Enabler Release Definition for OMA Device Management

Approved Version 1.3 – 24 May 2016

Open Mobile Alliance

OMA-ERELD-DM-V1_3-20160524-A

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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 with various enhancements.

2. References

2.1 Normative References

[ACw7DM] "OMA Device Management w7 Application Characteristic, Version 1.0.1". Open Mobile Alliance™. OMA-SUP-ac_w7_dm-V1_0_1. URL:http://www.openmobilealliance.org/

[BootConfigDDF] "OMA Device Management Bootstrap Config Managed Object DDF, Version 1.0". Open Mobile Alliance™. OMA-SUP-MO_DM_BootConfigMO-V1_0. URL:http://www.openmobilealliance.org/

[DevDetailDDF] "OMA Device Management 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 Device Management 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 Device Management Account Managed Object DDF, Version 1.3". Open Mobile Alliance™. OMA-SUP-MO_DM_DMAcc-V1_3. URL:http://www.openmobilealliance.org/

[DMAD] "OMA Device Management Architecture, Version 1.3". Open Mobile Alliance™. OMA-AD-DM -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 Device Management Device Description Framework DTD, Version 1.3". Open Mobile Alliance™. OMA-SUP-dtd_dm_ddf-v1_3. URL:http://www.openmobilealliance.org/

[DMDELEGATE] "Device Management Server Delegation Protocol", Open Mobile Alliance™. OMA-TS-DM_Server_Delegation_Protocol-V1_3. URL:http://www.openmobilealliance.org

[DMDELXSD] "Server Delegation Protocol Schema, Version 1.3". Open Mobile Alliance™. URL:http://www.openmobilealliance.org

[DMDICT] "OMA Device Management Dictionary, Version 1.0". Open Mobile Alliance™. OMA-SUP-DM_Dictionary-v1_0. URL:http://www.openmobilealliance.org/

[DMMODES] "OMA DM Management Object Design Guidelines". Open Mobile Alliance™. OMA-WP-Management_Object_Design_Guidelines-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

[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/

[DMSESS] "OMA Device Management Sessionless Message, Version 1.3", Open Mobile Alliance™. OMA-TS-DM_Sessionless-V1_3. URL:http://www.openmobilealliance.org/

[DMSESSREP] "OMA Device Management Sessionless Reporting, Version 1.3", Open Mobile Alliance™. OMA-TS-DM_Sessionless_Reporting-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/

[HTTPBinding] "OMA Device Management HTTP Binding Specification", Open Mobile Alliance™, OMA-TS-DM_HTTPBinding-V1_3, URL:http://www.openmobilealliance.org/

[Meta] "OMA Device Management Meta Information", Open Mobile Alliance™, OMA-TS-DM_DM_MetaInfo-V1_3, URL:http://www.openmobilealliance.org/

[MetaDTD] "OMA Device Management Meta Information, Document Type Definition", Open Mobile Alliance™,OMA-TS-DM_MetaInfo_DTD-V1_3, URL:http://www.openmobilealliance.org/

[OBEXBinding] "OMA Device Management OBEX Binding Specification", Open Mobile Alliance™, OMA-TS-DM_OBEXBinding-V1_3, URL:http://www.openmobilealliance.org/

[PushBinding] "OMA Device Management Push Binding Specification", Open Mobile Alliance™, OMA-TS-DM_PushBinding-V1_3, URL:http://www.openmobilealliance.org/

[REPPRODTD] "OMA Device Management Representation Protocol DTD, Version 1.3". Open Mobile Alliance™. OMA-SUP-DTD_DM_RepPro-V1_3. 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

[SCRRULES] "SCR Rules and Procedures", Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:http://www.openmobilealliance.org/

[WSPBinding] "OMA Device Management WSP Binding Specification", Open Mobile Alliance™, OMA-TS-DM_WSPBinding-V1_3, URL:http://www.openmobilealliance.org/

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 [SCRRULES].

3.2 Definitions

Kindly consult [DMDICT] for all definitions used in this document.

3.3 Abbreviations

Kindly consult [DMDICT] for all abbreviations used in this document.

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 DM 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.

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:

- Extensible DM Notification message structure, supporting rich information (i.e., expiration, reason for connection, etc.) and server request for specific management objects to be sent in the Package#1

- SIP Push and HTTP Push binding for DM Notification
- Enhancement on existing DM 1.2 Bootstrap mechanism, including Client Initiated Bootstrap (via HTTPS GET), Bootstrap Server Discovery and Bootstrap Config MO
- Clarification regarding Inbox and TNDS Usage
- Support for the discovery of optional DM features supported by the DM client
- Security enhancements such as mandatory support for TLS 1.1 and recommended support for TLS 1.2 for HTTP Binding, separate credentials for DM Notification, SHA256 authentication scheme, control over initial access rights for a newly bootstrapped DM Server and replay attacks countermeasure enhancements
- Virtual URI based addressing and enhanced DM structural query
- Indication of the roaming status and bearer for the current DM session
- Sessionless Command DM and Sessionless Reporting DM
- Server to server delegation protocol

The DM V1.3 enabler merged the OMA SyncML Common V1.2 into its own release.

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_3-20160524-A	Requirement Document for DM 1.3 Enabler
Architecture Document		
[DMAD]	OMA-AD-DM-V1_3-20160524-A	Architecture Document for DM 1.3 Enabler
Technical Specifications		
[DMBOOT]	OMA-TS-DM_Bootstrap-V1_3-20160524-A	OMA Device Management Bootstrap
[DMDELEGATE]	OMA-TS-DM_Server_Delegation_Protocol-V1_3-20160524-A	OMA Device Management Server Delegation Protocol
[DMNOTI]	OMA-TS-DM_Notification-V1_3-20160524-A	OMA Device Management Notification Initiated Session
[DMPRO]	OMA-TS-DM_Protocol-V1_3-20160524-A	OMA Device Management Protocol
[DMREPU]	OMA-TS-DM_RepPro-V1_3-20160524-A	OMA Device Management Representation Protocol
[DMSEC]	OMA-TS-DM_Security-V1_3-20160524-A	OMA Device Management Security
[DMSESS]	OMA-TS-DM_Sessionless-V1_3-20160524-A	OMA Device Management Sessionless Command Message
[DMSESSREP]	OMA-TS-DM_Sessionless_Reporting-V1_3-20160524-A	OMA Device Management Sessionless Reporting
[DMSTDOBJ]	OMA-TS-DM_StdObj-V1_3-20160524-A	OMA Device Management Standardized Objects
[DMTND]	OMA-TS-DM_TND-V1_3-20160524-A	OMA Device Management Tree and Description
[DMTNDS]	OMA-TS-DM_TNDS-V1_3-20160524-A	OMA Device Management Tree and Description Serialization
[HTTPBinding]	OMA-TS-DM_HTTPBinding-V1_3-20160524-A	OMA Device Management HTTP Binding
[Meta]	OMA-TS-DM_Metainfo-V1_3-20160524-A	OMA Device Management Meta Information
[OBEXBinding]	OMA-TS-DM_OBEXBinding-V1_3-20160524-A	OMA Device Management OBEX Binding
[PushBinding]	OMA-TS-DM_PushBinding-V1_3-20160524-A	OMA Device Management Push Binding
[WSPBinding]	OMA-TS-DM_WSPBinding-V1_3-20160524-A	OMA Device Management WSP Binding
Supporting Files		
[DMAccDDF]	OMA-SUP-MO_DM_DMAcc-V1_3-20160524-A	OMA DM Account Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_dmacc-v1_3.ddf
[DevInfoDDF]	OMA-SUP-MO_DM_DevInfo-V1_3-20160524-A	OMA DM Device Information Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_devinfo-v1_3.ddf
[DevDetailDDF]	OMA-SUP-MO_DM_DevDetail- V1_3-20160524-A	OMA DM Detailed Information Device Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/dm_devdetail-v1_3.ddf

[DMDICT]	OMA-SUP-DM_Dictionary-V1_0-20160524-A	OMA DM Dictionary
[DMDDFDTD]	OMA-SUP-dtd_dm_ddf-V1_3-20160524-A	OMA DM Device Description Framework DTD Working file in DTD directory: http://www.openmobilealliance.org/tech/dtd/dm_ddf-v1_2.dtd
[MetaDTD]	OMA-SUP-DTD-DM_MetaInfo-V1_2-20160524-A	OMA DM Meta Information DTD Working file in DTD directory: http://www.openmobilealliance.org/tech/dtd/dm_metainfo-v1_2.dtd
[REPPRODTD]	OMA-SUP-DTD-DM_RepPro-V1_2-20160524-A	OMA DM Representation Protocol DTD Working file in DTD directory: http://www.openmobilealliance.org/tech/dtd/DM_RepPro-v1_2.dtd
[ACw7DM]	OMA-SUP-ac_w7_dm-V1_0_1-20080617-A	OMA DM w7 Application Characteristic. Working file in AC directory: http://www.openmobilealliance.org/tech/omna/dm-ac/ac_w7_dm-V1_0_1.txt
[DMDELXSD]	OMA-SUP-XSD_DM_DelegationProtocol-V1_3-20160524-A	OMA DM XML Schema for Delegation Protocol. Working file in AC directory: http://www.openmobilealliance.org/tech/profiles/dm_dm13_delegationprotocol-v1_0.xsd
[BootConfigDDF]	OMA-SUP-MO_DM_BootConfigMO-V1_0-20160524-A	OMA DM Bootstrap Config Description File. Working file in DM_MO directory: http://www.openmobilealliance.org/tech/omna/dm_mo/MO_dm_bootconfig-v1_3.ddf

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

6. OMNA Considerations

The OMNA portal needs to add and maintain the following MO into OMNA Device Management (DM) Management Object (MO) Registry:

MO Identifier	Description	Owner	Version	MO DDF	MO Spec
urn:oma:mo:oma-dm-dmacc:1.1	DDF Document for DM Account	OMA	V1.3	dm_dmacc-v1_3.ddf	OMA-TS-DM_StdObj-V1_3
urn:oma:mo:oma-dm-devinfo:1.1	DDF Document for Device Info	OMA	V1.3	dm_devinfo-v1_3.ddf	OMA-TS-DM_StdObj-V1_3
urn:oma:mo:oma-dm-devdetail:1.1	DDF Document for Device Details	OMA	V1.3	dm_devdetail-v1_3.ddf	OMA-TS-DM_StdObj-V1_3
urn:oma:mo:oma-dm-bootstrapcfg:1.0	DDF Document for Bootstrap Configuration MO	OMA	V1.0	MO_dm_bootconfig-v1_3.ddf	OMA-TS-DM_Bootstrap-V1_3

The OMNA portal needs to maintain the following number into OMNA PUSH Application ID:

Number	URN	Description
0x07	x-wap-application:syncml.dm	This ID is used for SyncML Device Management. Requested by the SyncML Device Management Expert Group.

The OMNA portal needs to maintain the following assigned numbers into OMNA WSP Content Type Numbers:

Assigned Number	Content Type	Encoding Version
0x42	application/vnd.syncml.dm+wbxml	1.5
0x43	application/vnd.syncml.dm+xml	1.5
0x58	application/vnd.syncml.dm.notification	TBD

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 [SCRRULES].

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

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

8. ERDEF for Device Management – Client Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-DM-C-001-M	DM Client	[DMPRO] AND [DMREPU] AND [DMSEC] AND [DMTND] AND [DMTNDS] AND [DMSTDOBJ] AND [DMDDFDTD] AND [DMBOOT] AND [Meta].
OMA-ERDEF-DM-C-003-O	DM Client Notification	[DMNOTI]
OMA-ERDEF-DM-C-004-O	DM Client Sessionless Command	[DMSESS]
OMA-ERDEF-DM-C-005-O	DM Client Sessionless Reporting	[DMSESSREP]
OMA-ERDEF-DM-C-006-O	DM Client HTTP Binding	[HTTPBinding]
OMA-ERDEF-DM-C-007-O	DM Client OBEX Binding	[OBEXBinding]
OMA-ERDEF-DM-C-008-O	DM Client WSP Binding	[WSPBinding]
OMA-ERDEF-DM-C-009-O	DM Client Push Binding	[PushBinding]

Table 2: ERDEF for Device Management Client-side Requirements

9. ERDEF for Device Management – Server Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-DM-S-001-M	DM Server	[DMPRO] AND [DMREPU] AND [DMSEC] AND [DMTND] AND [DMTNDS] AND [DMSTDOBJ] AND [DMDDFDTD] AND [Meta].
OMA-ERDEF-DM-S-002-O	DM Server Bootstrap	[DMBOOT]
OMA-ERDEF-DM-S-003-O	DM Server Notification	[DMNOTI]
OMA-ERDEF-DM-S-004-O	DM Server Sessionless Command	[DMSESS]
OMA-ERDEF-DM-S-005-O	DM Server Sessionless Reporting	[DMSESSREP]
OMA-ERDEF-DM-S_006-O	DM Server HTTP Binding	[HTTPBinding]
OMA-ERDEF-DM-S_007-O	DM Server OBEX Binding	[OBEXBinding]
OMA-ERDEF-DM-S_008-O	DM Server WSP Binding	[WSPBinding]
OMA-ERDEF-DM-S_009-O	DM Server Push Binding	[PushBinding]
OMA-ERDEF-DM-S_010-O	DM Server Delegation Protocol	[DMDELEGATE]

Table 3: ERDEF for Device Management Server-side Requirements

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-ERELD-DM-V1_3-20160524-A	24 May 2016	Status changed to Approved by TP TP Ref # OMA-TP-2016-0041R01-INP_DM_V1_3_ERP_for_final_Approval