Enabler Release Definition for OMA Device Management

Candidate Version 1.3 – 01 September 2009

Open Mobile Alliance

OMA-ERELD-DM-V1_3-20090901-C

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1. Scope

The scope of this document is limited to the Enabler Release Definition of Device Management according to OMA Release process and the Enabler Release specification baseline listed in section 5. The OMA DM v1.3 specifications are based on the OMA Device Management (DM) v1.2.1 specifications and make use of the OMA SyncML Common v1.2 specifications as specified in the OMA SyncML Common specifications Enabler Release Definition [ERELDSC].

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.

The SyncML Initiative merged with the Open Mobile Alliance in November 2002. The SyncML legacy specifications were converted to the OMA format with the 1.1.2 versions of OMA SyncML Common, OMA Data Synchronization and OMA Device Management in May 2002. The relationship between these documents which had been created during the SyncML Initiative has been preserved and is depicted in Figure 1: OMA DS and DM Specification Structure and Relationship.
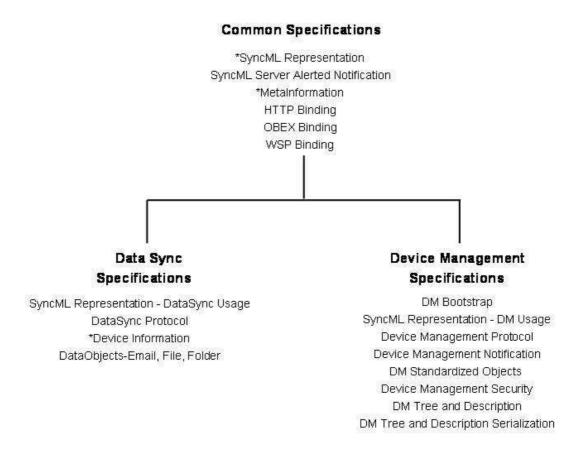

Figure 1: OMA DS and DM Specification Structure and Relationship

Although the SyncML Common specification defines transport bindings that specify how to use a particular transport to exchange messages and responses, the SyncML Common Representation, synchronization and device management protocols are transport-independent. Each package in these protocols 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 Common could not be implemented using email or message queues, to list only two alternatives. Because the SyncML Common 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.

2. References

2.1 Normative References

[DevDetailDDF]	"OMA DM Device Detailed Information Managed Object DDF, Version 1.3". Open Mobile Alliance™. OMA-SUP-MO_DM_DevDetail-V1_3. URL: http://www.openmobilealliance.org
[DevInfoDDF]	"OMA DM Device Information Managed Object DDF, Version 1.3". Open Mobile Alliance™. OMA-SUP-MO_DM_DevInfo-V1_3. URL: http://www.openmobilealliance.org
[DMAccDDF]	"OMA DM Account Managed Object DDF, Version 1.3". Open Mobile Alliance™. OMA-SUP-MO_DM_DMAcc-V1_3. URL: http://www.openmobilealliance.org
[DMBOOT]	"OMA Device Management Bootstrap, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_Bootstrap-V1_3. URL: http://www.openmobilealliance.org
[DMDDFDTD]	"OMA DM Device Description Framework DTD, Version 1.3". Open Mobile Alliance™. OMA-SUP-dtd_dm_ddf-v1_3. URL: http://www.openmobilealliance.org
[DMNOTI]	"OMA Device Management Notification Initiated Session, Version 1.3". Open Mobile Alliance™. OMA-DM_Notification-V1_3. URL: http://www.openmobilealliance.org
[DMPRO]	"OMA Device Management Protocol, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_Protocol-V1_3**.** URL: http://www.openmobilealliance.org
[DMRD]	"OMA Device Management Requirements Document, Version 1.3". Open Mobile Alliance™. OMA-RD-DM-V1_3. URL:http://www.openmobilealliance.org
[DMRD12]	"OMA Device Management Requirements Document, Version 1.2". Open Mobile Alliance™. OMA-RD-DM-V1_2. URL:http://www.openmobilealliance.org
[DMREPU]	"OMA Device Management Representation Protocol, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_RepPro-V1_3. URL:http://www.openmobilealliance.org
[DMSEC]	"OMA Device Management Security, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_Security-V1_3. URL: http://www.openmobilealliance.org
[DMSTDOBJ]	"OMA Device Management Standardized Objects, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_StdObj-V1_3. URL: http://www.openmobilealliance.org
[DMTND]	"OMA Device Management Tree and Description, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_TND-V1_3. URL: http://www.openmobilealliance.org
[DMTNDS]	"OMA Device Management Tree and Description Serialization, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_TNDS-V1_3. URL: http://www.openmobilealliance.org
[ERELDSC]	"Enabler Release Definition for SyncML Common Specifications, version 1.3". Open Mobile Alliance™. OMA-ERELD-SyncML-Common-V1_3. URL: http://www.openmobilealliance.org
[IOPPROC]	"OMA Interoperability Policy and Process", Version 1.1, Open Mobile Alliance™, OMA-IOP-Process-V1_1,

URL: http://www.openmobilealliance.org

[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 7 and 8 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [IOPPROC].

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	Collection of specifications that combined together form 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
RD	Requirements Document
SCR	Static Conformance Requirements
SyncML	Synchronization Mark-up Language
WAP	Wireless Application Protocol
WSP	Wireless Session Protocol
XML	Extensible Mark-up Language

4. Release Version Overview

This section is informative. It describes the functionality that is delivered with the OMA Device Management specifications and their internal mandatory requirements.

The OMA DM specifications define the protocols and mechanisms for how configuration parameters can be delivered to an OMA client from an OMA 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.

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 v1.3 specifications.

It should be understood that the OMA SyncML Common v1.3 specifications must be used in conjunction with the OMA Device Management Enabler Release, version 1.3. 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 [ERELDSC] 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.

4.1   Version 1.1.2 Functionality

DM 1.0 and 1.1 were completed under the auspices of the SyncML Initiative. DM 1.1.2 was a re-release of the same basic enabler under the OMA auspices. DM 1.1.2 provided basic remote device management capabilities for writing and reading device settings. The enabler strongly depended upon Client Provisioning for initial provisioning for this release.

4.2   Version 1.2 Functionality

DM 1.2 expanded on DM 1.1 by increasing security requirements, providing bootstrap capabilities that complement Client Provisioning capabilities, Generic Alert, and the ability to provision and read entire management objects. New node formats (such as Date, Time, etc) were added. Security functionality was significantly improved – XML encryption was added, and TLS/SSL was mandated for HTTP. Many minor improvements to the specification were also included.

4.2.1   Version 1.2.1 Functionality

DM 1.2.1 is a bug-fix release that removes most of the remaining ambiguities in the specification. No normative changes were made.

4.3   Version 1.3 Functionality

The DM V1.3 Enabler supports the following additional functionality:

- Support for SIP/UDP transport bindings

- Specify for mandatory support for bootstrap/TNDS

- Support for rich information in notification message including expiration, reason for session, etc.

- Support for the discovery of optional DM features supported by the DM client

5. Document Listing for Device Management 1.3

This section is normative.

Doc Ref	Permanent Document Reference	Description
Requirement Document		
[DMRD]	OMA-RD-DM- V1_3-20090901-C	Requirement Document for DM 1.3 Enabler
[DMRD12]	OMA-RD-DM- V1_2-20070209-A	Requirement Document for DM 1.2 Enabler
Architecture Document		
[DMAD]	OMA-AD-DM-V1_3-20090602-C	Architecture Document for DM 1.3 Enabler
Technical Specifications		
[DMBOOT]	OMA-TS-DM_Bootstrap-V1_3-20090706-D	OMA Device Management Bootstrap
[DMNOTI]	OMA-TS-DM_ Notification-V1_3-20090814-D	OMA Device Management Notification Initiated Session
[DMPRO]	OMA-TS-DM_Protocol- V1_3-20081015-D	OMA Device Management Protocol
[DMREPU]	OMA-TS-DM_RepPro- V1_3-20081015-D	OMA Device Management Representation Protocol
[DMSEC]	OMA-TS-DM_Security- V1_3-20090706-D	OMA Device Management Security
[DMSTDOBJ]	OMA-TS-DM_StdObj- V1_3-20090706-D	OMA Device Management Standardized Objects
[DMTND]	OMA-TS-DM_TND- V1_3-20090129-D	OMA Device Management Tree and Description
[DMTNDS]	OMA-TS-DM_TNDS- V1_3-20090413-D	OMA Device Management Tree and Description Serialization
Supporting Files		
[DMAccDDF]	OMA-SUP-MO_DM_DMAcc-V1_3-20090526-D	OMA DM Account Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_dmacc-v1_2.ddf
[DevInfoDDF]	OMA-SUP-MO_DM_DevInfo-V1_3-20090526-D	OMA DM Device Information Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_devinfo-v1_2.ddf
[DevDetailDDF]	OMA-SUP-MO_DM_DevDetail- V1_3-20090526-D	OMA DM Detailed Information Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_devdetail-v1_2.ddf

| [DMDDFDTD] | OMA-SUP-dtd_dm_ddf- V1_3-20081015-D | OMA DM Device Description Framework DTD Working file in DTD directory: http://www.openmobilealliance.org/tech/DTD/dm_ddf-v1_2.dtd |
| [ACw7DM] | OMA-SUP-ac_w7_dm-V1_0_1-20080522-D | OMA DM w7 Application Characteristic. Working file in AC directory: http://www.openmobilealliance.org/tech/omna/dm-ac/ac_w7_dm-v1_0.txt |

Table 1: Listing of Documents in DM V1.3 Enabler

6. 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 [IOPPROC].

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 [IOPPROC] and it MUST accurately reflect the architectural requirement of the **Item** in question.

7. ERDEF for Device Management - Client Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DM-C-001	DM Client	M*	[DMPRO] AND [DMREPU] AND [DMSEC] AND [DMTND] AND [DMSTDOBJ] AND [DMDDFDTD] AND [DMBOOT].
OMA-ERDEF-DM-C-003	DM Client Notification	O	[DMNOTI]
OMA-ERDEF-DM-C-004	DM TND Serialization	O	[DMTNDS]

Table 2 ERDEF for Device Management Client-side Requirements

[*]It should be understood that the OMA SyncML Common v1.3 specifications MUST be used in conjunction with the OMA Device Management Enabler Release, version 1.3. 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 [ERELDSC].

8. ERDEF for Device Management - Server Requirements

This section is normative.

Item	Feature / Application	Status	Requirement
OMA-ERDEF-DM-S-001	DM Server	M*	[DMPRO] AND [DMREPU] AND [DMSEC] AND [DMTND] AND [DMSTDOBJ] AND [DMDDFDTD].
OMA-ERDEF-DM-S-002	DM Bootstrap Server	O	[DMBOOT]
OMA-ERDEF-DM-S-003	DM Notification Server	O	[DMNOTI]
OMA-ERDEF-DM-S-004	DM TND Serialization	O	[DMTNDS]

Table 3 ERDEF for Device Management Server-side Requirements

[*]It should be understood that the OMA SyncML Common v1.3 specifications must be used in conjunction with the OMA Device Management Enabler Release, version 1.3. 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 [ERELDSC].

Appendix A.   **(Informative)**

A.1   Approved Version History

Reference	Date	Description
OMA-ERELD-DM-V1_2-20070209-A	09 Feb 2007	Approved by TP Ref TP Doc# OMA-TP-2007-0075R03-INP_ERP_DM_V1.2_for_Final_Approval
OMA-ERELD-DM-V1_2_1-20080522-D	22 May 2008	Updated with latest template Document listing updated
OMA-ERELD-DM-V1_2_1-20080612-D	12 Jun 2008	Updated with agreed CR: MA-DM-2008-0081R02
OMA-ERELD-DM-V1_2_1-20080617-A	17 Jun 2008	Approved by TP TP ref# OMA-TP-2008-0257R01-INP_DM_V1_2_1_ERP_for_notification

A.2   Draft/Candidate Version 1.3 History

Document Identifier	Date	Sections	Description
OMA-ERELD-DM-V1_3-20081015-D	15 Oct 2008	All	Baseline to v1.3.
	10 Nov 2008	7	Applied CR OMA-DM-2008-0159-CR_ERELD_Bootstrap .
	05 Mar 2009	 4.1, 4.3 All	Incorporated agreed CRs: OMA-DM-DM13-2009-0006R01 Editorial/clerical changes
	12 Mar 2009	All	Final editorial before RD Formal Review
OMA-ERELD-DM-V1_3-20090505-D	05 May 2009	5	Document Listing Updated
OMA-ERELD-DM-V1_3-20090505-D	02 Jun 2009	5	Document Listing Updated
OMA-ERELD-DM-V1_3-20090626-D	26 Jun 2009	5	Document Listing Updated
OMA-ERELD-DM-V1_3-20090729-D	29 Jul 2009	5	Document Listing Updated
OMA-ERELD-DM-V1_3	01 Sep 2009	N/A	Status changed to Candidate by TP TP Ref # OMA-TP-2009-0381-INP_DM_V1_3_RD_for_Candidate_Re_Approval