OMA Device Management Sessionless Message

Candidate Version 1.3 – 25 May 2010

Open Mobile Alliance

OMA-TS-DM_Sessionless-V1_3-20100525-C

Contents

Figures

Tables

No table of figures entries found.

1. Scope

This document defines how an OMA DM message may be sent to a DM Client for continuous management in a sessionless manner.

2. References

2.1 Normative References

[DMBootstrap] "OMA Device Management Bootstrap, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_Bootstrap-V1_3. URL:http://www.openmobilealliance.org

[DMProtocol] "OMA Device Management Protocol, Version 1.3". Open Mobile Alliance™. OMA-TS-DM_Protocol-V1_3. URL:http://www.openmobilealliance.org

[DMSecurity] "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

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

[WBXML1.1] "WAP Binary XML Content Format Specification", WAP Forum™. SPEC-WBXML-19990616.pdf. URL:http://www.openmobilealliance.org

[WBXML1.2] "WAP Binary XML Content Format Specification", WAP Forum™. WAP-154-WBXML. URL:http://www.openmobilealliance.org

[WBXML1.3] "WAP Binary XML Content Format Specification", WAP Forum™. WAP-192-WBXML. URL:http://www.openmobilealliance.org

2.2 Informative References

[OMADICT] "Dictionary for OMA Specifications", Version 2.7, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_7, URL:http://www.openmobilealliance.org

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

Authentication	Authentication is the process of ascertaining the validity of either the Device or the Device Management Server’s identity.
Device	See [OMADICT]
Device Management Server	The Device Management Server is an entity that is responsible for maintaining one or more Devices, in whole or in part. Its role is to facilitate the easy maintenance of a Device.
DM Server	See Device Management Server
Management Session	A continuous connection between the Device and the Device Management Server established for the purpose of carrying out one or more device management operations.
Sessionless Message	A standalone DM Message sent from a DM Server to a DM Client, outside a Management Session, for the continuous management purposes.
Sessionless Process	The sending and processing of Sessionless Messages to a DM client for the purpose of carrying out one or more device management operations outside a Management Session.

3.3 Abbreviations

BCAST	Broadcast
DM	Device Management
OMA	Open Mobile Alliance
SIP	Session Initiation Protocol
WAP	Wireless Application Protocol

4. Introduction

Other OMA DM specifications define how a DM Client is bootstrapped, or how a DM management session is established and maintained. This specification defines the Sessionless Message and Sessionless Process which is an alternative to session-based DM mechanism. Sessionless Process can be performed by sending a Sessionless Message to a DM Client using a push technology.

5. Sessionless Management

5.1 Sessionless Management Scenario

OMA DM devices need to be able to function in diverse network environments and using a large set of protocols. This makes it hard to find a 'one size fits all' solution to the sessionless management problem. This section illustrates the requirements and processes for Sessionless Process.

5.1.1 Requirements

An OMA DM solution capable of continuous management outside a normal DM session needs to address these requirements:

- Re-use technology (WAP Push, SIP Push, HTTP Push, OMA BCAST, etc),
- Highly interoperable,
- Secure (signed and authenticated),
- Transport encoding should be [WBXML1.1], or [WBXML1.2], or [WBXML1.3],
- Previously bootstrapped DM Client.

5.1.2 Solutions

This document defines how to perform the Sessionless Process – a DM Server sends out a Sessionless Message via some push mechanism, e.g. WAP or SIP Push or broadcast mechanism e.g. OMA BCAST. The DM Client MUST have previously bootstrapped with the DMAcc [DMSTDOBJ] for the DM Server sending the Sessionless Message.

Regardless of how the device has been configured, the DM Server is now in a position where it can send out a Sessionless Message. This Sessionless Message, whose structure and content are defined in this document, contains management commands to the device.

It is critical that DM Clients accept Sessionless Management messages only from DM Servers that have a corresponding DMAcc on the device. Furthermore, each Sessionless Message MUST be signed. The DM Client MUST authenticate every Sessionless Message.

Figure 1 gives an overview of this scenario.

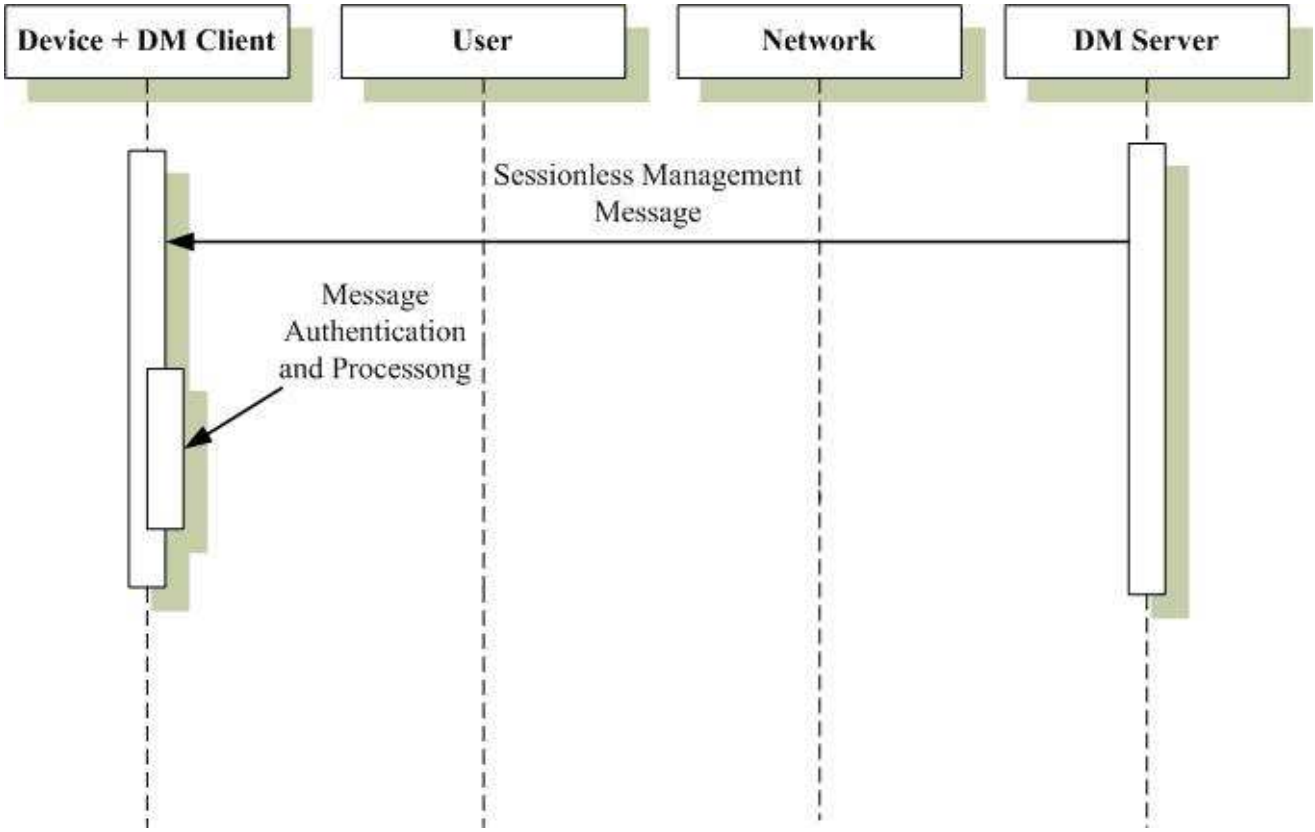

Figure 1: Sessionless Management

5.2 Sessionless Management Content

The content of a Sessionless Message is an OMA DM message. However, this message is a special package in many ways since it is not part of an ongoing OMA DM session but rather a one-time message. Hence, many of the elements needed to manage the session are superfluous in this context, but they must still be included so that the message may be processed by the normal DM client.

Sessionless Messages MUST have the DM Server's ServerID value in the SyncHdr/Source/LocURI.

If the DM Sessionless Message has been fully encrypted with XML-encryption [XMLENC], then it MUST be in XML. Otherwise, the Sessionless Messages MUST be [WBXML1.1], or [WBXML1.2], or [WBXML1.3] encoded.

OMA DM servers MUST NOT expect any response to a Sessionless Message.

A DM Server MUST use the XML-signature [XMLSIGN] mechanism on the entire Sessionless Message.

A DM Server SHOULD use the XML-encryption [XMLENC] mechanism on part or entire Sessionless Message when the message contains confidential information.

A DM Client MUST support WBXML encoded TNDS objects and normal TNDS objects [DMTNDS] and MUST support the Inbox.

See the DM Security document [DMSecurity] for more information on XML-signature and XML-encryption.

5.3 Transport

Any transport MAY be used to send the Sessionless Message to the DM Client. Transport specific security MUST be employed. See the security document for further information [DMSecurity].

5.4 Management Object Access Rights

When a Sessionless Message adds new TNDS objects [DMTNDS] - any ACL values that are to be set for these objects MUST be included in the TNDS data as ACL property data for the applicable nodes.

5.5 Processing of the Sessionless Message

A Sessionless Message is processed just like a normal DM message, except:

- A response message MUST NOT be sent back; (Note that this does not preclude the device from initiating a new DM session as a consequence of the sessionless message if supported by the relevant Management Object specifications);
- The DM Client MUST NOT process the body of the Sessionless Message if the XML Signing of the message is not valid;
- The ServerID in the SyncHdr/Source/LocURI MUST match a ServerID in only one of the DMAcc in the DM Tree;
- The DM Client MUST authenticate the Sessionless Message based on the authentication information in the matching DMAcc;
- The ServerID from the matching DMAcc MUST be used for all ACL decisions for the Sessionless Message;
- The DM Server MUST NOT include Get command in the Sessionless Message.

The DM Client MAY rename a new MO. In the case of the Connectivity MO the DM Client SHOULD also rename the values of the corresponding connectivity references to the new name for all MO's encoded within the same TNDS object.

When a TNDS object contains a MO where connectivity references are linked to a Connectivity or Proxy MO that also are included in the same TNDS object, then the values of those connectivity references MAY contain a URI that starts with "./Inbox". In that case the URI MUST have the value of "./Inbox/" plus the URI of that Connectivity MO's location in the same TNDS object.

If a DM Client encounters an item with a URI of the EXT sub-tree that it is not prepared to handle, the DM Client MAY ignore that item so that the overall message may succeed.

If the Sessionless Message contains a MO that the DM Client does not support, the DM Client MAY ignore this MO, so that the overall message may succeed.

If the Sessionless Message contains multiple versions of a MO, the DM Client SHOULD use the latest version of that MO that it supports and ignore the other versions so that the overall message may succeed.

6. Sessionless Message Usage

There are two major usages for Sessionless Message:

- Adding new Management Objects into the management tree;
- Managing exiting Management Objects using Add, Replace, Delete and Exec commands.

Sessionless Message MUST NOT be used to provision the DM Account MO to the devices. The bootstrap mechanism defined in DM Bootstrap [DMBootstrap] is used for provisioning DM Account MO to the devices.

6.1 Add New MO using Sessionless Message

There are two ways to provision the new Management Object into the devices as shown below.

6.1.1 Inbox + TNDS

The new Management Object can be transformed into xml or wbxml file using the TNDS mechanism specified in [DMTNDS]. In case the DM Server doesn't know where the new Management Object is located, the DM Server can send the TNDS encoded Management Object to the device with the URI "./Inbox" as defined in [DMSTDOBJ].

It is not possible to add new Management Object node by node against the URI "./Inbox" since no child nodes are allowed for "./Inbox" and Inbox mechanism has to be used together with TNDS mechanism.

6.1.2 Absolute URI

In case the DM Server knows exactly where the new Management Object is located, the DM Server can send the TNDS encoded Management Object to the device using one Add command. Alternatively the DM Server can send the new Management using multiple Add commands without TNDS encoding.

6.2 Manage existing MO using Sessionless Message

Since no child nodes are allowed for "./Inbox" and only Add command is allowed to be used on "./Inbox" mechanism as described in [DMSTDOBJ], it is not possible to send Sessionless Message using "./Inbox" as the target URI for managing existing MOs. In order to manage existing MOs using Sessionless Message, the DM Server MUST either knows absolute URI of each node to be manipulated in advance or use the relative URI mechanism defined in section 5.2 of [DMProtocol].

6.2.1 Absolute URI

In order to manage existing MOs using Sessionless Message, one possibility is that the DM Server knows exactly where the nodes are located in advance. In this scenario, the absolute URI has to be included in Add, Replace, Delete or Exec command to address the node which is to be manipulated.

6.2.2 Relative URI

In order to perform continuous management, another possibility is that the DM Server sends Add, Replace, Delete or Exec commands using relative URI defined in section 5.2 of [DMProtocol]. The DM Client and DM Server MUST support relative URI mechanism if Sessionless DM is supported.

Appendix A. (Informative)

A.1 Approved Version History

Reference	Date	Description
N/A	N/A	No prior version

A.2 Draft/Candidate Version 1.3 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-TS-DM_Sessionless-V1_3	19 Oct 2009	All	New document
	12 Dec 2009	All	Applied OMA-DM-DM13-2009-0114R01-CR_Sessionless_Message_Usage, OMA-DM-DM13-2009-0117R01-CR_Sessionless_WBXML.
	11 Jan 2010	All	Spell check corrections and applied OMA-DM-DM13-2009-0133-CR_Sessionless_Figure_Clarification.
	14 Jan 2010	All	Editorial cleanup as part of Closure Review.
	03 Feb 2010	4	Applied OMA-DM-DM13-2010-0015R01-CR_Sessionless_Intro OMA-DM-DM13-2010-0022R03-CR_Sessionless_SCR_Entries OMA-DM-DM13-2010-0025R01-CR_Sessionless_Bug_Fix
	11 Feb 2010	All	Editorial clean up of formatting by DSO
	15 Mar 2010	All	All text to UK, and fixed “SyncHhdr” to “SyncHdr” in B.1.
	14 Apr 2010	6.2.2	Applied OMA-DM-DM13-2010-0048-CR_Remove_Sessionless_Example.
	26 Apr 2010	All	Creation by DSO of a clean version without change marks
Candidate Version OMA-TS-DM_Sessionless-V1_3	25 May 2010	N/A	Status changed to Candidate by TP Ref # OMA-TP-2010-0221-INP_DM_V1.3_ERP_and_ETR_for_Candidate_approval

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [IOPPROC].

B.1 SCR for DM Client

Item	Function	Reference	Requirement
DM-SM-C-001-M	Support for OMA Sessionless Management	Section 5.2	
DM-SM-C-002-M	Support for embedded WBXML encoded TNDS objects and normal TNDS objects.	Section 5.2	
DM-SM-C-003-M	Support for Inbox.	Section 5.2	
DM-SM-C-004-M	ServerID in SyncHdr/Source/LocURI must match the ServerID in only one DMAcc	Section 5.5	
DM-SM-C-005-M	ServerID in SyncHdr/Source/LocURI is used for all ACL calculations	Section 5.5	
DM-SM-C-006-M	Support for Relative URI Addressing Mechanism	Section 6.2	

B.2 SCR for DM Server

Item	Function	Reference	Requirement
DM-SM-S-001-M	Support for OMA Sessionless Management	Section 5.2	
DM-SM-S-002-M	Encode DM message into WBXML if DM Message is not fully XML-encrypted.	Section 5.2	
DM-SM-S-003-M	Write ServerID in SyncHdr/Source/LocURI	Section 5.2	
DM-SM-S-004-M	XML-Signature applied on entire Sessionless Message	Section 5.2	
DM-SM-S-005-M	Transport specific security is employed	Section 5.3	
DM-SM-S-006-M	ACL properties for new objects are included with TNDS data.	Section 5.4	
DM-SM-S-007-O	XML-Encryption applied on part or entire Sessionless Message when the message contains confidential information	Section 5.2	
DM-SM-S-008-M	Support for Relative URI Addressing Mechanism	Section 6.2	