




# **RAN Management System API Reference Guide Release 4.1**

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# 1 Preface

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The Cisco Provisioning Management Gateway (PMG) is a generic provisioning and management application that provides the necessary workflow component between the Service Provider (SP) IT or Operations Support Systems (OSS) applications and the Cisco provisioning Broadband Access Center (BAC). These OSS applications include service management and custom care systems.

## 1.1 Functional Overview

PMG is an integration platform for the provisioning and management functions in the CISCO RMS solution. PMG enables the Service Provider (SP) Operations Support System (OSS) to send request messages, which can be provisioning flow messages or FAP/system management messages. All messages are XML over HTTP. Depending on the message, the PMG scriptable workflow engine takes care of coordinating the necessary message workflow among the various entities in the CISCO RMS solution.

The application provides an Extensible Markup Language (XML) interface over Hypertext Transfer Protocol (HTTP) based Application Programming Interface (API) to the OSS that hides the complexity of the BAC API. The PMG API addresses the needs of a given deployment by configuring the PMG profile that defines the elements of the API (such as messages, parameters, and so on) that are applicable.

Following are a few features that the PMG supports:

- Register, Update, Delete, Activate, Shutdown, Factory Reset, Block, Unblock, Deactivate, Reboot and Replace of the Devices and so on.
- Group and Pool Management API
- Access to stored and live data of devices
- Event subscription

The PMG API is defined by a profile, which is an XML document that describes the inbound messages that the PMG supports. The XML schema provides a means for defining the structure, content, and semantics of the XML document. The XML schema for the profile specifies the inbound requests, the required elements, excluded elements, ignored elements, and the applicable parameters. These parameter elements include name, type, readable, writable, deletable, and source type along with optional validation and source key.

**Note: The particular xml supported element parameters can be verified using the pmg-profile.xml file.**

The PMG API uses standard HTTP requests (POSTs) that allow the OSS to provision and manage devices. PMG acknowledges to the requests with HTTP responses.

Each HTTP message includes XML as content and responses use HTTP status codes. PMG, for request messages accepts HTTP content-type of either application/xml or text/xml and the response HTTP content-type is always text/xml.

**Note: The RMS exposes PMG messages in "javascript" which the operator can modify if they need a different implementation.**

Table 1-1 lists a few standard HTTP status codes used in validating the PMG messages:

**Table 1-1 PMG HTTP Status Codes**

Sl. No.	HTTP Status Codes	Description
1.	200 OK	PMG sends HTTP 200 OK status code for every PMG messages that are processed by PMG. PMG message transaction status message is embedded in this response.
2.	400 Bad Request	Occurs when the request received does not contain a valid PMG message (for example, wrong encoding).
3.	503 Service Unavailable	Used when the service is unavailable, typically due to high load or PMG is in maintenance mode. <b>Note: The client can retry sending request after some time.</b>

Following is the URL for defining the HTTP POST messages to PMG:

`http://<host name>:8083/pmg/`

Where,

- **<host name>**: is the central node Eth1 IP address
- **/pmg**, is the pmg path.

Digest authentication is supported in PMG.

The default username for PMG digest authentication is '*pmguser*' and it is defined in `pmgServer.properties`

```
pmg.auth.username = pmguser
```

```
pmg.auth.password.pmguser=<encrypted password>
```

Additional users can be added by comma separated values to `pmg.auth.username` parameter. Password will be provided for the new user by creating new property like below,

```
pmg.auth.username = pmguser, newpmguser
```

```
pmg.auth.password.newpmguser=<encrypted password>
```

## 2 PMG Provisioning API

---

The following are the four major classifications of PMG messages grouped with respect to functionalities. :

- Provisioning messages
- Device control messages
- Group Management messages
- Event Notification messages

The inbound request messages allow stored data manipulation such as Register, Update, Delete, as well as operations that directly interact with the CPE such as Reboot, Set live Data and Get Live Data. The stored data are pushed on to the device through connection request messages. The following sections describe the available PMG messages based on the usage.

PMG XML API are synchronous API call which are send over HTTP Post method and response is send back with HTTP response 200 OK.

The PMG response codes are:

- 0- success
- 2xx- Warnings
- 4xxx – Errors
- 5xxx – Global error

**Note: The Mandatory Parameters to be present in xml can be tracked using the “min occurs”. If the min occurs value is “1”, and then it is a Mandatory parameter.**

PMG Messages are transported over HTTP with digest authentication support. HTTP pipelining and chunking are supported.

### 2.1 Register

Register message is used to provision Small Cell device to RMS system.

This provide common interface for supporting UMTS devices for residential and enterprise deployment mode.

Register message contains multiple elements to configure different parameter with respect to RAT type.

#### 2.1.1 Request Structure

Following is the Request structure:

```
<xs:complexType>  
  <xs:all>
```



```

    <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
maxOccurs="1"/>
    <xs:element name="EID" type="EIDType" minOccurs="1"
maxOccurs="1"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="SubscriberID" type="SubscriberIDType"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="UMTS" type="UMTSType" minOccurs="0"
maxOccurs="1"/>
    <xs:element name="DeploymentMode"
type="DeploymentModeType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="Activated" type="xs:boolean"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="ExpectedLocation"
type="ExpectedLocationType" minOccurs="0"
maxOccurs="1"/>
    <xs:element name="GroupMemberships"
type="GroupsType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="AccessControl"
type="AccessControlType" minOccurs="0"
maxOccurs="1"/>
    <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
  </xs:all>
</xs:complexType>

```

#### Register Paramter detials

Element Name	Description
TxnID	Unique transaction ID of type string with max size of 100 characters. Ex, <TxnID> Register-0202201412345 </TxnID>  This is mandatory parameter.
EID	Device equipment ID of UMTS device which contains OUI(6 characters length, allowed chars 0-9A-F) and a SerialNumber of the form <b>OUI-SerialNumber.</b>  Ex, <EID>00000C-ABC123456789<EID>  This is mandatory parameter.

---

SecondaryID	<p>A secondary identifier for the CPE which is unique and can be any FQDN with max size of 100.</p> <p>&lt;SecondaryID&gt;IND-KA-03EZ45451234&lt;/ SecondaryID&gt;</p> <p>This is optional parameter.</p>
SubscriberID	<p>This is a subscriber identifier. Typically this is the primary telephone number of the subscriber. This is of type string with out any size limit.</p> <p>&lt;SubscriberID&gt;MyName1001&lt;/SubscriberID&gt;</p> <p>This is optional parameter.</p>

<p>UMTS</p>	<p>Specifies technology type of the device is UMTS. This is ONLY supported technology type at present. It has group of UMTS related parameter that can be set optionally.</p> <p>Ex. Just to specify the device technology type is UMTS.</p> <pre>&lt;UMTS&gt; &lt;/UMTS &gt;</pre> <p>Ex. Specify technology type is UMTS and also specify optional arguments.</p> <pre>&lt;UMTS&gt;   &lt;SAI&gt;     &lt;MCC&gt;405&lt;/MCC&gt;     &lt;MNC&gt;40&lt;/MNC&gt;     &lt;LAC&gt;1234&lt;/LAC&gt;     &lt;SAC&gt;345&lt;/SAC&gt;   &lt;/SAI&gt;   &lt;CID&gt;34&lt;/CID&gt; &lt;/UMTS&gt;</pre> <ul style="list-style-type: none"> <li>○ SAI – A Service Area Identifier (SAI). The concatenation of PLMN ID (MCC+MNC), LAC, and SAC uniquely identifies the Service Area ID (SAI).</li> <li>○ CID – Cell Identifier (C-id) that identifies a cell within an RNS.</li> </ul> <p>By default It is considered as UMTS technology type and SAI &amp; CID is assigned by RMS when not specified.</p> <p>This is optional parameter.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1) If operator provides the SAC and CID in the register message then this CID and SAC ID should be unique and within the range specified in CELL and SAI pool respectively.</li> <li>2) To specify SAC Id and CID, do not use customer properties "FC-OTA-CELL-ID" and "FC-SAC-ID" in parameters block.</li> </ol>
-------------	---

DeploymentMode	<p>This is applicable only for enterprise AP registration.</p> <p>This specifies role and purpose of AP.</p> <p>The supported AP roles are 'ActiveEntry', 'IdleEntry' and 'Inner'. Supported Purpose values are 'Capacity' and 'Coverage'.</p> <p>Ex.</p> <pre>&lt;DeploymentMode&gt;   &lt;Role&gt;ActiveEntry&lt;/Role&gt;   &lt;Purpose&gt;Capacity&lt;/Purpose&gt; &lt;/DeploymentMode&gt;</pre> <p>Default role is IdleEntry and default purpose is Coverage if not specified.</p> <p><b>Note:</b> When 'Inner' AP role is specified, purpose value selection is not applicable. It will be ignored if specified. This is optional parameter.</p>
Activated	<p>Specifies if AP is to be activated.</p> <pre>&lt;Activated&gt;true&lt;/Activated&gt;</pre> <p>Default value is false.</p> <p>This is optional parameter.</p>

<p>ExpectedLocation</p>	<p>The expected location specified by latitude/longitude and/or list of DNM (MCC/optional MNC) and/or list Radio neighbor ID(s).</p> <p>Ex- GPS co-ordinates. This is also used for polygon lookup from PMG-DB if no Area Group association is found in Register message.</p> <pre> &lt;ExpectedLocation&gt;   &lt;ExpectedLatitude&gt;32.66390097&lt;/ExpectedLatitude&gt;   &lt;ExpectedLongitude&gt;-6.904765&lt;/ExpectedLongitude&gt; &lt;/ExpectedLocation&gt; Ex- Radio neighbour: &lt;EDNIDList&gt;   &lt;RadioNeighbor&gt;     &lt;Radio2GNeighborID&gt;       &lt;MCC&gt;123&lt;/MCC&gt;       &lt;MNC&gt;123&lt;/MNC&gt;       &lt;LAC&gt;6500&lt;/LAC&gt;       &lt;CID&gt;200&lt;/CID&gt;     &lt;/Radio2GNeighborID&gt;   &lt;/RadioNeighbor&gt;   &lt;RadioNeighbor&gt;     &lt;Radio3GNeighborID&gt;       &lt;MCC&gt;123&lt;/MCC&gt;       &lt;MNC&gt;321&lt;/MNC&gt;       &lt;RNCID&gt;510&lt;/RNCID&gt;       &lt;CID&gt;6500&lt;/CID&gt;     &lt;/Radio3GNeighborID&gt;   &lt;/RadioNeighbor&gt; &lt;/EDNIDList&gt; Ex DNM list: &lt;DNMIDList&gt;   &lt;DNM&gt;     &lt;MCC&gt;250&lt;/MCC&gt;     &lt;MNC&gt;210&lt;/MNC&gt;   &lt;/DNM&gt; &lt;/DNMIDList&gt; </pre> <p>Note: This is optional element.</p>
-------------------------	---

<p>GroupMemberships</p>	<p>RMS groups that need to be associated to the device are specified here. There are certain MANDATORY groups to be specified, based on whether AP is deployed in residential or enterprise mode.</p> <p><u>Mandatory groups for UMTS:</u></p> <p>For Residential mode, either Area (polygon) group OR lat-long (through ExpectedLocation element) must be specified. Lat-Long, if specified, will be used for polygon lookup from PMG-DB.</p> <p>For Enterprise mode, Enterprise and Site group must be specified.</p> <p><u>Optional Groups:</u></p> <p>In addition to above groups, other groups like Alarm, RFprofile, Management, etc can be optionally specified.</p> <p>Example,</p> <pre> &lt;GroupMemberships&gt;   &lt;Group&gt;     &lt;Name&gt;Cisco&lt;/Name&gt;     &lt;Type&gt;Enterprise&lt;/Type&gt;   &lt;/Group&gt;   &lt;Group&gt;     &lt;Name&gt;INDBGL25&lt;/Name&gt;     &lt;Type&gt;Site&lt;/Type&gt;   &lt;/Group&gt; &lt;/GroupMemberships&gt; </pre> <p>This is mandatory parameter.</p>
<p>AccessControl</p>	<p>Specifies access control for the CPE.</p> <p>AccessMode is either 'Open' or 'Closed'.</p> <p>AccessControlList contains list of IMSIs for those CPE access to be granted.</p> <p>Example,</p> <pre> &lt;AccessControl&gt;   &lt;AccessMode&gt;Closed&lt;/AccessMode&gt;   &lt;AccessControlList&gt;     &lt;IMSI&gt;123456789012345&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012346&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012347&lt;/IMSI&gt;   &lt;/AccessControlList&gt; &lt;/AccessControl&gt; </pre> <p>This is optional parameter, by default access mode is 'Open'.</p>

Parameters	<p>In addition to standard Register message elements, Parameters element provides option to provision other parameters on AP via RMS custom properties.</p> <pre> &lt;Parameters&gt;   &lt;Parameter&gt;     &lt;Name&gt;FC-REM-3G-ARFCN-LIST&lt;/Name&gt;     &lt;Value&gt;345,567&lt;/Value&gt;   &lt;/Parameter&gt;   &lt;Parameter&gt;     &lt;Name&gt;MAX-UL-TX-POWER&lt;/Name&gt;     &lt;Value&gt;345,567&lt;/Value&gt;   &lt;/Parameter&gt; &lt;/Parameters&gt; </pre> <p>This is optional element.</p>
------------	---

i) UMTS Residential sample registration with ONLY mandatory elements:

```

<Register xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>Register-TxnID-7666</TxnID>
  <EID>000000-000000000000001</EID>
  <GroupMemberships>
    <Group>
      <Name>Area-1</Name>
      <Type>Area</Type>
    </Group>
  </GroupMemberships>
</Register>

```

ii) UMTS Enterprise sample registration with ONLY mandatory elements:

```

<Register xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>Register-TxnID-7666</TxnID>
  <EID>000000-000000000000001</EID>
  <GroupMemberships>
    <Group>
      <Name>ATT</Name>
      <Type>Enterprise</Type>
    </Group>
    <Group>
      <Name>CA-building21</Name>
      <Type>Site</Type>
    </Group>
  </GroupMemberships>

```

```
<DeploymentMode>
  <Purpose>Coverage</Purpose>
  <Role>ActiveEntry</Role>
</DeploymentMode>
</Register>
```

## 2.1.2 Register Response

These are the supported status code for the register request.

*0 Success*

*202 Some elements have been ignored*

*401 Missing required element*

*402 Excluded element found*

*403 Unknown parameter name*

*404 Invalid parameter value*

*407 RDU unavailable*

*411 Unknown group*

*412 No Area found for expected location*

*415 Unexpected error*

*416 Could not assign id(s) property*

*501 Batch request timed out from BAC RDU*

### RegisterResponse XML

```
<RegisterResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>Register-TxnID-7666</TxnID>
  <Status><Code>0</Code><Message> Success</Message></Status>
</RegisterResponse>
```

## 2.2 Update

Update message is used to update any property or group of the registered device. The following is the XSD format of the update message. This message has separate section to add/update or remove StaticNeighbors.

The following is the XSD structure of of update message

```
<xs:element name="Update">
  <xs:complexType>
    <xs:sequence>
```



```

    <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
maxOccurs="1"/>
    <xs:choice minOccurs="1" maxOccurs="1">
        <xs:element name="EID" type="EIDType"/>
        <xs:element name="SecondaryID" type="SecondaryIDType"/>
    </xs:choice>
    <xs:element name="Updates" minOccurs="0" maxOccurs="1">
        <xs:complexType>
            <xs:all>
                <xs:element name="SecondaryID" type="SecondaryIDType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="SubscriberID" type="SubscriberIDType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="UMTS" type="UMTSType" minOccurs="0"
maxOccurs="1"/>
                <xs:element name="DeploymentMode" type="DeploymentModeType"
minOccurs="0" maxOccurs="1"/>

                <xs:element name="AccessControl" type="AccessControlType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="ExpectedLocation" type="ExpectedLocationType"
minOccurs="0" maxOccurs="1"/>
                <xs:element name="GroupMemberships" type="GroupsType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="Parameters" type="ParametersType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="StaticNeighbors" type="StaticNeighborsType"
minOccurs="0"
                    maxOccurs="1"/>
            </xs:all>
        </xs:complexType>
    </xs:element>
    <xs:element name="Removals" minOccurs="0" maxOccurs="1">
        <xs:complexType>
            <xs:all>
                <xs:element name="SecondaryID" minOccurs="0" maxOccurs="1"/>
                <xs:element name="SubscriberID" minOccurs="0" maxOccurs="1"/>

                <xs:element name="AccessControl" type="AccessControlType"
minOccurs="0"
                    maxOccurs="1"/>
                <xs:element name="ExpectedLocation" minOccurs="0"
maxOccurs="1"/>
                <xs:element name="GroupMemberships" type="GroupsType"
minOccurs="0"
                    maxOccurs="1"/>
            </xs:all>
        </xs:complexType>
    </xs:element>

```

```

        <xs:element name="ParameterNames" type="ParameterNamesType"
            minOccurs="0" maxOccurs="1"/>
        <xs:element name="StaticNeighbors" type="StaticNeighborsType"
minOccurs="0"
            maxOccurs="1"/>
    </xs:all>
</xs:complexType>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>

```

**Note: If the same parameter or element present in both <updates> and <removals> section, <updates> takes the precedence. Update message provides the option to modify/delete the device provisioning parameters such as group, IDs, whitelist information, and so on.**

There are two sections in the update message:

**a) Updates section**

The Update section contains the elements that can be added and modified.

**b) Removals section**

Remove section contains the elements that can be removed.

The following table describes elements for Updates section in Update message

Element Name	Description
<b>&lt;Updates&gt;&lt;/Updates&gt;</b>	The elements to be added or modified will be specified inside <Updates></Updates> element.
SecondaryID	A secondary identifier for the CPE which is unique and can be any string with max size of 100. Existing SecondaryID values will be replaced by specified values here.  <SecondaryID>IND-KA-03EZ45451234</ SecondaryID>
SubscriberID	This is a subscriber identifier. Typically this is the primary telephone number of the subscriber. This is of type string with out any size limit.  <SubscriberID>MyName1001</SubscriberID>

<p>UMTS</p>	<p>It specifies UMTS specific parameters like SAI and CID that can be updated.</p> <p>Ex. Technology type is UMTS and specifies optional arguments.</p> <pre> &lt;UMTS&gt;   &lt;SAI&gt;     &lt;MCC&gt;405&lt;/MCC&gt;     &lt;MNC&gt;40&lt;/MNC&gt;     &lt;LAC&gt;1234&lt;/LAC&gt;     &lt;SAC&gt;345&lt;/SAC&gt;   &lt;/SAI&gt;   &lt;CID&gt;34&lt;/CID&gt; &lt;/UMTS&gt; </pre> <ul style="list-style-type: none"> <li>○ SAI – A Service Area Identifier (SAI). The concatenation of PLMN ID (MCC+MNC), LAC, and SAC uniquely identifies the Service Area ID (SAI).</li> <li>○ CID – Cell Identifier (C-id) that identifies a cell within an RNS.</li> </ul> <p>SAI and CID are optional, and are only supported UMTS specific parameters at present.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1) Technology type of the device can't be changed and only umts supported params are updated.</li> <li>2) If operator provides the SAC and CID in the update message then this CID and SAC ID should be unique and within the range specified in CELL and SAI pool respectively.</li> <li>3) CID and SAC Id should be updated only through CID or SAI block in update message and not by updating the custom property "FC-OTA-CELL-ID" and "FC-SAC-ID" in parameters block.</li> </ol>
-------------	---

DeploymentMode	<p>This is applicable only for Enterprise APs.</p> <p>This specifies role of AP and pupose of AP.</p> <p>The supported AP roles are 'ActiveEntry', 'IdleEntry' and 'Inner'. Supported Purpuse values are 'Capacity' and 'Coverage'.</p> <p>Ex.</p> <pre>&lt;DeploymentMode&gt;   &lt;Role&gt; ActiveEntry &lt;/Role&gt;   &lt;Purpose&gt;Capacity&lt;/Purpose&gt; &lt;/DeploymentMode&gt;</pre> <p>Note: When 'Inner' AP role is specified, purpose value is not applicable.</p>
Activated	<p>Specifies if AP to be activated(true) or deactivated(false).</p> <pre>&lt;Activated&gt; true&lt;/Activated&gt;</pre>
AccessControl	<p>Specifies access control for the CPE.</p> <p>AccessMode is either 'Open' or 'Closed'.</p> <p>AccessControlList contails list of IMSIs for those CPE access to be granted.</p> <p>If the access control mode is Open, &lt;AccessControlList&gt; is not applicable.</p> <p>Example,</p> <pre>&lt;AccessControl&gt;   &lt;AccessMode&gt;Closed&lt;/AccessMode&gt;   &lt;AccessControlList&gt;     &lt;IMSI&gt;123456789012345&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012346&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012347&lt;/IMSI&gt;   &lt;/AccessControlList&gt; &lt;/AccessControl&gt;</pre>

<p>ExpectedLocation</p>	<p>The expected location specified by latitude/longitude and/or list of DNM (MCC/optional MNC) and/or list Radio neighbor ID(s).</p> <p><b>Ex- GPS co-ordinates.</b></p> <pre>&lt;ExpectedLocation&gt;  &lt;ExpectedLatitude&gt;32.663907&lt;/ExpectedLatitude&gt; &lt;ExpectedLongitude&gt;-6.90476&lt;/ExpectedLongitude&gt; &lt;/ExpectedLocation&gt;</pre> <p><b>Note:</b> ExpectedLatitude &amp; ExpectedLongitude are decimal type.</p> <p><b>Ex- Radio neighbour</b></p> <pre>&lt;EDNIDList&gt;   &lt;RadioNeighbor&gt;     &lt;Radio2GNeighborID&gt;       &lt;MCC&gt;123&lt;/MCC&gt;       &lt;MNC&gt;123&lt;/MNC&gt;       &lt;LAC&gt;6500&lt;/LAC&gt;       &lt;CID&gt;200&lt;/CID&gt;     &lt;/Radio2GNeighborID&gt;   &lt;/RadioNeighbor&gt;   &lt;RadioNeighbor&gt;     &lt;Radio3GNeighborID&gt;       &lt;MCC&gt;123&lt;/MCC&gt;       &lt;MNC&gt;321&lt;/MNC&gt;       &lt;RNCID&gt;510&lt;/RNCID&gt;       &lt;CID&gt;6500&lt;/CID&gt;     &lt;/Radio3GNeighborID&gt;   &lt;/RadioNeighbor&gt; &lt;/EDNIDList&gt;</pre> <p><b>Ex DNM list</b></p> <pre>&lt;DNMIDList&gt;   &lt;DNM&gt;     &lt;MCC&gt;250&lt;/MCC&gt;     &lt;MNC&gt;210&lt;/MNC&gt;   &lt;/DNM&gt; &lt;/DNMIDList&gt;</pre> <p><b>Note:</b> This is optional element.</p>
-------------------------	--

<p>GroupMemberships</p>	<p>The groups which are previously associated to the device can be replaced by another group of the same grouptype.</p> <p>Entirely new group instance whose type was not previous associated to the device can also be specified.</p> <p>For Residential mode, Area group of the device can be replaced by another group. Meaning, Device can be moved from one Area to another Area.</p> <p>Similarly, Device can be moved to another Site belong to same Enterprise group.</p> <p>In Addition to above groups, other groups like Alarm, RFprofile, Management, etc can be associated.</p> <p>Example,</p> <pre> &lt;GroupMemberships&gt;   &lt;Group&gt;     &lt;Name&gt;Cisco&lt;/Name&gt;     &lt;Type&gt;Enterprise&lt;/Type&gt;   &lt;/Group&gt;   &lt;Group&gt;     &lt;Name&gt;INDBGL25&lt;/Name&gt;     &lt;Type&gt;Site&lt;/Type&gt;   &lt;/Group&gt; &lt;/GroupMemberships&gt; </pre> <p>Note: If there is no change needed for associated group, it's recommended not to specify it in update message.</p>
<p>Parameters</p>	<p>In addition to standard Update message elements, Parameters element provides option to provision other parameters on AP via RMS custom properties.</p> <pre> &lt;Parameters&gt;   &lt;Parameter&gt;     &lt;Name&gt;FC-REM-3G-ARFCN-LIST&lt;/Name&gt;     &lt;Value&gt;345,567&lt;/Value&gt;   &lt;/Parameter&gt;   &lt;Parameter&gt;     &lt;Name&gt;MAX-UL-TX-POWER&lt;/Name&gt;     &lt;Value&gt;345,567&lt;/Value&gt;   &lt;/Parameter&gt; &lt;/Parameters&gt; </pre> <p>This is optional element.</p>

StaticNeighbors	Static neighbour is described in section “ 2.3 Static Neighbors Configuration”
-----------------	---

The following table describes Removals elements of the Update message

Elements name in Removals	Description
SecondaryID	This element indicates SecondaryID to be removed from Device. <SecondaryID></SecondaryID> This is optional paramter
SubscriberID	This element indicates that SubscriberID to be removed from Device. < SubscriberID></ SubscriberID>
AccessControl	Specifies access control for the CPE. AccessControlList contails list of IMSIs for those CPE access to be disabled. If the access control mode is Open, <AccessControlList> is not applicable. Example, <pre> &lt;AccessControl&gt;   &lt;AccessControlList&gt;     &lt;IMSI&gt;123456789012345&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012346&lt;/IMSI&gt;     &lt;IMSI&gt;123456789012347&lt;/IMSI&gt;   &lt;/AccessControlList&gt; &lt;/AccessControl&gt; </pre> AccessMode can't be removed and will be ignored if specified.

ExpectedLocation	<p>This element indicates all previously specified ExpectedLocation to be removed from Device.</p> <pre>&lt;ExpectedLocation&gt;&lt;/ExpectedLocation&gt;</pre> <p>Expected Locations are GPS, DNM and EDN list.</p> <p>Note: This is optional element.</p>
GroupMemberships	<p>RMS groups that need to be disassociated from the device are specified here. There are certain MANDATORY groups that CAN'T be disassociated.</p> <p>The UMTS mandatory groups like Area, Enterptise, Site and FemtoGateway groups can't be disassociated.</p> <p>Any custom defined groups like Alarm, RFprofile, Management, etc can be specified.</p> <p>Example,</p> <pre>&lt;GroupMemberships&gt;   &lt;Group&gt;     &lt;Name&gt;cisco-pc1&lt;/Name&gt;     &lt;Type&gt;Alarm&lt;/Type&gt;   &lt;/Group&gt;   &lt;Group&gt;     &lt;Name&gt;rfprofile1&lt;/Name&gt;     &lt;Type&gt;RFprofile&lt;/Type&gt;   &lt;/Group&gt; &lt;/GroupMemberships&gt;</pre> <p>This group disassiation removes the properties specified in the groups from Devices.</p>
ParameterNames	<p>This specifies the parameters names which are to be removed from Device. Only the custom properties defined at the device level can be removed. The custom properties defined at the hierarchy (group) level can't be removed through this section.</p>
StaticNeighbors	<p>Static neighbour is described in section “ 2.3 Static Neighbors Configuration”</p>



## 2.2.1 Request Structure

```
<xs:sequence>
    <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
    <xs:choice minOccurs="1" maxOccurs="1">
        <xs:element name="EID" type="EIDType"/>
        <xs:element name="SecondaryID"
type="SecondaryIDType"/>
    </xs:choice>
    <xs:element name="Updates" minOccurs="0"
maxOccurs="1">
        <xs:complexType>
            <xs:all>
                <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="UMTS"
type="UMTSType" minOccurs="0" maxOccurs="1"/>
                <xs:element name="DeploymentMode"
type="DeploymentModeType" minOccurs="0" maxOccurs="1"/>
                <xs:element name="AccessControl"
type="AccessControlType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="ExpectedLocation"
type="ExpectedLocationType"
                minOccurs="0" maxOccurs="1"/>
                <xs:element name="GroupMemberships"
type="GroupsType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="Parameters"
type="ParametersType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="StaticNeighbors"
type="StaticNeighborsType" minOccurs="0"
                maxOccurs="1"/>
            </xs:all>
        </xs:complexType>
    </xs:element>
    <xs:element name="Removals" minOccurs="0"
maxOccurs="1">
```

```

        <xs:complexType>
            <xs:all>
                <xs:element name="SecondaryID"
minOccurs="0" maxOccurs="1"/>
                <xs:element name="SubscriberID"
minOccurs="0" maxOccurs="1"/>
                <xs:element name="AccessControl"
type="AccessControlType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="ExpectedLocation"
minOccurs="0" maxOccurs="1"/>
                <xs:element name="GroupMemberships"
type="GroupsType" minOccurs="0"
                maxOccurs="1"/>
                <xs:element name="ParameterNames"
type="ParameterNamesType"
                minOccurs="0" maxOccurs="1"/>
                <xs:element name="StaticNeighbors"
type="StaticNeighborsType" minOccurs="0"
                maxOccurs="1"/>
            </xs:all>
        </xs:complexType>
    </xs:element>
</xs:sequence>

```

**Sample Update message and response:**

```

<Update xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
<TxnID>DCCdcaadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
<EID>000000-0000000000000001</EID>
<Updates>
<SecondaryID>1001116126</SecondaryID>
    <DeploymentMode>
        <Purpose>Coverage</Purpose>
        <Role>ActiveEntry</Role>
    </DeploymentMode>
    <GroupMemberships>
        <Group>
            <Name>Multicell_Open_24dBm</Name>
            <Type>RFProfile</Type>
        </Group>
    </GroupMemberships>
    <AccessControl><AccessMode>Open</AccessMode></AccessControl>
</Updates>

<Removals>

```

```
<ParameterNames>
  <Name>FC-RESERVED-MODE</Name>
</ParameterNames>

</Removals>
</Update>

<UpdateResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Status>
    <Code>0</Code>
    <Message>Success</Message>
  </Status>
</UpdateResponse>
```

## 2.2.2 Response

0 Success  
201 CPE offline  
202 Some elements have been ignored  
204 HNB-GW unable to be contacted  
401 Missing required element  
402 Excluded element found  
403 Unknown parameter name  
404 Invalid parameter value  
405 Unknown CPE  
406 Unknown subscriber ID  
407 RDU unavailable  
408 Delete not permitted for Parameter  
410 Update not permitted for Parameter  
411 Unknown group  
415 Unknown error  
423 Duplicate primary key instance  
501 Batch request timed out from BAC RDU

Elements mentioned in the update section are the same as in the Register message. The only difference is that AccessModeType cannot be changed.

In remove section,

SAI – The entire SAI block properties will be removed. There is no option to remove MCC/MNC and SAC ID individually.

GroupMemberships – Area and FemtoGateway group cannot be removed for UMTS.

- ExpectedLocation – All the previously set expected location are removed.
- AccessControl - Specified IMSIs will be removed. Access control mode cannot be removed.
- ParameterNames – Specified parameters are removed.

## 2.3 Static Neighbors Configuration

Static neighbors can be configured for enterprise Aps.

UMTS static neighbour can be of 2 types viz. inter-Frequency and inter-RAT neighbors.

The following is the XSD specification for ADD/UPDATE/DELETE operation of Static Neighbors. Static Neighbors need to be configured as part of Update message as per below XSD spec:

```
<xs:complexType name="StaticNeighborsType">
  <xs:sequence>
    <xs:element name="StaticNeighboringFilteringEnable"
type="xs:boolean" minOccurs="0" maxOccurs="1"/>
    <xs:element name="FemtoNeighboringFilteringEnable"
type="xs:boolean" minOccurs="0" maxOccurs="1"/>
    <xs:element name="StaticNeighbor"
type="StaticNeighborType" minOccurs="1" maxOccurs="1"/>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="StaticNeighborType">
  <xs:annotation>
    <xs:documentation>
      <p>
        A list of inter-freq and inter-rat
neighbors, and their associated parameter names and values.
      </p>
    </xs:documentation>
  </xs:annotation>

  <xs:sequence>
    <xs:element name="InterFreq" type="InterFreqType"
minOccurs="0" maxOccurs="unbounded"/>
    <xs:element name="InterRat" type="InterRATType"
minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>
```

```

<xs:complexType name="InterFreqType">
  <xs:annotation>
    <xs:documentation>
      <p>
        A single instance of inter-freq neighbor,
with its associated parameter names and values.
      </p>
    </xs:documentation>
  </xs:annotation>

  <xs:sequence>
    <xs:element name="Parameter" type="ParameterType"
minOccurs="1" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

```

```

<xs:complexType name="InterRATType">
  <xs:annotation>
    <xs:documentation>
      <p>
        A single instance of inter-rat neighbor,
with its associated parameter names and values.
      </p>
    </xs:documentation>
  </xs:annotation>

  <xs:sequence>
    <xs:element name="Parameter" type="ParameterType"
minOccurs="1" maxOccurs="unbounded"/>
  </xs:sequence>
</xs:complexType>

```

i) Sample XML for UMTS static neighbors (two Inter-Frequency and Two Inter-Rat neighbors), UPDATE and DELETE operation:

```

<?xml version="1.0" encoding="UTF-8"?>
<Update xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
    v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>update-txn-1234567868</TxnID>
  <EID>123456-1234567899</EID>
  <Updates>
    <StaticNeighbors>

```

```

<StaticNeighboringFilteringEnable>true</StaticNeighboringFilteringEnable>

<FemtoNeighboringFilteringEnable>>false</FemtoNeighboringFilteringEnable>
<StaticNeighbor>
<InterFreq>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-1-UARFCDL</Name>
        <Value>10</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-1-SCRAMBLING-
CODE</Name>
        <Value>510</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-1-ENABLE</Name>
        <Value>>false</Value>
    </Parameter>
</InterFreq>
<InterFreq>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-2-UARFCDL</Name>
        <Value>10</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-2-SCRAMBLING-
CODE</Name>
        <Value>510</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-FREQ-2-RNCID</Name>
        <Value>4000</Value>
    </Parameter>
</InterFreq>
<InterRat>
    <Parameter>
        <Name>FC-SC-INTER-RAT-1-BCCH-
ARFCN</Name>
        <Value>1000</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-RAT-1-
ENABLE</Name>
        <Value>>true</Value>

```

```

        </Parameter>
    </InterRat>
    <InterRat>
        <Parameter>
            <Name>FC-SC-INTER-RAT-2-BCCH-
                ARFCN</Name>
            <Value>1000</Value>
        </Parameter>
        <Parameter>
            <Name>FC-SC-INTER-RAT-2-
                ENABLE</Name>
            <Value>>true</Value>
        </Parameter>
    </InterRat>
    </StaticNeighbor>
</StaticNeighbors>
</Updates>

<Removals>
    <StaticNeighbors>
        <FemtoNeighboringFilteringEnable>>false
        </FemtoNeighboringFilteringEnable>
        <StaticNeighbor>
            <InterFreq>
                <Parameter>
                    <Name>FC-SC-INTER-FREQ-20-
                        UARFCDL</Name>
                    <Value></Value>
                </Parameter>
                <Parameter>
                    <Name>FC-SC-INTER-FREQ-20-
                        SCRAMBLING-CODE</Name>
                    <Value></Value>
                </Parameter>
                <Parameter>
                    <Name>FC-SC-INTER-FREQ-20-
                        ENABLE</Name>
                    <Value>>false</Value>
                </Parameter>
            </InterFreq>
            <InterFreq>
                <Parameter>
                    <Name>FC-SC-INTER-FREQ-32-
                        UARFCDL</Name>
                    <Value>10</Value>
                </Parameter>
                <Parameter>

```

```

        <Name>FC-SC-INTER-FREQ-32-
            SCRAMBLING-CODE</Name>
        <Value>510</Value>
    </Parameter>
</InterFreq>
<InterRat>
    <Parameter>
        <Name>FC-SC-INTER-RAT-31-BCCH-
            ARFCN</Name>
        <Value>1000</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-RAT-31-
            ENABLE</Name>
        <Value></Value>
    </Parameter>
</InterRat>
<InterRat>
    <Parameter>
        <Name>FC-SC-INTER-RAT-4-BCCH-
            ARFCN</Name>
        <Value>1000</Value>
    </Parameter>
    <Parameter>
        <Name>FC-SC-INTER-RAT-4-
            ENABLE</Name>
        <Value></Value>
    </Parameter>
</InterRat>
</StaticNeighbor>
</StaticNeighbors>
</Removals>
</Update>

```

The allowed UMTS neighbor parameters can be configured in pmg-profile as below. Profile is already populated with current allowed parameters as per data model; new parameters in future can be added to this list. Neighbor parameters need to be configured in a regex format as shown:

i) UMTS Inter-freq params list:

```

<InterFreqParams>
  <NeighborParamDef>
    <Name>FC-SC-INTER-FREQ-\d{1,2}-UARFCDL</Name>
    <Type>int</Type>
    <SourceType>DeviceProperty</SourceType>
    <Writable>>true</Writable>
    <Readable>true</Readable>
  </NeighborParamDef>
</InterFreqParams>

```



```

    <Deletable>>true</Deletable>
    <Validation>
      <Type>range</Type>
      <Expression>[0:16383]</Expression>
    </Validation>
  </NeighborParamDef>
  <NeighborParamDef>
    <Name>FC-SC-INTER-FREQ-\d{1,2}-SCRAMBLING-CODE</Name>
    <Type>int</Type>
    <SourceType>DeviceProperty</SourceType>
    <Writable>true</Writable>
    <Readable>true</Readable>
    <Deletable>true</Deletable>
    <Validation>
      <Type>range</Type>
      <Expression>[0:511]</Expression>
    </Validation>
  </NeighborParamDef>
</InterFreqParams>

```

ii) UMTS Inter-rat params list:

```

<InterRatParams>
  <NeighborParamDef>
    <Name>FC-SC-INTER-RAT-\d{1,2}-BCCH-ARFCN</Name>
    <Type>int</Type>
    <SourceType>DeviceProperty</SourceType>
    <Writable>true</Writable>
    <Readable>true</Readable>
    <Deletable>true</Deletable>
    <Validation>
      <Type>range</Type>
      <Expression>[0:1023]</Expression>
    </Validation>
  </NeighborParamDef>
  <NeighborParamDef>
    <Name>FC-SC-INTER-RAT-\d{1,2}-ENABLE</Name>
    <Type>boolean</Type>
    <SourceType>DeviceProperty</SourceType>
    <Writable>true</Writable>
    <Readable>true</Readable>
    <Deletable>true</Deletable>
  </NeighborParamDef>
</InterRatParams>

```

NB: Above is just a small set of params for illustration. Complete set of supported params can be seen in pmg-profile.xml.

Max allowed UMTS Inter-Freq and Inter-Rat neighbors are controlled by the below two configurations in dcc.properties:

```
#Static-neighbors configuration
max.interFreq.neighborcount=32
max.interRat.neighborcount=32
```

## 2.4 Shutdown

The shutdown message is used to deactivate already provisioned device and remove it from the provisioning system. Either EID or the SecondaryID of the CPE should be specified in the argument. The shutdown message will initiate connection request with CPE.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### Sample Shutdown message and response:

```
<Shutdown xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>
</Shutdown>
```

```
<ShutdownResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Status>
    <Code>0</Code>
    <Message>Success</Message>
  </Status>
</ShutdownResponse>
```

## 2.4.1 Response Code

0 Success  
201 CPE offline  
202 Some elements have been ignored  
204 HNB-GW unable to be contacted  
401 Missing required element  
402 Excluded element found  
405 Unknown CPE  
407 RDU unavailable  
415 Unexpected error  
404 Invalid parameter value  
501 Batch request timed out from BAC RDU

**Note: Shutdown will not trigger Factory Reset to the device**

## 2.5 Activate

The Activate message activates the registered device by initiating management session with the CPE. This is used to bring the AP to service. Once this message is posted, the AP is brought to service (by setting TR-069 AdminState=True), if all the other prerequisites are met. Either EID or SecondaryID should be specified as argument in the message.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### Sample Activate message and response:

```
<Activate xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>
</Activate>
```

```
<ActivateResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Status>
```

```

        <Code>0</Code>
        <Message>Success</Message>
    </Status>
</ActivateResponse>

<ActivateResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
    <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
    <Status><Code>201</Code><Message>CPE
offline</Message></Status>
</ActivateResponse>

```

## 2.5.1 Response

- 0 Success
- 201 CPE offline
- 202 Some elements have been ignored
- 401 Missing required element
- 402 Excluded element found
- 405 Unknown CPE
- 407 RDU unavailable
- 415 Unexpected error found while processing
- 501 Batch request timed out from BAC RDU

## 2.6 Deactivate

This message initiates a management session with the CPE to deactivate service (setting TR-069 AdminState=False). But the device is not removed from the provisioning system. Later CPE can be activated through Activate Message. Either EID or SecondaryID should be specified as argument in the message.

```

<xs:sequence>
    <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
maxOccurs="1"/>
    <xs:choice minOccurs="1" maxOccurs="1">
        <xs:element name="EID" type="EIDType"/>
        <xs:element name="SecondaryID" type="SecondaryIDType"/>
    </xs:choice>
</xs:sequence>

```

### Sample Deactivate message:

```

<Deactivate xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
    <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>

```

```
<EID>000000-0000000000000001</EID>
</Deactivate>
```

## 2.6.1 Response

- 0 Success
- 201 CPE offline
- 202 Some elements have been ignored
- 401 Missing required element
- 402 Excluded element found
- 405 Unknown CPE
- 407 RDU unavailable
- 415 Unexpected error found while processing
- 501 Batch request timed out from BAC RDU

## 2.7 Delete

This message deletes the specified device from the Provisioning system. But no management session will be established with the CPE.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### Sample Delete message:

```
<Delete xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>
</Delete>
```

## 2.7.1 Response

- 0 Success
- 202 Some elements have been ignored
- 401 Missing required element
- 402 Excluded element found
- 405 Unknown CPE

407 RDU unavailable  
415 Unknown error  
501 Batch request timed out from BAC RDU

**Note: Ubiquisys FAP will not trigger Factory Restore when the “404 Not Found” message appears.**

## 2.8 Block

This message blocks service for a previously activated CPE. It initiates a management session with the CPE to disable service.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### Sample Block message and response:

```
<Block xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>
</Block>
```

```
<BlockResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Status>
    <Code>0</Code>
    <Message>Success</Message>
  </Status>
</BlockResponse>
```

```
<BlockResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
  <Status><Code>201</Code><Message>CPE
offline</Message></Status>
</BlockResponse>
```

## 2.8.1 Response

0 Success  
201 CPE offline  
202 Some elements have been ignored  
401 Missing required element  
402 Excluded elements found  
405 Unknown CPE  
407 RDU unavailable  
415 Unknown error  
501 Batch request timed out from BAC RDU

## 2.9 Unblock

This message unblocks service for a previously blocked CPE. It initiates a management session with the CPE to enable service.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### Sample Unblock message and response:

```
<Unblock xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>
</Unblock>
```

```
<UnblockResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Status>
    <Code>0</Code>
    <Message>Success</Message>
  </Status>
</UnblockResponse>
```

```
<UnblockResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
  <Status><Code>201</Code><Message>CPE
offline</Message></Status>
</UnblockResponse>
```

## 2.9.1 Response

- 0 Success
- 201 CPE offline
- 202 Some elements have been ignored
- 401 Missing required element
- 402 Excluded element found
- 405 Unknown CPE
- 407 RDU unavailable
- 415 Unknown error
- 501 Batch request timed out from BAC RDU

## 2.9.2 Replace Message

Replace message is used to replace an already commissioned device on field because of one of the following reasons.

1. Misbehaving device which cannot be solved using software or firmware upgrade
2. Hardware malfunctioning.

For doing the same, PMG exposes an NBI API, which operator can use to replace a device with minimal information.

Below is the XSD file for reference specification for Replace message:

```
<xs:element name="Replace">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
maxOccurs="1"/>
      <xs:element name="OldEID" type="EIDType" minOccurs="1"
maxOccurs="1"/>
      <xs:element name="NewEID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```



### Sample Replace message.

```
<?xml version="1.0" encoding="UTF-8"?>
<Replace xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages
    v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>update-txn-1234567868</TxnID>
  <OldEID>001B67-357539019692488</OldEID>
  <NewEID>001B01-1111111111111111</NewEID>
</Replace>
```

Replace device will retain all the configurations in the new device as it is except below:

1. FC-ACTIVATED property – this will be deleted from new device properties.
2. Discovered parameters – This will be cleared.

**Note: Replace device will also set the class of service of new device to baseline. New device has to be explicitly activated by operator after replace.**

If the old device is already active during device replacement (which means the value of *InternetGatewayDevice.Services.FAPService.1.FAPControl.OpState* and *InternetGatewayDevice.Services.FAPService.1.FAPControl.RFTxStatus* are true in GetLiveData response), then PMG will throw an error “422-CPE Already Active “ to OSS.

Similarly, if a new device already exists in RMS, PMG will throw an error “422-CPE Already Active” to OSS”.

## 2.10 UpdateIMSI

This message updates whitelist value in the devices which have existing IMSI present in the whitelist. Devices will have whitelist in FC-ACL property. Existing IMSI and new IMSI will be specified in the argument.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
    maxOccurs="1"/>
  <xs:element name="ExistingIMSI" type="IMSIType"
    minOccurs="1" maxOccurs="1"/>
  <xs:element name="NewIMSI" type="IMSIType" minOccurs="1"
    maxOccurs="1"/>
</xs:sequence>
```

### Sample UpdateImsi message:

```
<?xml version="1.0" encoding="UTF-8"?>
<UpdateIMSI xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
  xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
```

```

xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages
                    v3_0_0 pmg-messages-v3_0_0.xsd">
<TxnID>3432478374412345</TxnID>
<ExistingIMSI>1111111111111111</ExistingIMSI>
<NewIMSI>2222222222222222</NewIMSI>
</UpdateIMSI>

```

## 2.10.1 Response

- 0 Success
- 202 Some elements have been ignored
- 203 Unknown IMSI
- 204 HNB-GW unable to be contacted
- 401 Missing required element
- 402 Excluded required found
- 405 Unknown CPE
- 407 RDU unavailable
- 415 Unknown error

## 2.11 GetStoredData

This message returns the data for the given CPE stored in the provisioning system. This includes all registration data, discovered data from the CPE, as well as the stored CPE status data.

```

<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID"
                type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>

```

Sample GetSoredData and response:

```

<GetStoredData xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>DCCdcccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <EID>000000-0000000000000001</EID>

```

</GetStoredData>

```
<GetStoredDataResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
<TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
<Status><Code>0</Code><Message>Success</Message></Status>
<SubscriberID>12345566</SubscriberID>
<EID>001B33-1234567890</EID>
<RegisteredOn>2014-08-01T17:24:45.924Z</RegisteredOn>
<AppearedOnline>>false</AppearedOnline>
<Blocked>>false</Blocked>
<Tampered>>false</Tampered>
<SAI><MCC>116</MCC><MNC>116</MNC><LAC>1024</LAC><SAC>615</SAC></
SAI>
<CID>125</CID>
<AccessControl><AccessMode>Open</AccessMode></AccessControl>
<Activated>>true</Activated>
<GroupMemberships><Group><Name>NEW-ENT-
1</Name><Type>Enterprise</Type></Group><Group><Name>BGL-CELL-
POOL-1</Name><Type>CELL-POOL</Type></Group><Group><Name>NEW-ENT-
SITE-1</Name><Type>Site</Type></Group><Group><Name>BGL-SAI-POOL-
1</Name><Type>SAI-
POOL</Type></Group><Group><Name>blr_area_band_2_5</Name><Type>Ar
ea</Type></Group><Group><Name>blr_fgw</Name><Type>FemtoGateway</
Type></Group></GroupMemberships>
<Parameters>
<Parameter><Name>GPS-PERIODIC-TIME</Name><Value>2013-01-
01T01:11:42Z</Value></Parameter>
<Parameter><Name>/IPDevice/homeProvGroup</Name><Value>pg01</Valu
e></Parameter>
<Parameter><Name>FC-AP-
ROLE</Name><Value>IdleEntry</Value></Parameter>
<Parameter><Name>FC-IUSAC-
ID</Name><Value>555</Value></Parameter>
<Parameter><Name>FC-SAC-ID</Name><Value>615</Value></Parameter>
<Parameter><Name>CELL-CONFIG-RAN-CELL-
ID</Name><Value>7602301</Value></Parameter>
<Parameter><Name>FC-JOB-ID</Name><Value>116</Value></Parameter>
<Parameter><Name>PERIODIC-SCAN-RANDOM-TIME</Name><Value>2013-01-
01T03:10:19Z</Value></Parameter>
<Parameter><Name>FC-AP-
PURPOSE</Name><Value>Capacity</Value></Parameter>
<Parameter><Name>FC-NTP-SERVER-
2</Name><Value>10.105.233.11</Value></Parameter>
<Parameter><Name>FC-NTP-SERVER-
1</Name><Value>10.105.233.60</Value></Parameter>
```

```
</Parameters>
</GetStoredDataResponse>
```

### 2.11.1 Response

0 Success  
202 Some elements have been ignored  
401 Missing required element  
405 Unknown CPE  
407 RDU unavailable  
415 Unknown error  
501 Batch request timed out from BAC RDU

### 2.11.2 Response Message

```
<xs:sequence>
  <xs:element name="SubscriberID" type="SubscriberIDType"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="EID" type="EIDType" minOccurs="0"
    maxOccurs="1"/>
  <xs:element name="SecondaryID" type="SecondaryIDType"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="RegisteredOn" type="xs:dateTime"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="AppearedOnline" type="xs:boolean"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="Blocked" type="xs:boolean"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="Tampered" type="xs:boolean"
    minOccurs="0" maxOccurs="1"/>
  <xs:element name="SAI" type="SAIType" minOccurs="0"
    maxOccurs="1"/>
  <xs:element name="CID" type="CIDType" minOccurs="0"
    maxOccurs="1"/>
  <xs:element name="AccessControl"
    type="AccessControlType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="ServiceStatus"
      type="xs:string" minOccurs="0" maxOccurs="1"/>
      <xs:element name="ServiceStatusTS"
        type="xs:dateTime" minOccurs="0" maxOccurs="1"/>
      <xs:element name="LocationValid"
        type="xs:boolean" minOccurs="0" maxOccurs="1"/>
      <xs:element name="LocationValidTS"
        type="xs:dateTime" minOccurs="0" maxOccurs="1"/>
```

```

        <xs:element name="Activated"
type="xs:boolean" minOccurs="0" maxOccurs="1"/>
        <xs:element name="ExpectedLocation"
type="ExpectedLocationType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="LocationStatus"
type="LocationStatusType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="ActualGPS"
type="GPSLocationType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="DNBenchmark"
type="DetectedNeighborBenchmarkListType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="GroupMemberships"
type="GroupsType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>

```

- RegisteredOn - The Device registered date.
- AppearedOnline - First CPE appeared online date.
- AccessControl - Vales can be open or closed
- SAI - FC-LAC-ID is taken from SAI\_POOL.
- ServiceStatus - Status of service, It can be Operational, Service Error.
- Parameters - All discovered parameters will present here.

## 2.12 GetIDs

This message returns a list of IDs (equipment and secondary Id) for a given subscriber identifier or Group.

```

    <xs:sequence>
        <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:choice>
            <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="1" maxOccurs="1"/>
            <xs:element name="InseeCode" type="InseeCodeType"
minOccurs="1" maxOccurs="1" />
            <xs:element name="Group" type="GroupType"
minOccurs="1" maxOccurs="1"/>
        </xs:choice>
    </xs:sequence>

```

- SubscriberID – Subscriber ID of the FAP
- InseeCode - An INSEE identifier.

- Group - A group is defined by its name and its type.

**Sample GetIDs message and response:**

```
<GetIDs xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>DCCdccadmin468a05b2-4164-458b-93ae-
81b7910c6ec1</TxnID>
  <Group>
    <Name>Cisco-IND-site4</Name>
    <Type>Site</Type>
  </Group>
</GetIDs>
```

```
<GetIDsResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
<TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
<Status><Code>0</Code><Message>Success</Message></Status>
<IDs>
  <ID><EID>001B67-357539019247622</EID></ID>
  <ID><EID>001B01-123456789</EID></ID>
  <ID><EID>001B55-1234567890</EID></ID>
  <ID><EID>001B33-1234567890</EID></ID>
  <ID><EID>001B01-1234567890</EID></ID>
</IDs>
</GetIDsResponse>
```

**2.12.1 Response Code**

- 0 Success
- 202 Some elements have been ignored
- 401 Missing required element
- 402 Excluded element found
- 406 Unknown subscriber ID
- 407 RDU unavailable
- 411 Unknown group
- 415 Unknown error
- 501 Batch request timed out from BAC RDU

**RESPONSE MESSAGE:**

This message returns EID and the optional SecondaryID.

```
<xs:sequence>
  <xs:element name="IDs" type="IDsType" minOccurs="0" maxOccurs="1"/>
</xs:sequence>
```

## 2.13 GetLiveData

This message creates a management session (CWMP) with the CPE and then retrieves a specified set of parameters directly from the CPE.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
              maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID" type="SecondaryIDType"/>
  </xs:choice>
  <xs:element name="ParameterNames"
              type="ParameterNamesType" minOccurs="0" maxOccurs="1"/>
</xs:sequence>
</xs:complexType>
```

ParameterNames – There are two types of parameters

- Actual TR-69 Parameters,

Sample GetLiveData message and response:

```
<GetLiveData xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
<TxnID>1234dfdf</TxnID>
<EID>001B67-357539019247622</EID>
<ParameterNames>
<Name>Device.DeviceInfo.SoftwareVersion2</Name>
<Name>Device.DeviceInfo.ModelName</Name>
<Name>Device.DeviceInfo.X_00000C_GpsModuleVersion</Name>
</ParameterNames>
</GetLiveData>
```

```
<GetLiveDataResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>1234dfdf</TxnID>
  <Status><Code>409</Code><Message>CPE offline
error</Message></Status>
</GetLiveDataResponse>
```

### 2.13.1 Response

- 0 Success
- 202 Some elements have been ignored
- 404 Invalid parameter value
- 405 Unknown CPE
- 407 RDU unavailable

- 409 CPE offline error
- 414 TR-069 fault
- 415 Unknown error
- 501 Batch request timed out from BAC RDU

The response will contain the actual TR-69 params.

```

<xs:sequence>
  <xs:element name="Parameters" type="ParametersType"
minOccurs="0" maxOccurs="1"/>
</xs:sequence>

```

## 2.14 SetLiveData

This message creates a management session (CWMP) with the CPE and then sets the specified set of TR-069 parameters on CPE.

```

<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
    minOccurs="1" maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID"
      type="SecondaryIDType"/>
  </xs:choice>
  <xs:element name="Parameters" type="ParametersType"
    minOccurs="1" maxOccurs="1"/>
  <xs:element name="ParameterKey"
    type="ParameterKeyType" minOccurs="0" maxOccurs="1" />
</xs:sequence>

```

### 2.14.1 Response

- 0 Success
- 202 Some elements have been ignored
- 403 Unknown parameter name
- 404 Invalid parameter value
- 405 Unknown CPE
- 407 RDU unavailable
- 409 CPE offline error
- 414 TR-069 fault
- 415 Unknown error
- 501 Batch request timed out from BAC RDU



## 2.15 ConnectionRequest

Creates a management session (CWMP) with the CPE. This may cause the CPE to have its firmware upgraded, the latest configuration applied, have its location verified, or its service provisioned and activated. It may also result in new notifications via the PMG interface.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType" minOccurs="1"
maxOccurs="1"/>
  <xs:choice minOccurs="1" maxOccurs="1">
    <xs:element name="EID" type="EIDType"/>
    <xs:element name="SecondaryID"
type="SecondaryIDType"/>
  </xs:choice>
</xs:sequence>
```

### 2.15.1 Response

0 Success  
201 CPE offline  
202 Some elements have been ignored  
401 Missing required element  
402 Excluded element found  
405 Unknown CPE  
407 RDU unavailable  
414 TR-069 fault  
415 Unknown error  
501 Batch request timed out from BAC RDU

## 2.16 ResetCPEToFactory Defaults

Creates a management session (CWMP) with the CPE and does one of the following depending on **ap.factory.recovery.option** configuration in dcc.properties:

0 -- Factory reset  
1 -- Factory Recovery Immediate (default)  
2 -- Factory Recovery In Least Busy Hour  
3 -- Factory Recovery On Next Power Up

Default behaviour of this API is Factory Recovery Immediate.

```
    <xs:sequence>
      <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
```

```

        <xs:choice minOccurs="1" maxOccurs="1">
            <xs:element name="EID" type="EIDType"/>
            <xs:element name="SecondaryID"
type="SecondaryIDType"/>
        </xs:choice>
    </xs:sequence>

```

### 2.16.1 Response

- 0 Success
- 202 Some elements have been ignored
- 404 Invalid parameter value
- 405 Unknown CPE
- 407 RDU unavailable
- 409 CPE offline error
- 414 TR-069 fault
- 415 Unknown error
- 501 Batch request timed out from BAC RDU

## 2.17 RebootCPE

Creates a management session (CWMP) with the CPE and then reboots it.


```

    <xs:sequence>
        <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:choice minOccurs="1" maxOccurs="1">
            <xs:element name="EID" type="EIDType"/>
            <xs:element name="SecondaryID"
type="SecondaryIDType"/>
        </xs:choice>
    </xs:sequence>

```

### 2.17.1 Response

- 0 Success
- 202 Some elements have been ignored
- 405 Unknown CPE
- 407 RDU unavailable
- 409 CPE offline error
- 414 TR-069 fault



415 Unknown error

501 Batch request timed out from BAC RDU

## 3 PMG Group Management API

PMG exposes group management API to OSS for creating, retrieving, updating, and deleting group and ID pool groups specified in the xsd file pmg-messages-v3\_0\_0.

### 3.1 GetDeviceAssignmentByGroups

Return device assignment information for the groups requested.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
  <xs:element name="GroupIDs"
type="FRMGroupIDsType" minOccurs="1" maxOccurs="1"/>
</xs:sequence>
```

#### 3.1.1 Response

0 Success  
220 Unknown instance  
415 Unknown error

### 3.2 GetIDPoolsByGroups

Return pools usage information for the groups requested.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
  <xs:element name="GroupIDs"
type="FRMGroupIDsType" minOccurs="1" maxOccurs="1"/>
</xs:sequence>
```

#### 3.2.1 Response

0 Success  
220 Unknown instance  
415 Unknown error

### 3.3 GetIDPoolsByTypes

Returns pools usage information for the pools requested by type.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
  <xs:element name="PoolTypes"
type="FRMPoolTypesName" minOccurs="1" maxOccurs="1"/>
</xs:sequence>
```

### 3.3.1 Response

0 Success  
415 Unknown error  
421 Unknown type

## 3.4 ReassignDevice

**Note: If we make the assigned Group state to Deactive or Planned using this xml, we can reassign the Devices to other active Group.**

Reassign device to the available group.

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
  <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
</xs:sequence>
```

### 3.4.1 Response

0 Success  
405 Unknown CPE  
407 RDU unavaliable  
417 FRM reassign failed  
415 Unexpected error  
501 Batch request timed out from BAC RDU

## 3.5 ResyncFRMdb

**Note: To get in sync with BAC, use this xml after making FRM Group changes in the DCC UI.**

**Resyncs FRM Data from BAC.**

```
<xs:sequence>
  <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
</xs:sequence>
```

### 3.5.1 Response

0 Success  
407 RDU unavaliable  
415 Unexpected error  
501 Batch request timed out from BAC RDU

## 3.6 CreateGroup

Creates a group of a particular type. It takes two mandatory parameters, name of the group and its type name.

Following is the sample XML for CreateGroup:

```
<CreateGroup xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>CreateGroup-trans-1234567890</TxnID>
    <Group>
      <GroupTypeName>newGroupTyeName</GroupTypeName>
      <Name>newGroupName</Name>
      <State>Planned</State>
      <PoolIDs>
        <PoolID>
          <PoolTypeName>poolTypeName-
1</PoolTypeName>
          <Name>name-1</Name>
        </PoolID>
        <PoolID>
          <PoolTypeName>poolTypeName-
N</PoolTypeName>
          <Name>name-N</Name>
        </PoolID>
      </PoolIDs>
      <GroupIDs>
        <GroupID>
          <GroupTypeName>groupTypeName-
1</GroupTypeName>
          <Name>name-1</Name>
        </GroupID>
        <GroupID>
          <GroupTypeName>groupTypeName-
N</GroupTypeName>
          <Name>name-N</Name>
        </GroupID>
      </GroupIDs>
      <EnableGrid>true</EnableGrid>
      <Parameters>
        <Parameter>
```

---

```
                <Name>Parameter-1</Name>
                <Value
xsi:type="xsd:boolean">true</Value>
                </Parameter>
                <Parameter>
                <Name>Parameter-N</Name>
                <Value xsi:type="xsd:string">value-
N</Value>
                </Parameter>
            </Parameters>
        </Group>
    </CreateGroup>
```

## 3.7 UpdateGroup

Updates group of a particular type. It takes two mandatory parameters, name of the group and its type name.

UpdateGroup has two options:

1. <update>: Any group properties or related group can be added or updated.
2. <remove>: Properties or related group to be removed to be added in <remove>.

Following is the sample XML for UpdateGroup:

```
<UpdateGroup xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>UpdateGroup-trans-1234567890</TxnID>
  <Group>
    <GroupTypeName>GroupTyeName</GroupTypeName>
    <Name>GroupName</Name>
    <Updates>
      <State>Planned</State>
      <EnableGrid>>true</EnableGrid>
      <PoolIDs>
        <PoolID>
          <PoolTypeName>poolTypeName-
1</PoolTypeName>
          <Name>name-1</Name>
        </PoolID>
        <PoolID>
          <PoolTypeName>poolTypeName-
N</PoolTypeName>
          <Name>name-N</Name>
        </PoolID>
      </PoolIDs>
      <GroupIDs>
        <GroupID>
          <GroupTypeName>groupTypeName-
1</GroupTypeName>
          <Name>name-1</Name>
        </GroupID>
        <GroupID>
```



```

                                <GroupName>groupName-
N</GroupName>
                                <Name>name-N</Name>
                                </GroupID>
                                </GroupIDs>

                                <Parameters>
                                <Parameter>
                                <Name>Parameter-1</Name>
                                <Value
xsi:type="xsd:boolean">true</Value>
                                </Parameter>
                                <Parameter>
                                <Name>Parameter-N</Name>
                                <Value
xsi:type="xsd:string">value-N</Value>
                                </Parameter>
                                </Parameters>
                                </Updates>
                                <Removals>
                                <PoolIDs>
                                <PoolID>
                                <PoolTypeName>poolTypeName-
1</PoolTypeName>
                                <Name>name-1</Name>
                                </PoolID>
                                <PoolID>
                                <PoolTypeName>poolTypeName-
N</PoolTypeName>
                                <Name>name-N</Name>
                                </PoolID>
                                </PoolIDs>

                                <GroupIDs>
                                <GroupID>
                                <GroupName>groupName-
1</GroupName>
                                <Name>name-1</Name>
                                </GroupID>
                                <GroupID>
                                <GroupName>groupName-
N</GroupName>
                                <Name>name-N</Name>
                                </GroupID>
                                </GroupIDs>

                                <Parameters>

```

```

                <Name>Parameter-1</Name>
                <Name>Parameter-N</Name>
            </Parameters>
        </Removals>

    </Group>
</UpdateGroup>

```

### 3.7.1 Response

0 Success  
 403 Unknown parameter name  
 404 Invalid parameter value  
 407 RDU unavaliable  
 415 Unexpected error  
 421 Unknown type  
 425 Missing Dependent Group  
 501 Batch request timed out from BAC RDU

## 3.8 DeleteGroup

Removes the FRM Groups listed.

Following is the sample XML for DeleteGroup:

```

<DeleteGroup xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>DeleteGroup-trans-1234567890</TxnID>
  <GroupID>
    <GroupTypeName>Site</GroupTypeName>
    <Name>site_tnr2</Name>
  </GroupID>

</DeleteGroup>

```

### 3.8.1 Response

0 Success  
 407 RDU unavaliable  
 415 Unexpected error  
 421 Unknown type  
 501 Batch request timed out from BAC RDU

## 3.9 CreateGroupType

Creates a new group type.

Following is the sample XML for CreateGroupType:

```
<CreateGroupType xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>CreateGroupType-trans-1234567890</TxnID>
  <GroupType>
    <Name>newGrouptypeName</Name>
    <Priority>20</Priority>
    <PoolTypeNames>
      <Name>poolType-1</Name>
      <Name>PoolType-N</Name>
    </PoolTypeNames>

    <FrmGroupTypeNames>
      <Name>GroupType-1</Name>
      <Name>GroupType-N</Name>
    </FrmGroupTypeNames>

    <MaxDevices>20000</MaxDevices>
    <Reassignable>true</Reassignable>
    <IDGeneratable>true</IDGeneratable>
    <GenerateId>123</GenerateId>
    <Parameters>
      <Parameter>
        <Name>Parameter-1</Name>
        <Value
xsi:type="xsd:boolean">true</Value>
        </Parameter>
      <Parameter>
        <Name>Parameter-N</Name>
        <Value xsi:type="xsd:string">value-
N</Value>
        </Parameter>
      </Parameters>
    </GroupType>
  </CreateGroupType>
```

## 3.10 UpdateGroupType

Updates an existing group type.

Following is the sample XML for UpdateGroupType:

```
<UpdateGroupType xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>UpdateGroupType-trans-1234567890</TxnID>
  <GroupType>
    <Name>GrouptypeName</Name>

    <Updates>
      <Priority>20</Priority>
      <PoolTypeNames>
        <Name>poolType-1</Name>
        <Name>PoolType-N</Name>
      </PoolTypeNames>
      <FrmGroupTypeNames>
        <Name>GroupType-1</Name>
        <Name>GroupType-N</Name>
      </FrmGroupTypeNames>
      <MaxDevices>20000</MaxDevices>
      <Reassignable>true</Reassignable>
      <IDGeneratable>true</IDGeneratable>
      <GenerateId>123</GenerateId>
      <Parameters>
        <Parameter>
          <Name>Parameter-1</Name>
          <Value
xsi:type="xsd:boolean">true</Value>
          </Parameter>
        <Parameter>
          <Name>Parameter-N</Name>
          <Value
xsi:type="xsd:string">value-N</Value>
          </Parameter>
        </Parameters>
      </Updates>

      <Removals>
        <PoolTypeNames>
          <Name>poolType-1</Name>
        </PoolTypeNames>
      </Removals>
    </GroupType>
  </UpdateGroupType>
```

```

        <Name>PoolType-N</Name>
    </PoolTypeNames>
    <FrmGroupTypeNames>
        <Name>GroupType-1</Name>
        <Name>GroupType-N</Name>
    </FrmGroupTypeNames>
    <Parameters>
        <Name>Parameter-1</Name>
        <Name>Parameter-N</Name>
    </Parameters>
</Removals>

```

```

    </GroupType>
</UpdateGroupType>

```

### 3.10.1 Response

0 Success  
 403 Unknown parameter name  
 404 Invalid parameter value  
 407 RDU unavaliable  
 415 Unexpected error  
 501 Batch request timed out from BAC RDU

## 3.11 DeleteGroupType

Removes a group type if all the groups in that group type have been removed.

Following is the sample XML for DeleteGroupType:

```

<DeleteGroupType xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>DeleteGroupType-trans-1234567890</TxnID>
  <Name>GrpTypeName</Name>
</DeleteGroupType>

```

### 3.11.1 Response

0 Success  
 407 RDU unavaliable  
 415 Unexpected error  
 421 Unknown type  
 501 Batch request timed out from BAC RDU

## 3.12 CreatePool

Creates a new pool with the passed group name and group type. Else it updates the pool elements.

Following is the sample XML for CreatePool:

```
<CreatePool xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
  xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>SetFRMPools-trans-123456789</TxnID>
    <Pool>
      <PoolTypeName>PoolType</PoolTypeName>
      <Name>PoolName</Name>
      <State>Planned</State>
      <GroupIDs>
        <GroupID>

          <GroupTypeName>Enterprise</GroupTypeName>
            <Name>ENT-10</Name>
          </GroupID>
        </GroupIDs>
      <Range>1..234</Range>
      <Parameters>
        <Parameter>
          <Name>FC-LAC-ID</Name>
          <Value>4</Value>
        </Parameter>
      </Parameters>
    </Pool>
</CreatePool>
```

### 3.12.1 Response

- 0 Success
- 403 Unknown parameter name
- 404 Invalid parameter value
- 407 RDU unavaliable
- 415 Unexpected error
- 421 Unknown type
- 501 Batch request timed out from BAC RDU

## 3.13 UpdatePool

Updates the existing FRM Group.

Following is the sample XML for UpdatePool:

```

<UpdatePool xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
<TxnID>UpdatePool-trans-1234567890</TxnID>
<Pool>
      <PoolTypeName>CELL-POOL</PoolTypeName>
      <Name>TEST1</Name>
    <Updates>
      <State>Planned</State>
      <GroupIDs>
        <GroupID>

          <GroupTypeName>FemtoGateway</GroupTypeName>
          <Name>ChileFGW</Name>
        </GroupID>
      </GroupIDs>
      <Parameters>
        <Parameter>
          <Name>Parameter-1</Name>
          <Value>>true</Value>
        </Parameter>
        <Parameter>
          <Name>Parameter-N</Name>
          <Value>value-N</Value>
        </Parameter>
      </Parameters>
    </Updates>
    <Removals>
      <GroupIDs>
        <GroupID>

          <GroupTypeName>FemtoGateway</GroupTypeName>
          <Name>DefaultFGW</Name>
        </GroupID>
      </GroupIDs>
      <Parameters>
        <Name>Parameter-1</Name>
        <Name>Parameter-N</Name>
      </Parameters>
    </Removals>
  </Pool>
</UpdatePool>

```

### 3.13.1 Response

0 Success  
403 Unknown parameter name  
404 Invalid parameter value  
407 RDU unavaliabile  
415 Unexpected error  
421 Unknown type  
501 Batch request timed out from BAC RDU

## 3.14 DeletePool

Removes the listed pool.

Following is the sample XML for DeletePool:

```
<DeletePool xmlns="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0 pmg-messages-v3_0_0.xsd">  
  <TxnID>san-4etFRMGroups-TxnID0</TxnID>  
<PoolID>  
  <PoolTypeName>Enterprise</PoolTypeName>  
  <Name>EntP1002</Name>  
</PoolID>  
</DeletePool>
```

### 3.14.1 Response

0 Success  
407 RDU unavaliabile  
415 Unexpected error  
421 Unknown type  
501 Batch request timed out from BAC RDU

## 3.15 CreatePoolType

Creates a new pool type.

Following is the sample XML for CreatePoolType:

```
<CreatePoolType xmlns:xsi="http://www.w3.org/2001/XMLSchema-  
instance"  
  xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"  
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0 pmg-messages-v3_0_0.xsd">  
  <TxnID>SetFRMPools-trans-123456789</TxnID>  
  <PoolType>
```



```

    <Name>TestPoolType</Name>
    <Priority>10</Priority>
    <GroupName>Area</GroupName>
      <PropertyName>FC-CSG-ID</PropertyName>

    <Parameters>
      <Parameter>
        <Name>ParameterName</Name>
        <Value>ParameterValue</Value>
      </Parameter>
    </Parameters>
  </PoolType>
</CreatePoolType>

```

### 3.15.1 Response

0 Success  
 403 Unknown parameter name  
 404 Invalid parameter value  
 407 RDU unavaliable  
 415 Unexpected error  
 501 Batch request timed out from BAC RDU

## 3.16 UpdatePoolType

Creates a new pool type. Additionally, it is also used to update the pool type elements.

Following is the sample XML for UpdatePoolType:

```

<UpdatePoolType xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>UpdatePoolType-trans-1234567890</TxnID>
  <PoolType>
    <Name>PoolTypeName</Name>

    <Updates>
      <Priority>20</Priority>
      <GroupName>sampleGrpTyp</GroupName>
      <PropertyName>exPropertyName</PropertyName>
      <Parameters>
        <Parameter>
          <Name>Parameter-1</Name>
          <Value
xsi:type="xsd:boolean">true</Value>

```

```

        </Parameter>
        <Parameter>
            <Name>Parameter-N</Name>
            <Value
xsi:type="xsd:string">value-N</Value>
            </Parameter>
        </Parameters>
    </Updates>

    <Removals>
        <GroupTypeName>sampleGrpTyp</GroupTypeName>
        <Parameters>
            <Name>Parameter-1</Name>
            <Name>Parameter-N</Name>
        </Parameters>
    </Removals>

</PoolType>
</UpdatePoolType>

```

### 3.16.1 Response

0 Success  
 403 Unknown parameter name  
 404 Invalid parameter value  
 407 RDU unavailable  
 415 Unexpected error  
 415 Unexpected error501 Batch request timed out from BAC RDU

## 3.17 DeletePoolType

Removes a pool type if all the groups for that pool type have been removed.

Following is the sample XML for DeletePoolType:

```

<DeletePoolType xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>san-4etFRMGroups-TxnID0</TxnID>
  <Name>TestPoolType</Name>
</DeletePoolType>

```

### 3.17.1 Response

0 Success  
 407 RDU unavaliable

415 Unexpected error  
420 Instances exist for type  
421 Unknown type  
501 Batch request timed out from BAC RDU

## 3.18 GetGroupNames

Returns all the FRM group names for the given group type.

Following is the sample XML for GetGroupNames:

```
<GetGroupNames xmlns="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0 pmg-messages-v3_0_0.xsd">  
  <TxnID>GetGroupNames-trans-1234567890</TxnID>  
  <GroupTypeName>Area</GroupTypeName>  
</GetGroupNames>
```

## 3.19 GetGroupsDetails

Returns all the elements for the FRM groups requested.

Following is the sample XML for GetGroupsDetails:

```
<GetGroupsDetails  
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-  
v3_0_0 pmg-messages-v3_0_0.xsd">  
  <TxnID>GetGroupsDetails-trans-1234567890</TxnID>  
  <GroupIDs>  
    <GroupID>  
      <GroupTypeName>Area</GroupTypeName>  
      <Name>DefaultArea</Name>  
    </GroupID>  
    <GroupID>  
      <GroupTypeName>Area</GroupTypeName>  
      <Name>NEWAREA</Name>  
    </GroupID>  
  </GroupIDs>  
</GetGroupsDetails>
```

## 3.20 GetGroupTypeNames

Returns all the FRM group type names.

Following is the sample XML for GetGroupTypeNames:

```
<GetGroupTypeNames
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetGroupTypeNames-trans-1234567890</TxnID>
</GetGroupTypeNames>
```

## 3.21 GetGroupTypesDetails

Returns all the elements for the existing FRM group type.

Following is the sample XML for GetGroupTypesDetails:

```
<GetGroupTypesDetails
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetGroupTypesDetails-trans-1234567890</TxnID>
<GroupTypeNames>
  <Name>Area</Name>
  <Name>FemtoGateway</Name>
</GroupTypeNames>
</GetGroupTypesDetails>
```

## 3.22 GetPoolNames

Returns all the FRM pool names for the given pool type

Following is the sample XML for GetPoolNames:

```
<GetPoolNames xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetPoolNames-trans-1234567890</TxnID>
  <PoolTypeName>SAI-POOL</PoolTypeName>
</GetPoolNames>
```

## 3.23 GetPoolsDetails

Returns all the elements for the FRM pools requested.

Following is the sample XML for GetPoolsDetails:

```

<GetPoolsDetails xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetPoolsDetails-trans-1234567890</TxnID>
  <PoolIDs>
    <PoolID>
      <PoolTypeName>SAI-POOL</PoolTypeName>
      <Name>CHILE-SAI-POOL-1</Name>
    </PoolID>
    <PoolID>
      <PoolTypeName>CELL-POOL</PoolTypeName>
      <Name>DEFAULT-CELL-POOL-1</Name>
    </PoolID>
  </PoolIDs>
</GetPoolsDetails>

```

### 3.24 GetPoolTypeNames

Returns all the FRM pool type names.

Following is the sample XML for GetPoolTypeNames:

```

<GetPoolTypeNames
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetPoolTypeNames-trans-1234567890</TxnID>
</GetPoolTypeNames>

```

### 3.25 GetPoolTypesDetails

Returns all the elements for an existing FRM pool type.

Following is the sample XML for GetPoolTypesDetails:

```

<GetPoolTypesDetails
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd">
  <TxnID>GetPoolTypesDetails-trans-1234567890</TxnID>
  <PoolTypeNames>
    <Name>SAI-POOL</Name>
    <Name>CELL-POOL</Name>
  </PoolTypeNames>

```

---

```
</PoolTypeNames>  
</GetPoolTypesDetails>
```

## 4 Event Subscription

Notification messages are the events received by PMG from BAC and sent to register OSS HTTP URL. These notifications are resent a specified number of times when the HTTP 200 OK message is not received by PMG from OSS.

PMG event notification framework provides the facility to the subscribers for subscribing the events through subscriber.xml. Subscriber can send <unsubscribe> message to PMG for unsubscribing events.

### 4.1 Subscribe

The subscriber sends the subscribe.xml to PMG for getting the notification for the selected events.

Subscription can be made to receive all the events or selected events. Subscriber can have more than one notification url, PMG will pick up one url and send the event. If the URL is not reachable, PMG pick up next url for event delivery.

**Note: If the subscriber does not want to receive the notification for the particular event, the event can be disabled either by setting event enabled value to “false” as shown in the example or removing the particular event:**

```
<Event name='GroupCreateNotification' isEnabled='false'>
</Event>
```

The following is the sample xml request for event subscriptions,

```
<Subscribe subscriber-name="ATT-OSS-1">
<URL>http:server1/notifyme </URL>
<URL>http:server2/notifyme </URL>
<URL>http:server3/notifyme </URL>
<Event name="AssignedData">
</Event>
<Event name="Groups" isEnabled=false>
</subscribe>
```

Following is the example of subscriber message:

```
<Subscribe xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd"
  subscriber-name='ATT-OSS-1'>
<URL>http://10.105.233.87:8085/pmg</URL>
<URL>http://10.105.233.12:8083/pmg</URL>
<URL>http://10.105.233.38:8083/pmg</URL>
<Events>
<Event name='AssignedData' isEnabled='true'>
```

```

</Event>
<Event name='GroupCreated' isEnabled='true'>
</Event>
<Event name='GroupUpdated' isEnabled='true'>
</Event>
<Event name='GroupDeleted' isEnabled='true'>
</Event>
<Event name='FirmwareUpgraded' isEnabled='true'>
</Event>
<Event name='LocationStatus' isEnabled='true'>
</Event>
<Event name='Online' isEnabled='true'>
</Event>
<Event name='ServiceError' isEnabled='true'>
</Event>
<Event name='ServiceOperational' isEnabled='true'>
</Event>
<Event name='Tampered' isEnabled='true'>
</Event>
</Events>
</Subscribe>

```

The following is the sample XML message for subscribing all Events.

```

<Subscribe xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd"
  subscriber-name='CISCO-OSS-1'>
<URL>http://10.105.233.78:8083/pmg</URL>
<URL>http://10.105.233.12:8083/pmg</URL>
<URL>http://10.105.233.38:8083/pmg</URL>
<Events>
</Events>
</Subscribe>

```



## 4.2 Unsubscribe

Subscriber can send <unsubscribe> message to PMG for unsubscribing events with the subscriber name.

The following is the sample xml request for event unsubscribe,

```
<unsubscribe subscriber-name="ATT-OSS-1" />
```

Following is the example of Unsubscriber message:

```
<UnSubscribe subscriber-name="ATT-OSS-1"
xsi:schemaLocation="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0 pmg-messages-v3_0_0.xsd"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0"/>
```

### 4.2.1 Events

The followings are the supported events for the notification and its structure.

1. AssignedData
2. FirmwareUpgrade
3. GroupCreate
4. GroupUpdate
5. GroupDelete
6. LocationStatus
7. Online
8. ServiceError
9. ServiceOperational
10. Tampered

#### 4.2.1.1 AssignedData

This notification is sent when the device assigned data is updated in the provisioning system.

The format of AssignedData event is:

```
<xs:element name="AssignedData">
  <xs:annotation>
    <xs:documentation>
      <p>
        Notifies of automatically assigned data in
order to update IT
        systems such as a billing database. If the
response is not
        acknowledged, PMG will resent this
notification, typically
```

```

        upon the next interaction with the CPE.
    </p>
    </xs:documentation>
</xs:annotation>

<xs:complexType>
  <xs:all>
    <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
    <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
    <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="LAC" type="LACType"
minOccurs="0" maxOccurs="1"/>
    <xs:element name="ExpectedLatitude"
type="LatitudeType " minOccurs="0" maxOccurs="1"/>
    <xs:element name="ExpectedLongitude"
type="LongitudeType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="GroupMemberships"
type="GroupsType" minOccurs="0" maxOccurs="1"/>
    <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
  </xs:all>
</xs:complexType>
</xs:element>

```

Element Name	Description
TxnID	Unique transaction ID of type string with max size of 100 characters. Ex, <TxnID> Register-0202201412345 </TxnID> This is mandatory parameter.

EID	<p>Device equipment ID of UMTS device which contains OUI (6 characters length, allowed chars 0-9A-F) and a SerialNumber of the form <b>OUI-SerialNumber</b>.</p> <p>Ex, &lt;EID&gt;00000C-ABC123456789&lt;EID&gt;</p> <p>This is mandatory parameter.</p>
SecondaryID	<p>A secondary identifier for the CPE which is unique and can be any FQDN with max size of 100.</p> <p>&lt;SecondaryID&gt;IND-KA-03EZ45451234&lt;/ SecondaryID&gt;</p> <p>This is optional parameter.</p>
SubscriberID	<p>This is a subscriber identifier. Typically this is the primary telephone number of the subscriber. This is of type string with out any size limit.</p> <p>&lt;SubscriberID&gt;MyName1001&lt;/SubscriberID&gt;</p> <p>This is optional parameter.</p>
SAI	<p>A Service Area Identifier (SAI). The concatenation of PLMN ID (MCC+MNC), LAC, and SAC uniquely identifies the Service Area ID (SAI).</p>
CID	<p>Cell Identifier (C-id) that identifies a cell within an RNS.</p>
LAC	<p>Location Area Code</p>
ExpectedLatitude	<p>The expected latitude (FC-EXP-LAT) for this device.</p>
ExpectedLongitude	<p>The expected longitude (FC-EXP-LONG) for this device.</p>
GroupMemberships	<p>RMS groups associated to the device.</p>
OccuredOn	<p>The time the notification was raised in milliseconds since epoch.</p>
Parameters	<p>Other set of parameters which have populated in AssignedData notification. This generic parameter list enables PMG to support new parameter without modifying the event XSD definition. Below are some of the parameters included in this:</p> <ul style="list-style-type: none"> <li>a) DNPrefix</li> <li>b) Technology Type – Currently only UMTS</li> <li>c) AP Role (FC-AP-ROLE for enterprise APs)</li> <li>d) AP Purpose (FC-AP-PURPOSE for enterprise APs)</li> <li>e) UARFCN (FC-UARFCN-SINGLE for enterprise APs)</li> </ul>

### Sample AssignedData event:

```
<AssignedData xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
<TxnID>DCCdccadmin468a05b2-4164-458b-93ae-81b7910c6ec1</TxnID>
<EID>001B33-1234567890</EID>
<SAI><MCC>116</MCC><MNC>116</MNC><LAC>1024</LAC><SAC>615</SAC></
SAI>
<LAC>1024</LAC>
<GroupMemberships>
  <Group><Name>NEW-ENT-
1</Name><Type>Enterprise</Type></Group>
  <Group><Name>NEW-ENT-SITE-1</Name><Type>Site</Type></Group>
  <Group><Name>BGL-CELL-POOL-1</Name><Type>CELL-
POOL</Type></Group>
  <Group><Name>BGL-SAI-POOL-1</Name><Type>SAI-
POOL</Type></Group>
  <Group><Name>blr_area_band_2_5</Name><Type>Area</Type></Gro
up>
  <Group><Name>blr_fgw</Name><Type>FemtoGateway</Type></Group
>
</GroupMemberships>
<OccuredOn>2014-08-05T11:54:09Z</OccuredOn>
<Parameters>
  <Parameter><Name>FC-DN-PREFIX</Name><Value>HNB-GW=,HNB-GW-
SRV=blr_fgw,HeNB-GW=,HeNB-GW-SRV=, SeGW=,SeGW-
SRV=blr_fgw,Area=blr_area_band_2_5,Enterprise=2,Site=1,Chassis
ID=,RAT_Type=,EID=001B33-
1234567890,SecondaryID=,</Value></Parameter>
  <Parameter><Name>FC-AP-
ROLE</Name><Value>IdleEntry</Value></Parameter>
  <Parameter><Name>FC-AP-
PURPOSE</Name><Value>Capacity</Value></Parameter>
  <Parameter><Name>FC-UARFCN-
SINGLE</Name><Value>10562</Value></Parameter>
</Parameters>
</AssignedData>
```

#### 4.2.1.2 FirmwareUpgraded

This notification is sent when a CPE first reports a firmware version that matches the NotifyOnFirmwareVersion element. If the CPE appears online with the desired firmware version each time, this notification will be generated.

```
<xs:element name="FirmwareUpgraded">
  <xs:annotation>
    <xs:documentation>
      <p>
```

A notification that is emitted when a CPE

```

        first reports a firmware version that
matches
        the NotifyOnFirmwareVersion element. If the
</p>
        <p>
desired firmware
        Each time the CPE appears online with the
        version this notification will be generated
until an
        FirmwareUpgradedResponse has been received
that indicates
        the notification has been processed.
        </p>
    </xs:documentation>
</xs:annotation>
<xs:complexType>
    <xs:sequence>
        <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

#### 4.2.1.3 GroupCreated

This event is generated by PMG when Groups are created through North Bound Interface (NBI). The subscriber can subscribe the event by specifying event type as GroupCreate. Optionally group type can be specified to receive the events of the particular group. By default, PMG will send the events for all group types.

```

    <xs:element name="GroupCreated">
        <xs:annotation>
            <xs:documentation>
                <p>
                    Notification sent to OSS after a group gets
successfully created.
                </p>
            </xs:documentation>
        </xs:annotation>
    </xs:element>

```

```

        </xs:documentation>
    </xs:annotation>

    <xs:complexType>
        <xs:sequence>
            <xs:element name="GroupName" type="xs:string"
minOccurs="1" maxOccurs="1"/>
            <xs:element name="GroupTypeName"
type="xs:string" minOccurs="1" maxOccurs="1"/>
            <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
        </xs:sequence>
    </xs:complexType>
</xs:element>

```

Some of the parameters sent in GroupCreated notification include:

- a) UARFCN
- b) Expected Latitude (FC-EXP-LAT)
- c) Expected Longitude (FC-EXP-LONG)
- d) Site ID (FC-SITE-ID for Site Group creation)

Sample GroupCreated event:

```

<GroupCreated xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
<GroupName>CA-
site12</GroupName><GroupTypeName>Site</GroupTypeName>
<Parameters>
    <Parameter><Name>FC-SITE-
ID</Name><Value>3</Value></Parameter>
    <Parameter><Name>GROUPS</Name><Value>Enterprise:DefaultEnte
rprise,Area:DefaultArea,FemtoGateway:DefaultFGW</Value></Paramet
er>
    <Parameter><Name>FC-UARFCN-
SINGLE</Name><Value>9697</Value></Parameter>
</Parameters>
</GroupCreated>

```

Sample GroupCreated event response:

```

<GroupCreatedResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
    <TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>

```

```

    <NotificationStatus>0</NotificationStatus>
</GroupCreatedResponse>

```

#### 4.2.1.4 GroupUpdated

This event is generated by PMG when Group is updated through NBI. The subscriber can subscribe this event by specifying the event type as GroupUpdate. Optionally group type can be specified to receive the events of the particular group. By default, PMG will send the events for all group type.

```

<xs:element name="GroupUpdated">
  <xs:annotation>
    <xs:documentation>
      <p>
        Notification sent to OSS after a group gets
updated with updated params.
      </p>
    </xs:documentation>
  </xs:annotation>
  <xs:complexType>
    <xs:sequence>
      <xs:element name="GroupName" type="xs:string"
minOccurs="1" maxOccurs="1"/>
      <xs:element name="GroupTypeName"
type="xs:string" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>

```

#### Sample GroupUpdated event:

```

<GroupUpdated xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <GroupName>CA-site12</GroupName>
  <GroupTypeName>Site</GroupTypeName>
  <Parameters>

    <Parameter><Name>GROUPS</Name><Value>Area:DefaultArea,Enter
prise:DefaultEnterprise,FemtoGateway:DefaultFGW</Value></Paramet
er>

    <Parameter><Name>FC-UARFCN-
SINGLE</Name><Value>9697</Value></Parameter>
    <Parameter><Name>FC_EXP_LAT</Name><Value>-
34.56576</Value></Parameter>
    <Parameter><Name>FC_EXP_LONG</Name><Value>-
14.3454</Value></Parameter>

```

```
</Parameters>
</GroupUpdated>
```

#### Sample GroupUpdated event response:

```
<GroupUpdatedResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
  <TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
  <NotificationStatus>0</NotificationStatus>
</GroupUpdatedResponse>
```

#### **4.2.1.5 GroupDeleted**

This event is generated by PMG when a Group is deleted through NBI. The subscriber can subscribe this event by specifying event type as GroupDelete. Optionally group type can be specified to receive the events of that particular group. By default PMG will send the events for all group types.

```
<xs:element name="GroupDeleted">
  <xs:annotation>
    <xs:documentation>
      <p>
        Notification sent to OSS after a group gets
        deleted.
      </p>
    </xs:documentation>
  </xs:annotation>
  <xs:complexType>
    <xs:sequence>
      <xs:element name="GroupName" type="xs:string"
minOccurs="1" maxOccurs="1"/>
      <xs:element name="GroupTypeName"
type="xs:string" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Parameters"
type="ParametersType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

#### **4.2.1.6 Location Status**

The LocationStatus notification is generated when the valid location flag changes part of the location status has reached a notification value.

```
<xs:element name="LocationStatus">
  <xs:annotation>
    <xs:documentation>
```



<p>  
 Notifies that the CPE's location status has changed or parts of it have reached notification values.  
 The CPE's Valid Location flag is set to the content of the notification. The Radio Location Status is updated to the content of the notification (if included), as is the GPS Location Status.  
 The Service Activation Status may be set to "Enablement pending" if all pre-requisites are now met, otherwise will remain as "Pre-requisites not met".  
 All updates only occur when the LocationStatusResponse has been received.

</p>

<p>

The LocationStatus notification is generated when:

<ul>

<li>The Valid Location flag changes</li>

<li>Part of the location status has

reached a notification value</li>

</ul>

</p>

</xs:documentation>

</xs:annotation>

<xs:complexType>

<xs:sequence>

<xs:element name="TxnID" type="TxnIDType" minOccurs="1" maxOccurs="1"/>

<xs:element name="EID" type="EIDType" minOccurs="1" maxOccurs="1"/>

<xs:element name="SecondaryID" type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>

<xs:element name="SubscriberID" type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>

<xs:element name="SAI" type="SAIType" minOccurs="0" maxOccurs="1"/>

<xs:element name="CID" type="CIDType" minOccurs="0" maxOccurs="1"/>

<xs:element name="ExpectedLocation" type="ExpectedLocationType" minOccurs="0" maxOccurs="1"/>

<xs:element name="GPS" type="GPSEventDataType" minOccurs="0" maxOccurs="1"/>

<xs:element name="IPAddress" type="IPAddressType" minOccurs="0" maxOccurs="1"/>

<xs:element name="ExpectedDetectedNeighbors"

```

        type="ExpectedDetectedNeighborEventDataTypes"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="DetectedNeighborLocation"
            type="DetectedNeighborLocationEventDataTypes"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="DetectedNeighborMCCMNC"
            type="DetectedNeighborMCCMNCEventDataTypes"
            minOccurs="0" maxOccurs="1"/>
        <xs:element name="IPSubnetMatch"
            type="IPSubnetMatchEventDataTypes" minOccurs="0"
            maxOccurs="1"/>
        <xs:element name="DetectedNeighborBenchmark"
            type="DetectedNeighborBenchmarkEventDataTypes" minOccurs="0"
            maxOccurs="1"/>
        <xs:element name="DetectedRadioNeighbors"
            type="RadioNeighborsType" minOccurs="0"
            maxOccurs="1"/>
        <xs:element name="ValidLocation"
            type="xs:boolean" minOccurs="0" maxOccurs="1"/>
        <xs:element name="LocationVerification"
            type="xs:boolean" minOccurs="0"
            maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

**Sample LocationStatus event:**

i)

```

<?xml version="1.0" encoding="UTF-8"
standalone="no"?><LocationStatus
xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"><TxnID>941f5f28-9c6c-4fae-be4c-
757aa30c7a0c</TxnID><EID>001B67-
357539015670272</EID><SubscriberID>sseadmin</SubscriberID><CID>6
18</CID><ExpectedLocation><ExpectedLatitude>57.999461</ExpectedL
atitude><ExpectedLongitude>-
134.19359</ExpectedLongitude></ExpectedLocation><GPS><Status>Val
id location</Status><Latitude>57.999404</Latitude><Longitude>-
134.194015</Longitude><Tolerance>300000</Tolerance><Locked>>true<
/Locked><Distance>25</Distance></GPS><DetectedNeighborMCCMNC><St
atus>Valid
location</Status><IDList><DNM><MCC>116</MCC><MNC>116</MNC></DNM>
</IDList></DetectedNeighborMCCMNC><DetectedNeighborBenchmark><St

```

```

atus>Valid
location</Status></DetectedNeighborBenchmark><ValidLocation>>true
</ValidLocation><LocationVerification>true</LocationVerification
><OccuredOn>2014-08-13T10:40:32Z</OccuredOn></LocationStatus>

```

ii)

```

<?xml version="1.0" encoding="UTF-8"
standalone="no"?><LocationStatus
xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0"><TxnID>1d0c8a4c-ef73-41d2-bd1d-
2d02f0cd740f</TxnID><EID>001B67-
357539017728995</EID><SubscriberID>sseadmin</SubscriberID><CID>6
19</CID><ExpectedLocation><EDNIDList><RadioNeighbor><Radio3GNeig
hborID><MCC>116</MCC><MNC>116</MNC><RNCID>00116</RNCID><CID>0061
8</CID></Radio3GNeighborID></RadioNeighbor></EDNIDList></Expecte
dLocation><GPS><Locked>>false</Locked></GPS><ExpectedDetectedNeig
hbors><Status>Valid
location</Status><Tolerance>1</Tolerance><Matched>1</Matched></E
xpectedDetectedNeighbors><DetectedNeighborLocation><Status>Valid
location</Status><Tolerance>8000</Tolerance></DetectedNeighborLo
cation><DetectedNeighborMCCMNC><Status>Valid
location</Status><IDList><DNM><MCC>116</MCC><MNC>116</MNC></DNM>
</IDList></DetectedNeighborMCCMNC><DetectedNeighborBenchmark><St
atus>Valid
location</Status></DetectedNeighborBenchmark><ValidLocation>true
</ValidLocation><LocationVerification>true</LocationVerification
><OccuredOn>2014-08-18T15:14:27Z</OccuredOn></LocationStatus>

```

#### 4.2.1.7 Online

This notification is sent when a CPE first appears online.

```

<xs:element name="Online">
  <xs:annotation>
    <xs:documentation>
      <p>
        A notification that is emitted when a CPE
        first appears online.
      </p>
      <p>
        Using the Update inbound request message, the
        AppearedOnline
        flag can be reset which will cause the Online
        notification to
        be emitted again the next time the CPE
        appears online.
      </p>
    </xs:documentation>
  </xs:annotation>
</xs:element>

```

```

        <p>
            Each time the CPE appears online this
notification will be
            generated until an OnlineResponse has been
received that
            indicates the notification has been
processed.
        </p>
        <p>
            The CPE's Appeared Online flag is set to
true.
            The Service Activation Status may be set to
"Enablement pending"
            if all pre-requisites are now met, otherwise
will remain
            as "Pre-requisites not met".
        </p>
    </xs:documentation>
</xs:annotation>
<xs:complexType>
    <xs:sequence>
        <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

**Sample Online event:**

```

<Online xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
    <TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
    <EID>001B67-357539019247622</EID>
    <SAI><MCC>116</MCC><MNC>116</MNC><LAC>1024</LAC><SAC>615</S
AC></SAI>
    <CID>129</CID>

```

```
<OccuredOn>2014-08-05T22:00:08Z</OccuredOn>
</Online>
```

#### **Sample Online event response:**

```
<OnlineResponse xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
<TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
<NotificationStatus>0</NotificationStatus>
</OnlineResponse>
```

#### **4.2.1.8 Service Error**

This notification is sent when there is an error in enabling service on the CPE (for example, unable to connect to gateway or interference issue). This is either an enablement error or configuration error.

```
<xs:element name="ServiceError">
  <xs:annotation>
    <xs:documentation>
      <p>
        Notifies that there has been an error
enabling service on the CPE (e.g. unable to
connect to gateway, or interference issue).
This is either
an enablement error or an error make service
operational.
The Service Activation Status is set to the
included status
(optionally with a cause).
      </p>
      <p>
        Only generated when the previous Service
Activation Status value was not
"Operational".
      </p>
    </xs:documentation>
  </xs:annotation>
  <xs:complexType>
    <xs:sequence>
      <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
      <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
      <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
      <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

```

        <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="ServiceActivationError"
type="xs:string" minOccurs="0"
maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

#### Sample ServiceError event:

```

<ServiceError xmlns="http://www.cisco.com/ca/sse/PMGMessages-
v3_0_0">
  <TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
  <EID>001B67-357539019247622</EID>
  <SAI><MCC>116</MCC><MNC>116</MNC><LAC>1024</LAC><SAC>615</S
AC></SAI>
  <CID>129</CID>
  <OccuredOn>2014-08-05T22:00:08Z</OccuredOn>
  <ServiceActivationError>Operation error :
Event Type: Communications Alarm , Probable Cause: HNB-GW
Communication Failure , Specific Problem: Radio Activation
Failure</ServiceActivationError>
</ServiceError>

```

#### Sample ServiceError event response:

```

<ServiceErrorResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
<TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
<NotificationStatus>0</NotificationStatus>
</ServiceErrorResponse>

```

#### **4.2.1.9 Service Operational**

This event notifies that service is operational on the CPE after it was enabled.

```

  <xs:element name="ServiceOperational">
    <xs:annotation>
      <xs:documentation>
        <p>
          Notifies that service is now operational on
the CPE after it
          was enabled.
        </p>

```

```

    The Service Activation Status is set to
"Operational".
    Generated when:
    <ul>
        <li>
            This is the first time it has been
set to
            "Operational" or
        </li>
        <li>
            It was previously changed from
"Operational" due to
            the CPE's location becoming invalid;
now CPE's the
            location is valid
        </li>
    </ul>
    </p>
</xs:documentation>
</xs:annotation>
<xs:complexType>
    <xs:sequence>
        <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
        <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>
        <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>

```

**Sample ServiceOperational event:**

```

<ServiceOperational
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
    <TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
    <EID>001B67-357539019247622</EID>

```

```

    <SAI><MCC>116</MCC><MNC>116</MNC><LAC>1024</LAC><SAC>615</S
AC></SAI>
    <CID>129</CID>
    <OccuredOn>2014-08-05T22:00:08Z</OccuredOn>
</ServiceOperational>

```

**Sample ServiceOperational event response:**

```

<ServiceOperationalResponse
xmlns="http://www.cisco.com/ca/sse/PMGMessages-v3_0_0">
<TxnID>d98d5cd2-b4dc-424e-95f5-732b02c95635</TxnID>
<NotificationStatus>0</NotificationStatus>
</ServiceOperationalResponse>

```

#### **4.2.1.10 Tampered**

This event notifies that the reported CPE has been physically tampered.

A tampered CPE does not have its service provisioned.

```

    <xs:element name="Tampered">
      <xs:annotation>
        <xs:documentation>
          <p>
            Notifies that the CPE has reported it has
            been physically tampered with. A tampered CPE does not have its
            service
            provisioned.
          </p>
          <p>
            Each time the CPE reports that it has been
            tampered this notification will be generated until a successful
            TamperedResponse has been received. The CPE's Tampered flag is
            set to true. The Service Activation Status is set to "Pre-
            requisites not met".
          </p>
        </xs:documentation>
      </xs:annotation>
      <xs:complexType>
        <xs:sequence>
          <xs:element name="TxnID" type="TxnIDType"
minOccurs="1" maxOccurs="1"/>
          <xs:element name="EID" type="EIDType"
minOccurs="1" maxOccurs="1"/>
          <xs:element name="SecondaryID"
type="SecondaryIDType" minOccurs="0" maxOccurs="1"/>
          <xs:element name="SubscriberID"
type="SubscriberIDType" minOccurs="0" maxOccurs="1"/>

```




---

```
        <xs:element name="SAI" type="SAIType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="CID" type="CIDType"
minOccurs="0" maxOccurs="1"/>
        <xs:element name="OccuredOn" type="xs:dateTime"
minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
</xs:complexType>
</xs:element>
```

## 5 Glossary

TERM	DESCRIPTION
ACL	Access Control List, aka whitelist
API	Application Programming Interface
BAC	Broadband Access Center
CPE	Customer Premises Equipment
CSV	Comma Separated Value
DPE	Distributed Provisioning Engine
EAID	Emergency Area ID
EID	Equipment ID
GATEWAY	Femto Gateway, aka HNB-GW, aka AC, aka FGW
HTTP	Hypertext Transfer Protocol
LAC	Location Area Code
MCC	Mobile Country Code, 3 digits
MNC	Mobile Network Code, 3 digits
NBI	North Bound Interface
OSS	Operations Support Systems
PMG	Provisioning Management Gateway
RAC	Routing Area Code
RAT	Radio Access Technology
RMS	RAN Management System
RDU	Regional Distribution Unit
SAC	Service Area Code
SAI	Service Area Identifier, consists of the LAC + SAC
SP	Service Provider



UARFCN	UTRA Absolute Radio Frequency Channel Number
XML	Extensible Markup Language
XSD	XML Schema Definition
whitelist	Aka ACL