Enabler Release Definition for OMA Device Management (based on SyncML DM), Version 1.1.2

Approved Version 09-December-2003

Open Mobile Alliance
OMA-ERELD-SyncML_DM-V1_1_2-20031209-A

Continues the Technical Activities
Originated in the SyncML Initiative

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Contents

1. Scope

The scope of this document is limited to the Enabler Release Definition of Open Mobile Alliance (OMA) Device Management (based on SyncML DM) according to OMA Release process and the Enabler Release specification baseline listed in section 5. The OMA DM (based on SyncML DM) v1.1.2 specifications are based on the SyncML Initiative's v1.1.1 Device Management (DM) specifications and make use of the OMA SyncML Common v1.1.2 specifications as specified in the OMA SyncML Common specifications Enabler Release Definition [ELREDSC].

The SyncML Initiative, Ltd. was a not-for-profit corporation formed by a group of companies who co-operated to produce an open specification for data synchronization and device management. Prior to SyncML, data synchronization and device management had been based on a set of different, proprietary protocols, each functioning only with a very limited number of devices, systems and data types. These non-interoperable technologies have complicated the tasks of users, manufacturers, service providers, and developers. Further, a proliferation of different, proprietary data synchronization and device management protocols has placed barriers to the extended use of mobile devices, has restricted data access and delivery and limited the mobility of the users.

SyncML is a specification that contains the following main components:

- An XML-based representation protocol

- A synchronization protocol and a device management protocol

- Transport bindings for the protocol

- A device description framework for device management

The data representation specifies an XML DTD that allows the representation of all the information required to perform synchronization or device management, including data, metadata and commands. The synchronization and device management protocols specify how SyncML messages conforming to the DTD are exchanged in order to allow a SyncML client and server to exchange additions, deletes, updates and other status information.

There are also DTDs that define the representation of information about the device such as memory capacity, and the representation of various types of Meta information such as security credentials.

Although the SyncML specification defines transport bindings that specify how to use a particular transport to exchange messages and responses, the SyncML representation, synchronization and device management protocols are transport-independent. Each SyncML package is completely self-contained, and could in principle be carried by any transport. The initial bindings specified are HTTP, WSP and OBEX, but there is no reason why SyncML could not be implemented using email or message queues, to list only two alternatives. Because SyncML messages are self-contained, multiple transports may be used without either the server or client devices having to be aware of the network topology. Thus, a short-range OBEX connection could be used for local connectivity, with the messages being passed on via HTTP to an Internet-hosted synchronization server.

To reduce the data size, a binary coding of SyncML based on the WAP Forum's WBXML is defined. Messages may also be passed in clear text if required. In this and other ways SyncML addresses the bandwidth and resource limitations imposed by mobile devices.

SyncML is both data type and data store independent. SyncML can carry any data type that can be represented as a MIME object. To promote interoperability between different implementations of SyncML, the specification includes the representation formats used for common PIM data.

The OMA SyncML Device Management v1.1.2 Enabler Release continues the effort to promote a single, common device management protocol.

2. References

2.1   Normative References

[CREQ]	"Specification of WAP Conformance Requirements". Open Mobile Alliance™. WAP-221-CREQ. URL:http:www.openmobilealliance.org/tech/docs
[DMBOOT]	"SyncML Device Management Bootstrap, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMBootstrap-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMCONF]	"Device Management Conformance Requirements, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMConReqs-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMDDFDTD]	"SyncML DM Device Description Framework, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMDDFDTD-V1_1_2. URL:http:www.openmobilealliance.org/tech/DTD
[DMNOTI]	"Notification Initiated Session, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMNotification-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMPRO]	"SyncML Device Management Protocol, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMProtocol-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMREPU]	"SyncML Representation Protocol, Device Management Usage, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMRepPro-V_1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMSEC]	"SyncML Device Management Security, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMSecurity-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMSTDOBJ]	"SyncML Device Management Standardized Objects, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMStdObj-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[DMTND]	"SyncML Device Management Tree and Description, Version 1.1.2". Open Mobile Alliance™. OMA-SyncML-DMTND-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[ELREDSC]	"Enabler Release Definition for SyncML Common Specifications, version 1.1.2". Open Mobile Alliance™. OMA-ERELD-SyncML-Common-V1_1_2. URL:http:www.openmobilealliance.org/tech/docs
[RFC2119]	"Key words for use in RFCs to Indicate Requirement Levels". S. Bradner. March 1997. URL:http://www.ietf.org/rfc/rfc2119.txt

2.2   Informative References

None

3. Terminology and Conventions

3.1 Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except "Scope" and "Introduction", are normative, unless they are explicitly indicated to be informative.

The formal notation convention used in Sections 8 and 9 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [CREQ].

3.2 Definitions

Device Management
> Management of the Device configuration and other managed objects of Devices from the point of view of the various Management Authorities. Device Management includes, but is not restricted to setting initial configuration information in Devices, subsequent updates of persistent information in Devices, retrieval of management information from Devices and processing events and alarms generated by Devices

Enabler Release
> A collection of specifications that combined together forms an enabler for a service area, e.g. a download enabler, a browsing enabler, a messaging enabler, a location enabler, etc. The specifications that are forming an enabler should combined fulfill a number of related market requirements.

Minimum Functionality Description
> Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.

3.3 Abbreviations

DM	Device Management
DTD	Document Type Definition
ERDEF	Enabler Requirement Definition
ERELD	Enabler Release Definition
HTTP	Hypertext Transfer Protocol
MIME	Multipurpose Internet Mail Extension
OBEX	Object Exchange protocol
OMA	Open Mobile Alliance
PIM	Personal Information Management
SCR	Static Conformance Requirements
SyncML	Synchronization Mark-up Language
WAP	Wireless Application Protocol
WSP	Wireless Session Protocol
XML	Extensible Mark-up Language

4. Introduction

This document outlines the Enabler Release Definition for DM and the respective conformance requirements for client and server implementations claiming compliance to the Open Mobile Alliance DM (based on SyncML DM) v1.1.2 specifications.

It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Device Management Enabler Release (based on SyncML DM), version 1.1.2. Fully conformant DM client and DM server implementations can only be achieved through combining the conformance requirements outlined within this enabler release definition with those outlined within the SyncML Common Specifications [ELREDSC] enabler release definition.

Device management is the generic term used for technology that allows third parties to carry out the difficult procedures of configuring mobile devices on behalf of the end user (customer). Third parties would typically be wireless operators, service providers or corporate information management departments.

Through device management, an external party can remotely set parameters, conduct troubleshooting servicing of terminals, install or upgrade software. In broad terms, device management consists of three parts:

- Protocol and mechanism: The protocol used between a management server and a mobile device

- Data model: The data made available for remote manipulation, for example browser and mail settings

- Policy: The policy decides who can manipulate a particular parameter, or update a particular object in the device

In a wireless environment, the crucial element for device management protocol is the need to efficiently and effectively address the characteristics of mobile devices including low bandwidth and high latency. The SyncML Initiative, based on its experience and track record within basic synchronization, is well-prepared to meet the market and technological challenges of device management.

5. Enabler Release Specification Baseline

The following section comprises the OMA DM (based on SyncML DM) v1.1.2 enabler release.

Document	Reference
SyncML Representation Protocol, Device Management Usage, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMREPU]
SyncML Device Management Bootstrap, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMBOOT]
SyncML Device Management Security, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMSEC]
SyncML Device Management Protocol, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMPRO]
Device Management Conformance Requirements, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMCONF]
SyncML Device Management Tree and Descriptions, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMTND]
SyncML Device Management Standardized Objects, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMSTDOBJ]
Notification Initiated Session, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMNOTI]
SyncML DM Device Description Framework DTD, Version 1.1.2. URL:http://www.openmobilealliance.org/	[DMDDFDTD]

6. Minimum Functionality Description for DM

This section is informative. It describes the functionality that is delivered with the OMA Device Management (based on SyncML DM) specifications and their internal mandatory requirements.

The OMA DM (based on SyncML DM) specifications define the protocols and mechanisms for how configuration parameters can be delivered to an OMA client from a SyncML DM server that is part of the overall architecture. The mandatory functionality defines a set of commands used in the DM protocol for various management procedures as well as needed security level for management session. Mandatory management tree is used as server interface to the device, which includes several mandatory management objects that are providing basic device management functionality.

The optional functionality covers several additional commands in DM protocol. Also, support for notification initiated session and bootstrapping is recommended, but optional functionality.

The list of minimum functionality for a DM client and DM server is described in [DMCONF].

7. Conformance Requirements Notation Details

This section is informative

The tables in following chapters use the following notation:

Item:
Entry in this column MUST be a valid ScrItem according to [CREQ].

Feature/Application:
Entry in this column SHOULD be a short descriptive label to the **Item** in question.

Status:
Entry in this column MUST accurately reflect the architectural status of the **Item** in question.
- M means the **Item** is mandatory for the class
- O means the **Item** is optional for the class
- NA means the **Item** is not applicable for the class

Requirement:
Expression in the column MUST be a valid TerminalExpression according to [CREQ] and it MUST accurately reflect
the architectural requirement of the **Item** in question.

8. ERDEF for DM - Client Requirements

This section is normative.

Table 1 ERDEF for DM Client-side Requirements

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DM-C-001	DM Client	M*	See static conformance requirements in [DMCONF].

*It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Device Management (based on SyncML DM) Enabler Release, version 1.1.2. Fully conformant DM client implementations can only be achieved through combining the conformance requirements outlined above with those outlined within the SyncML Common Specifications enabler release definition [ELREDSC].

9. ERDEF for DM - Server Requirements

This section is normative.

Table 2 ERDEF for DM Server-side Requirements

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DM-S-001	DM Server	M*	See static conformance requirements in [DMCONF].

*It should be understood that the OMA SyncML Common v1.1.2 specifications must be used in conjunction with the OMA Device Management (based on SyncML DM) Enabler Release, version 1.1.2. Fully conformant DM server implementations can only be achieved through combining the conformance requirements outlined above with those outlined within the SyncML Common Specifications enabler release definition [ELREDSC].

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Reference	Date	Description
n/a	n/a	No previous version within OMA

A.2   Draft/Candidate Version 1.1.2 History

Document Identifier	Date	Section	Description
Class 0	26-Mar-2003	All	The initial version of this document.
Class 3	02-Apr-2003	All	Comments received in DM review incorporated.
Class 3	11-Apr-2003	All	Editorial comments incorporated
Class 3	08-May-2003	All	Editorial corrections
Class 3	20-May-03	2.1	Updated reference information for [ELREDSC]
Draft Version OMA-ERELD-SyncML_DM-V1_1_2-20030520-D	20 May 2003		Draft for TP approval
Candidate Version OMA-ERELD-SyncML_DM-V1_1_2-20030612-C	12 June 2003		Status Changed to Candidate by TP TP ref# OMA-TP-2003-0266R1
Class 3	09 December 2003	2.1	Change request OMA-DM-2003-0168R01