structure are defined in two separate RFC-s, however they form a logical unit, one makes no sense without the other, so I put them into a single line. This can be changed, if found suitable, once the structure of the R4 specification is defined.* Required for: device management Corresponding Java API: org.osgi.service.dmt	RFC-85, RFC-87
Deployment Admin	This service defines the process of deploying applications to the device. It specifies a package format and processing rules for the package for all stages of its lifecycle on the device. Required for: deployment, device management Corresponding Java API: org.osgi.service.deploymentadmin	RFC-88

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Service	Notes	Reference
Application Model	Defines an application model for OSGi. It also specifies how other (foreign) application models can be supported in the OSGi framework. Required for: application model Corresponding Java APIs: org.osgi.service.application, org.osgi.util.application	RFC-91
Policy Management	Defines the building block of device policy structure and the DMT mapping of policy. *NOTE: Policy contains both mandatory (ACL) and optional (Java permissions) parts. Including Policy into the Mobile Device Profile means that mandatory parts of Policy MUST be implemented by a compliant device.* Required for: device management – policy management	RFC-92
Deployment Configuration	When a resource package is deployed in the MEG environment, there is a requirement to provide configuration parameters to bundles automatically, as part of the deployment operation. The bundles to receive configuration parameters may be bundles in the RP being deployed, or they may be other bundles (outside the bundle suite) on which the bundle suite depends. This document describes a technique that allows the MEG Deployment Administrator (MDA) to perform this deployment-time configuration based on an XML configuration document that is associated with the RP being deployed. Required for: deployment	RFC-94
Conditional Permission Admin	It allows user defined conditions to be added to Permissions managed by Conditional Permission Admin such that the permission evaluation will only take place if the condition is satisfied. Required for: device management – policy Corresponding Java API: org.osgi.service.condpermadmin	RFC-95
Generic Event Mechanism	Defines a generic event mechanism, which extends the even mechanism defined in the framework. Required for: application model Corresponding Java API: org.osgi.service.event	RFC-97

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Service	Notes	Reference
Download	Specifies the download mechanisms that must be supported. Required for: download, deployment	RFC-105

5.2 Utility Services

The services listed in this section are considered useful for the application and/or service developers; therefore, they were included in the Profile.

Service	Notes	Reference
Service Tracker Service	ServiceTracker is a utility class, which makes tracking the registration, modification, and deregistration of services much easier. Required for: developers' convenience Corresponding Java API: org.osgi.util.tracker	Chapter 19 of [3]

5.3 Profile versioning

OSGi Mobile Device Profile is likely to be extended in the future; therefore, version of the profiles is necessary. This specification defines the 1.0 version.

The profile version numbers should follow the <major>.<minor> scheme but no particular semantics is associated with the major and minor components.

NOTE: JSR-232 will reference a concrete version of Mobile Device Profile (version 1.0) and not Mobile Device Profile in general.

6 Considered Alternatives

The following services were also considered for inclusion:

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Service	Notes	Reference
Start Level Service	Enables ordering startup/shutdown of bundles, and controlling activity level of the system. Corresponding Java API: org.osgi.service.startlevel	Chapter 6 of [3]
URL Handlers	This specification defines how to register new URL schemes and how to convert content-typed java.io.InputStream objects to specific Java objects. Corresponding Java API: org.osgi.service.packageadmin	Chapter 8 of [3]
Device Access	The Device Access specification supports the coordination of automatic detection and attachment of existing devices on an OSGi Service Platform, facilitates hot-plugging and – unplugging of new devices, and downloads and installs device drivers on demand. Corresponding Java API: org.osgi.service.device	Chapter 11 of [3]
User Admin Service	User Admin implements a user database, which stores logon credentials (username and password) and enable the creation of user groups. This service will be required by Terminal Session service, but it is not included in R4. Corresponding Java API: org.osgi.service.useradmin	Chapter 12 of [3]
IO Connector Service	IO Connector Service specification adopts the Java 2 Micro Edition (J2ME) javax.microedition.io packages as a basic communications infrastructure. In J2ME, this API is also called the Connector framework. A key aspect of this framework is that the connection is configured by a single string, the URI. Corresponding Java API: org.osgi.service.io	Chapter 13 of [3]
XML Parser Service	This specification addresses how the classes defined in JAXP can be used in an OSGi Service Platform. It defines how: • Implementations of XML parsers can become available to other bundles • Bundles can find a suitable parser • A standard parser in a JAR can be transformed to a bundle Corresponding Java API: org.osgi.util.xml	Chapter 17 of [3]
Monitor Admin	This service addresses the question of how an application or	RFC-84

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Service	Notes	Reference
	service running in the mobile device can make information about its internal state available for management entities, both local and remote. Required for: device management – monitoring Corresponding Java API: org.osgi.service.monitor	

6.1 Really considered alternatives

- Addition of a list of mandatory event types was considered but dropped because it is too low level compared to the scope of this profile. Besides, JSR-249 can address such issues.
- It was considered to have some means for a bundle to require a certain Profile version. An idea was to use the Bundle-RequiredExecutionEnvironment header. The value for Mobile Profile x.y could be "OSGi/MobileProfile-x.y". Nevertheless, the idea was dropped because the different import headers (for services and packages) provide a much finer-grained way to specify dependencies.

7 Security Considerations

Description of all known vulnerabilities this may either introduce or address as well as scenarios of how the weaknesses could be circumvented.

8 Document Support

8.1 References

[1]. Bradner, S., Key words for use in RFCs to Indicate Requirement Levels, RFC2119, March 1997.

[2]. Software Requirements & Specifications. Michael Jackson. ISBN 0-201-87712-0

[3]. OSGi R3 specification

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[4].

Add references simply by adding new items. You can then cross-refer to them by chosing <Insert><Cross Reference><Numbered Item> and then selecting the paragraph. ***STATIC REFERENCES (I.E. BODGED) ARE NOT ACCEPTABLE, SOMEONE WILL HAVE TO UPDATE THEM LATER, SO DO IT PROPERLY NOW.***

8.2 Author's Address

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8.3 Acronyms and Abbreviations

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