Lightweight M2M – Event Log Object (LwM2M Object – EventLog)

Candidate Version 1.0 – 28 Feb 2018

Open Mobile Alliance

OMA-TS-LwM2M_EventLog-V1_0-20180228-C

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1. Scope

This document defines a set of Objects to be used in conjunction with the Lightweight M2M enabler in order to interact with event logs within a device.

The LwM2M object provides a standardised interface to query logs within a device. The actual implementation of the underlying log functionality is outside the scope of this TS.

2. References

2.1 Normative References

[3GPP-TS_23.203] 3GPP TS 23.203 " Policy and charging control architecture"
URL:http://www.3gpp.org

2.2 Informative References

[3GPP-TS_21.905] 3GPP TS "3GPP Vocabulary" URL:http://www.3gpp.org

[OMADICT] "Dictionary for OMA Specifications", Open Mobile Alliance™,
OMA-ORG-Dictionary-V2_9, 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

LTE	WB-E-UTRAN as defined in [3GPP-TS_23.401].
NB-IoT	NarrowBand IoT is a subset of E-UTRAN.

See also [3GPP-TS_21.905] for 3GPP-specific definitions.

3.3 Abbreviations

AS	Application Server

See also [3GPP-TS_21.905] for 3GPP-specific abbreviations.

4. Introduction

This specification enables the transfer of log information from a device to an LwM2M server.

4.1 Version 1.0

V1.0 of the specification covers:

(1) Communication of generic log information

5. Use cases

5.1 Controlling the recording of log data

This uses the LogStart/Stop resource, 4011/4012

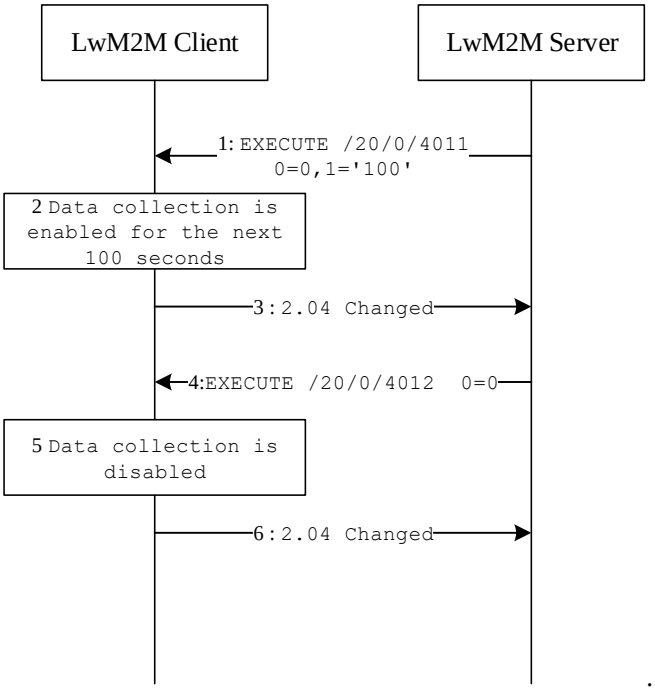

Figure 1: Controlling the recording of log data procedure

1. The LwM2M Server sends an EXECUTE command to the LwM2M Client on the device specifying
    - the IDs of the Log Object and its instance (/20/0),
    - the Log Start Resource ID (4011) to indicate to start the Data Collection logging process and
    - the payload containing the arguments of the EXECUTE command : namely argument 1 for indicating a Data Collection Period of 100s is requested, and argument 0 (which could be omitted) for indicating that the logging process is started with a virgin Data Collection
2. The LwM2M Client enables log data collection for the next 100 seconds
3. The LwM2M Client sends successful response to LwM2M Server.
4. The LwM2M Server sends an EXECUTE command to the LwM2M Client on the device specifying
    - the IDs of the Log Object and its Instance (20/0),
    - the Log Start Resource ID (4012) to indicate to stop the Data Collection logging process and
    - the payload containing the argument 0 (which could be omitted here) of the EXECUTE command for indicating that Data Collection is preserved when the logging process is stopped
5. The LwM2M Client disable log data collection
6. The LwM2M Client sends successful response to LwM2M Server.

5.2 Reporting the logging status

This uses the LogStatus resource 4013. The LogStatus could be reported either by a READ from the LwM2M Server or NOTIFICATION from the LwM2M Client. This use case intruduces the READ for example.

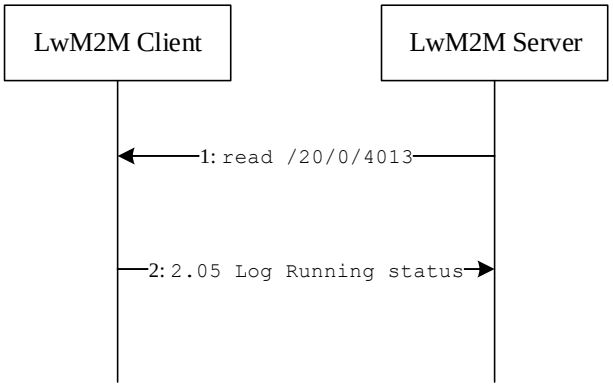

Figure 2: Reporting the logging status procedure

1. The LwM2M Server sends a read request to the LwM2M Client running on the device specifying
    - the IDs of the Log Object and its instance (/20/0),
    - the LogStatus Resource ID 4013 to indicate to get the log status information.
2. The LwM2M Client returns the log running status to the LwM2M server

5.3 Collecting the log data

This uses the LogData resource，4014

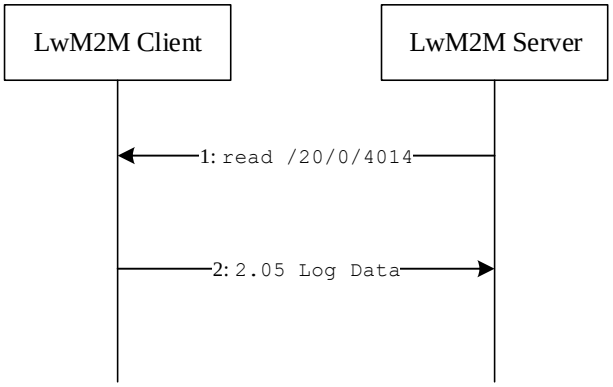

Figure 3: Collecting the log data procedure

1. The LwM2M Server sends a read request to the LwM2M Client running on the device specifying:
    - the IDs of the Log Object and its instance (/20/0),
    - the LogData Resource ID 4014 to indicate to get the log data information.
2. The LwM2M Client returns the log data to the LwM2M Server

5.4 Categorizing the log data

This uses the LogClass resource，4010

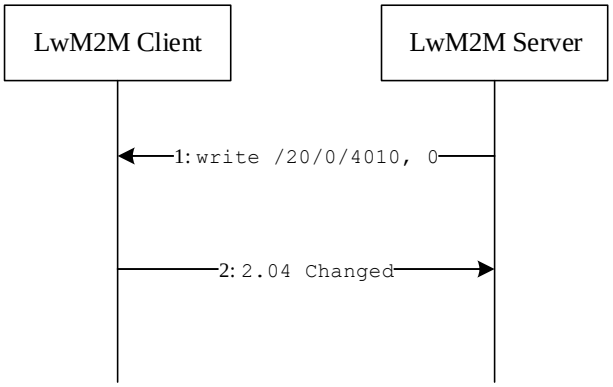

Figure 4: Categorizing the log data procedure

1. The LwM2M Server sends a write request to the LwM2M Client specifying:
    - the IDs of the Log Object and its instance (/20/0),
    - the Log Class Resource ID 4010 to indicate to set the log class information,
    - the payload containing the argument 0 of the EXECUTE command for indicating that only generic log class should be collected.
2. The LwM2M Client sends response to the LwM2M Server with the changed result.

6. LwM2M Object: Event Log

Description

The Event Log Object is a single Instance Object defined for logging data in a straightforward and generic way.

The Resources of that Object are based on the OMA LwM2M set of reusable Resources dedicated to logging event activity.

Object definition

Name	Object ID	Object Version	LwM2M Version
Event Log	20	1.0	1.0
Object URN		**Instances**	**Mandatory**
urn:oma:lwm2m:oma:20		Single	Optional

Resource Definitions

ID	Name	Operations	Instances	Mandatory	Type	Range or Enumeration	Units	Description
4010	LogClass	RW	Single	Optional	Integer	255		Define the Log Event Class: 0: generic (default) 1: system 2: security 3: event 4: trace 5: panic 6: charging [7-99]: reserved [100-255]: vendor specific
4011	LogStart	E	Single	Optional	none			Actions: a) Start data collection(DC) b) LogStatus is set to 0 (running) c) DC is emptied (default) or extended according arg'0' value Arguments definitions are described in the table below.
4012	LogStop	E	Single	Optional	none			Actions: a) Stop data collection(DC) b) 1st LSB of LogStatus is set to "1"(stopped) c) DC is kept (default) or emptied according arg'0' value Arguments definitions are described in the table below.
4013	LogStatus	R	Single	Optional	Integer	8-bits		Data Collection process status: Each bit of this Resource Instance value defines a specific status : 1st LSB 0=running, 1=stopped 2nd LSB 1=LogData contains

								Valid Data 0=LogData doesn't contain Valid Data 3rd LSB 1=Error occurred during Data Collection 0=No error [4th -7th] LSB : reserved 8th LSB: vendor specific.
4014	LogData	R	Single	Mandatory	Opaque			Read Access on that Resource returns the Data Collection associated to the current Object Instance.
4015	LogDataFormat	RW	Single	Optional	Integer	255		when set by the Server, this Resource indicates to the Client, what is the Server preferred data format to use when the LogData Resource is returned. when retrieved by the Server, this Resource indicates which specific data format is used when the LogData Resource is returned to the Server 0 or Resource not present : no specific data format (sequence of bytes) 1 : OMA-LwM2M TLV format 2 : OMA-LwM2M JSON format 3: OMA-LwM2M CBOR format [4..99] reserved [100..255] vendor specific data format

Execution Resource Arguments Definition

ID	Resource Name	Order	Name	Type	Range or Enum	Unit	Description
4011	LogStart	0	Data Collection Mode	Integer	[0-1]		• 0 or no argument (default) : the DC is emptied • 1 : the DC is extended
		1	Data Collection Period	Integer	-	sec	• 0 or no argument (default) : the DC is stopped by the LogStop action only • the value in seconds after which the Data Collection is stopped
4012	LogStop	0	Data Collection Mode	Integer	[0-1]		• 0 or no argument (default) : the DC is kept • 1 : the DC is emptied

7. Guidance on how to use the resource, the generic object

- Configuration phase: the LogClass is set, the OBSERVE on LogStatus is requested

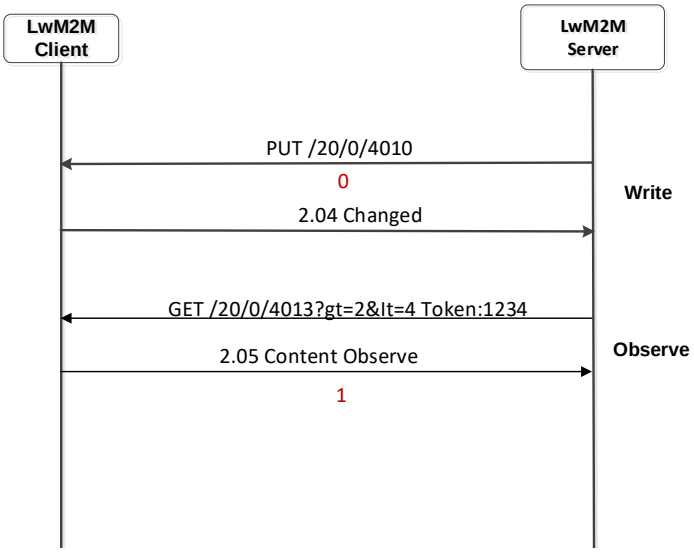

Figure 5: Data Collection Configuration sequence

- Active phase :
  - The Data Collection process is started with a period of 5 minutes (300 sec)
  - Some LogStatus notification take place for LwM2M Server Analysis
  - When Data Collection logging ends (period expires), the LwM2M Server can retrieve the LogData information (the data format is pre-configured between the Client and the Server)

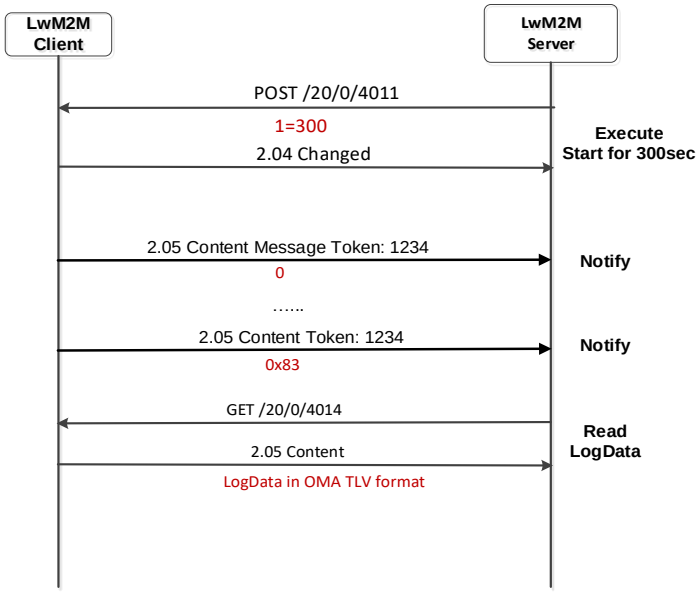

Figure 6: Data Collection Logging nominal sequence

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2 Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Version OMA-TS-LwM2M_EventLog-V1_0	30 Aug 2017	All	First draft
	15 Sept 2017	5,6,7	Incorporated CR: OMA-DM-LightweightM2M-2017-0194R01-CR_Resource_Updating_of_EventLog OMA-DM-LightweightM2M-2017-0211-CR_section7_of_EventLog_TS OMA-DM-LightweightM2M-2017-0210R01-CR_usecase_of_EventLog_TS
	03 Nov	5, 5.1, 5.2, 5.3, 5.4, 7	Incorporated CR: OMA-DM-LightweightM2M-2017-0210R01-CR_usecase_of_EventLog_TS OMA-DM-LightweightM2M-2017-0211-CR_section7_of_EventLog_TS OMA-DM-LightweightM2M-2017-0233R01 CR_EventLog_TS_NewBaseline
	01 Jan 2018		Editorial updates
Candidate Version OMA-TS-LwM2M_EventLog-V1_0	28 Feb 2018	n/a	Status changed to Candidate by BoD Doc Ref # OMA-DM-2018-0013-INP_LwM2M_EventLog_V1_0_ERP_for_1st_Candidate_Approval

Appendix B. Example objects and resources (Informative)

Object name	Object ID	Object Instance ID
Event Log Object	20	0

Table 1: Object Instances of the Example

Resource Name	Resource ID	Resource Instance ID	Value	Notes
LogClass	4010		0	Generic log.
LogStatus	4013		3	The log status is stopped and LogData contains Valid Data
LogDataFormat	4015		1	OMA-LwM2M TLV format
LogData	4014		61-7C-E3-01-C1-11-00-00-05-00-60-18-18-18-0C-00-01-41-06-00-02-00-40-0C-00-00-00-00	4545> 2017/8/1 0:46:37.803 - NAS_DBG_TIMER: (00:00:31.685729): LAYER_NAS => LAYER_NAS: action: (TIMER_STOP), prim_id: (EMM_T3410_TIMER_EXPIRY_MSG), duration: 0x00 (0)

Table 2: Event Log Object