# Enabler Release Definition for Open Connection Manager API

Candidate Version 1.1 – 17 Feb 2015

**Open Mobile Alliance**

OMA-ERELD-OpenCMAPI-V1_1-20150217-C

# Contents



# Figures



# Tables

# 1. Scope

The scope of this document is limited to the Enabler Release Definition of the Open Connection Manager API (OpenCMAPI) v1.1 Enabler according to OMA Release process and the Enabler Release specification baseline listed in section 5.

# 2. References

## 2.1 Normative References

**[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/

## 2.2 Informative References

**[OMADICT]** "Dictionary for OMA Specifications", Version 2.8, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_8, 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”, "Release Version Overview" and “Conformance Requirements Notation Details”, are normative, unless they are explicitly indicated to be informative.

The formal notation convention used in sections 8 to formally express the structure and internal dependencies between specifications in the Enabler Release specification baseline is detailed in [SCRRULES].

## 3.2 Definitions

| | |
|---|---|
| **Enabler Release** | Collection of specifications that combined together form an enabler for a service area, e.g. a download enabler, a browsing enabler, a messaging enabler, a location enabler, etc. The specifications that are forming an enabler should combined fulfil a number of related market requirements. |
| **Minimum Functionality Description** | Description of the guaranteed features and functionality that will be enabled by implementing the minimum mandatory part of the Enabler Release. |

## 3.3 Abbreviations

| | |
|---|---|
| **ANDSF** | Access Network Discovery and Selection Function |
| **API** | Application Programming Interface |
| **CDMA** | Code Division Multiple Access |
| **CM** | Connection Manager |
| **D2D** | Device to Device |
| **DM** | Device Management |
| **ERDEF** | Enabler Requirement Definition |
| **ERELD** | Enabler Release Definition |
| **GNSS** | Global Navigation Satellite System |
| **IoT** | Internet of Things |
| **M2M** | Machine to Machine |
| **ODM** | Original Device Manufacturer |
| **OEM** | Original Equipment Manufacturer |
| **OMA** | Open Mobile Alliance |
| **OMNA** | Open Mobile Naming Authority |
| **OpenCMAPI** | Open Connection Manager (CM) Application Programming Interface (API) |
| **PIN** | Personal Identification Number |
| **ProSe** | Proximity Services (Also referred to as LTE D2D) |
| **PUK** | Pin Unlocking Key |
| **RFC** | Request For Comments |
| **SIM** | Subscriber Identity Module |
| **SMS** | Short Message Service |
| **UI** | User Interface |

| | |
|---|---|
| **UICC** | Universal Integrated Circuit card |
| **URL** | Uniform Resource Locator |
| **USSD** | Unstructured Supplementary Service Data |
| **Wi-Fi** | Wireless Fidelity |
| **WLAN** | Wireless Local Area Network |
| **WWAN** | Wireless Wide Area Network |

# 4. Release Version Overview

The focus of the OpenCMAPI enabler is the standardization of new functional APIs essential for applications to develop connection manager user interface and to extend applications and services with information related to the connection.

In order to allow for advanced service creation based on multiple services/enablers, interface functionalities for SMS, USSD as well as GPS are included.

The intention is to be supported by different types of devices such as Mobile Broadband devices, Wireless routers, M2M, Smartphones, Tablets, and Cloud Devices requiring access to mobile data connectivity.

The OpenCMAPI functionalities are designed independently of a specific framework architecture or application domain.

This enabler will allow service providers to develop easily connection manager application and dedicated user interface to work across all their devices in their portfolio without additional effort to integrate or support a new device. Moreover, it will help to improve new types of applications relying almost solely on having a good always on connection such as virtual reality applications to be always informed about the status of the connection established or the ones available.

From device manufacturer point of view, OpenCMAPI will allow reducing effort and costs to be compliant with the requirements of different service providers and OEM/ODM and will provide immediate support of the services and user experience developed by these Service providers.

From the OEM/ODM such as laptop’s manufacturers’ point of view, OpenCMAPI will allow to develop connection managers applications that can easily interwork with any modems embedded and will decrease the complexity for customization and support for multiple Business models with service providers.

Furthermore, the OpenCMAPI will allow Corporate or Enterprise customers to develop their own connection managers, their own UI and services easily across numerous devices and without having to redevelop any time they have a new device to be supported.

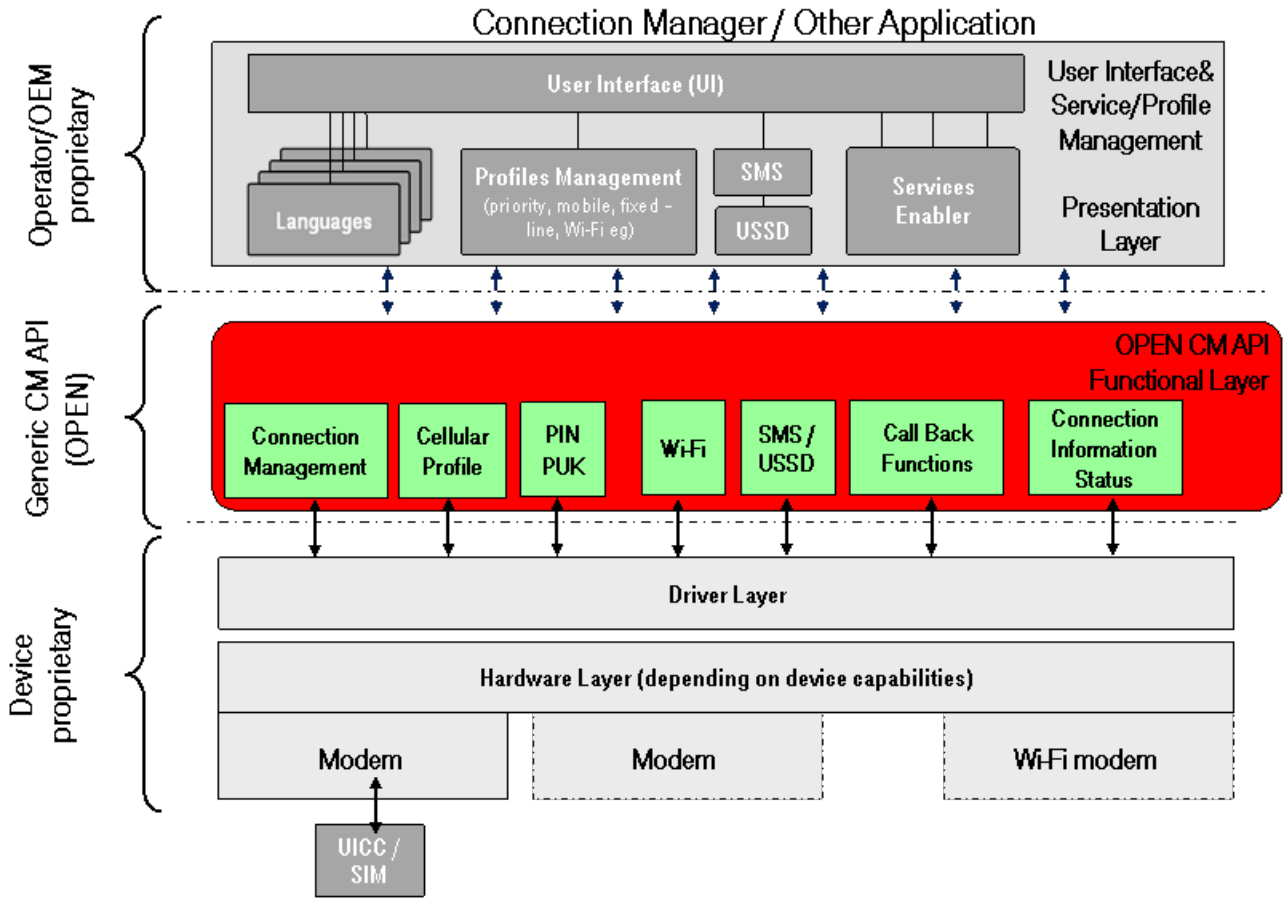


**Figure 1: High Level Diagram for the OpenCMAPI Enabler**

## 4.1 Version 1.0 Functionality

The API functionalities as proposed in the OpenCMAPI v1.0 created a new set of OMA service interfaces to enhance value of the connectivity and access to multiple networks by allowing the industry to easily develop services, differentiation and their own User experience on top of the connection management API.

The functionality of the OpenCMAPI Enabler v1.0 included the following features:

- Network Types
- Cellular Network Management
- Device Service Handling
- PIN/PUK Management
- Connection Management:
- Wi-Fi handling & WLAN authentication
- CallBack
- Status information handling
- Statistics Management
- SMS service handling

- USSD service handling
- GPS service handling
- Power Management
- Tethering handling
- UICC interface
- PUSH Services

## 4.2 Version 1.1 Functionality

OpenCMAPI v1.1 is enhancing the version 1.0 and extending functionality of service APIs to 3rd party applications with the addition of the following features:

- Additional Information Status and call-backs functions
- Phone Book /Contacts management support
- Extension of WLAN functions including support of Hotspot 2.0, ANDSF & user and operator preferences
- Support of P2P (or D2D or ProSe as known in 3GPP) Direct connection
- Web API (e.g. for wireless routers)
- Router Management support
- Support of extended device service functions
- Support of IP Multimedia Services functions
- Support of dedicated M2M/IoT functions

# 5. Document Listing for OpenCMAPI

This section is normative.

| Doc Ref | Permanent Document Reference | Description |
|---|---|---|
| **Requirement Document** | | |
| [OpenCMAPI_RD] | OMA-RD-OpenCMAPI-V1_1-20150217-C | Requirement Document for OpenCMAPI Enabler v1.1 |
| **Architecture Document** | | |
| [OpenCMAPI_AD] | OMA-AD-OpenCMAPI-V1_1-20150217-C | Architecture Document for OpenCMAPI Enabler v1.1 |
| **Technical Specifications** | | |
| [OpenCMAPI_TS] | OMA-TS-OpenCMAPI-V1_1-20150217-C | Specification Document that defines OpenCMAPI Enabler v1.1 |
| [OpenCMAPI _TS_WEB] | OMA-TS-OpenCMAPI_Web-V1_1-20150217-C | Specification Document that defines OpenCMAPI Enabler v1.1 Web API |
| **Supporting Files** | | |
| [JSD] | OMA-SUP-JSD_OpenCMAPI-V1_1-20150217-C | JSON Schema definitions for OpenCMAPI<br>Working file in Schema directory:<br>file: opencmapi-V1_1.zip<br>http://www.openmobilealliance.org/tech/profiles/ |
| [WebIDL] | OMA-SUP-WIDL_OpenCMAPI-V1_1-20150217-C | WebIDL for OpenCMAPI<br>Working file in Schema directory:<br>file: opencmapi-V1_1.idl<br>http://www.openmobilealliance.org/tech/profiles/ |

**Table 1: Listing of Documents in OpenCMAPI Enabler**

# 6. OMNA Considerations

Note: The CMAPI enabler introduces new types of supporting file: JSON schema definition & WebIDL.

# 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 OpenCMAPI

This section is normative.

| Item | Feature / Application | Requirement |
|---|---|---|
| OMA-ERDEF-OpenCMAPI-001-M | Support of API Management | |
| OMA-ERDEF-OpenCMAPI-002-M | Support of Device Discovery APIs | |
| OMA-ERDEF-OpenCMAPI-003-M | Support of Cellular Network Management APIs | |
| OMA-ERDEF-OpenCMAPI-004-M | Support of Connection Management APIs | |
| OMA-ERDEF-OpenCMAPI-005-M | Support of Network Management APIs | |
| OMA-ERDEF-OpenCMAPI-006-O | Support of CDMA2000 APIs | |
| OMA-ERDEF-OpenCMAPI-007-M | Support of Device Service APIs | |
| OMA-ERDEF-OpenCMAPI-008-O | Support of Device Extended Service APIs | |
| OMA-ERDEF-OpenCMAPI-009-M | Support of PINs/PUKs Management APIs | |
| OMA-ERDEF-OpenCMAPI-010-M | Support of UICC Management APIs for device types Smartphone and Tablet | |
| OMA-ERDEF-OpenCMAPI-011-O | Support of UICC Management APIs for device types Mobile Broadband Device, Laptop, Wireless Router, M2M, Cloud Devices | |
| OMA-ERDEF-OpenCMAPI-012-M | Support of WLAN APIs for device types Laptop, Smartphone, Tablet, Cloud Devices | |
| OMA-ERDEF-OpenCMAPI-013-O | Support of WLAN APIs for device types Mobile Broadband Device, Wireless Router, M2M | |
| OMA-ERDEF-OpenCMAPI-014-M | Support of Statistics APIs | |
| OMA-ERDEF-OpenCMAPI-015-M | Support of Information Status APIs | |
| OMA-ERDEF-OpenCMAPI-016-M | Support of SMS Management APIs | |
| OMA-ERDEF-OpenCMAPI-017-M | Support of USSD Management APIs | |
| OMA-ERDEF-OpenCMAPI-018-O | Support of GNSS APIs | |
| OMA-ERDEF-OpenCMAPI-019-M | Support of Contact Management APIs for device types Mobile Broadband Device, Laptop, Wireless Router, Smartphone, Tablet, Cloud Devices | |
| OMA-ERDEF-OpenCMAPI-020-O | Support of Contact Management APIs for device M2M | |
| OMA-ERDEF-OpenCMAPI-021-M | Support of Data Push Service Management APIs for device types Smartphone and Tablet | |
| OMA-ERDEF-OpenCMAPI-022-O | Support of Data Push Service Management APIs for device types Mobile Broadband Device, Laptop, Wireless Router, M2M, Cloud Devices | |
| OMA-ERDEF-OpenCMAPI-023-O | Support of P2P Direct Management APIs | |
| OMA-ERDEF-OpenCMAPI-024-M | Support of Wireless Router Management APIs for device types Wireless Router | |
| OMA-ERDEF-OpenCMAPI-025-O | Support of Wireless Router Management APIs for device types Mobile Broadband Device, Laptop, M2M, Smartphone, Cloud Devices and Tablet | |
| OMA-ERDEF-OpenCMAPI-026-O | Support of IP Multimedia Services APIs | |
| OMA-ERDEF-OpenCMAPI-027-O | Support of M2M/IoT APIs | |
| OMA-ERDEF-OpenCMAPI-028-M | Support of Callback APIs | |

| | | |
|---|---|---|
| OMA-ERDEF-OpenCMAPI-029-M | Support of WebAPI for device types Wireless Router, Cloud Devices | |
| OMA-ERDEF-OpenCMAPI-030-O | Support of WebAPI for device types Mobile Broadband Device, Laptop, M2M, Smartphone and Tablet | |

**Table 2: ERDEF for OpenCMAPI**

# 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 Versions<br>OMA-ERELD-OpenCMAPI-V1_1 | 21 Nov 2012 | n/a | Initial baseline for RD review. |
| | 23 Jan 2013 | 5 | Updated the document listing |
| | 30 Jan 2013 | 5 | Updated the document listing |
| | 22 Feb 2013 | 5 | Updated the document listing |
| | 18 Mar 2013 | 5 | Updated the document listing in preparation for submission of RD for Candidate approval |
| Candidate Version<br>OMA-ERELD-OpenCMAPI-V1_1 | 26 Mar 2013 | All | Status changed to Candidate by TP #:<br>OMA-TP-2013-0093R02-INP_OpenCMAPI_V1_1_RD_for_Candidate_approval |
| Draft Version<br>OMA-ERELD-OpenCMAPI-V1_1 | 23 May 2013 | All | Status demoted to draft<br>Updated the document listing with AD and TS draft documents |
| Candidate Version<br>OMA-ERELD-OpenCMAPI-V1_1 | 04 Jun 2013 | All | Status changed to Candidate by TP #:<br>OMA-TP-2013-0159-INP_OpenCMAPI_1_1_AD_for_Candidate_approval |
| Draft Versions<br>OMA-ERELD-OpenCMAPI-V1_1 | 30 Jan 2014 | All | Status changed to Draft<br>Updated the document listing with RD and TS draft documents |
| | 31 Jan 2014 | All | Updated the document listing TS draft documents |
| | 01 Oct 2014 | 2, 3.3, 4.2, 5, 6, 8, 9 | Incorporated CR:<br>OMA-CD-OpenCMAPI-2014-0097R01-CR_ERELD_CONRR_comments_resolution |
| | 10 Feb 2015 | 5 | Updated document listing prior to consistency review closure. |
| Candidate Version<br>OMA-ERELD-OpenCMAPI-V1_1 | 17 Feb 2015 | All | Status changed to Candidate by TP<br>TP Ref # OMA-TP-2015-0059-INP_OpenCMAPI_V1_1_ERP_and_ETR_for_Candidate_approval |