



# **RESTful Network API for Zonal Presence Requirements**

## **Approved Version 1.0 – 21 Jun 2018**

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**Open Mobile Alliance**  
OMA-RD-REST\_NetAPI\_ZonalPresence-V1\_0-20180621-A

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# 1. Scope

**(Informative)**

This document defines the requirements for OMA RESTful Network API for Zonal Presence.

## 2. References

### 2.1 Normative References

- [Autho4API\_10] “Authorization Framework for Network APIs”, Open Mobile Alliance™, OMA-ER-Autho4API-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” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

### 3.2 Definitions

For the purpose of this RD, all definitions from the OMA Dictionary [OMADICT] apply.

|                  |  |
|------------------|--|
| Attachment Point | Any cell, in any access technology that is accessible to the mobile network.   |
| Small Cell       | A mobile cell as defined by the Small Cell Forum.  |
| Zone             | A collection of at least one Attachment Point. Attachment points belonging to a zone may or may not be contiguous. An Attachment point may belong to more than one zone. |

### 3.3 Abbreviations

|      |                                   |
|------|-----------------------------------|
| API  | Application Programming Interface |
| HTTP | HyperText Transfer Protocol       |
| OMA  | Open Mobile Alliance              |
| REST | REpresentational State Transfer   |
| URL  | Uniform Resource Locator          |

## 4. Introduction

**(Informative)**

A zone is a set of attachment points. Any cell type accessible to the mobile device could be an attachment point, for example a mobile network cell including small cells as defined by the Small Cell Forum and WiFi access point.

Zones may be formed for example based on location, ownership, type of area they are deployed in, type of traffic they carry etc. in any combination. They do not have to be geographically adjacent.

The OMA RESTful Network API for Zonal Presence exposes certain zonal presence information to authorized applications.

### 4.1 Version 1.0

This document defines the requirements for OMA RESTful Network API for Zonal Presence.

## 5. RESTful Network API for Zonal Presence release description (Informative)

### 5.1 End-to-end Service Description

This RD defines requirements on an OMA enabler that is a Network API which exposes certain zonal presence information to authorized applications.

Several types of information are available:

- Information which defines the zone itself, such as zone ID, the number of attachment points, their location, type and operational status.
- Information which returns user count in attachment points or zones.
- Information which returns lists of users in attachment points or zones or reports the actions of specific users (e.g. entering and exiting a zone or attachment point). This type of information requires user permission.



## 6. Requirements (Normative)

### 6.1 High-Level Functional Requirements

#### 6.1.1 Common

| Label      | Description   | Release                                    |
|------------|---|--|
| HLF-CM-001 | The Network API for Zonal Presence SHALL support HTTP/REST.   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-CM-002 | Resource URLs and primitives names SHALL have an intuitive relationship with the functions and resources they are intended to represent.  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-CM-003 | The RESTful Network API for Zonal Presence SHALL allow the inclusion of API version in the resource URLs.   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-CM-004 | The RESTful Network API for Zonal Presence SHALL expose a functional abstraction at the user level rather than at the level of underlying protocols.  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-CM-005 | The RESTful Network API for Zonal Presence SHALL support “server”-based application clients and “device”-based application clients. Instantiation examples include applications running on a Web server (where the user interacts with the application via a web browser), or running on a mobile or fixed device as a “widget” or as a native application. | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-CM-006 | In order to provide controlled access to Zonal Presence functionality, the RESTful Network API for Zonal Presence SHALL support appropriate authorization mechanisms and Service Provider policies.   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |

**Table 1: High-Level Functional Requirements – Common**

#### 6.1.2 Zonal Presence Requirements

| Label      | Description   | Release                                    |
|------------|---|--|
| HLF-ZP-001 | <p>The Zonal Presence API SHALL expose the following operations:</p> <ul style="list-style-type: none"> <li>• Initiate and terminate subscription to Zonal Presence notifications</li> <li>• Initiate and terminate subscription to Zone Status notifications</li> <li>• Initiate and terminate subscription to Specific User Status notifications</li> <li>• Query list of zones</li> <li>• Query status of zone</li> <li>• Query status for attachment point(s) within zone</li> <li>• Query user(s)</li> </ul> | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |

|            |  |  |
|------------|--|--|
| HLF-ZP-002 | <p>The Initiate Subscription to Zonal Presence Notifications operation SHALL include the following parameters:</p> <ul style="list-style-type: none"> <li>• Zone ID</li> <li>• Notification URL - the location where notifications are sent</li> </ul> <p>The Initiate Subscription to Zonal Presence Notifications operation MAY include the following parameters - User event criteria and/or Interest realm:</p> <ul style="list-style-type: none"> <li>• User event criteria - list of user event values to generate notifications (e.g. zone enter, zone exit, zone transfer)</li> <li>• Interest realm - realm of interest to generate notifications (e.g. geographical area, a type of industry etc.)</li> </ul>  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-003 | A response to the Initiate Subscription to Zonal Presence Notifications operation SHALL confirm the subscription.  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-004 | <p>A Zonal Presence Notification SHALL include one or more events of the following type:</p> <ul style="list-style-type: none"> <li>• Zone Enter - A mobile device entered a zone by camping on to one of its attachment points. This event SHALL include a mobile identity of the device, a timestamp and current attachment point ID</li> <li>• Zone Exit - A mobile device handed over to an attachment point out of a zone from one that was inside the zone. This event SHALL include a mobile identity of the device, a timestamp and prior attachment point ID</li> <li>• Zone Transfer - A mobile device moved between attachment points within a zone. This event SHALL include a mobile identity of the device, a timestamp and attachment point ID's of the current and previous attachment point</li> </ul> <p>If the Initiate Subscription to Zonal Presence Notifications operation included reportable events then only those events which have been requested shall be reported.<br/>If the Initiate Subscription to Zonal Presence Notifications operation included interest realm then only events about the interest realm shall be reported.</p> | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-005 | <p>The Initiate Subscription to Zone Status Notifications operation SHALL include the following parameters:</p> <ul style="list-style-type: none"> <li>• Zone ID</li> <li>• Notification URL - the location where notifications are sent</li> </ul> <p>One or more interest criteria of the following:</p> <ul style="list-style-type: none"> <li>• Number of users zone threshold - threshold number of users in a zone which if crossed shall cause a notification</li> <li>• Number of users attachment point threshold - threshold number of users in an attachment point which if crossed shall cause a notification</li> <li>• Operation status - list of operation status values to generate notifications for (these apply to all attachment points within a zone). e.g. serviceable, unserviceable, unknown</li> </ul>  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-006 | A response to the Initiate Subscription to Zone Status Notifications operation SHALL confirm the subscription.   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |

|            |   |  |
|------------|---|--|
| HLF-ZP-007 | <p>A Zone Status Notification SHALL include one or more interest criteria of the following:</p> <ul style="list-style-type: none"> <li>• Number Of Users In Zone - This element SHALL be present when Zone Status Subscription includes Number Of Users Zone Threshold element and the number of users in a zone exceeds the threshold defined in this subscription.</li> <li>• Number Of Users In Attachment Point - This element SHALL be present when Zone Status Subscription includes Number Of Users Attachment Point Threshold element and the number of users in an attachment point exceeds the threshold defined in the subscription.</li> <li>• Operation Status - This element SHALL be present when Zone Status Subscription includes Operation Status element and the operation status value of an attachment point meets Serviceable or Unserviceable or Unknown defined in the subscription.</li> </ul>   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-008 | <p>The Initiate Subscription to Specific User Status Notifications operation SHALL include the following parameters:</p> <ul style="list-style-type: none"> <li>• Address</li> <li>• Notification URL - the location where notifications are sent</li> </ul> <p>The Initiate Subscription to Specific User Status Notifications operation MAY include the following parameter:</p> <ul style="list-style-type: none"> <li>• Interest user event criteria - list of interest user event values to generate notifications (e.g. zone enter, zone exit, zone transfer)</li> </ul>  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-009 | <p>A response to the Initiate Subscription to Specific User Status Notifications operation SHALL confirm the subscription.</p>  | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-010 | <p>A Specific User Status Notification SHALL include one or more events of the following type:</p> <ul style="list-style-type: none"> <li>• Zone Enter - A specific mobile device entered a zone by camping on to one of its attachment points. This event SHALL include a mobile identity of the device, a timestamp and current attachment point ID</li> <li>• Zone Exit - A specific mobile device handed over to an attachment point out of a zone from one that was inside the zone. This event SHALL include a mobile identity of the device, a timestamp and prior attachment point ID</li> <li>• Zone Transfer - A specific mobile device moved between attachment points within a zone. This event SHALL include a mobile identity of the device, a timestamp and attachment point ID's of the current and previous attachment point</li> </ul> <p>If the Initiate Subscription to Specific User Status Notifications operation included reportable events then only those events which have been requested shall be reported.</p> | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-011 | <p>The Query List of Zones operation SHALL return a list of zone information visible to the authorized application (e.g. zone Id, number of attachment points, number of unserviceable attachment points, number of users).</p>   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |
| HLF-ZP-012 | <p>The Query Status of Zone operation SHALL return a zone information of the following parameters::</p> <ul style="list-style-type: none"> <li>• Zone ID</li> <li>• Number of attachment points - number of attachment points within the zone</li> <li>• Number of unserviceable attachment points - number of inoperable attachment points within the zone</li> <li>• Number of users - number of users currently on the zone</li> </ul>   | REST_Net<br>API_Zonal<br>Presence-<br>V1.0 |

|            |  |                                  |
|------------|--|----------------------------------|
| HLF-ZP-013 | <p>The Query Status for Attachment Point(s) Within Zone operation SHALL provide a means to query the information for all attachment points in a zone or all attachment points with same interest realm in a zone or an attachment point in a zone. Each attachment point in the result SHALL contain the following parameters:</p> <ul style="list-style-type: none"> <li>• Zone ID</li> <li>• Attachment point ID</li> <li>• Location (lat/lon), accuracy and altitude</li> <li>• Attachment point connection type that indicates (e.g. femto, LTE-femto, smallcell, LTE-smallcell, WiFi, pico, micro, macro, wimax)</li> <li>• Attachment point operational status indicating either serviceable or unserviceable or unknown condition</li> <li>• Number of mobile devices camped on the attachment point</li> <li>• Timezone the attachment point is currently located</li> <li>• Interest realm of attachment point (e.g. geographical area, a type of industry etc.)</li> </ul> | REST_Net API_Zonal Presence-V1.0 |
| HLF-ZP-014 | <p>The Query User(s) operation SHALL return the information of all mobile devices or a mobile device. For each user, it SHALL return the following parameters:</p> <ul style="list-style-type: none"> <li>• Zone ID</li> <li>• Mobile identity (i.e. mobile user)</li> <li>• Attachment point ID</li> </ul>  | REST_Net API_Zonal Presence-V1.0 |

**Table 2: High-Level Functional Requirements – Zonal Presence**

### 6.1.3 Security

It is expected to be possible for a service provider to deploy developer security mechanisms and engagement/registration processes aimed to individual developers. Developer security mechanisms are out of the scope of this document.

#### 6.1.3.1 Authentication

Application authentication and User authentication are out of scope.

#### 6.1.3.2 Authorization

| Label   | Description  | Release                          |
|---------|--|----------------------------------|
| OAU-001 | Only authorized applications SHALL have access to Zonal Presence information.                                | REST_Net API_Zonal Presence-V1.0 |
| OAU-002 | The RESTful Network API for Zonal Presence SHOULD support application authorization based on [Autho4API_10]. | REST_Net API_Zonal Presence-V1.0 |

**Table 3: High-Level Functional Requirements – Authorization Items**

#### 6.1.3.3 Data Integrity

Data Integrity is out of scope.

#### 6.1.3.4 Confidentiality

Confidentiality is out of scope.

### 6.1.4 Charging Events

Charging events are out of scope.

### 6.1.5 Administration and Configuration

Administration and configuration are out of scope.

### 6.1.6 Usability

Usability is out of scope.

### 6.1.7 Interoperability

Not applicable.

### 6.1.8 Privacy

Privacy is out of scope.

## 6.2 Overall System Requirements

Overall system requirements are out of scope.

## Appendix A. Change History

(Informative)

### A.1 Approved Version History

| Reference  | Date        | Description  |
|--|-------------|--|
| OMA-RD-REST_NetAPI_ZonalPresence-V1_0-20180621-A | 21 Jun 2018 | Status changed to Approved by ARC<br>Doc Ref # OMA-ARC-2018-0025-INP_REST_NetAPI_ZonalPresence_V1_0_ERP_for_final_Approval |