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1. Scope

(Informative)

This document contains use cases and requirements for Device Management 1.3. It describes a set of enhanced or new functional requirements for the management of a Device. These functional requirements will maintain the backward compatibility with DM 1.2.
2. References

2.1 Normative References


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.

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. Introduction

Currently, DM technology allows a device to present the information stored on the device to an external server, in case the external server has sufficient rights to do this. This can be seen in the following picture:

At the left side of the picture we can find the device, with its internal resources. The device presents part of this information to the server that is on the right part. The way to do this is through Management Objects at the DM Tree.

Along with the emergence of advanced Devices and new services, the device management framework already defined in DM 1.2 [DM12RD] is enhanced in release 1.3 to address more market needs. The objective of this document is to collect additional use cases, a set of enhanced and/or new functional requirements for the management of a Device to cover those needs in release 1.3.
5. Device Management release description  (Informative)

The Device Management (DM) Enabler provides a platform neutral protocol to allow servers to remotely manage devices. DM is intended to operate over a variety of transport and notification protocols in a platform neutral format.

5.1 Version 1.2

The DM V1.2 Enabler added or improved the following functionality:

- Enhanced security
- DM Profile bootstrap
- TNDS
- Inbox
- DM Account
- XML Encryption
- Generic Alert
- Connectivity settings moved to ConnMO Reference Release
- Nonce Resynchronization

5.2 Version 1.3

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

- Sessionless DM
- Support for rich information in notification message including expiration, reason for session, etc.
- Support for notification to contain server request for specific management objects to be sent in package 1
- SIP Push and HTTP Push binding for DM Notification
- Enhancement on existing bootstrap mechanism in DM 1.2
- Support Client to request bootstrap using HTTPS GET
- Clarification regarding Inbox and TNDS Usage
- Support for the discovery of optional DM features supported by the DM client
- Mandating support for TLS 1.1 and recommending support for TLS 1.2 for HTTP Binding
- Virtual URI based addressing
- Enhanced DM structural query
- Indication of the roaming status and bearer for the current DM session
- Server to server delegation

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

6.1 Modularisation

The requirements for DM 1.3 are in addition to the requirements for DM 1.2 [DM12RD].

This section depicts the whole release as a collection of different functional modules where each one is a group of requirements identified as related with the offering of functionality. Functional modules will be described as mandatory functionality (core functionality) or optional functionality (value-added functionality).

The defined functional modules are as follows:

- **Bootstrap**: this functional module supports the process of installing parameters and/or applications on a DM Client to establish a given service for the first time, or for the purposes of resetting a DM Client to initial settings. This is a mandatory functional module.

- **Notification**: this functional module provides for out-of-band notification from a DM Server to a DM Client, indicating that a session is desired. This is a mandatory functional module.

- **Authentication**: this functional module provides secure management sessions between a DM Server and a DM Client. This is a mandatory functional module.

- **Transports**: this functional module supports multiple transports for communication between a DM Server and a DM Client. This is a mandatory functional module.

- **General**: Some requirements are intended to affect all the functional modules, and therefore are marked in the functional module column of the requirement’s table as “General”.

6.2 High-Level Functional Requirements

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Release</th>
<th>Functional module</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM-HLF-001</td>
<td>The DM enabler SHALL specify SIP transport.</td>
<td>Future</td>
<td>Transports</td>
</tr>
<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 already supports HTTP, WSP and OBEX.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM-HLF-002</td>
<td>The DM enabler SHALL specify UDP transport.</td>
<td>Future</td>
<td>Transports</td>
</tr>
<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 already supports HTTP, WSP and OBEX.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM-HLF-003</td>
<td>The DM enabler SHALL specify SIP notification method.</td>
<td>1.3</td>
<td>Notification</td>
</tr>
<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 already supports the WAP PUSH method.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM-HLF-004</td>
<td>The DM enabler SHALL specify UDP notification method.</td>
<td>Future</td>
<td>Notification</td>
</tr>
<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 already supports the WAP PUSH method.</td>
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<td></td>
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<tr>
<td>DM-HLF-005</td>
<td>The DM enabler SHALL specify mandatory bootstrap functionality.</td>
<td>1.3</td>
<td>Bootstrap</td>
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<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 already supports optional bootstrap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM-HLF-006</td>
<td>The DM enabler notification SHALL provide expiration for the notification message.</td>
<td>1.3</td>
<td>Notification</td>
</tr>
<tr>
<td></td>
<td><strong>Informational Note</strong>: DM 1.2 notification does not provide for expiration, reason for session or recommended protocol version. The new notification MUST be backward compatible with the DM 1.2 version.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requirement</td>
<td>Description</td>
<td>Section</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-007</td>
<td>The DM enabler notification SHALL convey reason for session information in the notification message. <strong>Informational Note:</strong> DM 1.2 notification does not provide for expiration, reason for session or recommended protocol version. The new notification MUST be backward compatible with the DM 1.2 version.</td>
<td>1.3 Notification</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-008</td>
<td>The reason for session information SHALL be made available to the end user as additional information before establishing the management session if user interaction is required.</td>
<td>1.3 Notification</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-009</td>
<td>The DM enabler SHALL provide a mechanism for the discovery of optional DM features supported by the client. <strong>Informational Note:</strong> DM 1.2 already provides an indication of Large Object delivery. Optional features to be indicated are Large Object, Nonce Synchronization, TNDS, Inbox object, User Interaction Commands, asynchronous data via Client initiated Alert, Generic Alert, Correlator, Client Event Alert.</td>
<td>1.3 General</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-010</td>
<td>The DM enabler SHALL specify mandatory TNDS support. <strong>Informational Note:</strong> DM 1.2 already supports optional support for TNDS.</td>
<td>1.3 Bootstrap</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-011</td>
<td>The DM account information SHOULD include highest protocol version supported by the server. <strong>Informational Note:</strong> DM 1.2 account does not provide highest protocol version. The new account information MUST be backward compatible with DM 1.2.</td>
<td>Future General</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-012</td>
<td>The DM Enabler SHALL provide a mechanism to obtain the list of locations of all occurrences of an MO within the Device tree, given the MO Identifier.</td>
<td>1.3 General</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-013</td>
<td>The DM enabler SHOULD provide a mechanism that allows a DM Client to read bootstrap data larger than 32KB from a smartcard.</td>
<td>1.3 Bootstrap</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-014</td>
<td>The DM enabler notification SHOULD indicate which transport binding and authentication type are required by the DM Server in the succedent DM session.</td>
<td>1.3 General</td>
<td></td>
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<tr>
<td>DM-HLF-015</td>
<td>The DM enabler notification SHOULD indicate if some specific information in the DevDetail is desired by the DM server.</td>
<td>1.3 General</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-016</td>
<td>The DM enabler SHALL specify HTTP Push notification method. <strong>Informational Note:</strong> DM 1.2 already supports the WAP PUSH method.</td>
<td>1.3 Notification</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-017</td>
<td>The DM Client SHALL support multiple Management Authorities.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-018</td>
<td>The DM Client SHALL support multiple Management Authorities managing different instances of the same Management Object.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-019</td>
<td>The DM Client SHALL support the delegation of a Management Authority’s control to other Management Authorities.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-020</td>
<td>The DM Enabler SHALL support a mechanism to prioritize Management Authorities that access the same instance of a management object.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-021</td>
<td>The DM Enabler SHALL support Partial Delegation.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-022</td>
<td>The DM Enabler SHALL support Full Delegation.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
<tr>
<td>DM-HLF-023</td>
<td>The DM Enabler SHALL support Temporary Delegation.</td>
<td>1.3 Management Authority</td>
<td></td>
</tr>
</tbody>
</table>
DM-HLF-024 The DM enabler SHALL provide a mechanism for a Device to discover the URL of the DM Bootstrap Server. 1.3 Bootstrap

DM-HLF-025 The DM enabler SHALL provide a mechanism for the DM Server to allow automatic discovery of the URL of the DM Bootstrap Server. 1.3 Bootstrap

DM-HLF-026 The DM enabler SHALL provide a mechanism for the DM Server to inhibit automatic discovery of the URL of the DM Bootstrap Server. 1.3 Bootstrap

DM-HLF-027 The DM enabler SHALL provide a mechanism for delivery of the DM Bootstrap Server URL to a Device over OMA Push. 1.3 Bootstrap

DM-HLF-028 The DM enabler SHALL provide a mechanism for the DM Server to allow delivery of the DM Bootstrap Server URL to a Device over OMA Push. 1.3 Bootstrap

DM-HLF-029 The DM enabler SHALL provide a mechanism for the DM Server to inhibit delivery of the DM Bootstrap Server URL to a Device over OMA Push. 1.3 Bootstrap

DM-HLF-030 The DM enabler SHALL define a Management Object for the DM Server to manage the URLs of the DM Bootstrap Servers for a Device. 1.3 Bootstrap

DM-HLF-031 The DM enabler SHALL provide a mechanism for devices that support a smartcard to retrieve the Bootstrap Server URL from the smartcard. 1.3 Bootstrap

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Release</th>
<th>Functional module</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM-SEC-001</td>
<td>The DM enabler Network Initiated Bootstrapping SHOULD also support a NETWORKID based on a shared secret between device and network provider. Informational Note: DM 1.2 suggests IMSI/ESN as shared secret NETWORKID which is a vulnerability, but needs to be kept for backwards compatibility.</td>
<td>1.3</td>
<td>Bootstrap</td>
</tr>
<tr>
<td>DM-SEC-002</td>
<td>The mechanism for delivery of the DM Bootstrap Server URL to a Device over OMA Push SHALL be secure.</td>
<td>1.3</td>
<td>Bootstrap</td>
</tr>
</tbody>
</table>

Table 1: High-Level Functional Requirements

6.2.1 Security

6.2.1.1 Authentication

N/A

6.2.1.2 Authorization

N/A

6.2.1.3 Data Integrity

N/A
6.2.1.4 Confidentiality
N/A

6.2.2 Charging
N/A

6.2.3 Administration and Configuration

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
<th>Release</th>
<th>Functional module</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM-ADM-001</td>
<td>The Management Authority SHALL be able to specify that the DM Client connect to the DM Server upon successful processing a DM Profile bootstrap message</td>
<td>1.3</td>
<td>Bootstrap</td>
</tr>
<tr>
<td>DM-ADM-002</td>
<td>The DM Client SHOULD be able to securely retrieve a bootstrap message from an URL</td>
<td>1.3</td>
<td>Bootstrap</td>
</tr>
</tbody>
</table>

Table 3: High-Level Functional Requirements – Administration and Configuration Items

6.2.4 Usability
N/A

6.2.5 Interoperability
N/A

6.2.6 Privacy
N/A

6.3 Overall System Requirements
N/A
# Appendix A. Change History (Informative)

## A.1 Approved Version History

<table>
<thead>
<tr>
<th>Reference</th>
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## A.2 Draft/Candidate Version 1.3 History

<table>
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<th>Date</th>
<th>Sections</th>
<th>Description</th>
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<tr>
<td>Draft Versions</td>
<td>01 Jan 2008</td>
<td>All</td>
<td>Initial baseline for DM 1.3 RD based on RD from Ref TP Doc# OMA-TP-2007-0075R03-INP_ERP_DM_V1.2_for_Final_Approval</td>
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<tr>
<td></td>
<td>23 Jul 2008</td>
<td>All</td>
<td>New template, same text.</td>
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|                     | 27 Sep 2008| 2.2, 4, 6.2 | OMA-DM-2008-0114R01-CR_Bugfixes_RD_Intro_chapter (excluding change #2)  
OMA-DM-2008-0127R01-CR_RD_Transport  
OMA-DM-2008-0132-CR_RD_Bootstrap |
|                     | 13 Oct 2008| 6.2      | Incorporated agreed CR:  
OMA-DM-2008-0133R01-CR_RD_Notification  
OMA-DM-2008-0134R01-CR_RDOptional_Features  
OMA-DM-2008-0137-CR_RD_TDND |
|                     | 22 Oct 2008| 5, 6.1   | Applied agreed CRs:  
OMA-DM-2008-0150R02-CR_RD_Version  
OMA-DM-2008-0156R02-CR_RD_Modularisation |
|                     | 13 Jan 2009| 4, 6     | Incorporated agreed CRs:  
OMA-DM-2008-0144R03-CR_RD_Notification  
OMA-DM-2008-0193R01-CR_Secure_Network_Initiated_Bootstrap  
OMA-DM-DM13-2008-0009R02-CR_successful_bootstrap_indication  
OMA-DM-DM13-2008-0012-CR_RD_Modules [Using a smaller font in this box only to prevent text wrap-around] |
|                     | 01 Feb 2009| 2,6,B,C  | Incorporated agreed CRs:  
OMA-DM-DM13-2009-0001R01-CR_RD_Cleanup  
OMA-DM-2008-0174R01-CR_URL_Bootstrap  
Also fixed a few spelling and grammar errors. |
|                     | 03 Feb 2009| 6, B     | Incorporated agreed CRs:  
OMA-DM-DM13-2008-0010R05-CR_Clarification_on_reason_for_session |
|                     | 16 Apr 2009| 6, B     | Incorporated agreed CR (RD review comment A004):  
OMA-DM-2009-0008R01-CR_UC_MOID_Search  
Incorporated RD review comment A003 |
|                     | 27 Apr 2009| 6        | Incorporated agreed CRs:  
DM13-2008-0005R02-CR_SC_SIZE |
|                     | 08 May 2009| 6.2      | Incorporated agreed CRs (RD review comments A006, A007):  
OMA-DM-DM13-2009-0017R01-CR_RDERR_A006_Auth_Type  
OMA-DM-DM13-2009-0018R01-CR_RDERR_A007_DevDetail |
| Candidate Version:  | 02 Jun 2009| N/A      | Status changed to Candidate by TP:  
TP Ref #: OMA-TP-2009-0217-INP_DM_V1.3_RD_and_AD_for_Candidate_Approval |
| OMA-RD-DM-V1_3      |            |          | |
| Draft Version:      | 26 Jun 2009| 6.2      | Incorporated CR:  
| OMA-RD-DM-V1_3      |            |          | |
| Candidate Version:  | 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 |
| OMA-RD-DM-V1_3      |            |          | |
| Draft Versions      | 20 Nov 2009| 5.1, 6.2 | Incorporated CRs:  
OMA-DM-DM13-2009-0071R01-CR_RD_patch_before_publication  
OMA-DM-DM13-2009-0090-CR_HLR_Update  
Clean-up of formatting in the document |
<table>
<thead>
<tr>
<th>Document Identifier</th>
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<th>Sections</th>
<th>Description</th>
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<tbody>
<tr>
<td>OMA-RD-DM-V1_3</td>
<td>25 May 2010</td>
<td>N/A</td>
<td>Status changed to Candidate by TP</td>
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<td></td>
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<tr>
<td>OMA-RD-DM-V1_3</td>
<td>09 Sep 2010</td>
<td>5.2</td>
<td>Incorporated CR: OMA-DM-DM13-2010-0104R01-CR_RD_Correction_Informative</td>
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<td>OMA-RD-DM-V1_3</td>
<td>07 Dec 2010</td>
<td>N/A</td>
<td>Status changed to Candidate by TP</td>
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<td></td>
<td>Ref # OMA-TP-2010-0502-INP_DM_V1.3_ERP_and_ETR_for_Candidate_re_approval</td>
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<tr>
<td></td>
<td>19 Jan 2012</td>
<td>2, 4, 5.2</td>
<td>Incorporated CR: OMA-DM-DM13-2012-0002R02-CR_RD_updates_for_CONR_A003_and_A004</td>
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<tr>
<td></td>
<td>03 Feb 2012</td>
<td>All</td>
<td>Restored cross-references in the whole document.</td>
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<tr>
<td>OMA-RD-DM-V1_3</td>
<td>06 Mar 2012</td>
<td>N/A</td>
<td>Status changed to Candidate by TP</td>
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<td></td>
<td></td>
<td></td>
<td>Ref # OMA-TP-2012-0084-INP_DM_V1.3_ERP_and_ETR_for_Candidate_re_approval</td>
</tr>
</tbody>
</table>
Appendix B. Use Cases

B.1 Bootstrap retrieval via URL

B.1.1 Short Description

A DM client will download, authenticate and process a bootstrap message from a URL. This downloaded bootstrap message would be processed just like a normal bootstrap message. The DM client would decide when to download the bootstrap message, and would be allowed to check to see if the bootstrap message had changed from the last download before processing it.

B.1.2 Market benefits

Device can directly retrieve a bootstrap message from a server without having to wait for the server to discover the device. Devices can retrieve the bootstrap on networks without notification.

B.2 Reason for session

B.2.1 Short Description

A Network Operator changes its platform configuration for its browsing service and initiates a campaign to update the browser settings on devices already in the field. The Device Management Server sends the DM Notification via SMS to the users’ devices. The DM Notification is the trigger to perform a DM session but local market policies oblige the Network Operator to provide the user with a legal disclaimer concerning benefits and risks of such session before performing it. For this reason, an informative text is associated to the DM Notification. The DM Client in the users’ device receives the DM Notification and displays the informative text in a popup informing, for example, that Network Operators’ DM System requests a new session in order to update the browser settings. This text also indicates that if user decides to refuse the connection, he/she won’t be able to use the browser, and that Network Operators’ DM System is not responsible for any damage suffered by device in consequence of the DM session. Finally, the user confirmation is requested for starting or refusing the connection with the DM Server. If the user accepts, the client initiates the DM session and he/she can use the browser with the new settings.

B.2.2 Market benefits

The Network Operator can inform the user about the reason and legal notice of the request for a DM session using the DM Notification, avoiding the need, for example, of a text SMS sent previously and separately and increasing the users’ acceptance for remote configurations.

The user can be informed about the reasons why the DM Session is needed avoiding unnecessary impact on the services he/she consumes regularly (e.g. browser).

B.3 Search for MO instances by MO Identifier

B.3.1 Short Description

A Device may support several kinds of MOs. These MOs may exist during factory bootstrap or may be dynamically created by the DM Server. The DM Server needs to know the location of the MO or its properties since it is Device dependent. Currently structural queries on the management tree to obtain DDF files are used to identify the location of a MO. However DDF files may be static, not provided or out-of-date which cause structural queries insufficient for this purpose. When multiple DM Servers exist, this functionality would also need a convenient way to find MO instances or their properties.
B.3.2 Market Benefits

Adding the ability to dynamically retrieve the location of a specific MO in the tree will simplify the design and implementation of application within the DM Server – instead of hard-coding the location of the MO per specific devices (by make, model, version, etc.), the application only needs to know the MO ID.