



Enabler Release Definition for LWM2M_VirtualObserveNotify

Approved Version 1.0 – 11 Jul 2019

Open Mobile Alliance
OMA-ERELED-LWM2M_VirtualObserveNotify-V1_0-20190711-A

Use of this document is subject to all of the terms and conditions of the Use Agreement located at <https://www.omaspecworks.org/about/policies-and-terms-of-use/>.

Unless this document is clearly designated as an approved specification, this document is a work in process, is not an approved Open Mobile Alliance™ specification, and is subject to revision or removal without notice.

You may use this document or any part of the document for internal or educational purposes only, provided you do not modify, edit or take out of context the information in this document in any manner. Information contained in this document may be used, at your sole risk, for any purposes. You may not use this document in any other manner without the prior written permission of the Open Mobile Alliance. The Open Mobile Alliance authorizes you to copy this document, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials and that you comply strictly with these terms. This copyright permission does not constitute an endorsement of the products or services. The Open Mobile Alliance assumes no responsibility for errors or omissions in this document.

Each Open Mobile Alliance member has agreed to use reasonable endeavors to inform the Open Mobile Alliance in a timely manner of Essential IPR as it becomes aware that the Essential IPR is related to the prepared or published specification. However, the members do not have an obligation to conduct IPR searches. The declared Essential IPR is publicly available to members and non-members of the Open Mobile Alliance and may be found on the “OMA IPR Declarations” list at <https://www.omaspecworks.org/about/intellectual-property-rights/>. The Open Mobile Alliance has not conducted an independent IPR review of this document and the information contained herein, and makes no representations or warranties regarding third party IPR, including without limitation patents, copyrights or trade secret rights. This document may contain inventions for which you must obtain licenses from third parties before making, using or selling the inventions. Defined terms above are set forth in the schedule to the Open Mobile Alliance Application Form.

NO REPRESENTATIONS OR WARRANTIES (WHETHER EXPRESS OR IMPLIED) ARE MADE BY THE OPEN MOBILE ALLIANCE OR ANY OPEN MOBILE ALLIANCE MEMBER OR ITS AFFILIATES REGARDING ANY OF THE IPR'S REPRESENTED ON THE “OMA IPR DECLARATIONS” LIST, INCLUDING, BUT NOT LIMITED TO THE ACCURACY, COMPLETENESS, VALIDITY OR RELEVANCE OF THE INFORMATION OR WHETHER OR NOT SUCH RIGHTS ARE ESSENTIAL OR NON-ESSENTIAL.

THE OPEN MOBILE ALLIANCE IS NOT LIABLE FOR AND HEREBY DISCLAIMS ANY DIRECT, INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF DOCUMENTS AND THE INFORMATION CONTAINED IN THE DOCUMENTS.

THIS DOCUMENT IS PROVIDED ON AN "AS IS" "AS AVAILABLE" AND "WITH ALL FAULTS" BASIS.

© 2019 Open Mobile Alliance.

Used with the permission of the Open Mobile Alliance under the terms set forth above.

Contents

1. SCOPE.....	4
2. REFERENCES	5
2.1 NORMATIVE REFERENCES.....	5
2.2 INFORMATIVE REFERENCES.....	5
3. TERMINOLOGY AND CONVENTIONS	6
3.1 CONVENTIONS.....	6
3.2 DEFINITIONS.....	6
3.3 ABBREVIATIONS	6
4. RELEASE VERSION OVERVIEW	7
4.1 VERSION 1.0 FUNCTIONALITY	7
5. DOCUMENT LISTING FOR LWM2M VIRTUALOBSERVE NOTIFY 1.0.....	8
6. OMNA CONSIDERATIONS	9
7. API CONSIDERATIONS	10
APPENDIX A. CHANGE HISTORY (INFORMATIVE).....	11
A.1 APPROVED VERSION HISTORY	11

Tables

Table 1: Listing of Documents in Lwm2m VirtualObserveNotify 1.0.....	8
----------------------------------------------------------------------	---

1. Scope

The scope of this document is limited to the Enabler Release Definition of LWM2M VirtualObserveNotify V1.0 according to OMA Release process and the Enabler Release specification baseline listed in section 0.

2. References

2.1 Normative References

- [PORTFOLIO_TS] “Lightweight M2M – Portfolio Object”, Version 1.0, Open Mobile Alliance, OMA-TS-LWM2M PortfolioObj-V1_0, [URL:http://www.openmobilealliance.org/](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](http://www.ietf.org/rfc/rfc2119.txt)

2.2 Informative References

- [OMADICT] “Dictionary for OMA Specifications”, Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_9, [URL:http://www.openmobilealliance.org/](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”, "Release Version Overview" and “Conformance Requirements Notation Details”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Minimum Functionality Description	Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release.
Reference Release	A set of specifications and/or white papers which form a formal deliverable of OMA. The release can be referenced or otherwise used to support implementable enabler releases, but it cannot by itself be implemented in products.

3.3 Abbreviations

LwM2M	Lightweight Machine to Machine (refers to this OMA enabler)
OMA	Open Mobile Alliance
OMNA	Open Mobile Naming Authority
RRELD	Reference Release Definition

Kindly consult [OMADICT] for more abbreviations used in this document.

4. Release Version Overview

The Information Reporting Interface is used by a LwM2M Server to observe any changes of resources on a registered LwM2M Client, receiving notifications when new values are available. In LightweightM2M version 1.0, a single notification message can only include resources in a single object. In LightweightM2M version 1.1, the LwM2M Enabler can support a mechanism for atomic reporting of resources across different objects in a single notification. However, the conditions and rules of a notification message are too simple to satisfy complex scenarios that described as follows:

- The notification message can only be sent when multiple subscription conditions are met at the same time.
- Only some of the observed resources are included in the notification message, and other resources are only used as subscription conditions.
- Compared with the last notification message, this notification message only contains the changed resources.

In order to satisfy the requirements described above, this specification defines an Object to realize flexibly reporting resources across different objects in a single client notification message under different conditions and rules.

4.1 Version 1.0 Functionality

Version 1.0 of the Virtual Observe Notify object is used to support following functionalities.

1. Reporting resources across different objects in a single client notification message.
2. Supporting AND conditions for subscription, that is, a single client notification can be sent just when multiple subscription conditions are met at the same time.
3. Using resources as only the condition for Observe operation.
4. Reporting changed resources by a notification message.

5. Document Listing for LwM2M VirtualObserveNotify 1.0

This section is normative.

Doc Ref	Permanent Document Reference	Description
Technical Specification		
[VirtualObserveNotify_TS]	OMA-TS-LWM2M_VirtualObserveNotify-V1_0-20190711-A	Technical Specification for LWM2M VirtualObserveNotify Object
Supporting File		
[LWM2M_VirtualObserveNotify_XML]	OMA-SUP-LWM2M_VirtualObserveNotify-v1_0-20190711-A	XML document for LightweightM2M Portfolio Object Working file in profiles directory: File: LWM2M_VirtualObserveNotify-v1_0.xml Path: http://www.openmobilealliance.org/tech/profiles

Table 1: Listing of Documents in LwM2M VirtualObserveNotify 1.0

6. OMNA Considerations

The present Enabler Release consists in a new LwM2M Object. This LwM2M Object will be registered with the OMNA LwM2M Object registry.

Object URN Identifier	Organization	Object Specification URL	Description
urn:oma:lwm2m:oma:22	OMA	“Object Virtual Observe Notify Technical Specification”, Version 1.0, Open Mobile Alliance™, OMA-TS-LWM2M_VirtualObserveNotify-V1_0, URL:http://www.openmobilealliance.org/	LwM2M VirtualObserveNotify Object

7. API Considerations

Not Applicable.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
Approved Version OMA-ERELED- LwM2M_VirtualObserveNotify-V1_0	11 Jul 2019	Status changed to Approved by OMA-IPSO-2019-0087- INP_LwM2M_Object_Virtual_Observe_Notify_v1.0_for_Final_Approval