# RESTful Network API for Zonal Presence

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**Open Mobile Alliance**

OMA-TS-REST_NetAPI_ZonalPresence-V1_0-20160308-C

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# Contents



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# Figures



# Tables



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# 1. Scope

This specification defines a RESTful API for Zonal Presence using HTTP protocol bindings

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# 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/

**[REST_NetAPI_ACR]** "RESTful Network API for Anonymous Customer Reference Management ", Open Mobile Alliance™, OMA-TS-REST_NetAPI_ACR-V1_0, URL: http://www.openmobilealliance.org/

**[REST_NetAPI_Common]** "Common definitions for RESTful Network APIs", Open Mobile Alliance™, OMA-TS-REST_NetAPI_Common-V1_0, URL: http://www.openmobilealliance.org/

**[REST_NetAPI_NotificationChannel]** Include if the use of Notification Channel is supported, otherwise delete this reference. "RESTful Network API for Notification Channel", Open Mobile Alliance™, OMA-TS-REST_NetAPI_NotificationChannel-V1_0, URL: http://www.openmobilealliance.org/

**[REST_SUP_ZonalPresence]** "XML schema for the RESTful Network API for Zonal Presence", Open Mobile Alliance™, OMA-SUP-XSD_rest_netapi_zonalpresence-V1_0, URL: http://www.openmobilealliance.org/

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

**[RFC3966]** "The tel URI for Telephone Numbers", H.Schulzrinne, December 2004, URL: http://tools.ietf.org/html/rfc3966.txt

**[RFC3986]** "Uniform Resource Identifier (URI): Generic Syntax", R. Fielding et. al, January 2005, URL: http://tools.ietf.org/html/rfc3986.txt

**[RFC7159]** "The JavaScript Object Notation (JSON) Data Interchange Format", T. Bray, Ed., March 2014, URL: http://tools.ietf.org/html/rfc7159.txt

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**[SCRRULES]** "SCR Rules and Procedures", Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL: http://www.openmobilealliance.org/

**[XMLSchema1]** W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures, W3C Recommendation 5 April 2012, URL: http://www.w3.org/TR/xmlschema11-1/

**[XMLSchema2]** W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes, W3C Recommendation 5 April 2012, URL: http://www.w3.org/TR/xmlschema11-2/


## 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/

**[REST_WP]** "Guidelines for RESTful Network APIs", Open Mobile Alliance™, OMA-WP-Guidelines_for_RESTful_Network_APIs, URL:http://www.openmobilealliance.org/


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# 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 TS, all definitions from the OMA Dictionary apply [OMADICT].

| | |
|---|---|
| **Access Point** | Any cell, in any access technology that is accessible to the mobile network. |
| **Client-side Notification URL** | An HTTP URL exposed by a client, on which it is capable of receiving notifications and that can be used by the client when subscribing to notifications. |
| **Long Polling** | A variation of the traditional polling technique, where the server does not reply to a request unless a particular event, status or timeout has occurred. Once the server has sent a response, it closes the connection, and typically the client immediately sends a new request. This allows the emulation of an information push from a server to a client. |
| **Notification Channel** | A channel created on the request of the client and used to deliver notifications from a server to a client. The channel is represented as a resource and provides means for the server to post notifications and for the client to receive them via specified delivery mechanisms.<br>For example in the case of Long Polling the channel resource is defined by a pair of URLs. One of the URLs is used by the client as a call-back URL when subscribing for notifications. The other URL is used by the client to retrieve notifications from the Notification Server. |
| **Notification Server** | A server that is capable of creating and maintaining Notification Channels. |
| **Server-side Notification URL** | An HTTP URL exposed by a Notification Server, that identifies a Notification Channel and that can be used by a client when subscribing to notifications. |
| **Zone** | A collection of at least one Access Point. Access points belonging to a zone may or may not be contiguous. An Access point may belong to more than one zone. |

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## 3.3 Abbreviations

| | |
|---|---|
| **ACR** | Anonymous Customer Reference |
| **API** | Application Programming Interface |
| **HTTP** | HyperText Transfer Protocol |
| **JSON** | JavaScript Object Notation |
| **LTE** | Long Term Evolution |
| **MIME** | Multipurpose Internet Mail Extensions |
| **OMA** | Open Mobile Alliance |
| **REST** | REpresentational State Transfer |
| **SCR** | Static Conformance Requirements |
| **SIP** | Session Initiation Protocol |
| **TS** | Technical Specification |
| **URI** | Uniform Resource Identifier |
| **URL** | Uniform Resource Locator |
| **WP** | White Paper |
| **XML** | eXtensible Markup Language |
| **XSD** | XML Schema Definition |

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# 4. Introduction

A zone is a set of access points. Any cell type accessible to the mobile device could be an access 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 zonal presence API provides a subscription mechanism where authorized applications can receive notifications of user activities (such as zone enter, zone exit, zone transfer) within a 'zone' and notifications of specific user tracking or interest events (such as threshold number of users in the zone or access point, operational status of access point).

- Zone enter – When a mobile device (i.e. user) transitions to the coverage of an access point within the zone from one that is external to the zone
- Zone exit – When a mobile device transitions to the coverage of an access point external to the zone from one that is within the zone
- Zone transfer – Upon transitioning between two access points within the zone

Additionally, the zonal presence API defines operations where applications can gain information about zones, access points, and mobile devices.

The Technical Specification of the RESTful Network API for Zonal Presence contains HTTP protocol bindings for the Zonal Presence functionality, using the REST architectural style. The specification provides resource definitions, the HTTP verbs applicable for each of these resources, and the element data structures, as well as support material including flow diagrams and examples using the various supported message body formats (i.e. XML, JSON).

## 4.1 Version 1.0

Version 1.0 of this specification supports the following operations:

- Retrieve the zone list and individual zone information
- Retrieve the access point list and individual access point information
- Retrieve the user list and individual user information
- Manage client-specific subscriptions to zonal traffic change notifications.
- Manage client-specific subscriptions to user tracking change notifications
- Manage client-specific subscriptions to zone status change notifications

In addition this specification provides:

- Support for scope values used with authorization framework defined in [Autho4API_10]
- Support for Anonymous Customer Reference (ACR) as an end user identifier
- Support for "acr:auth" as a reserved keyword in an ACR

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# 5. Zonal Presence API definition

This section is organized to support a comprehensive understanding of the Zonal Presence API design. It specifies the definition of all resources, definition of all data structures, and definitions of all operations permitted on the specified resources.

Common data types, naming conventions, fault definitions and namespaces are defined in [REST_NetAPI_Common].

The remainder of this document is structured as follows:

Section 5 starts with a diagram representing the resources hierarchy followed by a table listing all the resources (and their URL) used by this API, along with the data structure and the supported HTTP verbs (section 5.1). What follows are the data structures (section 5.2). A sample of typical use cases is included in section 5.3, described as high level flow diagrams.

Section 6 contains detailed specification for each of the resources. Each such subsection defines the resource, the request URL variables that are common for all HTTP methods, and the supported HTTP verbs. For each supported HTTP verb, a description of the functionality is provided, along with an example of a request and an example of a response. For each unsupported HTTP verb, the returned HTTP error status is specified, as well as what should be returned in the Allow header.

All examples in section 6 use XML as the format for the message body. JSON examples are provided in Appendix C.

Section 7 contains fault definition details such as Service Exceptions and Policy Exceptions.

Appendix B provides the Static Conformance Requirements (SCR).

Appendix D provides the operations mapping to a pre-existing baseline specification, where applicable.

Appendix E provides a list of all Light-weight Resources, where applicable.

Appendix F defines authorization aspects to control access to the resources defined in this specification.

Note: Throughout this document client and application can be used interchangeably.

## 5.1 Resources Summary

This section summarizes all the resources used by the RESTful Network API for Zonal Presence.

The "apiVersion" URL variable SHALL have the value "v1" to indicate that the API corresponds to this version of the specification. See [REST_NetAPI_Common] which specifies the semantics of this variable.

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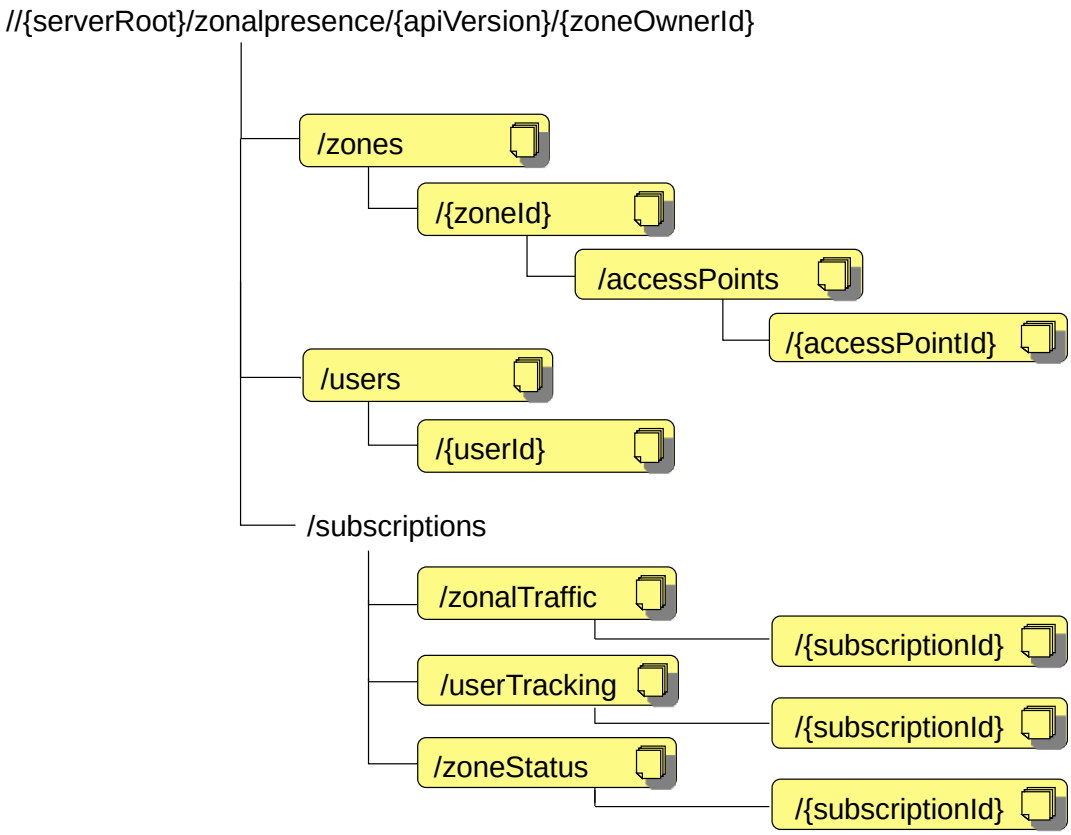


**Figure 1 Resource structure defined by this specification**

The following tables give a detailed overview of the resources defined in this specification, the data type of their representation and the allowed HTTP methods.

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**Purpose: To allow the client to retrieve list of zones, access points, users and individual information of zone, access point, user**

| Resource | URL<br>Base URL:<br>http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId} | Data Structures | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Zone list | /zones | ZoneList | retrieve list of zones | no | no | no |
| Individual zone information | /zones/{zoneId} | ZoneInfo | retrieve individual zone information | no | no | no |
| Access point list | /zones/{zoneId}/accessPoints | AccessPointList | retrieve list of access points | no | no | no |
| Individual access point information | /zones/{zoneId}/accessPoints/{accessPointId} | AccessPointInfo | retrieve individual access point information | no | no | no |
| User list | /users | UserList | retrieve list of users<br>Note: query strings are used to filter the response from the server, for example to include the list of users in a given zone or access point | no | no | no |
| Individual user information | /users/{userId} | UserInfo | retrieve individual user information | no | no | no |

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**Purpose: To allow the client to manage its subscriptions for zonal presence change notifications**

| Resource | URL<br>Base URL:<br>http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions | Data Structures | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Zonal traffic change notification subscriptions | /zonalTraffic | NotificationSubscriptionList (used for GET)<br>ZonalTrafficSubscription (used for POST)<br>common:ResourceReference (optional alternative for POST response) | return all subscriptions | no | create new subscription | no |
| Individual zonal traffic change notification subscription | /zonalTraffic /{subscriptionId} | ZonalTrafficSubscription (used for GET and PUT) | return one subscription | update subscription | no | delete one subscription |
| User tracking change notification subscriptions | /userTracking | NotificationSubscriptionList (used for GET)<br>UserTrackingSubscription (used for POST)<br>common:ResourceReference (optional alternative for POST response) | return all subscriptions | no | create new subscription | no |
| Individual user tracking change notification subscription | /userTracking /{subscriptionId} | UserTrackingSubscription (used for GET and PUT) | return one subscription | update subscription | no | delete one subscription |

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| Resource | URL<br>Base URL:<br>http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions | Data Structures | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Zone status change notification subscriptions | /zoneStatus | NotificationSubscriptionList (used for GET)<br><br>ZoneStatusSubscription (used for POST)<br><br>common:ResourceReference (optional alternative for POST response) | return all subscriptions | no | create new subscription | no |
| Individual zone status change notification subscription | /zoneStatus/{subscriptionId} | ZoneStatusSubscription (used for GET and PUT) | return one subscription | update subscription | no | delete one subscription |

**Purpose: To allow the server to inform the client about zonal presence changes**

| Resource | URL | Data Structures | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Client notification about zonal presence changes | {provided by client} | ZonalPresenceNotification<br><br>ZoneStatusNotification | no | no | notification on zonal presence change | no |

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# 5.2 Data Types

## 5.2.1 XML Namespaces

The XML namespace for the Zonal Presence data types is:

urn:oma:xml:rest:netapi:zonalpresence:1

The 'xsd' namespace prefix is used in the present document to refer to the XML Schema data types defined in XML Schema [XMLSchema1, XMLSchema2]. The 'common' namespace prefix is used in the present document to refer to the data types defined in [REST_NetAPI_Common]. The use of namespace prefixes such as 'xsd' is not semantically significant.

The XML schema for the data structures defined in the section below is given in [REST_SUP_ZonalPresence].

## 5.2.2 Structures

The subsections of this section define the data structures used in the Zonal Presence API.

Some of the structures can be instantiated as so-called root elements.

For structures that contain elements which describe a user identifier, the statements in section 6 regarding 'tel', 'sip' and 'acr' URI schemes apply.

### 5.2.2.1 Type: ZoneList

A type containing list of zones.

| Element | Type | Optional | Description |
|---|---|---|---|
| zone | ZoneInfo<br>[0..unbounded] | Yes | Collection of the zone information list. |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named zoneList of type ZoneList is allowed in response bodies.

### 5.2.2.2 Type: ZoneInfo

A type containing zone information.

| Element | Type | Optional | Description |
|---|---|---|---|
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001). |
| numberOfAccessPoints | xsd:unsignedInt | No | Number of access points within the zone. |
| numberOfUnserviceableAccessPoints | xsd:unsignedInt | No | Number of inoperable access points within the zone. |
| numberOfUsers | xsd:unsignedInt | No | Number of users currently on the zone. |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named zoneInfo of type ZoneInfo is allowed in response bodies.

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### 5.2.2.3 Type: AccessPointList

A type containing list of access points.

| Element | Type | Optional | Description |
|---|---|---|---|
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001). |
| accessPoint | AccessPointInfo<br>[0..unbounded] | Yes | Collection of the access point information list. |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named accessPointList of type AccessPointList is allowed in response bodies.

### 5.2.2.4 Type: AccessPointInfo

A type containing access point information.

| Element | Type | Optional | Description |
|---|---|---|---|
| accessPointId | xsd:string | No | Identifier of access point (e.g. ap01). |
| locationInfo | LocationInfo | Yes | The coordinates of the access point. |
| connectionType | ConnectionType | No | Connection type of access point. |
| operationStatus | OperationStatus | No | Operation status of access point. |
| numberOfUsers | xsd:unsignedInt | No | Number of users currently on the access point. |
| timezone | xsd:dateTimeStamp | Yes | Time zone of access point |
| interestRealm | xsd:string | Yes | Interest realm of access point (e.g. geographical area, a type of industry etc.). |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named accessPointInfo of type AccessPointInfo is allowed in response bodies.

### 5.2.2.5 Type: LocationInfo

A type containing location information with latitude, longitude and altitude, in addition the accuracy of the information are provided.

| Element | Type | Optional | Description |
|---|---|---|---|
| latitude | xsd:float | No | Location latitude. |
| longitude | xsd:float | No | Location longitude. |
| altitude | xsd:float | Yes | Location altitude. |
| accuracy | xsd:unsignedInt | No | Accuracy of location provided in meters. |

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#### 5.2.2.6 Type: UserList

A type containing list of users.

| Element | Type | Optional | Description |
|---|---|---|---|
| user | UserInfo<br>[0..unbounded] | Yes | Collection of the user information list. |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named userList of type UserList is allowed in response bodies.

#### 5.2.2.7 Type: UserInfo

A type containing user information.

| Element | Type | Optional | Description |
|---|---|---|---|
| address | xsd:anyURI | No | Address of user (e.g. 'sip' URI, 'tel' URI, 'acr' URI) currently on the access point. |
| accessPointId | xsd:string | No | Identifier of access point (e.g. ap01). |
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001). |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named userInfo of type UserInfo is allowed in response bodies.

#### 5.2.2.8 Type: NotificationSubscriptionList

A type containing list of zonal traffic, user tracking, and zone status subscription(s).

| Element | Type | Optional | Description |
|---|---|---|---|
| zonalTrafficSubscription | ZonalTrafficSubscription<br>[0..unbounded] | Yes | Collection of ZonalTrafficSubscription elements. |
| userTrackingSubscription | UserTrackingSubscription<br>[0..unbounded] | Yes | Collection of UserTrackingSubscription elements. |
| zoneStatusSubscription | ZoneStatusSubscription<br>[0..unbounded] | Yes | Collection of ZoneStatusSubscription elements. |
| resourceURL | xsd:anyURI | No | Self referring URL. |

A root element named notificationSubscriptionList of type NotificationSubscriptionList is allowed in response bodies.

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### 5.2.2.9 Type: ZonalTrafficSubscription

A type containing zonal traffic subscription.

| Element | Type | Optional | Description |
|---|---|---|---|
| clientCorrelator | xsd:string | Yes | A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server.<br><br>This element MAY be present.<br><br>Note: this allows the client to recover from communication failures during resource creation and therefore avoids duplicate subscription creation in such situations.<br><br>In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the element is not present, the server SHALL NOT generate it. |
| callbackReference | common:CallbackReference | No | Notification callback definition. |
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001) to monitor. |
| interestRealm | xsd:string<br><br>[0..unbounded] | Yes | Interest realms of access points within a zone (e.g. geographical area, a type of industry etc.). |
| userEventCriteria | UserEventType<br><br>[0..unbounded] | Yes | List of user event values to generate notifications for (these apply to zone identifier or all interest realms within zone identifier specified). If this element is missing, a notification is requested to be generated for any change in user event. |

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| | | | |
|---|---|---|---|
| duration | xsd:unsignedInt | Yes | Period (in seconds) of time notifications are provided for. If set to “0” (zero), a default duration time, which is specified by the service policy, will be used. If the parameter is omitted, the notifications will continue until the maximum duration time, which is specified by the service policy, unless the notifications are stopped by deletion of subscription for notifications.<br><br>This element MAY be given by the client during resource creation in order to signal the desired lifetime of the subscription. The server MUST return in this element the period of time for which the subscription will still be valid. |
| resourceURL | xsd:anyURI | Yes | Self referring URL. The resourceURL SHALL NOT be included in POST requests by the client, but MUST be included in POST requests representing notifications by the server to the client, when a complete representation of the resource is embedded in the notification. The resourceURL MUST also be included in responses to any HTTP method that returns an entity body, and in PUT requests. |

A root element named zonalTrafficSubscription of type ZonalTrafficSubscription is allowed in request and/or response bodies.

Note that the clientCorrelator is used for purposes of error recovery as specified in [REST_NetAPI_Common], and internal client purposes. The server is NOT REQUIRED to use the clientCorrelator value in any form in the creation of the URL of the resource. The specification [REST_NetAPI_Common] provides a recommendation regarding the client’s generation of the value of this field.

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### 5.2.2.10 Type: UserTrackingSubscription

A type containing user tracking subscription.

| Element | Type | Optional | Description |
|---|---|---|---|
| clientCorrelator | xsd:string | Yes | A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server.<br><br>This element MAY be present.<br><br>Note: this allows the client to recover from communication failures during resource creation and therefore avoids duplicate subscription creation in such situations.<br><br>In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the element is not present, the server SHALL NOT generate it. |
| callbackReference | common:CallbackReference | No | Notification callback definition. |
| address | xsd:anyURI | No | Address of user (e.g. ‘sip’ URI, ‘tel’ URI, ‘acr’ URI) to monitor. |
| userEventCriteria | UserEventType<br><br>[0..unbounded] | Yes | List of user event values to generate notifications for (these apply to address specified). If this element is missing, a notification is requested to be generated for any change in user event. |
| resourceURL | xsd:anyURI | Yes | Self referring URL. The resourceURL SHALL NOT be included in POST requests by the client, but MUST be included in POST requests representing notifications by the server to the client, when a complete representation of the resource is embedded in the notification. The resourceURL MUST also be included in responses to any HTTP method that returns an entity body, and in PUT requests. |

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A root element named userTrackingSubscription of type UserTrackingSubscription is allowed in request and/or response bodies.

Note that the clientCorrelator is used for purposes of error recovery as specified in [REST_NetAPI_Common], and internal client purposes. The server is NOT REQUIRED to use the clientCorrelator value in any form in the creation of the URL of the resource. The specification [REST_NetAPI_Common] provides a recommendation regarding the client's generation of the value of this field.

### 5.2.2.11 Type: ZoneStatusSubscription

A type containing zone status subscription.

| Element | Type | Optional | Description |
|---|---|---|---|
| clientCorrelator | xsd:string | Yes | A correlator that the client can use to tag this particular resource representation during a request to create a resource on the server.<br><br>This element MAY be present.<br><br>Note: this allows the client to recover from communication failures during resource creation and therefore avoids duplicate subscription creation in such situations.<br><br>In case the element is present, the server SHALL not alter its value, and SHALL provide it as part of the representation of this resource. In case the element is not present, the server SHALL NOT generate it. |
| callbackReference | common:CallbackReference | No | Notification callback definition. |
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001) to monitor. |
| numberOfUsersZoneThreshold | xsd:unsignedInt | Yes | Threshold number of users in a zone which if crossed shall cause a notification. |
| numberOfUsersAPThreshold | xsd:unsignedInt | Yes | Threshold number of users in an access point which if crossed shall cause a notification. |
| operationStatus | OperationStatus<br><br>[0..unbounded] | Yes | List of operation status values to generate notifications for (these apply to all access points within a zone). |

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| | | | |
|---|---|---|---|
| resourceURL | xsd:anyURI | Yes | Self referring URL. The resourceURL SHALL NOT be included in POST requests by the client, but MUST be included in POST requests representing notifications by the server to the client, when a complete representation of the resource is embedded in the notification. The resourceURL MUST also be included in responses to any HTTP method that returns an entity body, and in PUT requests. |

A root element named zoneStatusSubscription of type ZoneStatusSubscription is allowed in request and/or response bodies.

Note that the clientCorrelator is used for purposes of error recovery as specified in [REST_NetAPI_Common], and internal client purposes. The server is NOT REQUIRED to use the clientCorrelator value in any form in the creation of the URL of the resource. The specification [REST_NetAPI_Common] provides a recommendation regarding the client's generation of the value of this field.

### 5.2.2.12 Type: ZonalPresenceNotification

A type containing zonal presence notification.

| Element | Type | Optional | Description |
|---|---|---|---|
| callbackData | xsd:string | Yes | CallbackData if passed by the application during the associated ZonalTrafficSubscription and UserTrackingSubscription operation.<br><br>See [REST_NetAPI_Common]. |
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001). |
| address | xsd:anyURI | No | Address of user (e.g. 'sip' URI, 'tel' URI, 'acr' URI). |
| interestRealm | xsd:string | Yes | Interest realm of access point (e.g. geographical area, a type of industry etc.). |
| userEventType | UserEventType | No | User event (e.g. Zone Enter, Zone Exit, Zone Transfer) |
| currentAccessPointId | xsd:string | No | Identifier of access point. |
| previousAccessPointId | xsd:string | Yes | Identifier of access point.<br><br>Note: This element MUST only be present if event type is Zone Transfer. |
| timestamp | xsd:dateTimeStamp | No | Indicates the time of day for zonal presence notification. |

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| | | | |
|---|---|---|---|
| link | common:Link<br><br>[0..unbounded] | Yes | Link to other resources that are in relationship with this notification.<br><br>The server SHOULD include a link to the related subscription. No other links are required or suggested by this specification. |

A root element named zonalPresenceNotification of type ZonalPresenceNotification is allowed in notification request bodies.

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#### 5.2.2.13 Type: ZoneStatusNotification

A type containing zone status notification.

| Element | Type | Optional | Description |
|---|---|---|---|
| callbackData | xsd:string | Yes | CallbackData if passed by the application during the associated ZoneStatusSubscription operation.<br><br>See [REST_NetAPI_Common]. |
| zoneId | xsd:string | No | Identifier of zone (e.g. zone001). |
| accessPointId | xsd:string | Yes | Identifier of an access point (e.g. ap01). Must be included when numberOfUsersInAP or operationStatus element is included. |
| numberOfUsersInZone | xsd:unsignedInt | Yes | This element shall be present when ZoneStatusSubscription includes numberOfUsersZoneThreshold element and the number of users in a zone exceeds the threshold defined in this subscription. |
| numberOfUsersInAP | xsd:unsignedInt | Yes | This element shall be present when ZoneStatusSubscription includes numberOfUsersAPThreshold element and the number of users in an access point exceeds the threshold defined in the subscription. |
| operationStatus | OperationStatus | Yes | This element shall be present when ZoneStatusSubscription includes operationStatus element and the operation status value of an access point meets Serviceable or Unserviceable or Unknown defined in the subscription. |
| timestamp | xsd:dateTimeStamp | No | Indicates the time of day for zone status notification. |
| link | common:Link<br><br>[0..unbounded] | Yes | Link to other resources that are in relationship with this notification.<br><br>The server SHOULD include a link to the related subscription. No other links are required or suggested by this specification. |

A root element named zoneStatusNotification of type ZoneStatusNotification is allowed in notification request bodies.

### 5.2.3 Enumerations

The subsections of this section define the enumerations used in the Zonal Presence API.

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#### 5.2.3.1 Enumeration: ConnectionType

An enumeration defining the connection type of an access point.

| Enumeration | Description |
|---|---|
| Femto | Access point provides a Femto connection |
| LTE-femto | Access point provides a LTE-Femto connection |
| Smallcell | Access point provides a Smallcell connection |
| LTE-smallcell | Access point provides a LTE-smallcell connection |
| Wifi | Access point provides a Wifi connection |
| Pico | Access point provides a Pico connection |
| Micro | Access point provides a Micro connection |
| Macro | Access point provides a Macro connection |
| Wimax | Access point provides a Wimax connection |
| Unknown | Access point connection type is unknown |

#### 5.2.3.2 Enumeration: OperationStatus

An enumeration defining the operations status of an access point.

| Enumeration | Description |
|---|---|
| Serviceable | Access point is in service |
| Unserviceable | Access point is out of service |
| Unknown | Access point status is unknown |

#### 5.2.3.3 Enumeration: UserEventType

An enumeration defining the direction of a user.

| Enumeration | Description |
|---|---|
| Entering | When a mobile device transitions to the coverage of an access point within the zone from one that is external to the zone |
| Leaving | When a mobile device transitions to the coverage of an access point external to the zone from one that is within the zone |
| Transferring | Upon transitioning between two access points within the zone |

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### 5.2.4 Values of the Link "rel" attribute

The "rel" attribute of the Link element is a free string set by the server implementation, to indicate a relationship between the current resource and an external resource. The following are possible strings (list is non-exhaustive, and can be extended):

- ZonalTrafficSubscription
- UserTrackingSubscription
- ZoneStatusSubscription

These values indicate the kind of resource that the link points to.

## 5.3 Sequence Diagrams

The following subsections describe the resources, methods and steps involved in typical scenarios.

In a sequence diagram, a step which involves delivering a notification is labeled with "POST or NOTIFY", where "POST" refers to delivery via the HTTP POST method, and "NOTIFY" refers to delivery using the Notification Channel [REST_NetAPI_NotificationChannel].

### 5.3.1 Zone list query

This figure below shows a scenario for retrieving list of zones.

The resources:

– To get list of zones including zone information.

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/zones**

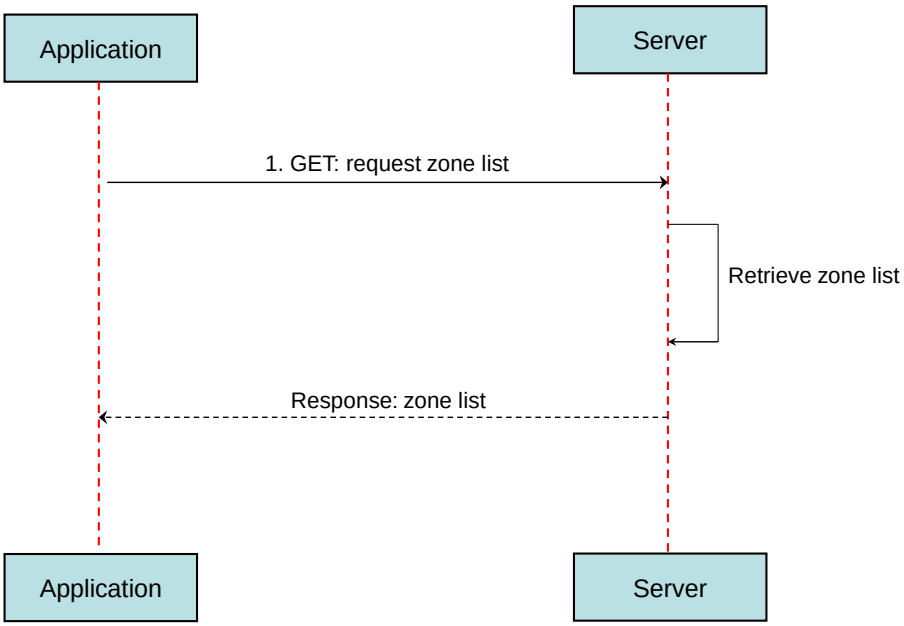


**Figure 2 Zone list query**

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Outline of flow:

1. An application requests zone list using GET and receives the zone list information (i.e. zoneId, numberOfAccessPoints, numberOfUnserviceableAccessPoints, numberOfUsers, and so on).

## 5.3.2 Zonal traffic notification

This figure below shows a scenario for controlling subscriptions to notification about zonal traffic change (e.g. zone enter, zone exit, zone transfer).

The notification URL passed by the client during the subscription step can be a Client-side Notification URL, or a Server-side Notification URL. Refer to [REST_NetAPI_NotificationChannel] for sequence flows illustrating the creation of a Notification Channel and obtaining a Server-side Notification URL on the server-side, and its use by the client via Long Polling.

The resources:

- To start subscription to notifications about zonal traffic change, create new resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zonalTraffic**
- To update or delete an individual subscription to notifications about zonal traffic change, update or delete resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zonalTraffic/{subscriptionId}**

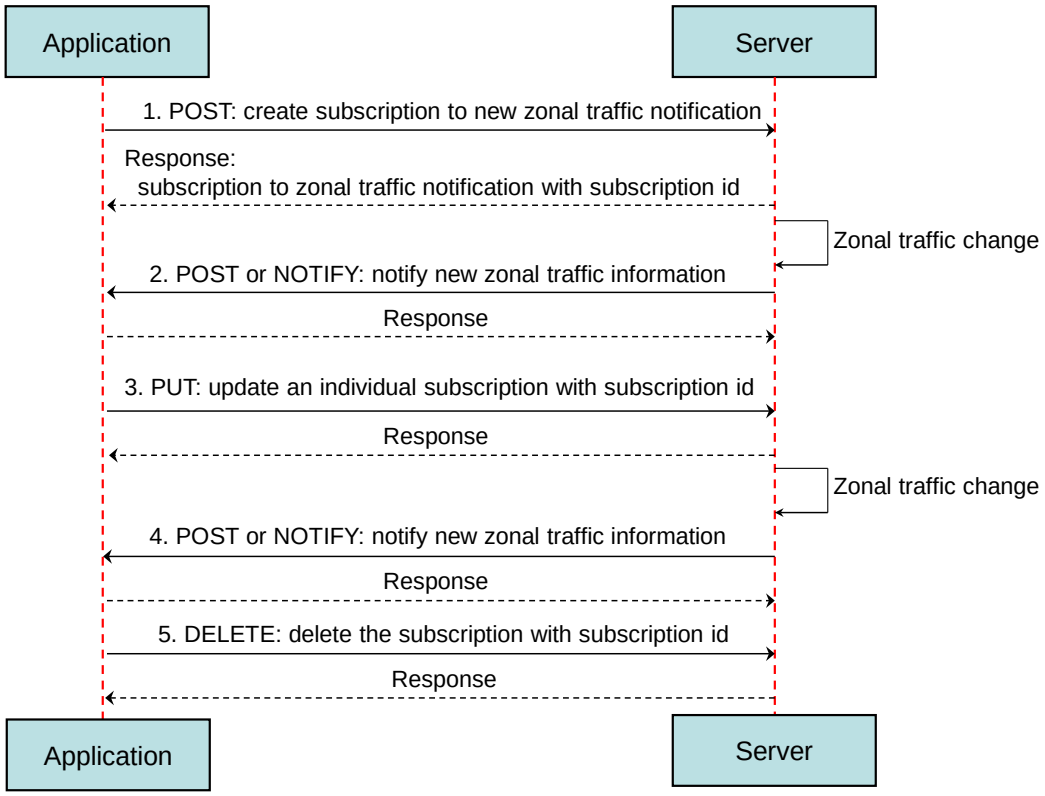


**Figure 3 Zonal traffic notification**

Outline of flow:

1. An application creates a new subscription to zonal traffic change notification by using POST and receives the resulting resource URL containing the subscriptionId.

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2. When the zonal traffic changes (e.g. Entering in zone001), the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
3. An application updates an individual subscription to zonal traffic change notification by using PUT to resource URL containing the subscriptionId. (e.g. interestRealm: NY)
4. When the zonal traffic changes (e.g. Entering in NY of zone001), the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
5. An application stops the notifications of the particular subscription by using DELETE to a resource URL containing the subscriptionId.

### 5.3.3 User tracking notification

This figure below shows a scenario for controlling subscriptions to notification about user tracking change (e.g. zone enter, zone exit, zone transfer).

The notification URL passed by the client during the subscription step can be a Client-side Notification URL, or a Server-side Notification URL. Refer to [REST_NetAPI_NotificationChannel] for sequence flows illustrating the creation of a Notification Channel and obtaining a Server-side Notification URL on the server-side, and its use by the client via Long Polling.

The resources:

- To start subscription to notifications about user tracking change, create new resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/userTracking**
- To update or delete an individual subscription to notifications about user tracking change, update or delete resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/userTracking/{subscriptionId}**

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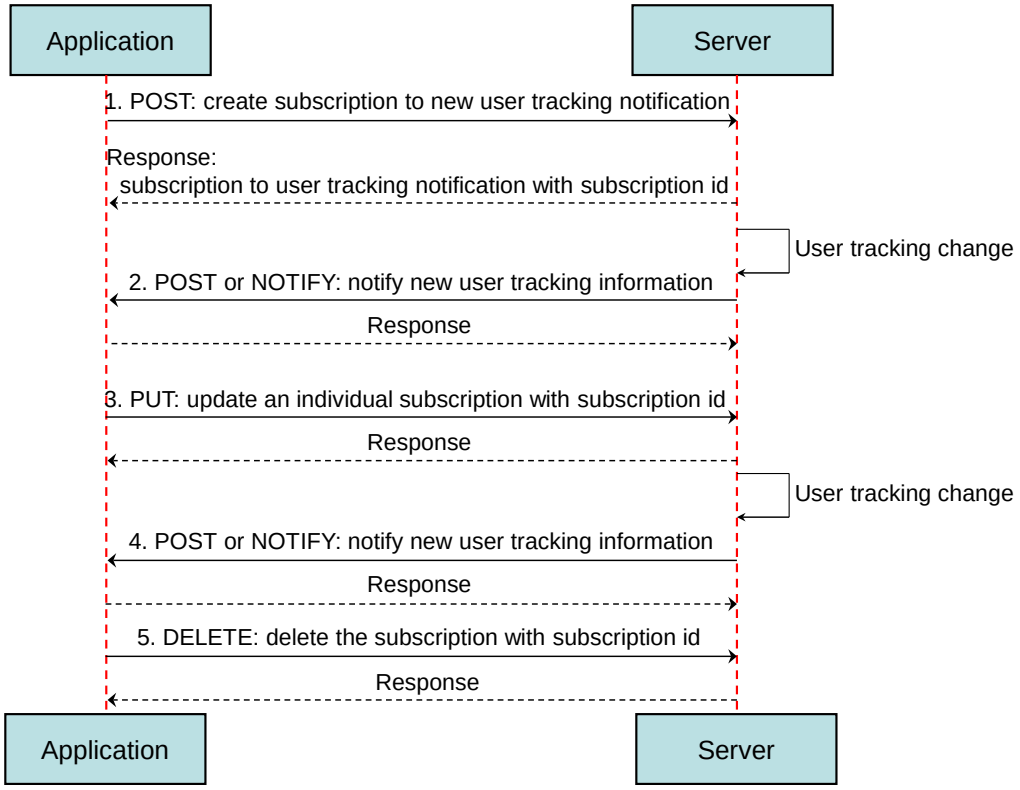


**Figure 4 User tracking notification**

Outline of flow:

1. An application creates a new subscription to user tracking change notification by using POST and receives the resulting resource URL containing the subscriptionId. (e.g. userEventCriteria: Zone Enter)
2. When the user tracking changes (e.g. Entering in zone001), the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
3. An application updates an individual subscription to user tracking change notification by using PUT to resource URL containing the subscriptionId. (e.g. userEventCriteria: Zone Exit)
4. When the user tracking changes (e.g. Leaving in zone002), the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
5. An application stops the notifications of the particular subscription by using DELETE to a resource URL containing the subscriptionId.

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### 5.3.4 Zone status notification

This figure below shows a scenario for controlling subscriptions to notification about zone status change (e.g. threshold number of users in the zone or access point, operation status of access point etc.).

The notification URL passed by the client during the subscription step can be a Client-side Notification URL, or a Server-side Notification URL. Refer to [REST_NetAPI_NotificationChannel] for sequence flows illustrating the creation of a Notification Channel and obtaining a Server-side Notification URL on the server-side, and its use by the client via Long Polling.

The resources:

- To start subscription to notifications about zone status change, create new resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zoneStatus**
- To update or delete an individual subscription to notifications about zone status change, update or delete resource under **http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zoneStatus/{subscriptionId}**

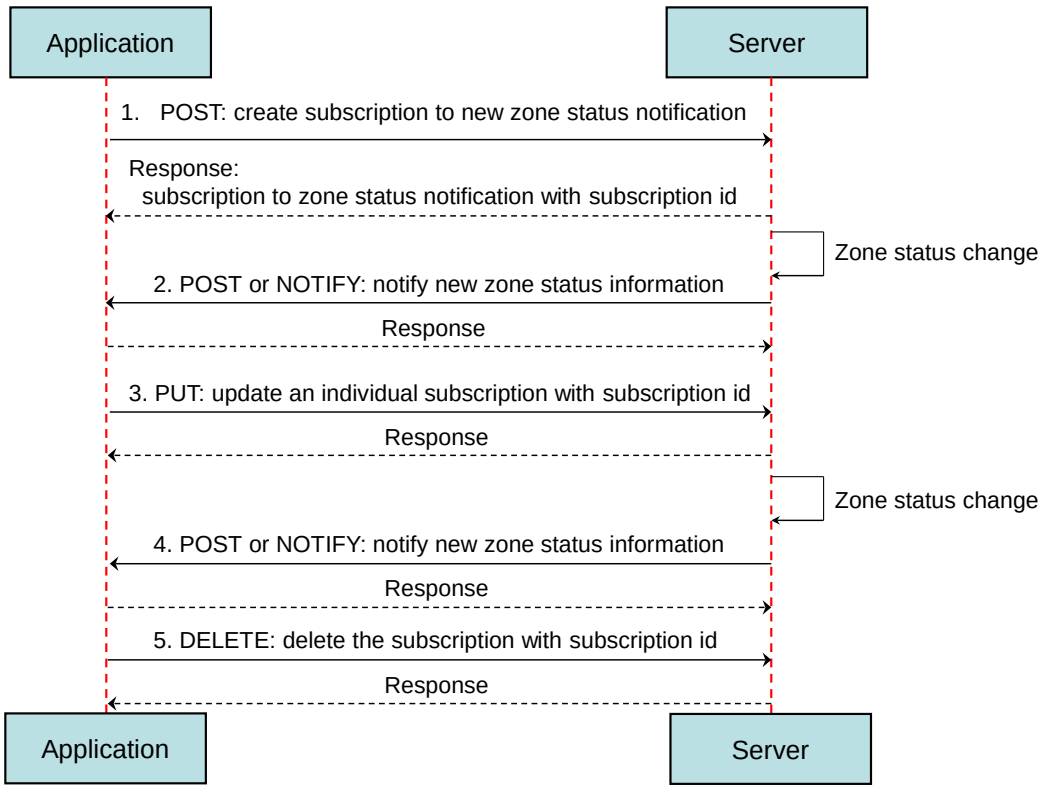


**Figure 5 Zone status notification**

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Outline of flow:

1. An application creates a new subscription to zone status change notification by using POST and receives the resulting resource URL containing the subscriptionId. (e.g. numberOfUsersZoneThreshold: 100)
2. When the zone status changes, the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
3. An application updates an individual subscription to zone status change notification by using PUT to resource URL containing the subscriptionId. (e.g. numberOfUsersZoneThreshold: 200)
4. When the zone status changes, the server notifies the application using POST to the application supplied notifyURL. Alternatively, the application obtains the notifications using a Notification Channel [REST_NetAPI_NotificationChannel].
5. An application stops the notifications of the particular subscription by using DELETE to a resource URL containing the subscriptionId.

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# 6. Detailed specification of the resources

The following applies to all resources defined in this specification regardless of the representation format (i.e. XML, JSON):

- Reserved characters in URL variables (parts of a URL denoted below by a name in curly brackets) MUST be percent-encoded according to [RFC3986]. Note that this always applies, no matter whether the URL is used as a Request URL or inside the representation of a resource (such as in "resourceURL" and "link" elements).
- If a user identifier (e.g. address, participantAddress, etc.) of type anyURI is in the form of an MSISDN, it MUST be defined as a global number according to [RFC3966] (e.g. tel:+19585550100). The use of characters other than digits and the leading "+" sign SHOULD be avoided in order to ensure uniqueness of the resource URL. This applies regardless of whether the user identifier appears in a URL variable or in a parameter in the body of an HTTP message.
- If an equipment identifier of type anyURI is in the form of a SIP URI, it MUST be defined according to [RFC3261].
- If a user identifier (e.g. address, userId, etc) of type anyURI is in the form of an Anonymous Customer Reference (ACR), it MUST be defined according to [REST_NetAPI_ACR], i.e. it MUST include the protocol prefix 'acr:' followed by the ACR.
    - The ACR 'auth' is a supported reserved keyword, and MUST NOT be assigned as an ACR to any particular end user. See F.1.2 for details regarding the use of this reserved keyword.
- For requests and responses that have a body, the following applies: in the requests received, the server SHALL support JSON and XML encoding of the parameters in the body. The Server SHALL return either JSON or XML encoded parameters in the response body, according to the result of the content type negotiation as specified in [REST_NetAPI_Common]. In notifications to the Client, the server SHALL use either XML or JSON encoding, depending on which format the client has specified in the related subscription. The generation and handling of the JSON representations SHALL follow the rules for JSON encoding in HTTP Requests/Responses as specified in [REST_NetAPI_Common].

## 6.1 Resource: Zone list

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/zones**

This resource is used for retrieving list of zones.

### 6.1.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

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## 6.1.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.1.3 GET

This operation is used for retrieving list of zones.

### 6.1.3.1 Example: Retrieve list of zones (Informative)

#### 6.1.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones HTTP/1.1
Host: example.com
Accept: application/xml
```

#### 6.1.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zone>
    <zoneId>zone001</zoneId>
    <numberOfAccessPoints>3</numberOfAccessPoints>
    <numberOfUnserviceableAccessPoints>1</numberOfUnserviceableAccessPoints>
    <numberOfUsers>10</numberOfUsers>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001</resourceURL>
  </zone>
  <zone>
    <zoneId>zone002</zoneId>
    <numberOfAccessPoints>12</numberOfAccessPoints>
    <numberOfUnserviceableAccessPoints>0</numberOfUnserviceableAccessPoints>
    <numberOfUsers>36</numberOfUsers>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone002</resourceURL>
  </zone>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones</resourceURL>
</zp:zoneList>
```

## 6.1.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.1.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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### 6.1.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.2 Resource: Individual zone information

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/zones/{zoneId}**

This resource is used for retrieving individual zone information.

### 6.2.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| zoneId | Identifier of zone (e.g. zone001). |

See section 6 for a statement on the escaping of reserved characters in URL variables.

### 6.2.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

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### 6.2.3 GET

This operation is used for retrieving individual zone information.

#### 6.2.3.1 Example: Retrieve individual zone information (Informative)

##### 6.2.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001 HTTP/1.1
Host: example.com
Accept: application/xml
```

##### 6.2.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneInfo xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zoneId>zone001</zoneId>
  <numberOfAccessPoints>3</numberOfAccessPoints>
  <numberOfUnserviceableAccessPoints>1</numberOfUnserviceableAccessPoints>
  <numberOfUsers>10</numberOfUsers>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001</resourceURL>
</zp:zoneInfo>
```

### 6.2.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.2.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.2.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.3 Resource: Access point list

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/zones/{zoneId}/accessPoints**

This resource is used for retrieving list of access points.

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## 6.3.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| zoneId | Identifier of zone (e.g. zone001). |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.3.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.3.3 GET

This operation is used for retrieving list of access points.

Supported parameters in the query string of the Request URL are:

| Name | Type/Values | Optional | Description |
|---|---|---|---|
| interestRealm | xsd:string | Yes | Interest realm of access point (e.g. geographical area, a type of industry etc.). |

### 6.3.3.1 Example 1: Retrieve list of access points (Informative)

#### 6.3.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints HTTP/1.1
Host: example.com
Accept: application/xml
```

#### 6.3.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:accessPointList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zoneId>zone001</zoneId>
  <accessPoint>
    <accessPointId>ap01</accessPointId>
    <locationInfo>
      <latitude>90.123</latitude>
      <longitude>80.123</longitude>
      <altitude>10.0</altitude>
```

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```
      <accuracy>0</accuracy>
    </locationInfo>
    <connectionType>Femto</connectionType>
    <operationStatus>Serviceable</operationStatus>
    <numberOfUsers>5</numberOfUsers>
    <interestRealm>NY</interestRealm>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01</resourceURL>
  </accessPoint>
  <accessPoint>
    <accessPointId>ap02</accessPointId>
    <locationInfo>
      <latitude>91.123</latitude>
      <longitude>81.123</longitude>
      <altitude>12.0</altitude>
      <accuracy>1</accuracy>
    </locationInfo>
    <connectionType>Femto</connectionType>
    <operationStatus>Unserviceable</operationStatus>
    <numberOfUsers>0</numberOfUsers>
    <interestRealm>DC</interestRealm>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap02</resourceURL>
  </accessPoint>
  <accessPoint>
    <accessPointId>ap03</accessPointId>
    <locationInfo>
      <latitude>93.123</latitude>
      <longitude>83.123</longitude>
      <altitude>16.0</altitude>
      <accuracy>3</accuracy>
    </locationInfo>
    <connectionType>Femto</connectionType>
    <operationStatus>Serviceable</operationStatus>
    <numberOfUsers>5</numberOfUsers>
    <interestRealm>NY</interestRealm>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap03</resourceURL>
  </accessPoint>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints</resourceURL>
</zp:accessPointList>
```

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#### 6.3.3.2 Example 2: Retrieve list of access points with same interest realm (Informative)

##### 6.3.3.2.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints?interestRealm=NY HTTP/1.1
Host: example.com
Accept: application/xml
```

##### 6.3.3.2.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:accessPointList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zoneId>zone001</zoneId>
  <accessPoint>
    <accessPointId>ap01</accessPointId>
    <locationInfo>
      <latitude>90.123</latitude>
      <longitude>80.123</longitude>
      <altitude>10.0</altitude>
      <accuracy>0</accuracy>
    </locationInfo>
    <connectionType>Femto</connectionType>
    <operationStatus>Serviceable</operationStatus>
    <numberOfUsers>5</numberOfUsers>
    <interestRealm>NY</interestRealm>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01</resourceURL>
  </accessPoint>
  <accessPoint>
    <accessPointId>ap03</accessPointId>
    <locationInfo>
      <latitude>93.123</latitude>
      <longitude>83.123</longitude>
      <altitude>16.0</altitude>
      <accuracy>3</accuracy>
    </locationInfo>
    <connectionType>Femto</connectionType>
    <operationStatus>Serviceable</operationStatus>
    <numberOfUsers>5</numberOfUsers>
    <interestRealm>NY</interestRealm>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap03</resourceURL>
  </accessPoint>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints</resourceURL>
</zp:accessPointList>
```

### 6.3.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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### 6.3.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.3.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.4 Resource: Individual access point information

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/zones/{zoneId}/accessPoints/{accessPointId}**

This resource is used for retrieving individual access point information.

### 6.4.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| zoneId | Identifier of zone (e.g. zone001). |
| accessPointId | Identifier of access point (e.g. ap01). |

See section 6 for a statement on the escaping of reserved characters in URL variables.

### 6.4.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

### 6.4.3 GET

This operation is used for retrieving individual access point information.

#### 6.4.3.1 Example: Retrieve individual access point information (Informative)

##### 6.4.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01 HTTP/1.1
Host: example.com
Accept: application/xml
```

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#### 6.4.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:accessPointInfo xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <accessPointId>ap01</accessPointId>
  <locationInfo>
    <latitude>90.123</latitude>
    <longitude>80.123</longitude>
    <altitude>10.0</altitude>
    <accuracy>0</accuracy>
  </locationInfo>
  <connectionType>Femto</connectionType>
  <operationStatus>Serviceable</operationStatus>
  <numberOfUsers>5</numberOfUsers>
  <interestRealm>NY</interestRealm>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01</resourceURL>
</zp:accessPointInfo>
```

## 6.4.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.4.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.4.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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## 6.5 Resource: User list

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/users**

This resource is used for retrieving list of users.

### 6.5.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

### 6.5.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

### 6.5.3 GET

This operation is used for retrieving list of users.

Supported parameters in the query string of the Request URL are:

| Name | Type/Values | Optional | Description |
|---|---|---|---|
| zoneId | xsd:string | Yes | Identifier of zone (e.g. zone001). |
| accessPointId | xsd:string | Yes | Identifier of access point (e.g. ap01). |

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#### 6.5.3.1 Example 1: Retrieve list of users (Informative)

##### 6.5.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users HTTP/1.1
Host: example.com
Accept: application/xml
```

##### 6.5.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:userList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <user>
    <address>tel:+19585550100</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100</resourceURL>
  </user>
  <user>
    <address>tel:+19585550101</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101</resourceURL>
  </user>
  <user>
    <address>tel:+19585550102</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone002</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550102</resourceURL>
  </user>
  <user>
    <address>tel:+19585550103</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone002</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550103</resourceURL>
  </user>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users</resourceURL>
</zp:userList>
```

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### 6.5.3.2 Example 2: Retrieve list of users in a zone (Informative)

#### 6.5.3.2.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users?zoneId=zone001 HTTP/1.1
Host: example.com
Accept: application/xml
```

#### 6.5.3.2.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:userList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <user>
    <address>tel:+19585550100</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100</resourceURL>
  </user>
  <user>
    <address>tel:+19585550101</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101</resourceURL>
  </user>
  <user>
    <address>tel:+19585550102</address>
    <accessPointId>ap03</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550102</resourceURL>
  </user>
  <user>
    <address>tel:+19585550103</address>
    <accessPointId>ap03</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550103</resourceURL>
  </user>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users</resourceURL>
</zp:userList>
```

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#### 6.5.3.3 Example 3: Retrieve list of users in an access point (Informative)

##### 6.5.3.3.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users?zoneId=zone001&accessPointId=ap01 HTTP/1.1
Host: example.com
Accept: application/xml
```

##### 6.5.3.3.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:userList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <user>
    <address>tel:+19585550100</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100</resourceURL>
  </user>
  <user>
    <address>tel:+19585550101</address>
    <accessPointId>ap01</accessPointId>
    <zoneId>zone001</zoneId>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101</resourceURL>
  </user>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users</resourceURL>
</zp:userList>
```

### 6.5.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.5.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.5.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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# 6.6 Resource: Individual user information

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/users/{userId}**

This resource is used for retrieving individual user information.

## 6.6.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| userId | Identifier of user (e.g. tel:+19585550100, acr:pseudonym123) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.6.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

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## 6.6.3 GET

This operation is used for retrieving individual user information.

### 6.6.3.1 Example: Retrieve individual user information (Informative)

#### 6.6.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100 HTTP/1.1
Host: example.com
Accept: application/xml
```

#### 6.6.3.1.2 Response

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/xml
Content-Length: nnnn

<?xml version="1.0" encoding="UTF-8"?>
<zp:userInfo xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <address>tel:+19585550100</address>
  <accessPointId>ap01</accessPointId>
  <zoneId>zone001</zoneId>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100</resourceURL>
</zp:userInfo>
```

## 6.6.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.6.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.6.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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# 6.7 Resource: Zonal traffic change notification subscriptions

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zonalTraffic**

This resource is used for controlling subscriptions to notification about zonal traffic change.

This resource can be used in conjunction with a Client-side Notification URL, or in conjunction with a Server-side Notification URL. In this latter case, the application MUST first create a Notification Channel (see [REST_NetAPI_NotificationChannel]) before creating a subscription.

## 6.7.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.7.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

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## 6.7.3 GET

This operation is used for retrieving all active subscriptions to zonal traffic change notifications.

### 6.7.3.1 Example: Retrieve zonal traffic subscriptions (Informative)

#### 6.7.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Accept: application/xml
Host: example.com
```

#### 6.7.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:notificationSubscriptionList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zonalTrafficSubscription>
    <clientCorrelator>0001</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <zoneId>zone001</zoneId>
    <interestRealm>NY</interestRealm>
    <userEventCriteria>Entering</userEventCriteria>
  </zonalTrafficSubscription>
  <zonalTrafficSubscription>
    <clientCorrelator>0002</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub124</resourceURL>
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <zoneId>zone002</zoneId>
    <interestRealm>DC</interestRealm>
    <userEventCriteria>Entering</userEventCriteria>
  </zonalTrafficSubscription>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic</resourceURL>
</zp:notificationSubscriptionList>
```

## 6.7.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET, POST’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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## 6.7.5 POST

This operation is used for creating a new subscription to zonal traffic change notification.

The notifyURL in the callbackReference either contains the Client-side Notification URL (as defined by the client) or the Server-side Notification URL (as obtained during the creation of the Notification Channel [REST_NetAPI_NotificationChannel]).

### 6.7.5.1 Example 1: Create new zonal traffic subscription (Informative)

#### 6.7.5.1.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Entering</userEventCriteria>
</zp:zonalTrafficSubscription >
```

#### 6.7.5.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Entering</userEventCriteria>
</zp:zonalTrafficSubscription >
```

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#### 6.7.5.2 Example 2: Create new zonal traffic subscription, response with location of created resource (Informative)

##### 6.7.5.2.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Entering</userEventCriteria>
</zp:zonalTrafficSubscription >
```

##### 6.7.5.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
</common:resourceReference>
```

### 6.7.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the ‘Allow: GET, POST’ field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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# 6.8 Resource: Individual zonal traffic change notification subscription

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zonalTraffic/{subscriptionId}**

This resource is used for controlling individual subscription to notification about zonal traffic change.

## 6.8.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| subscriptionId | Identifier of the subscription. Example: sub123 |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.8.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.8.3 GET

This operation is used for retrieving an individual subscription to zonal traffic change notification.

### 6.8.3.1 Example: Retrieve individual zonal traffic subscription (Informative)

#### 6.8.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

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#### 6.8.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1" >
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Entering</userEventCriteria>
</zp:zonalTrafficSubscription>
```

## 6.8.4 PUT

This operation is used for updating an individual subscription to zonal traffic change notification.

### 6.8.4.1 Example: Update individual zonal traffic subscription (Informative)

#### 6.8.4.1.1 Request

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Leaving</userEventCriteria>
</zp:zonalTrafficSubscription >
```

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#### 6.8.4.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalTrafficSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <interestRealm>NY</interestRealm>
  <userEventCriteria>Leaving</userEventCriteria>
</zp:zonalTrafficSubscription >
```

### 6.8.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, PUT, DELETE' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.8.6 DELETE

This operation is used for cancelling a subscription and stopping corresponding notifications.

#### 6.8.6.1 Example: Cancelling a subscription (Informative)

##### 6.8.6.1.1 Request

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

##### 6.8.6.1.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

## 6.9 Resource: User tracking change notification subscriptions

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/userTracking**

This resource is used for controlling subscriptions to notification about user tracking change.

This resource can be used in conjunction with a Client-side Notification URL, or in conjunction with a Server-side Notification URL. In this latter case, the application MUST first create a Notification Channel (see [REST_NetAPI_NotificationChannel]) before creating a subscription.

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## 6.9.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.9.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.9.3 GET

This operation is used for retrieving all active subscriptions to user tracking change notifications.

### 6.9.3.1 Example: Retrieve user tracking subscriptions (Informative)

#### 6.9.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Accept: application/xml
Host: example.com
```

#### 6.9.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:notificationSubscriptionList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <userTrackingSubscription>
    <clientCorrelator>0001</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <address>tel:+19585550100</address>
    <userEventCriteria>Entering</userEventCriteria>
  </userTrackingSubscription>
  <userTrackingSubscription>
    <clientCorrelator>0002</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub124</resourceURL>
```

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```
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <address>tel:+19585550101</address>
    <userEventCriteria>Entering</userEventCriteria>
  </userTrackingSubscription>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking</resourceURL>
</zp:notificationSubscriptionList>
```

## 6.9.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.9.5 POST

This operation is used for creating a new subscription to user tracking change notification.

The notifyURL in the callbackReference either contains the Client-side Notification URL (as defined by the client) or the Server-side Notification URL (as obtained during the creation of the Notification Channel [REST_NetAPI_NotificationChannel]).

### 6.9.5.1 Example 1: Create new user tracking subscription using tel URI (Informative)

#### 6.9.5.1.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

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#### 6.9.5.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

### 6.9.5.2 Example 2: Create new user tracking subscription using ACR (Informative)

#### 6.9.5.2.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>acr:pseudonym123</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

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#### 6.9.5.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>acr:pseudonym123</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

### 6.9.5.3 Example 3: Create new user tracking subscription using tel URI, response with location of created resource (Informative)

#### 6.9.5.3.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

#### 6.9.5.3.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
</common:resourceReference>
```

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### 6.9.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.10 Resource: Individual user tracking change notification subscription

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/userTracking/{subscriptionId}**

This resource is used for controlling individual subscription to notification about user tracking change.

### 6.10.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| subscriptionId | Identifier of the subscription. Example: sub123 |

See section 6 for a statement on the escaping of reserved characters in URL variables.

### 6.10.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

### 6.10.3 GET

This operation is used for retrieving an individual subscription to user tracking change notification.

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#### 6.10.3.1 Example: Retrieve individual user tracking subscription (Informative)

##### 6.10.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

##### 6.10.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1" >
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Entering</userEventCriteria>
</zp:userTrackingSubscription>
```

### 6.10.4 PUT

This operation is used for updating an individual subscription to user tracking change notification.

#### 6.10.4.1 Example: Update individual user tracking subscription (Informative)

##### 6.10.4.1.1 Request

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Leaving</userEventCriteria>
</zp:userTrackingSubscription>
```

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#### 6.10.4.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:userTrackingSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <address>tel:+19585550100</address>
  <userEventCriteria>Leaving</userEventCriteria>
</zp:userTrackingSubscription>
```

### 6.10.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, PUT, DELETE' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.10.6 DELETE

This operation is used for cancelling a subscription and stopping corresponding notifications.

#### 6.10.6.1 Example: Cancelling a subscription (Informative)

#### 6.10.6.1.1 Request

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

#### 6.10.6.1.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

## 6.11 Resource: Zone status change notification subscriptions

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zoneStatus**

This resource is used for controlling subscriptions to notification about zone status change.

This resource can be used in conjunction with a Client-side Notification URL, or in conjunction with a Server-side Notification URL. In this latter case, the application MUST first create a Notification Channel (see [REST_NetAPI_NotificationChannel]) before creating a subscription.

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## 6.11.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |

See section 6 for a statement on the escaping of reserved characters in URL variables.

## 6.11.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.11.3 GET

This operation is used for retrieving all active subscriptions to zone status change notifications.

### 6.11.3.1 Example: Retrieve zone status subscriptions (Informative)

#### 6.11.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Accept: application/xml
Host: example.com
```

#### 6.11.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:notificationSubscriptionList xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <zoneStatusSubscription>
    <clientCorrelator>0001</clientCorrelator>
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <zoneId>zone001</zoneId>
    <numberOfUsersZoneThreshold>500</numberOfUsersZoneThreshold>
    <operationStatus>Serviceable</operationStatus>
  </zoneStatusSubscription>
  <zoneStatusSubscription>
    <clientCorrelator>0002</clientCorrelator>
```

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```
    <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub124</resourceURL>
    <callbackReference>
      <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
    </callbackReference>
    <zoneId>zone002</zoneId>
    <numberOfUsersAPThreshold>50</numberOfUsersAPThreshold>
  </zoneStatusSubscription>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus</resourceURL>
</zp:notificationSubscriptionList>
```

## 6.11.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.11.5 POST

This operation is used for creating a new subscription to zone status change notification.

The notifyURL in the callbackReference either contains the Client-side Notification URL (as defined by the client) or the Server-side Notification URL (as obtained during the creation of the Notification Channel [REST_NetAPI_NotificationChannel]).

### 6.11.5.1 Example 1: Create new zone status subscription (Informative)

#### 6.11.5.1.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>500</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

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#### 6.11.5.1.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>500</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

### 6.11.5.2 Example 2: Create new zone status subscription, response with location of created resource (Informative)

#### 6.11.5.2.1 Request

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>500</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

#### 6.11.5.2.2 Response

```
HTTP/1.1 201 Created
Content-Type: application/xml
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<common:resourceReference xmlns:common="urn:oma:xml:rest:netapi:common:1">
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
</common:resourceReference>
```

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### 6.11.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.12 Resource: Individual zone status change notification subscription

The resource used is:

**http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId}/subscriptions/zoneStatus/{subscriptionId}**

This resource is used for controlling individual subscription to notification about zone status change.

### 6.12.1 Request URL variables

The following request URL variables are common for all HTTP commands:

| Name | Description |
|---|---|
| serverRoot | Server base url: hostname+port+base path. Port and base path are OPTIONAL. Example: example.com/exampleAPI |
| apiVersion | Version of the API client wants to use. The value of this variable is defined in section 5.1. |
| zoneOwnerId | Identifier of zone owner (e.g. zowner0001) |
| subscriptionId | Identifier of the subscription. Example: sub123 |

See section 6 for a statement on the escaping of reserved characters in URL variables.

### 6.12.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

### 6.12.3 GET

This operation is used for retrieving an individual subscription to zone status change notification.

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#### 6.12.3.1 Example: Retrieve individual zone status subscription (Informative)

##### 6.12.3.1.1 Request

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

##### 6.12.3.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1" >
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>500</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

### 6.12.4 PUT

This operation is used for updating an individual subscription to zone status change notification.

#### 6.12.4.1 Example: Update individual zone status subscription (Informative)

##### 6.12.4.1.1 Request

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Content-Type: application/xml
Content-Length: nnnn
Accept: application/xml
Host: example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>250</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

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#### 6.12.4.1.2 Response

```
HTTP/1.1 200 OK
Content-Type: application/xml
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusSubscription xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <clientCorrelator>0001</clientCorrelator>
  <resourceURL>http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123</resourceURL>
  <callbackReference>
    <notifyURL>http://applicationClient.example.com/zonalpresence/notifications/77777</notifyURL>
  </callbackReference>
  <zoneId>zone001</zoneId>
  <numberOfUsersZoneThreshold>250</numberOfUsersZoneThreshold>
  <operationStatus>Serviceable</operationStatus>
</zp:zoneStatusSubscription>
```

### 6.12.5 POST

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: GET, PUT, DELETE' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

### 6.12.6 DELETE

This operation is used for cancelling a subscription and stopping corresponding notifications.

#### 6.12.6.1 Example: Cancelling a subscription (Informative)

#### 6.12.6.1.1 Request

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Accept: application/xml
Host: example.com
```

#### 6.12.6.1.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

## 6.13 Resource: Client notification about zonal presence changes

This resource is a callback URL provided by the client for notification about Zonal Presence events.

The RESTful Zonal Presence API does not make any assumption about the structure of this URL. If this URL is a Client-side Notification URL, the server will POST notifications directly to it. If this URL is a Server-side Notification URL, the server uses it to determine the address of the Notification Server to which the notifications will subsequently be POSTed. The way the server determines the address of the Notification Server is out of scope of this specification.

Note: In the case when the client has set up a Notification Channel to obtain the notifications, the client needs to use the mechanisms described in [REST_NetAPI_NotificationChannel], instead of the mechanism described below in section 6.13.4.

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## 6.13.1 Request URL variables

Client provided.

## 6.13.2 Response Codes and Error Handling

For HTTP response codes, see [REST_NetAPI_Common].

For Policy Exception and Service Exception fault codes applicable to Zonal Presence, see section 7.

## 6.13.3 GET

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.13.4 PUT

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

## 6.13.5 POST

This operation is used for notifying client about zonal presence changes.

### 6.13.5.1 Example 1: Zonal presence notification for zonal traffic (Informative)

#### 6.13.5.1.1 Request

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Host: applicationClient.example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalPresenceNotification xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <callbackData>12345</callbackData>
  <zoneId>zone001</zoneId>
  <address>tel:+19585550100</address>
  <interestRealm>NY</interestRealm>
  <userEventType>Entering</userEventType>
  <currentAccessPointId>ap01</currentAccessPointId>
  <timestamp>2015-02-03T02:51:57Z</timestamp>
  <link rel="ZonalTrafficSubscription"
        href="http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123"/>
</zp:zonalPresenceNotification>
```

#### 6.13.5.1.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

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### 6.13.5.2 Example 2: Zonal presence notification for user tracking (Informative)

#### 6.13.5.2.1 Request

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Host: applicationClient.example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zonalPresenceNotification xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <callbackData>12345</callbackData>
  <zoneId>zone002</zoneId>
  <address>tel:+19585550101</address>
  <userEventType>Entering</userEventType>
  <currentAccessPointId>ap02</currentAccessPointId>
  <timestamp>2015-02-03T02:51:57Z</timestamp>
  <link rel="UserTrackingSubscription"
        href="http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123"/>
</zp:zonalPresenceNotification>
```

#### 6.13.5.2.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

### 6.13.5.3 Example 3: Zone status notification (Informative)

#### 6.13.5.3.1 Request

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/xml
Accept: application/xml
Host: applicationClient.example.com

<?xml version="1.0" encoding="UTF-8"?>
<zp:zoneStatusNotification xmlns:zp="urn:oma:xml:rest:netapi:zonalpresence:1">
  <callbackData>12345</callbackData>
  <zoneId>zone001</zoneId>
  <accessPointId>ap01</accessPointId>
  <numberOfUsersInAP>50</numberOfUsersInAP>
  <timestamp>2015-02-03T02:51:57Z</timestamp>
  <link rel="ZoneStatusSubscription"
        href="http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123"/>
</zp:zoneStatusNotification>
```

#### 6.13.5.3.2 Response

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

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### 6.13.6 DELETE

Method not allowed by the resource. The returned HTTP error status is 405. The server SHOULD also include the 'Allow: POST' field in the response as per section 6.5.5 and 7.4.1 of [RFC7231].

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# 7. Fault definitions

## 7.1 Service Exceptions

For common Service Exceptions refer to [REST_NetAPI_Common]. There are no additional Service Exception codes defined for the RESTful Zonal Presence API.

## 7.2 Policy Exceptions

For common Policy Exceptions refer to [REST_NetAPI_Common]. There are no additional Policy Exception codes defined for the RESTful Zonal Presence API.

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# 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>REST_NetAPI _ZonalPresence-V1_0 | 21 Jan 2015 | All | Initial draft |
| | 14 Jul 2015 | 5, 5.1, 5.2 | Incorporated:<br>- OMA-ARC-Rest Zon-2015-0004-CR_ZonalPresence_TS_resource_structure<br>- OMA-ARC-Rest Zon-2015-0005R03-CR_ZonalPresence_TS_data_types |
| | 17 Aug 2015 | 1, 2, 3, 4, 5.2, 5.3 | Incorporated:<br>- OMA-ARC-Rest Zon-2015-0006R02-CR_ZonalPresence_TS_ZoneStatusNotification_data_structure<br>- OMA-ARC-Rest Zon-2015-0008-CR_TS_Section_4_introduction<br>- OMA-ARC-Rest Zon-2015-0009-CR_TS_initial_sections<br>- OMA-ARC-Rest Zon-2015-0010R01-CR_TS_sequence_diagrams |
| | 06 Oct 2015 | 6, Appendix C | Incorporated:<br>- OMA-ARC-Rest Zon-2015-0011R01-CR_TS_XML_examples<br>- OMA-ARC-Rest Zon-2015-0012-CR_TS_JSON_examples |
| | 07 Nov 2015 | 5.2.3, 7, Appendix B, Appendix F | Incorporated:<br>- OMA-ARC-Rest Zon-2015-0014-CR_TS_Enumerations_Fault_others<br>- OMA-ARC-Rest Zon-2015-0015R01-CR_TS_Appendix_B_SCR<br>- OMA-ARC-Rest Zon-2015-0016-CR_TS_Appendix_F_Authorization |
| | 10 Feb 2016 | All | Incorporated:<br>- OMA-ARC-Rest Zon-2016-0003-CR_CONR_fixing_TS |
| Candidate Version:<br>REST_NetAPI _ZonalPresence-V1_0 | 08 Mar 2016 | n/a | Status changed to Candidate by TP<br>TP Ref # OMA-TP-2016-0042-INP_REST_NetAPI_Zonal_Presence_V1_0_ERP_for_Candidate_approval |

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# Appendix B. Static Conformance Requirements (Normative)

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

## B.1 SCR for REST.ZonalPresence Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-SUPPORT-S-001-M | Support for the RESTful Zonal Presence API | 5, 6 | |
| REST-ZON-SUPPORT-S-002-M | Support for the XML request & response format | 6 | |
| REST-ZON-SUPPORT-S-003-M | Support for the JSON request & response format | 6 | |

### B.1.1 SCR for REST.ZonalPresence.ZoneList Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-ZL-S-001-M | Support for retrieving list of zones | 6.1 | |
| REST-ZON-ZL-S-002-O | Retrieving list of zones - GET | 6.1.3 | |

### B.1.2 SCR for REST.ZonalPresence.IndZoneInfo Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IZI-S-001-M | Support for retrieving individual zone information | 6.2 | |
| REST-ZON-IZI-S-002-O | Retrieving individual zone information - GET | 6.2.3 | |

### B.1.3 SCR for REST.ZonalPresence.AccessPointList Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-APL-S-001-M | Support for retrieving list of access points | 6.3 | |
| REST-ZON-APL-S-002-O | Retrieving list of access points - GET | 6.3.3 | |

### B.1.4 SCR for REST.ZonalPresence.IndAccessPointInfo Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IAPI-S-001-M | Support for retrieving individual access point information | 6.4 | |
| REST-ZON-IAPI-S-002-O | Retrieving individual access point information - GET | 6.4.3 | |

### B.1.5 SCR for REST.ZonalPresence.UserList Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-UL-S-001-M | Support for retrieving list of users | 6.5 | |
| REST-ZON-UL-S-002-O | Retrieving list of users - GET | 6.5.3 | |

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### B.1.6 SCR for REST.ZonalPresence.IndUserInfo Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IUI-S-001-M | Support for retrieving individual user information | 6.6 | |
| REST-ZON-IUI-S-002-O | Retrieving individual user information - GET | 6.6.3 | |

### B.1.7 SCR for REST.ZonalPresence.ZonalTrafficSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-ZTS-S-001-M | Support for zonal traffic subscriptions | 6.7 | |
| REST-ZON-ZTS-S-002-O | Read all active subscriptions - GET | 6.7.3 | |
| REST-ZON-ZTS-S-003-M | Create a new zonal traffic notification subscription for the client - POST | 6.7.5 | |

### B.1.8 SCR for REST.ZonalPresence.IndZonalTrafficSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IZTS-S-001-M | Support for controlling individual subscription of zonal traffic | 6.8 | |
| REST-ZON-IZTS-S-002-O | Read individual subscription of zonal traffic - GET | 6.8.3 | |
| REST-ZON-IZTS-S-003-O | Update individual subscription of zonal traffic - PUT | 6.8.4 | |
| REST-ZON-IZTS-S-004-M | Delete a subscription of zonal traffic for the client - DELETE | 6.8.6 | |

### B.1.9 SCR for REST.ZonalPresence.UserTrackingSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-UTS-S-001-M | Support for user tracking subscriptions | 6.9 | |
| REST-ZON-UTS-S-002-O | Read all active subscriptions - GET | 6.9.3 | |
| REST-ZON-UTS-S-003-M | Create a new user tracking notification subscription for the client - POST | 6.9.5 | |

### B.1.10 SCR for REST.ZonalPresence.IndUserTrackingSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IUTS-S-001-M | Support for controlling individual subscription of user tracking | 6.10 | |
| REST-ZON-IUTS-S-002-O | Read individual subscription of user tracking - GET | 6.10.3 | |
| REST-ZON-IUTS-S-003-O | Update individual subscription of user tracking - PUT | 6.10.4 | |
| REST-ZON-IUTS-S-004-M | Delete a subscription of user tracking for the client - DELETE | 6.10.6 | |

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### B.1.11 SCR for REST.ZonalPresence.ZoneStatusSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-ZSS-S-001-M | Support for zone status subscriptions | 6.11 | |
| REST-ZON-ZSS-S-002-O | Read all active subscriptions - GET | 6.11.3 | |
| REST-ZON-ZSS-S-003-M | Create a new zone status notification subscription for the client - POST | 6.11.5 | |

### B.1.12 SCR for REST.ZonalPresence.IndZoneStatusSubscr Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-IZSS-S-001-M | Support for controlling individual subscription of zone status | 6.12 | |
| REST-ZON-IZSS-S-002-O | Read individual subscription of zone status - GET | 6.12.3 | |
| REST-ZON-IZSS-S-003-O | Update individual subscription of zone status - PUT | 6.12.4 | |
| REST-ZON-IZSS-S-004-M | Delete a subscription of zone status for the client - DELETE | 6.12.6 | |

### B.1.13 SCR for REST.ZonalPresence.ClientNotificationCallback Server

| Item | Function | Reference | Requirement |
|---|---|---|---|
| REST-ZON-CNC-S-001-M | Support for notifying client about zonal presence changes | 6.13 | |
| REST-ZON-CNC-S-002-M | Notify client about zonal presence changes - POST | 6.13.5 | |

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# Appendix C. JSON examples (Informative)

JSON (JavaScript Object Notation) is a Light-weight, text-based, language-independent data interchange format. It provides a simple means to represent basic name-value pairs, arrays and objects. JSON is relatively trivial to parse and evaluate using standard JavaScript libraries, and hence is suited for REST invocations from browsers or other processors with JavaScript engines. Further information on JSON can be found at [RFC7159].

The following examples show the request and response for various operations using the JSON data format. The examples follow the XML to JSON serialization rules in [REST_NetAPI_Common]. A JSON response can be obtained by using the content type negotiation mechanism specified in [REST_NetAPI_Common].

For full details on the operations themselves please refer to the section number indicated.

## C.1 Retrieve list of zones (section 6.1.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"zoneList": {
   "zone": [
      {
        “zoneId”: “zone001”,
        “numberOfAccessPoints”: “3”,
        “numberOfUnserviceableAccessPoints”: “1”,
        “numberOfUsers”: “10”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001”
      },
      {
        “zoneId”: “zone002”,
        “numberOfAccessPoints”: “12”,
        “numberOfUnserviceableAccessPoints”: “0”,
        “numberOfUsers”: “36”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone002”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones"
}}
```

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## C.2 Retrieve individual zone information (section 6.2.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001 HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"zoneInfo": {
    “zoneId”: “zone001”,
   “numberOfAccessPoints”: “3”,
   “numberOfUnserviceableAccessPoints”: “1”,
   “numberOfUsers”: “10”,
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001"
}}
```

## C.3 Retrieve list of access points (section 6.3.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"accessPointList": {
   "zoneId": “zone001”,
   "accessPoint": [
      {
        “accessPointId”: “ap01”,
        “locationInfo”: {
            “latitude”: “90.123”,
           “longitude”: “80.123”,
           “altitude”: “10.0”,
           “accuracy”: “0”
        },
        “connectionType”: “Femto”,
        “operationStatus”: “Serviceable”,
        “numberOfUsers”: “5”,
        “interestRealm”: “NY”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01”
```

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```
      },
      {
        “accessPointId”: “ap02”,
        “locationInfo”: {
            “latitude”: “91.123”,
           “longitude”: “81.123”,
           “altitude”: “12.0”,
           “accuracy”: “1”
        },
        “connectionType”: “Femto”,
        “operationStatus”: “Unserviceable”,
        “numberOfUsers”: “0”,
        “interestRealm”: “DC”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap02”
      },
      {
        “accessPointId”: “ap03”,
        “locationInfo”: {
            “latitude”: “93.123”,
           “longitude”: “83.123”,
           “altitude”: “16.0”,
           “accuracy”: “3”
        },
        “connectionType”: “Femto”,
        “operationStatus”: “Serviceable”,
        “numberOfUsers”: “5”,
        “interestRealm”: “NY”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap03”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints"
}}
```


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# C.4 Retrieve list of access points with same interest realm (section 6.3.3.2)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints?interestRealm=NY HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"accessPointList": {
   "zoneId": “zone001”,
   "accessPoint": [
      {
        “accessPointId”: “ap01”,
        “locationInfo”: {
             “latitude”: “90.123”,
            “longitude”: “80.123”,
            “altitude”: “10.0”,
            “accuracy”: “0”
        },
        “connectionType”: “Femto”,
        “operationStatus”: “Serviceable”,
        “numberOfUsers”: “5”,
        “interestRealm”: “NY”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01”
      },
      {
        “accessPointId”: “ap03”,
        “locationInfo”: {
             “latitude”: “93.123”,
            “longitude”: “83.123”,
            “altitude”: “16.0”,
            “accuracy”: “3”
        },
        “connectionType”: “Femto”,
        “operationStatus”: “Serviceable”,
        “numberOfUsers”: “5”,
        “interestRealm”: “NY”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap03”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints"
}}
```

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# C.5 Retrieve individual access point information (section 6.4.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01 HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"accessPointInfo": {
    “accessPointId”: “ap01”,
    “locationInfo”: {
        “latitude”: “90.123”,
        “longitude”: “80.123”,
        “altitude”: “10.0”,
        “accuracy”: “0”
    },
    “connectionType”: “Femto”,
    “operationStatus”: “Serviceable”,
    “numberOfUsers”: “5”,
    “interestRealm”: “NY”,
    "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones/zone001/accessPoints/ap01"
}}
```

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# C.6 Retrieve list of users (section 6.5.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"userList": {
   "user": [
      {
        “address”: “tel:+19585550100”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100”
      },
      {
        “address”: “tel:+19585550101”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101”
      },
      {
        “address”: “tel:+19585550102”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone002”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550102”
      },
      {
        “address”: “tel:+19585550103”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone002”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550103”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users"
}}
```

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# C.7 Retrieve list of users in a zone (section 6.5.3.2)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users?zoneId=zone001 HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"userList": {
   "user": [
      {
        “address”: “tel:+19585550100”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100”
      },
      {
        “address”: “tel:+19585550101”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101”
      },
      {
        “address”: “tel:+19585550102”,
        “accessPointId”: “ap03”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550102”
      },
      {
        “address”: “tel:+19585550103”,
        “accessPointId”: “ap03”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550103”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users"
}}
```

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# C.8 Retrieve list of users in an access point (section 6.5.3.3)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users?zoneId=zone001&accessPointId=ap01 HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"userList": {
   "user": [
      {
        “address”: “tel:+19585550100”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100”
      },
      {
        “address”: “tel:+19585550101”,
        “accessPointId”: “ap01”,
        “zoneId”: “zone001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550101”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users"
}}
```

# C.9 Retrieve individual user information (section 6.6.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100 HTTP/1.1
Host: example.com
Accept: application/json
```

Response:

```
HTTP/1.1 200 OK
Date: Tue, 03 Feb 2015 02:51:59 GMT
Content-Type: application/json
Content-Length: nnnn

{"userInfo": {
    “address”: “tel:+19585550100”,
   “accessPointId”: “ap01”,
   “zoneId”: “zone001”,
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/users/tel%3A%2B19585550100"
}}
```

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# C.10 Retrieve zonal traffic subscriptions (section 6.7.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"notificationSubscriptionList": {
   "zonalTrafficSubscription": [
      {
        “clientCorrelator”: “0001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123”,
        "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
        “zoneId”: “zone001”,
        “interestRealm”: “NY”,
        “userEventCriteria”: “Entering”
      },
      {
        “clientCorrelator”: “0002”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub124”,
        "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
        “zoneId”: “zone002”,
        “interestRealm”: “DC”,
        “userEventCriteria”: “Entering”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/zones"
}}
```

# C.11 Create new zonal traffic subscription (section 6.7.5.1)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “zoneId”: “zone001”,
   “interestRealm”: “NY”,
   "userEventCriteria": "Entering"
}}
```

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Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    “interestRealm”: “NY”,
    "userEventCriteria": "Entering"
}}
```

# C.12 Create new zonal traffic subscription, response with location of created resource (section 6.7.5.2)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    “interestRealm”: “NY”,
    "userEventCriteria": "Entering"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"resourceReference": {"resourceURL":
"http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123"}}
```

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## C.13 Retrieve individual zonal traffic subscription (section 6.8.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    “interestRealm”: “NY”,
    "userEventCriteria": "Entering"
}}
```

## C.14 Update individual zonal traffic subscription (section 6.8.4.1)

Request:

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    “interestRealm”: “NY”,
    "userEventCriteria": "Leaving"
}}
```

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Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zonalTrafficSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    “interestRealm”: “NY”,
    "userEventCriteria": "Leaving"
}}
```

# C.15 Cancelling a subscription (section 6.8.6.1)

Request:

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

# C.16 Retrieve user tracking subscriptions (section 6.9.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"notificationSubscriptionList": {
    "zonalTrafficSubscription": [
        {
            “clientCorrelator”: “0001”,
            “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
            "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
            “address”: “tel:+19585550100”,
            “userEventCriteria”: “Entering”
        },
```

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```
      {
        “clientCorrelator”: “0002”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub124”,
        "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
        “address”: “tel:+19585550101”,
        “userEventCriteria”: “Entering”
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking"
}}
```

# C.17 Create new user tracking subscription using tel URI (section 6.9.5.1)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “address”: “tel:+19585550100”,
   "userEventCriteria": "Entering"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
   “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “address”: “tel:+19585550100”,
   "userEventCriteria": "Entering"
}}
```

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## C.18 Create new user tracking subscription using ACR (section 6.9.5.2)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “address”: “acr:pseudonym123”,
   "userEventCriteria": "Entering"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
   “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “address”: “acr:pseudonym123”,
   "userEventCriteria": "Entering"
}}
```

## C.19 Create new user tracking subscription using tel URI, response with location of created resource (section 6.9.5.3)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “address”: “tel:+19585550100”,
   "userEventCriteria": "Entering"
}}
```

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Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"resourceReference": {"resourceURL": "
http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123"}}
```

# C.20 Retrieve individual user tracking subscription (section 6.10.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “address”: “tel:+19585550100”,
    "userEventCriteria": "Entering"
}}
```

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# C.21 Update individual user tracking subscription (section 6.10.4.1)

Request:

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “address”: “tel:+19585550100”,
    "userEventCriteria": "Leaving"
}}
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"userTrackingSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “address”: “tel:+19585550100”,
    "userEventCriteria": "Leaving"
}}
```

# C.22 Cancelling a subscription (section 6.10.6.1)

Request:

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

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# C.23 Retrieve zone status subscriptions (section 6.11.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"notificationSubscriptionList": {
   "zoneStatusSubscription": [
      {
        “clientCorrelator”: “0001”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123”,
        "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
        “zoneId”: “zone001”,
        “numberOfUsersZoneThreshold”: “500”,
        “operationStatus”: “Serviceable”
      },
      {
        “clientCorrelator”: “0002”,
        “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub124”,
        "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
        “zoneId”: “zone002”,
        “numberOfUsersAPThreshold”: “50”,
      }
   ],
   "resourceURL": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus"
}}
```

# C.24 Create new zone status subscription (section 6.11.5.1)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “zoneId”: “zone001”,
   "numberOfUsersZoneThreshold": "500",
   "operationStatus": "Serviceable"
}}
```

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Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
   “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “zoneId”: “zone001”,
   "numberOfUsersZoneThreshold": "500",
   "operationStatus": "Serviceable"
}}
```

# C.25 Create new zone status subscription, response with location of created resource (section 6.11.5.2)

Request:

```
POST /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
   "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
   “zoneId”: “zone001”,
   "numberOfUsersZoneThreshold": "500",
   "operationStatus": "Serviceable"
}}
```

Response:

```
HTTP/1.1 201 Created
Content-Type: application/json
Location: http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"resourceReference": {"resourceURL": "
http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123"}}
```

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## C.26 Retrieve individual zone status subscription (section 6.12.3.1)

Request:

```
GET /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    "numberOfUsersZoneThreshold": "500",
    "operationStatus": "Serviceable"
}}
```

## C.27 Update individual zone status subscription (section 6.12.4.1)

Request:

```
PUT /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Content-Type: application/json
Content-Length: nnnn
Accept: application/json
Host: example.com

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    "numberOfUsersZoneThreshold": "250",
    "operationStatus": "Serviceable"
}}
```

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Response:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: nnnn
Date: Tue, 03 Feb 2015 02:51:59 GMT

{"zoneStatusSubscription": {
    “clientCorrelator”: “0001”,
    “resourceURL”: “http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123”,
    "callbackReference": {"notifyURL": "http://applicationClient.example.com/zonalpresence/notifications/77777"},
    “zoneId”: “zone001”,
    "numberOfUsersZoneThreshold": "250",
    "operationStatus": "Serviceable"
}}
```

# C.28 Cancelling a subscription (section 6.12.6.1)

Request:

```
DELETE /exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123 HTTP/1.1
Accept: application/json
Host: example.com
```

Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

# C.29 Zonal presence notification for zonal traffic (section 6.13.5.1)

Request:

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/json
Accept: application/json
Host: applicationClient.example.com

{"zonalPresenceNotification": {
    “callbackData”: “12345”,
    "zoneId": "zone001",
    “address”: “tel:+19585550100”,
    “interestRealm”: “NY”,
    "userEventType": "Entering",
    “currentAccessPointId”: “ap01”,
    "timestamp": "2015-02-03T02:51:57Z"
    "link": {
        "rel": "ZonalTrafficSubscription",
        "href": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zonalTraffic/sub123"
    }

}}
```

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Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

# C.30 Zonal presence notification for user tracking (section 6.13.5.2)

Request:

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/json
Accept: application/json
Host: applicationClient.example.com

{"zonalPresenceNotification": {
    “callbackData”: “12345”,
   "zoneId": "zone002",
   “address”: “tel:+19585550101”,
   "userEventType": "Entering",
   “currentAccessPointId”: “ap02”,
   "timestamp": "2015-02-03T02:51:57Z"
   "link": {
        "rel": "UserTrackingSubscription",
        "href": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/userTracking/sub123"
   }

}}
```

Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

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# C.31 Zone status notification (section 6.13.5.3)

Request:

```
POST /zonalpresence/notifications/77777 HTTP/1.1
Content-Type: application/json
Accept: application/json
Host: applicationClient.example.com

{"zoneStatusNotification": {
    “callbackData”: “12345”,
   "zoneId": "zone001 ",
   “accessPointId”: “ap01”,
    “numberOfUsers”: “50”,
   "timestamp": "2015-02-03T02:51:57Z",
   "link": {
       "rel": "ZoneStatusSubscription",
       "href": "http://example.com/exampleAPI/zonalpresence/v1/zowner0001/subscriptions/zoneStatus/sub123"
   }
}}
```

Response:

```
HTTP/1.1 204 No Content
Date: Tue, 03 Feb 2015 02:51:59 GMT
```

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# Appendix D. Operations mapping (Informative)

As this specification does not have a baseline specification, this appendix is empty.

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# Appendix E. Light-weight Resources (Informative)

As this version of the specification does not define any Light-weight Resources, this appendix is empty.

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# Appendix F. Authorization aspects (Normative)

This appendix specifies how to use the RESTful Zonal Presence API in combination with some authorization frameworks.

## F.1 Use with OMA Authorization Framework for Network APIs

The RESTful Zonal Presence API MAY support the authorization framework defined in [Autho4API_10].

A RESTful Zonal Presence API supporting [Autho4API_10]:

- SHALL conform to section D.1 of [REST_NetAPI_Common];
- SHALL conform to this section F.1.

### F.1.1 Scope values

#### F.1.1.1 Definitions

In compliance with [Autho4API_10], an authorization server serving clients requests for getting authorized access to the resources exposed by the RESTful Zonal Presence API:

- SHALL support the scope values defined in the table below;
- MAY support scope values not defined in this specification.

| Scope value | Description | For one-time access token |
|---|---|---|
| oma_rest_zonalpresence.all_{apiVersion} | Provide access to all defined operations on the resources in this version of the API. The {apiVersion} part of this identifier SHALL have the same value as the “apiVersion” URL variable which is defined in section 5.1. This scope value is the union of the other scope values listed in next rows of this table. | No |
| oma_rest_zonalpresence.poll | Provide access to all defined operations on polling zone, access point, and user. | No |
| oma_rest_zonalpresence.subscr | Provide access to all defined operations on zonal traffic, user tracking, and zone status subscriptions. | No |

**Table 1 Scope values for RESTful Zonal Presence API**

#### F.1.1.2 Downscoping

In the case where the client requests authorization for “oma_rest_zonalpresence.all_{apiVersion}” scope, the authorization server and/or resource owner MAY restrict the granted scope to some of the following scope values:

- oma_rest_zonalpresence.poll
- oma_rest_zonalpresence.subscr

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### F.1.1.3 Mapping with resources and methods

Tables in this section specify how the scope values defined in section F.1.1.1 for the RESTful Zonal Presence API map to the REST resources and methods of this API. In these tables, the root “oma_rest_zonalpresence.” of scope values is omitted for readability reasons.

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| Resource | URL<br>Base URL:<br>http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId} | Section reference | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Zone List | /zones | 6.1 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |
| Individual Zone Information | /zones/{zoneId} | 6.2 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |
| Access Point List | /zones/{zoneId}/accessPoints | 6.3 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |
| Individual Access Point Information | /zones/{zoneId}/accessPoints/{accessPointId} | 6.4 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |
| User List | /users | 6.5 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |
| Individual User Information | /users/{userId} | 6.6 | **all_{apiVersion}** or **poll** | n/a | n/a | n/a |

**Table 2 Required scope values for: polling zone, access point, and user**

| Resource | URL<br>Base URL:<br>http://{serverRoot}/zonalpresence/{apiVersion}/{zoneOwnerId} | Section reference | HTTP verbs | | | |
|---|---|---|---|---|---|---|
| | | | GET | PUT | POST | DELETE |
| Zonal traffic change notification subscriptions | /zonalTraffic | 6.7 | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** | n/a |
| Individual zonal traffic change notification subscription | /zonalTraffic /{subscriptionId} | 6.8 | **all_{apiVersion}** or **subscr** | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** |
| User tracking change notification subscriptions | /userTracking | 6.9 | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** | n/a |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Individual user tracking change notification subscription | /userTracking /{subscriptionId} | 6.10 | **all_{apiVersion}** or **subscr** | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** |
| Zone status change notification subscriptions | /zoneStatus | 6.11 | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** | n/a |
| Individual zone status change notification subscription | /zoneStatus/{subscriptionId} | 6.12 | **all_{apiVersion}** or **subscr** | **all_{apiVersion}** or **subscr** | n/a | **all_{apiVersion}** or **subscr** |

**Table 3 Required scope values for: zonal traffic, user tracking, and zone status subscriptions**

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### F.1.2 Use of ‘acr:Authorization’

This section specifies the use of ‘acr:auth’ in place of an end user identifier in a resource URL path.

An ‘acr’ URI of the form ‘acr:auth’, where ‘auth’ is a reserved keyword MAY be used to avoid exposing a real end user identifier in the resource URL path.

A client MAY use ‘acr:auth’ in a resource URL in place of a {userId} when the the RESTful Zonal Presence API is used in combination with [Autho4API_10].

In the case the RESTful Zonal Presence API supports [Autho4API_10], the server:

– SHALL accept ‘acr:auth’ as a valid value for the resource URL variable {userId}

– SHALL conform to [REST_NetAPI_Common] section 5.8.1.1 regarding the processing of ‘acr:auth’

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