Oracle® Communications

Specification

User Data Repository SOAP Provisioning Interface Specification for Release 15.0.3.0.0

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ORACLE

CAUTION: Use only the Installation procedure included in the Install Kit.

Before installing any system, access My Oracle Support (https://support.oracle.com) and review any Technical Service Bulletins (TSBs) that relate to this procedure.

My Oracle Support (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with My Oracle Support registration.

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See more information on My Oracle Support, see Appendix D.

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Chapter 1. Introduction

1.1 Purpose and Scope

This document presents the SOAP Provisioning interface to be used by provisioning client applications to administer the Provisioning Database of the Oracle Communications User Data Repository (UDR) system. Through SOAP interfaces, an external provisioning system supplied and maintained by the network operator may add, change, or delete subscriber/pool information in the Oracle Communications User Data Repository database.

The primary audience for this document includes customers, Oracle customer service, software development, and product verification organizations, and any other Oracle personnel who have a need to use the SOAP interface.

1.2 References

The following external document references capture the source material used to create this document.

[1] *IMS Sh interface; Signalling flows and message contents*, 3GPP TS 29.328, Release 11
[2] *Sh interface based on the Diameter protocol; Protocol details*, 3GPP TS 29.329, Release 11
[3] *User Data Convergence (UDC); Technical realization and information flows; Stage 2*, 3GPP TS 23.335, Release 11
[4] *SDM v9.3 Subscriber Provisioning Reference Manual*, 910-6870-001 Revision A, January 2014

1.3 Glossary

This section lists terms and acronyms specific to this document.

Table 1: Glossary

Acronym/Term	Definition
ACID	Atomic, Consistent, Isolatable, Durable
BLOB	Binary Large Object
CFG	Configuration Data—data for components and system identification and configuration
CPS	Customer Provisioning System
DP	Database Processor
FRS	Feature Requirements Specification
FTP	File Transfer Protocol
GUI	Graphical User Interface
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity, or IMSI [im-zee]
IP	Internet Protocol

KPI	Key Performance Indicator
MEAL	Measurements, Events, Alarms, and Logs
MP	Message Processor
MSISDN	Mobile Subscriber ISDN Number
NA	Not Applicable
NE	Network Element
NPA	Numbering Plan Area (Area Code)
OAMP	Operations, Administration, Maintenance, and Provisioning
NOAMP	Network OAM and Provisioning
PCRF	Policy Charging and Rules Function
PS	Provisioning System
SDO	Subscriber Data Object
SEC	Subscriber Entity Configuration
SNMP	Simple Network Management Protocol
SOAM	System Operation, Administration, and Maintenance
SPR	Subscriber Profile Repository
TCP	Transmission Control Protocol
UDR	User Data Repository
UTC	Coordinated Universal Time
VIP	Virtual IP
XML	Extensible Markup Language

Chapter 2. System Architecture

2.1 Overview

Oracle Communications User Data Repository (UDR) performs the function of an SPR, which is a database system that acts as a single logical repository that stores subscriber data. The subscriber data that traditionally has been stored into the HSS, HLR, AuC, or Application Servers is stored in UDR as specified in 3GPP UDC information model [3]. UDR facilitates the share and the provisioning of user related data throughout services of 3GPP system. Several Applications Front Ends, such as: one or more PCRF/HSS/HLR/AuCFEs can be served by UDR.

The data stored in UDR can be permanent and temporary data. Permanent data is subscription data and relates to the required information the system needs to perform the service. User identities (for example, MSISDN, IMSI, IMEI,NAI and AccountId), service data (for example, service profile) and authentication data are examples of the subscription data. This kind of user data has a lifetime as long as the user is permitted to use the service and may be modified by administration means. Temporary subscriber data is dynamic data which may be changed as a result of normal operation of the system or traffic conditions (for example, transparent data stored by Application Servers for service execution, user status, usage, and so on).

Oracle Communications User Data Repository is a database system providing the storage and management of subscriber policy control data for PCRF nodes. subscriber/pool data is created/retrieved/modified or deleted through the provisioning or by the Sh interface peers (PCRF). The following subscriber/pool data is stored in Oracle Communications User Data Repository:

- Subscriber
  - Profile
  - Quota
  - State
  - Dynamic Quota
- Pool
  - Pool Profile
  - Pool Quota
  - Pool State
  - Pool Dynamic Quota

The Figure 1 below illustrates a high level the Oracle Communications User Data Repository Architecture.

Oracle Communications User Data Repository consists of several functional blocks. The Message Processors (MP) provide support for a variety of protocols that entail the front-end signaling to peer network nodes. The back-end UDR database resides on the N-OAMP servers.

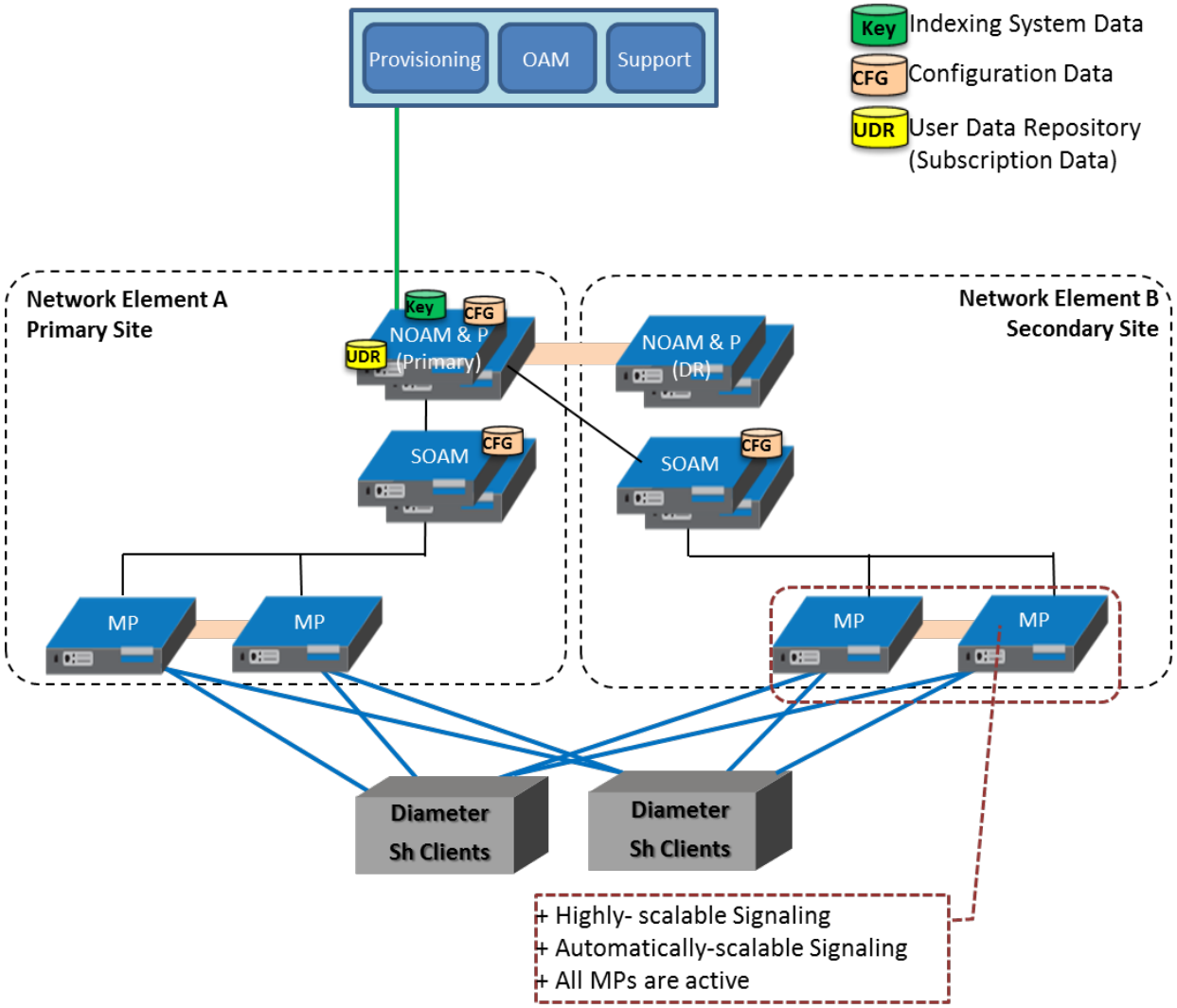
As the product evolves forward, the subscriber profiles in UDR can be expanded to support data associated with additional applications. Along with that, the MPs can be expanded to support additional Diameter interfaces associated with these applications. The IPFE can be integrated with the product to facilitate signaling distribution across multiple MP nodes.

The Network level OAMP server (NOAMP) in the architecture provides the provisioning, configuration and maintenance functions for all the network elements under it.

System level OAM server (SOAM) is a required functional block for each network element which gets data replicated from NOAMP and in turn replicates the data to the message processors.

MP functions as the client-side of the network application, provides the network connectivity and hosts network stack such as Diameter, SOAP, LDAP, SIP and SS7.

Figure 1: User Data Repository High Level Architecture



2.2 Provisioning Interface

The SOAP provisioning interface provides data manipulation commands for subscriber and Pool.

2.2.1 Subscriber Commands

- Subscriber profile create, retrieve, and delete
- Subscriber profile field create, retrieve, modify, and delete
- Subscriber opaque data create, retrieve, modify, and delete

  Quota, State, and Dynamic Quota
- Subscriber data row and field create, modify, and delete

  Quota, State and Dynamic Quota
- Subscriber transparent data create, retrieve, modify, delete

Quota, State and Dynamic Quota

- Reset of Subscriber Quota transparent data row

2.2.2 Pool Commands

- Pool profile create, retrieve, and delete
- Pool profile field create, retrieve, modify, and delete
- Pool opaque data create, retrieve, modify, and delete

  Pool Quota, Pool State and Pool Dynamic Quota

- Pool transparent data create, retrieve, modify, and delete

  Pool Quota, Pool State and Pool Dynamic Quota

- Pool data row and field create, modify, and delete

  Pool Quota, Pool State and Pool Dynamic Quota

- Pool subscriber membership operations
  - Add and remove from pool
  - Get pool subscriber membership
  - Get pool for subscriber
- Reset of Pool Quota transparent data row

2.3 XML SOAP Application Server (XSAS)

The application in the provisioning process interfacing to SOAP provisioning clients runs on every active NOAMP server. The XSAS is responsible for:

- Accepting and authorizing SOAP provisioning client connections
- Processing and responding to SOAP requests received from provisioning clients
- Performing provisioning requests directly on the database
- Updating the provisioning command log with requests sent and responses received

2.4 Provisioning Clients

The XSAS provides connections to the customer provisioning systems (CPS). These are independent information systems supplied and maintained by the network operator to be used for provisioning the UDR system. Through XSAS, the CPS may add, delete, change or retrieve information about any subscriber or pool.

CPSs use SOAP to send requests to manipulate and query data in the Provisioning Database. Provisioning Clients establish TCP/IP connections to the XSAS running on the active NOAMP using the VIP for the primary NOAMP.

Provisioning clients need to re-establish connections with the XSAS using the VIP for the primary UDR after switchover from the active server for the primary to the standby UDR server. Provisioning clients also need to redirect connections to the VIP for the secondary after switchover from the primary UDR site to the disaster recovery UDR site.

Provisioning clients must run a timeout for the response to a request, if a response is not sent. If a response is not received, the client drops the connection and re-establishes it before trying again.

Provisioning clients are expected to re-send requests that resulted in a temporary error, or for which a response was not received.

2.5 Security

The following forms of security are provided for securing connections between the SOAP interface and provisioning clients in an unsecure/untrusted network:

- Client Server IP Address White List
- Secure Connection using TLS

2.5.1 Client Server IP Address White List

For securing connections between the SOAP interface and provisioning clients in an unsecure/untrusted network, a list of authorized IP addresses is provided.

The system configuration process maintains a white list of server IP addresses and/or IP address ranges from which clients are authorized to establish a TCP/IP connection from.

The XSAS verifies provisioning connections by utilizing the authorized IP address list. Any connect request coming from an IP address that is not on the list is denied (connection is immediately closed). All active connections established from an IP address which is removed from the Authorized IP list are immediately closed.

2.5.2 Secure Connection using TLS

The XSAS supports secure (encrypted) connections between provisioning clients and the XSAS using Transport Layer Security version 1.0 (TLSv1.0) protocol implemented using OpenSSL based on SSLeay library developed by Eric A. Young and Tim J. Hudson.

TLS is an industry standard protocol for clients needing to establish secure (TCP-based) TLS-enabled network connections. TLS provides data confidentiality, data integrity, and server and client authentication based on digital certificates that comply with X.509v3 standard and public/private key pairs. These services are used to stop a wide variety of network attacks including: Snooping, Tampering, Spoofing, Hijacking, and Capture-replay.

The following capabilities of TLS address several fundamental concerns about communication over TCP/IP networks:

- TLS server authentication

  Allows a client application to confirm the identity of the server application. The client application through TLS uses standard public-key cryptography to verify that the certificate and public key for the server are valid and has been signed by a trusted certificate authority (CA) that is known to the client application.

- TLS client authentication

  Allows a server application to confirm the identity of the client application. The server application through TLS uses standard public-key cryptography to verify that the certificate and public key for the client are valid and has been signed by a trusted certificate authority (CA) that is known to the server application.

- An encrypted TLS connection

  Requires all information being sent between the client and server application to be encrypted. The sending application is responsible for encrypting the data and the receiving application is responsible for decrypting the data. In addition to encrypting the data, TLS provides message integrity. Message integrity provides a means to determine if the data has been tampered with since it was sent by the partner application.

Depending on the mode the XSAS is configured to operate in (secure/unsecure), provisioning clients can connect using unsecure or secure connections to the well-known TCP/TLS listening port for the XSAS (configured using the SOAP `Secure Mode` configuration variable via UDR GUI).

A TLS-enabled connection is slower than an unsecure TCP/IP connection. This is a direct result of providing adequate security. On a TLS-enabled connection, more data is transferred than normal. Data is transmitted in packets, which contain information required by the TLS protocol as well as any padding required by the cipher that is in use. There is also the overhead of encryption and decryption for each read and write performed on the connection.

TLS Certificates and Public/Private Key Pairs

TLS-enabled connections require TLS certificates. Certificates rely on asymmetric encryption (or public-key encryption) algorithms that have two encryption keys (a public key and a private key). A certificate owner can show the certificate to another party as proof of identity. A certificate consists of the public key for the owner. Any data encrypted with this public key can be decrypted only using the corresponding, matching private key, which is held by the owner of the certificate.

Oracle issues Privacy Enhanced Mail (PEM)-encoded TLS X.509v3 certificates and encryption keys to the SOAP server and provisioning clients needing to establish a TLS-enabled connection with the SOAP server. These files can be found on the UDR server in the `/usr/TKLC/udr/ssl` directory. These files are copied to the server running the provisioning client.

Table 2: TLS X.509 Certificate and Key PEM-encoded Files

Certificate and Key PEM-encoded Files	Description
tklcCaCert.pem	Oracle self-signed un-trusted root Certification Authority (CA) X.509v3 certificate.
serverCert.pem	The X.509v3 certificate and 2,048-bit RSA public key for the XSAS digitally signed by Oracle Certification Authority (CA) using SHA-1 message digest algorithm.
serverKey.nopass.pem	The corresponding 2,048-bit RSA private key without passphrase for the XSAS digitally signed by Oracle Certification Authority (CA) using SHA-1 message digest algorithm.
clientCert.pem	Provisioning X.509v3 certificate and 2,048-bit RSA public key for the client digitally signed by Oracle Certification Authority (CA) using SHA-1 message digest algorithm.
clientKey.nopass.pem	Provisioning corresponding 2,048-bit RSA private key without passphrase for the client digitally signed by Oracle Certification Authority (CA) using SHA-1 message digest algorithm.

Provisioning clients are required to send a TLS authenticating X.509v3 certificate when requested by the XSAS during the secure connection handshake protocol for mutual (two-way) authentication. If the provisioning client does not submit a certificate that is issued/signed by Oracle Certification Authority (CA), it is not able to establish a secure connection with the XSAS.

Supported TLS Cipher Suites

A cipher suite is a set/combination of lower-level algorithms that a TLS-enabled connection uses to do authentication, key exchange, and stream encryption. The following table lists the set of TLS cipher suites from the relevant specification and their OpenSSL equivalents that are supported by the XSAS to secure a TLS-enabled connection with provisioning clients. The cipher suites are listed and selected for use in the order of key

strength, from highest to lowest. This ensures that during the handshake protocol of a TLS-enabled connection, cipher suite negotiation selects the most secure suite possible from the list of cipher suites the client wishes to support, and if necessary, back off to the next most secure, and so on down the list.

NOTE: Cipher suites containing anonymous DH ciphers, low bit-size ciphers (those using 64 or 56 bit encryption algorithms but excluding export cipher suites), export-crippled ciphers (including 40 and 56 bits algorithms), or the MD5 hash algorithm are not supported due to their algorithms having known security vulnerabilities.

Table 3: TLS Supported Cipher Suites

Cipher Suite (RFC)	OpenSSL Equivalent	Key Exchange	Signing/ Authentication	Encryption (Bits)	MAC (Hash) Algorithms
TLS_RSA_WITH_AES_256_CBC_SHA	AES256-SHA	RSA	RSA	AES (256)	SHA-1
TLS_RSA_WITH_3DES_EDE_CBC_SHA	DES-CBC3-SHA	RSA	RSA	3DES(168)	SHA-1
TLS_RSA_WITH_AES_128_CBC_SHA	AES128-SHA	RSA	RSA	AES(128)	SHA-1
TLS_KRB5_WITH_RC4_128_SHA	KRB5-RC4-SHA	KRB5	KRB5	RC4(128)	SHA-1
TLS_RSA_WITH_RC4_128_SHA	RC4-SHA	RSA	RSA	RC4(128)	SHA-1
TLS_KRB5_WITH_3DES_EDE_CBC_SHA	KRB5-DES-CBC3-SHA	KRB5	KRB5	3DES(168)	SHA-1

2.6 Multiple Connections

The XSAS supports multiple connections and each connection is considered persistent unless declared otherwise. The HTTP persistent connections do not use separate keep-alive messages, they just allow multiple requests to use a same TCP/IP connection. However, connections are closed after being idle for a time limit configured in idle timeout (See section 2.9.3).

The provisioning client establishes a TCP/IP connection to XSAS before sending the first SOAP command. After performing the request, the XSAS sends a response message back, and keeps the connection alive as long as the next request comes before idle timeout.

NOTE: In order to achieve the maximum provisioning TPS rate that the UDR SOAP interface is certified for, multiple simultaneous provisioning connections are required.

- For example, if the certified maximum provisioning TPS rate is 200 TPS, and the `Maximum SOAP Connections` (see 7.8.1Appendix B) are set to 100, then up to 100 connections may be required in order to achieve 200 TPS. It is *not* possible to achieve the maximum provisioning TPS rate on a single connection.
- When calculating the provisioning TPS rate, if any `<tx>` transactions are sent (see section 2.8.1), then the TPS rate is calculated using the number of requests contained in the `<tx>`. A `<tx>` request does *not* count as 1 TPS.

2.7 Request Queue Management

If multiple clients simultaneously issues requests, each request is queued and processed in the order in which it was received on a per connection basis. The client is not required to wait for a response from one request before issuing another.

Incoming requests, whether multiple requests from a single client or requests from multiple clients, are not prioritized. Multiple requests on multiple connections from a single client are handled on a first-in, first-out basis. Generally, requests are answered in the order in which they are received, but this is not always guaranteed. A client sends a number of valid update requests, which are performed, and run in the order they are received. If the client were to then send an invalid request (such as if the XML could not be parsed) on a different connection, this is responded to immediately, potentially before the any, some, or all of the previous requests have been responded to.

NOTE: All requests from a client sent on a single connection are processed by UDR serially. Multiple requests can be sent without receiving a response, but each request is queued and not processed until the previous request has completed. A client can send multiple requests across multiple connections, and these may run in parallel (but requests on each connection are processed serially).

2.8 Database Transactions

Each create/update/delete request coming from SOAP interface triggers a unique database transaction, that is, a database transaction started by a request is committed before sending a response.

2.8.1 Block Transaction Mode

The block database transaction mode requires explicit `<tx>` XML tags around all of the requests in a transaction.

The block transaction is sent as one XML request, and all requests contained in the block are run in the sequence supplied in a database transaction. If any request fails the entire transaction is automatically rolled back. If all requests are successful then the transaction is automatically committed.

If a block transaction fails, the request in the block that encountered an error has the error code set, all requests except the one that failed has error code=1 (NOT_PROCESSED) which indicates that the request was not performed or has been rolled back.

All block transactions must also satisfy limits indicated by the `Maximum Requests in SOAP <tx> XML` and `Transaction Durability Timeout` system variables, which are defined in 7.8.1Appendix B. If any of those limits are exceeded, the transaction is aborted and automatically rolled back.

If a block transaction is sent which contains more than `Maximum Requests in SOAP <tx> XML` requests, then the request fails with a SOAP error `<message error="20">` (see section 3.1.2).

NOTE: The relevant transaction related measurements are incremented once per <tx> request (by +1). The relevant request based measurements are incremented once per request contained in the <tx>. All requests share the same outcome. For example, if a <tx> request contained 5 requests, and the transaction was successful, then measurement RxXsasProvMsgsSuccessful are incremented by 5. If the first 3 requests in the transaction were successful, and the 4th request failed, then the transaction fails, get rolled back, and RxXsasProvMsgsFailed are incremented by 5.

Request Format

```
<tx [resonly="resonly"]>
  <req … >
    request1
  </req>
    <expr><attr name="keyName1"/><value val="keyValue1"/></expr>
[
```

```
  <req … >
    request2
  </req>
    :
  <req … >
    requestN
  </req>
]
</tx>
```

- *resonly*: (Optional) Indicates whether the all request responses in the transaction consist of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

  NOTE: Any resonly value supplied in the <tx> takes precedence on any resonly value supplied in a contained request in <req>. If a resonly value is not supplied in the <tx>, then the value supplied in a contained request in <req> takes precedence. The default value for resonly when not supplied is n.

- *requestX*: SOAP XML request contained in the transaction

  NOTE: The maximum number of requests that can be included in a <tx> transaction is defined in the Maximum Requests in SOAP <tx> XML system variable, which is defined in Appendix B.

Response Format

```
<tx nbreq="nbreq" [resonly="resonly"]>
  <req … >
[    originalXMLRequest1 ]
    <res error="error" affected="affected"/>
  </req>
[
  <req … >
[    originalXMLRequest2 ]
    <res error="error" affected="affected"/>
  </req>
  :
  <req … >
[    originalXMLRequest3 ]
    <res error="error" affected="affected"/>
  </req>
]
</tx>
```

- *nbreq*: The number of requests contained in the original XML <tx> request
- *resonly*: (Optional) The resonly value from the original XML <tx> request, if supplied
- *originalXMLRequestN*: (Optional) The text of the original XML request that was contained in the <tx> request, if necessary (see notes for resonly in section 0)

  Values: A string with 1 to 4096 characters

- *error*: Error code indicating outcome of request. 0 means success. A value of 1 (NOT_PROCESSED) indicates that the request was not performed or had been rolled back. Other values are dependent on the request being performed, and are listed in the description for that specific request
- *affected*: The number of subscribers affected by the request. A value of 1 is expected for success

  NOTE: This value may be non-zero for requests that were valid in a transaction, but where a subsequent request failed, and the transaction was rolled back. The affected value is given to indicate that the request is successful if committed

NOTES

- For a transaction to be considered successful, all error values in all request responses must be 0.
- Results for a select request may be returned a response even if the transaction failed. Based on the error values for all request responses, it is up to the provisioning client sending the request to use the returned information for the select if the transaction itself was not successful.

Examples

Request:

This request creates 2 subscribers, and gets a 3rd subscriber.

```
<tx resonly="y">
  <req name="insert">
  <ent name="Subscriber"/>
    <set>
      <expr>
        <attr name="MSISDN"/>
        <value val="19195551234"/>
      </expr>
      <expr>
        <attr name="BillingDay"/>
        <value val="1"/>
      </expr>
      <expr>
        <attr name="Entitlement"/>
        <value val="DayPass,DayPassPlus"/>
      </expr>
    </set>
  </req>
  <req name="insert">
    <ent name="Subscriber"/>
    <set>
      <expr>
        <attr name="MSISDN"/>
        <value val="15141234567"/>
      </expr>
      <expr>
        <attr name="BillingDay"/>
        <value val="1"/>
      </expr>
      <expr>
        <attr name="Entitlement"/>
        <value val="DayPass,DayPassPlus"/>
      </expr>
    </set>
  </req>
  <req name="select">
    <ent name="Subscriber"/>
    <select>
      <expr>
        <attr name="IMSI"/>
      </expr>
      <expr>
        <attr name="MSISDN"/>
      </expr>
      <expr>
        <attr name="NAI"/>
      </expr>
    </select>
    <where>
      <expr>
        <attr name="IMSI"/>
        <op value="="/>
        <value val="302370123456789"/>
      </expr>
    </where>
  </req>
</tx>
```

Response 1

In this example, all requests were successful, and the transaction was committed.

```
<tx nbreq="3" resonly="y">
  <req name="insert">
    <res error="0" affected="1"/>
  </req>
  <req name="insert">
    <res error="0" affected="1"/>
  </req>
  <req name="select">
    <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>302370123456789</rv>
        <rv>15145551234</rv>
        <rv>person@operator.com</rv>
      </row>
    </rset>
  </req>
</tx>
```

Response 2

In this example, the first request was successful, but the second request failed. The transaction was rolled back.

The second request failed due to error FIELD_NOT_FOUND. The third command was not attempted.

```
<tx nbreq="3" resonly="y">
  <req name="insert">
    <res error="1" affected="1"/>
  </req>
  <req name="insert">
    <res error="70012" affected="0"/>
  </req>
  <req name="select">
    <res error="1" affected="0"/>
  </req>
</tx>
```

Response 3

In this example, the second request is invalid due to an unknown entity. The transaction was not attempted.

```
<tx nbreq="3" resonly="y">
  <req name="insert" resonly="y">
    <res error="1" affected="0"/>
  </req>
  <req name="insert" resonly="y">
    <res error="70000" affected="0"/>
  </req>
  <req name="select" resonly="y">
    <res error="1" affected="0"/>
  </req>
</tx>
```

Response 4

In this example, all requests are valid, but the commit of the transaction failed. The transaction was rolled back.

```
<tx nbreq="3" resonly="y">
  <req name="insert">
    <res error="70038" affected="1"/>
  </req>
  <req name="insert">
    <res error="70038" affected="1"/>
  </req>
  <req name="select">
    <res error="70038" affected="1"/>
    <rset>
```

```
      <row>
        <rv>302370123456789</rv>
        <rv>15145551234</rv>
        <rv>person@operator.com</rv>
      </row>
    </rset>
  </req>
</tx>
```

Request 5

This request creates 2 subscribers, and gets a 3rd subscriber.

This is an example for UDR for DSR based EIR solution.

```
<tx resonly="y">
  <req name="insert">
  <ent name="Subscriber"/>
    <set>
      <expr>
        <attr name="IMEI"/>
        <value val="98765439876546"/>
      </expr>
      <expr>
        <attr name="IMSI"/>
        <value val="987654398765460"/>
      </expr>
    </set>
  </req>
  <req name="insert">
    <ent name="Subscriber"/>
    <set>
      <expr>
        <attr name="IMEI"/>
        <value val="98765439876547"/>
      </expr>
      <expr>
        <attr name="IMSI"/>
        <value val="987654398765470"/>
      </expr>
    </set>
  </req>
  <req name="select">
    <ent name="Subscriber"/>
    <select>
      <expr>
        <attr name="IMEI"/>
      </expr>
      <expr>
        <attr name="IMSI"/>
      </expr>
    </select>
    <where>
      <expr>
        <attr name="IMEI"/>
        <op value="="/>
        <value val=" 98765439876546"/>
      </expr>
    </where>
  </req>
</tx>
```

Response 5

In this example, all requests were successful, and the transaction was committed.

```
<tx nbreq="3" resonly="y">
  <req name="insert">
    <res error="0" affected="1"/>
  </req>
  <req name="insert">
    <res error="0" affected="1"/>
```

```
  </req>
  <req name="select">
    <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>98765439876546</rv>
        <rv>987654398765460</rv>
      </row>
    </rset>
  </req>
</tx>
```

Request 6

This request creates 1 subscriber within the specified IMEI range and gets a third subscriber which exists.

This is an example of IMEI range operation for UDR for DSR based EIR solution.

```
<tx resonly="y">
    <req name="insert" resonly="y">
      <ent name="Subscriber"/>
        <set>
         <expr>
            <attr name="IMEI"/>
            <value val="97765439876546"/>
         </expr>
         <expr>
            <attr name="IMEI"/>
            <value val="98765439876546"/>
         </expr>
        </set>
    </req>
    <req name="select">
      <ent name="Subscriber"/>
        <select>
          <expr>
            <attr name="IMEI"/>
          </expr>
        </select>
          <where>
          <expr>
            <attr name="IMEI"/>
            <op value="="/>
            <value val="12345671234567"/>
          </expr>
          </where>
    </req>
</tx>
```

Response 6

In this example, request was successful, and the transaction was committed.

```
<tx nbreq="3" resonly="y">
  <req name="insert">
    <res error="0" affected="1"/>
  </req>
</tx>
```

2.8.2 ACID-Compliance

The SOAP interface supports Atomicity, Consistency, Isolation and Durability (ACID)-compliant database transactions which guarantee transactions are processed reliably.

Atomicity

Database manipulation requests are atomic. If one database manipulation request in a transaction fails, all of the pending changes can be rolled back by the client, leaving the database as it was before the transaction was initiated. However, the client also has the option to close the transaction, committing only the changes in that

transaction which were run successfully. If any database errors are encountered while committing the transaction, all updates are rolled back and the database is restored to its previous state.

Consistency

Data across all requests performed inside a transaction is consistent.

Isolation

All database changes made in a transaction by one client are not viewable by any other clients until the changes are committed by closing the transaction. In other words, all database changes made in a transaction cannot be seen by operations outside of the transaction.

Durability

After a transaction has been committed and become durable, it persists and not be undone. Durability is achieved by completing the transaction with the persistent database system before acknowledging commitment. Provisioning clients only receive success responses for transactions that have been successfully committed and have become durable.

The system recovers committed transaction updates in spite of system software or hardware failures. If a failure (loss of power) occurs in the middle of a transaction, the database returns to a consistent state when it is restarted.

Data durability signifies the replication of the provisioned data to different parts of the system before a response is provided for a provisioning transaction. The following additive configurable levels of durability are supported:

- Durability to the disk on the active provisioning server (just 1)
- Durability to the local standby server memory (1 + 2)
- Durability to the active server memory at the Disaster Recovery site (1 + 2 + 3)

2.9 Connection Management

It is possible to enable/disable/limit the SOAP provisioning interface in a number of different ways.

2.9.1 Connections Allowed

The configuration variable `Allow SOAP Connections` (see 7.8.1Appendix B) controls whether SOAP interface connections are allowed to the configured port. If this variable is set to `NOT_ALLOWED`, then all existing connections are immediately dropped. Any attempts to connect are rejected.

When `Allow SOAP Connections` is set back to `ALLOWED`, the connections are accepted again.

2.9.2 Disable Provisioning

When the Oracle Communications User Data Repository GUI option to disable provisioning is selected, existing connections remain up and new connections are allowed. But, any provisioning request that is sent is rejected with a SERVICE_UNAVAILABLE error indicating the service is unavailable.

For an example of a provisioning request/response when provisioning is disabled, see the last example in section 6.1.1.

2.9.3 Idle Timeout

HTTP connection between Provisioning client and XSAS is handled persistent fashion. The configuration variable `SOAP Interface Idle Timeout` (see 7.8.1Appendix B) indicates the time to wait before closing the connection due to inactivity (requests are not received).

2.9.4 Maximum Simultaneous Connections

The configuration variable `Maximum SOAP Connections` (see 7.8.1Appendix B) defines the maximum number of simultaneous SOAP interface client connections. If an attempt is made to connect more than the number of SOAP connections allowed, the connection is rejected by the SOAP server.

2.9.5 TCP Port Number

The configuration variable `SOAP Interface Port` (see 7.8.1Appendix B) defines the SOAP interface TCP listening port.

2.10 Behavior During Low Free System Memory

If the amount of free system memory available to the database falls below a critical limit, then requests that create or update data may fail with the error MEMORY_FULL. Before this happens, memory threshold alarms are raised indicating the impending behavior if the critical level is reached.

The error returned by the SOAP interface when the critical level has been reached is:

```
  <res error="70042" affected="0"/>
```

2.11 Multiple Subscriber Key Processing

UDR allows multiple key values for a subscriber to be supplied in some requests in the `<where>` element.

When multiple keys are supplied in a request (such as an IMSI and an MSISDN), UDR looks up all supplied keys, and only consider the subscriber record found if all supplied keys correspond to the same subscriber.

If any key value does not exist, then `KEY_NOT_FOUND` returns. If multiple keys are provided, and all keys exist, but do not correspond to the same subscriber, then the error `MULTIPLE_KEYS_NOT_MATCH` returns.

Example request:

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><value val="23"/></expr>
    <expr><attr name="Tier"/><value val="Gold"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/><value val="302370123456789"/></expr>
    <expr><attr name="MSISDN"/><op value="="/><value val="15145551234"/></expr>
  </where>
</req>
```

Multiple values for the same key type are also allowed, such as if a subscriber has two provisioned IMSIs, the following is allowed.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><value val="23"/></expr>
    <expr><attr name="Tier"/><value val="Gold"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/><value val="302370123456789"/></expr>
    <expr><attr name="IMSI"/><op value="="/><value val="206224111222333"/></expr>
    <expr><attr name="MSISDN"/><op value="="/><value val="15145551234"/></expr>
  </where>
```

```
</req>
```

UDR supports as many keys that are allowed for a subscriber in the request.

NOTE: For pool based requests, only a single PoolID is allowed. Do not mix PoolID and subscriber key values in the same request, doing so results in an `INVALID_XML` error response. For example, the following is not allowed:

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
:
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/><value val="302370123456789"/></expr>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

2.12 Congestion Control

If UDR starts to encounter congestion (based on high CPU usage), then based on the congestion level, UDR rejects some requests (based on the reqname, see section 5.2.1).

- If the minor CPU usage threshold is crossed (CL1), then UDR rejects select requests
- If the major CPU usage threshold is crossed (CL2), then UDR rejects select, update, operation, and tx (transaction) requests
- If the critical CPU usage threshold is crossed (CL3), then UDR rejects all requests

The error returned by the SOAP interface when a request is rejected due to congestion is:

```
  <res error="70045" affected="0"/>
```

2.13 Enterprise Pools

Enterprise pools have the capability to support more than 25 members in a pool. Basic pools maintain a threshold of 25 members as the maximum number of subscribers that are allowed. Enterprise pools are pools containing more than 25 members and there is not a maximum number of pool members enforced.

A field in the pool profile called Type is used to distinguish between a basic pool and an enterprise pool. If the Type field is not present, then this implies that the pool is a basic pool. A basic pool can be converted to an enterprise pool by updating the profile to set the Type field to have a value of enterprise. An enterprise pool can be converted to a basic pool by removing the Type field, as long as the number of members in the pool does not exceed the maximum allowed for a basic pool.

Chapter 3. SOAP Interface Description

Oracle Communications User Data Repository supports a SOAP based provisioning interface for management of subscriber data. This interface supports querying, creation, modification and deletion of subscriber and pool data. The SOAP Messages and SOAP Replies are transported over the HTTP protocol.

Each SOAP Message/Reply contains an UDR format XML request/response. The following XML request types are supported:

- Update
- Insert
- Delete
- Select
- Operation

A SOAP provisioning client application is responsible for:

- Establishing a TCP/IP connection with the SOAP server using the VIP for the primary UDR and the SOAP XSAS listening port (as specified in section 2.9).
- Creating and sending SOAP request messages (as specified in section 5.2.1) to the SOAP server.
- Receiving and processing SOAP response messages (as specified in section 5.2.2) received from the SOAP server.
- Detecting and handling connection errors. It is recommended that the TCP keep-alive interval for the client on the TCP/IP connection is set to detect and report a disconnection problem promptly.

3.1.1 SOAP Header Format

In SOAP messages, the authentication of the username and password is part of the SOAP envelope header. When the authentication feature is enabled, UDR validates the username and password received in the header of the SOAP request to validate the identity of the user who generated the request. Any requests that do not match valid users are rejected. The username and password provided in the SOAP Header are ignored when Authentication feature is disabled and the request is processed. In the context of SOAP requests, the SOAP header is outlined below in Figure 2.

NOTE: Usernames and passwords must not contain:

- Extra spaces
- Additional characters
- New line char

Figure 2: SOAP Header Format

```
<SOAP-ENV:Header>
  <ns1:UserName
           SOAP-ENV:actor="http://schemas.xmlsoap.org/soap/actor/next"
           SOAP-ENV:mustUnderstand="1"
           xsi:type=" SOAP-ENC:string"
           xmlns:ns1="http://www.oracle.com/udr/"
      xmlns:SOAP-ENC c="http://schemas.xmlsoap.org/soap/encoding/">[Add UserName
here]</ns1:UserName>
  <ns1:Passwd
           SOAP-ENV:actor="http://schemas.xmlsoap.org/soap/actor/next"
           SOAP-ENV:mustUnderstand="1"
           xsi:type=" SOAP-ENC:string"
           xmlns:ns2="http://www.oracle.com/udr/"
           xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">[Add Password
here]</ns1:Passwd>
</ SOAP-ENV:Header>
```

SOAP Request/Response Format

The SOAP interface uses SOAP as wrapper of XML requests and responses. The detailed format of the request is illustrated in Figure 3, and the response format in Figure 4.

Figure 3: SOAP Request Format

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">

  <SOAP-ENV:Body>

    <ns1:processTransaction>

      <![CDATA[REQUEST]]>

    </ns1:processTransaction>

  </SOAP-ENV:Body>

</SOAP-ENV:Envelope>
```

Example SOAP Request:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">

  <SOAP-ENV:Body>
    <ns1:processTransaction>
      <![CDATA[
        <req name="insert">
          <ent name="Subscriber"/>
          <set>
            <expr><attr name="MSISDN"/>
                  <value val="33628323201"/></expr>
            <expr><attr name="BillingDay"/>
                  <value val="12"/></expr>
          </set>
        </req>
      ]]>
    </ns1:processTransaction>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

The SOAP interface uses the following wrapper for the XML response and error codes. Note that either the `<ns1:message>` or the `<SOAP-ENV:Fault>` element is present, but not both. The contents of the `<SOAP-ENV:Fault>` are dependent on the SOAP error that occurs and can vary, and thus are not listed here:

Figure 4: SOAP Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">

<
  <SOAP-ENV:Body>

    <ns1:message error="ErrorCode">

      <![CDATA[RESPONSE]]>

    </ns1:message>

  </SOAP-ENV:Body>
|
  <SOAP-ENV:Body
    SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">

    <SOAP-ENV:Fault>
    ...
    </SOAP-ENV:Fault>

  </SOAP-ENV:Body>
>

</SOAP-ENV:Envelope>
```

3.1.2 Status Codes and Error Messages

If an error occurred in processing the request or with the format of the message, an error result code is sent:

- `<message error="0">`: normal, request transaction was sent and processed
- `<message error ="0">` but the message content has `<res error=error code number … >`. This implies there is a problem with the content of the request message (for example,, a problem with format or value out of range). The Error code numbers are generated by UDR
- `<message error="10">`: Communication problem, unable to process the request transaction. The response does not contain any other response/error content
- `<message error="20">`: Unable to parse the request transaction. The response does not contain any other response/error content

Example of a Response message indicating success:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:message error="0">
      <![CDATA[<req name="insert" resonly="y">
                 <res error="0" affected="1"/>
               </req>]]>
    </ns1:message>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a Response message with an error code returned:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:message error="0">
      <![CDATA[<req name="insert" resonly="y">
                 <res error="70019" affected="0"/>
               </req>]]>
    </ns1:message>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a Response message when a communications error occurred:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:message error="10"></ns1:message>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a Response message when a request parsing failure occurred:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:message error="20"></ns1:message>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a Response message when a SOAP Fault occurred:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body
    SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <SOAP-ENV:Fault>
      <faultcode>SOAP-ENV:Client</faultcode>
      <faultstring>Method 'processTransaction' not implemented: method name or namespace not
recognized</faultstring>
      <detail></detail>
    </SOAP-ENV:Fault>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Error Codes

The list of error codes is described in Appendix B.

Legacy SPR Format SOAP Request/Response

UDR can be configured to operate in a compatibility mode for legacy SPR customers, which affects the SOAP request/response format. See Appendix C for more details.

Chapter 4. SOAP Interface Message Definitions

4.1 Message Conventions

XML message specification syntax follows several conventions to convey what parameters are required or optional and how they and their values must be specified.

Table 4: Message Conventions

Symbol	Description
italics	Parameter values that are replaced by an actual parameter name or numeric value.
spaces	Spaces (zero or more space characters, " ") may be inserted anywhere except in a single name or number. At least one space is required to separate adjacent names or numbers.
…	Variable number of repeated entries. For example: dn DN1, dn DN2, …,dn DN7, dn DN8
< >	Angle brackets are used to enclose parameter values that are choices or names. For example, in parameter1 <1|2|3>, the numbers represent specific value choices. In parameter2 <*ServerName*>, the *ServerName* represents the actual value. In parameter3 <0…3600>, the numbers represent a choice in the range from 0 to 3600.
[ ]	Square brackets are used to enclose an optional parameter and its value, such as [, parameter1 <1|2|3>]. A parameter and its value that are not enclosed in square brackets are mandatory.
|	When the pipe symbol is used in a parameter value list, such as Parameter1 <1|2|3>, it indicates a choice between available values.
,	A literal comma is used in the message to separate each parameter that is specified.

4.2 Basic XML Message Format

Request

The following describes the basic layout of an XML request, with all different options and parameters included. UDR requests are made up of different combinations of the parameters. All are listed for illustrative purposes. Proper examples of which parameters are relevant for each request are described in the section that follows.

```
<req name="reqname" [resonly="resonly"] [id="id"] [odk="odk"]>
  <ent name="entityname"/>

  <select>

    <expr><attr name="fieldName"/>

  </select>

  <set>

    <expr><attr name="fieldName"/><value val="fieldValue"/></expr>

    <expr><attr name="fieldName"/><op value="="/><value val="" isnull="y"/></expr>

    <oper name="AddToSet">
```

```
      <expr><attr name="setFieldName"/><value val="setFieldValue"/></expr>
    </oper>

    <oper name="RemoveFromSet">
      <expr><attr name="setFieldName"/><value val="setFieldValue"/></expr>
    </oper>

    <expr><attr name="cdataFieldName"/><op value="="/><cdata>
<![CDATA[
cdataFieldValue
]]></cdata></expr>

  </set>

  <where>
    <expr><attr name="keyName"/><op value="="/><value val="keyValue"/></expr>
    <expr><attr name="rowKeyName"/><op value="="/><value val="rowKeyValue"/></expr>
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
  </where>

  <oper name="operName">
    <expr><attr name="fieldName"/><value val="fieldValue"/></expr>
  </oper>

</req>
```

The reqname attribute indicates what type of request is being sent. Values are either `insert`, `update`, `delete`, `select`, or `operation`, depending on the request.

NOTE: The resonly attribute controls whether or not the original request is included along with the response. The resonly attribute is optional, and if set to y, then the original request is not included in the response (result only). If resonly is set to n, then the original request IS included in the response. The default value of the flag (when the resonly attribute is not supplied) is n—that is, return the request in the response.

The id attribute is used by the XSAS client to correlate request and response messages. The id attribute is optional and if specified, is an integer between 1 and 4294967295 expressed as a decimal number in ASCII. If the user specifies the id attribute in a request, the same id attribute and value are returned by XSAS in the corresponding response, so a unique id value must be sent in each request message to differentiate responses.

The odk attribute (on duplicate key) allows an insert request to convert the insert request to an update request if the target entity exists. The odk attribute is optional, and if set to `yes`, then if the entity being inserted exists, the entity is updated instead of the request failing. The default value of the flag (for when the attribute is not supplied) is to not convert the insert request to an update request. Hence, if the target entity exists, the request fails.

The entityname attribute identifies the provisioning entity type on which the request is being performed on. Values are either `subscriber`, `pool`, `QuotaEntity`, or `PoolQuotaEntity` depending on the request, which match the configured Entity values in the SEC.

The namespace attribute identifies the database namespace in which the data relating to the request is stored. This is not used in UDR, but is retained for backwards compatibility. Value is always set to `policy`. This attribute is optional, and can be supplied for backwards compatibility with the legacy SPR. Any value supplied is not validated, and ignored.

When a field value is included to be set (for example in an insert/update request), a `<set>` element is present. In this,one, or many `<expr><attr name="fieldName"/><value val="fieldValue"/></expr>` elements are present. The fieldName indicates the name of the field being set, and the fieldValue is the value to set it to. When the value of a field is deleted, this is performed by setting the fieldValue as empty (""), and additionally specifying the attribute `isnull="y"`.

NOTE: When specifying fields in a <set> element, field order is not important. The fields defined for an entity do not have to be specified in the order they are defined in the SEC.

When a field value is included to be retrieved (for example in a select request), a <select> element is present. In this, one, or many <expr><attr name="fieldName"/></expr> elements are present. The fieldName indicates the name of the field being retrieved. For a select request, at least one field value must be requested. Only the fields requested returns in the response.

When a field is a list type (such as entitlement in profile), an embedded operation request is used to add/remove values from the list. This is performed by including the element <oper name="operName"> where operName is either AddToSet (to add a values to a list) or RemoveFromSet (to remove a values from a list). The name of the field being modified is specified in setFieldName, and the values being added/removed are specified in setFieldValue. Multiple comma separated values can be specified in setFieldValue, or with each individual value in a separate <expr><attr name="setFieldName"/><value val="setFieldValue"/></expr> element.

NOTE: The ns attribute is optional, and can be supplied for backwards compatibility with the legacy SPR. Any value supplied is not validated, and ignored.

To set a field as an XML data blob, the cdataFieldValue contains a <cdata> element, and the data in the constructs of an XML CDATA section. The CDATA section starts with <![CDATA[, then the cdataFieldValue containing the XML data blob, and the CDATA section ends with]]>.

Most commands identify the subscriber for which the provisioning request is being made by specifying the subscriber address in the <where> element. When present, a key type/value must be provided. Depending on the command, keyType can be IMSI, MSISDN, IMEI,NAI, AccountId, or PoolID. The value of the key (of the indicated key type) is set in keyValue.

Depending on the keyType, the keyValue is validated as showin in Table 1.

Table 5 keyValue Validation for keyType

keyType	keyValue Validation
IMEI	8 to 14 numeric digits
IMSI	10 to 15 numeric digits
MSISDN	8 to 15 numeric digits. **NOTE:** A preceding + (plus) symbol is not supported, and is rejected.
NAI	For NAI supported formats see Table 8
AccountId	1 to 255 characters (allowed values are any ASCII printable characters in the range x20 to x7e)
PoolID	1 to 22 numeric digits, minimum value 1

When a request is performing an action on a specific row in an entity (such as updating a field value in a specific quota instance), the row key field name used to select the row is specified in rowKeyName. The value of key is specified in rowKeyValue. If a field in the row can indicate uniqueness, in the case of more than one row having the same rowKeyName/rowKeyValue, then this field is specified in instanceFieldName/instanceFieldValue.

When the reqname is set to operation, the <oper> element is present. This defines the operation name in operName.

XML Comments in a Request

A SOAP request may contain XML comments, such as:

```
<!--comment-->
```

- If the comment is in the request, it is ignored.
- If the comment is contained with the XML blob for an opaque entity, in the CDATA constraint, then the comment gets stored in the XML blob.
- If the comment is contained with the XML blob for a transparent entity, in the CDATA constraint, then the comment does not get stored in the XML blob.

Response

The following describes the basic layout of an XML response, with all different options and parameters included. UDR responses are made up of different combinations of the parameters. All are listed for illustrative purposes. Proper examples of which parameters are relevant for each response are described in the section that follows.

```
<req name="reqname" [resonly="resonly"] [id="id"]>
  originalXMLRequest
  <res error="error" affected="affected"/>
    <rset>
      <row>
        <rv>rowValue</rv>
        <rv>
<![CDATA[
cdataRowValue
]]>
        <rv></rv>
        <rv null="y"/>
    </row>
  </rset>
</req>
```

The reqname attribute contains the same value as supplied in the request. Values are either `insert`, `update`, `delete`, `select`, or `operation`, depending on the request.

If the `resonly` attribute was included in the request, the same value is returned in the response.

If the `id` attribute was included in the request, the same value is returned in the response.

The *originalXMLRequest* element is the text of the original XML request that was sent. This is only present if the `resonly="n"` attribute is set in the original request (or the `resonly` attribute was not supplied, as the default value is `n`).

- The error attribute indicates the outcome of the request. A value of 0 indicates success. Any other value indicates failure. The possible errors for each request are detailed in the following section for each request. The list of error codes is described in Appendix B.
- The affected attribute indicates the number of affected subscribers. A value of 1 (or more) is expected (for success) and `0` for failure.

If a select request has been performed (or with some operation requests), result data returned is contained in a `<rset>` (rowset) element. In an `<rset>` can be zero (if matching data was not found) or one `<row>` element (UDR does not support returning multiple `<row>` elements). In a `<row>` are one or more `<rv>` (row value) elements containing a rowValue detailing the requested field value. One `<rv>` element corresponds for every fieldValue requested in the select request. The `<rv>` elements are given in the same order as the fieldValues are specified.

NOTES

- An `<rv>` element can contain an entire XML CDATA section, starting with `<![CDATA[`, then the cdataRowValue containing the XML data blob , and the CDATA section ends with `]]>`. If the `<rv>` element represents a valid field that is not present in the XML data blob, then this is indicated with `<rv`

null="y">. If the field is present in the XML blob, but has an empty value, this is indicated with <rv></rv>.

- Whenever XML blob data is returned, fields may not be returned in the order they are defined in the SEC. The fields may be returned in any order.

4.3 Encoding of Multiple Embedded CDATA Sections

Requests and responses may contain multiple embedded CDATA sections—that is, one CDATA section that completely contains another CDATA section, because the SOAP envelope begins with a CDATA section to contain the XML requests/responses. These requests/responses require special formatting.

Sections Chapter 6 and Chapter 7 describe CDATA sections in the UDR commands without any reference on how these are represented after are they embedded in the SOAP envelope.

The following sections here give examples of the complete SOAP HTTP requests/response to indicate how to format requests when requests are sent to UDR by a provisioning client, and how responses returned by UDR returns to the UDR client.

Request

When physically encoding the XML data to be sent, all embedded CDATA start and end sequences must be changed (the opening and closing sequences for the initial CDATA in the <message> element does not need to be changed).

- Replace all embedded occurrences of <![CDATA[with <![CDATA[
- Replace all embedded occurrences of]]> with]]>

For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:processTransaction>
      <![CDATA[
        <req name="insert" resonly="y">
          <ent name="Subscriber"/>
          <set>
            <expr><attr name="Quota"/>
              <op value="="/><cdata>&lt;![CDATA[
<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>9999</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
              ]]&gt;</cdata>
            </expr>
          </set>
          <where>
            <expr><attr name="MSISDN"/><op value="="/>
                  <value val="13123654862"/></expr>
          </where>
        </req>
      ]]>
```

```
    </ns1:processTransaction>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Response

When a response is received, every < and > character in the <message> element is replaced with < and > respectively (including for the initial CDATA).

For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://www.oracle.com/udr/">
  <SOAP-ENV:Body>
    <ns1:message error="0">
      &lt;![CDATA[
        &lt;?xml version="1.0" encoding="UTF-8"?&gt;
        &lt;req name="select" resonly="y"&gt;
        &lt;res affected="1" error="0"/&gt;
          &lt;rset&gt;
            &lt;row&gt;
              &lt;rv&gt;
&lt;![CDATA[
&lt;?xml version="1.0"?&gt;
  &lt;usage&gt;
    &lt;version&gt;1&lt;/version&gt;
    &lt;quota name="AggregateLimit"&gt;
      &lt;cid&gt;9999&lt;/cid&gt;
      &lt;time&gt;3422&lt;/time&gt;
      &lt;totalVolume&gt;1000&lt;/totalVolume&gt;
      &lt;inputVolume&gt;980&lt;/inputVolume&gt;
      &lt;outputVolume&gt;20&lt;/outputVolume&gt;
      &lt;serviceSpecific&gt;12&lt;/serviceSpecific&gt;
      &lt;nextResetTime&gt;2010-05-22T00:00:00-05:00&lt;/nextResetTime&gt;
    &lt;/quota&gt;
  &lt;/usage&gt;]]]]&gt;
   &lt;![CDATA[&gt;
        &lt;/rv&gt;
        &lt;/row&gt;
        &lt;/rset&gt;
        &lt;/req&gt;
      ]]&gt;
    </ns1:message>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

4.4 Case Sensitivity

The constructs that XML requests are made up of (such as <req>, <ent>, <set>, <where> and so on) are case-sensitive. Exact case must be followed for all the commands described in this document, or the request fails.

For example, the following is valid:

```
<req name="delete">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

But the following is not:

```
<req name="delete">
  <Ent name="Subscriber"/>
  <where>
```

```
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

- Entity names as specified in an entityName are not case sensitive.
- Entity field names, key names, and row element/identifiers names are not case-sensitive, for example fieldName, setFieldName, keyName, instanceFieldName, and rowIdName.
- Entity field values, and key values are case-sensitive, for example fieldValue, setFieldValue, keyValue, rowIdValue, and instanceFieldValue.
- Operation names as specified in an operName are not case sensitive.

Examples

- When accessing a *fieldName* defined as inputVolume in the SEC, then inputvolume, INPUTVOLUME or inputVolume *are* valid field names. Field names do not have to be specified in a request as they are defined in the SEC

  A field name is used to specify an *entire entity* (for example a *fieldName*, *cdataFieldName* or *opaqueDataType*) is also *not* case-sensitive

- When a field is returned in a response, it is returned *as defined in the SEC*. For example, if the above field is created using the name INPUTVOLUME, then it returns in a response as inputVolume
- When a *fieldValue* is used to find a field (such as when using the Delete Field Value command), the field value *is* case-sensitive. If a multi-value field contained the values DayPass,Weekend,Evening and the Delete Field Value command was used to delete the value WEEKEND, then this fails
- When an attribute in the XML blob contains the row identifier name—also known as *rowIdName* (for example for Quota, the element `<quota name="AggregateLimit">` contains the attribute called name) the row identifier name is *not* case-sensitive
- When a *rowIdValue* is used to find a row (such as when using the Get Row command), the row identifier value *is* case-sensitive. If an entity contained a row called DayPass, and the Get Row command was used to get the row DAYPASS, then this fails
- When an *instanceFieldName* is used to find a row (such as when using the Get Row command), the row instance identifier field name is *not* case-sensitive
- When an *instanceFieldValue* is used to find a row (such as when using the Get Row command), the row instance identifier field value *is* case-sensitive. If an entity contained a row called with a field with the value Data, and the Get Row command was used to get the row with the field value DATA, then this fails
- When a *keyName* is specified in a `<where>` or `<set>` element (such as MSISDN), the key name is *not* case-sensitive
- When a *keyValue* is specified in the `<where>` element (such as for an NAI), the value is case-sensitive. For example, for a subscriber with an NAI of mum@foo.com, then Mum@foo.com or MUM@FOO.COM does *not* find the subscriber
- When an element in the XML blob contains the row element name (for example for Quota, the row `<quota name="AggregateLimit">` contains the element called quota) the row element name is *not* case-sensitive
- When an operation name is specified in an *operName* (such as when using the GetPoolID operation), the operation name is *not* case-sensitive
- When an entity name is specified in an *entityName* (such as when using the Create Row command), the entity name is *not* case-sensitive

4.5 List of Messages

The following table provides a list of operations/messages for subscriber data. Each row of the table represents a command.

Table 6: Summary of Supported Subscriber Commands

Operation Data/Type	Command	SOAP
Subscriber Profile	Create Profile	insert
	Get Profile	select
	Delete Profile	delete
Subscriber Field	Add Field Value	update (using “AddToSet” operation)
	Get Field	select
	Update Field	update
	Delete Field	update, null
	Delete Field Value	update (using “RemoveFromSet” operation)
Subscriber Opaque Data	Create Opaque Data	insert
	Get Opaque Data	select
	Update Opaque Data	update
	Delete Opaque Data	update (using “isnull” attribute)
Subscriber Data Row	Create Row	insert
	Get Row	select
	Delete Row	delete
Subscriber Data Row Field	Get Row Field	select
	Update Row Field	update
	Delete Row Field	update (using “isnull” attribute)
Subscriber Data Field	Create Data Field	insert
	Get Data Field	select
	Update Data Field	update
	Delete Data Field	update (using “isnull” attribute)
Subscriber Special Operation	Reset Quota	operation

Table 7 provides a list of operations/messages for pool data. Similar to the previous table, each row of the table represents a command.

Table 7: Summary of Supported Pool Commands

Operation Data/Type	Command	SOAP
Pool Profile	Create Pool	insert
	Get Pool	select
	Delete Pool	delete
Pool Field	Add Field Value	update (using “AddToSet” operation)
	Get Field	select
	Update Field	update
	Delete Field	update (using “isnull” attribute)
	Delete Field Value	update (using “RemoveFromSet” operation)
Pool Opaque Data	Create Opaque Data	insert
	Get Opaque Data	select
	Update Opaque Data	update
	Delete Opaque Data	update (using “isnull” attribute)
Pool Data Row	Create Row	insert
	Get Row	select
	Delete Row	delete
Pool Data Row Field	Get Row Field	select
	Update Row Field	update
	Delete Row Field	update (using “isnull” attribute)
Pool Data Field	Create Data Field	insert
	Get Data Field	select
	Update Data Field	update
	Delete Data Field	update (using “isnull” attribute)
Additional Pool Commands	Add Member to Pool	operation
	Remove Member from Pool	operation
	Get Pool Members	operation
	Get Pool by Member (key)	operation

Operation Data/Type	Command	SOAP
Pool Special Operation	Reset Pool Quota	operation

Chapter 5. UDR Data Model

The UDR is a system used for the storage and management of subscriber policy control data. The UDR functions as a centralized repository of subscriber data for the PCRF.

The subscriber-related data includes:

- Profile and subscriber data

  Pre-provisioned information that describes the capabilities of each subscriber. This data is typically written by the OSS system (via a provisioning interface) and referenced by the PCRF (via the Sh interface).

- Quota:

  Information that represents the use of managed resources (quota, pass, top-up, roll-over) by the subscriber. Although the UDR provisioning interfaces allow quota data to be manipulated, this data is typically written by the PCRF and only referenced using the provisioning interfaces.

- State:

  Subscriber-specific properties. Like quota, this data is typically written by the PCRF, and referenced using the provisioning interfaces.

- Dynamic Quota:

  Dynamically configured information related to managed resources (pass, top-up). This data may be created or updated by either the provisioning interface or the Sh interface.

- Pool Membership:

  The pool to which the subscriber is associated. The current implementation allows a subscriber to be associated with a single pool.

The UDR can also be used to group subscribers using Pools. This feature allows wireless carriers to offer pooled or family plans that allow multiple subscriber devices with different subscriber account IDs, such as MSISDN, IMSI,IMEI or NAI to share one quota.

The pool-related data includes:

- Pool Profile: Pre-provisioned information that describes a pool
- Pool Quota: Information that represents the use of managed resources (quota, pass, top-up, roll-over) by the pool
- Pool State: Pool-specific properties
- Pool Dynamic Quota: dynamically configured information related to managed resources (pass, top-up)
- Pool Membership: List of subscribers that are associated with a pool

The data architecture supports multiple Network Applications. This flexibility is achieved though implementation of a number of registers in a Subscriber Data Object (SDO) and storing the content as Binary Large Objects (BLOB). An SDO exists for each individual subscriber, and an SDO exists for each pool.

The Index contains information on the following:

- Subscription
  - A subscription exists for every individual subscriber
  - Maps a subscription to the user identities through which it can be accessed
  - Maps an individual subscription to the pool of which they are a member

- Pool Subscription
  - A pool subscription exists for every pool
  - Maps a pool subscription to the pool identity through which it can be accessed
  - Maps a pool subscription to the individual subscriptions of the subscribers that are members of the pool
- User Identities

  Use to map a specific user identity to a subscription
  - IMSI, MSISDN,IMEI, NAI and AccountId map to an individual subscription
  - PoolID maps to a pool
- Pool Membership

  Maps a pool to the list of the individual subscriber members

The Subscription Data Object (SDO):

- An SDO record contains a list of registers, holding a different type of entity data in each register
- An SDO record exists for:
  - Each individual subscriber

    Defined entities stored in the registers are:
    - Profile
    - Quota
    - State
    - Dynamic Quota
  - Each pool

    Defined entities stored in the registers are:
    - Pool Profile
    - Pool Quota
    - Pool State
    - Pool Dynamic Quota

Provisioning applications can create, retrieve, modify, and delete subscriber/pool data. The indexing system allows access to the SDO via IMSI, MSISDN, IMEI, NAI or AccountId. The pool SDO can be accessed via PoolID.

A field in an entity can be defined as mandatory, or optional. A mandatory field must exist, and cannot be deleted.

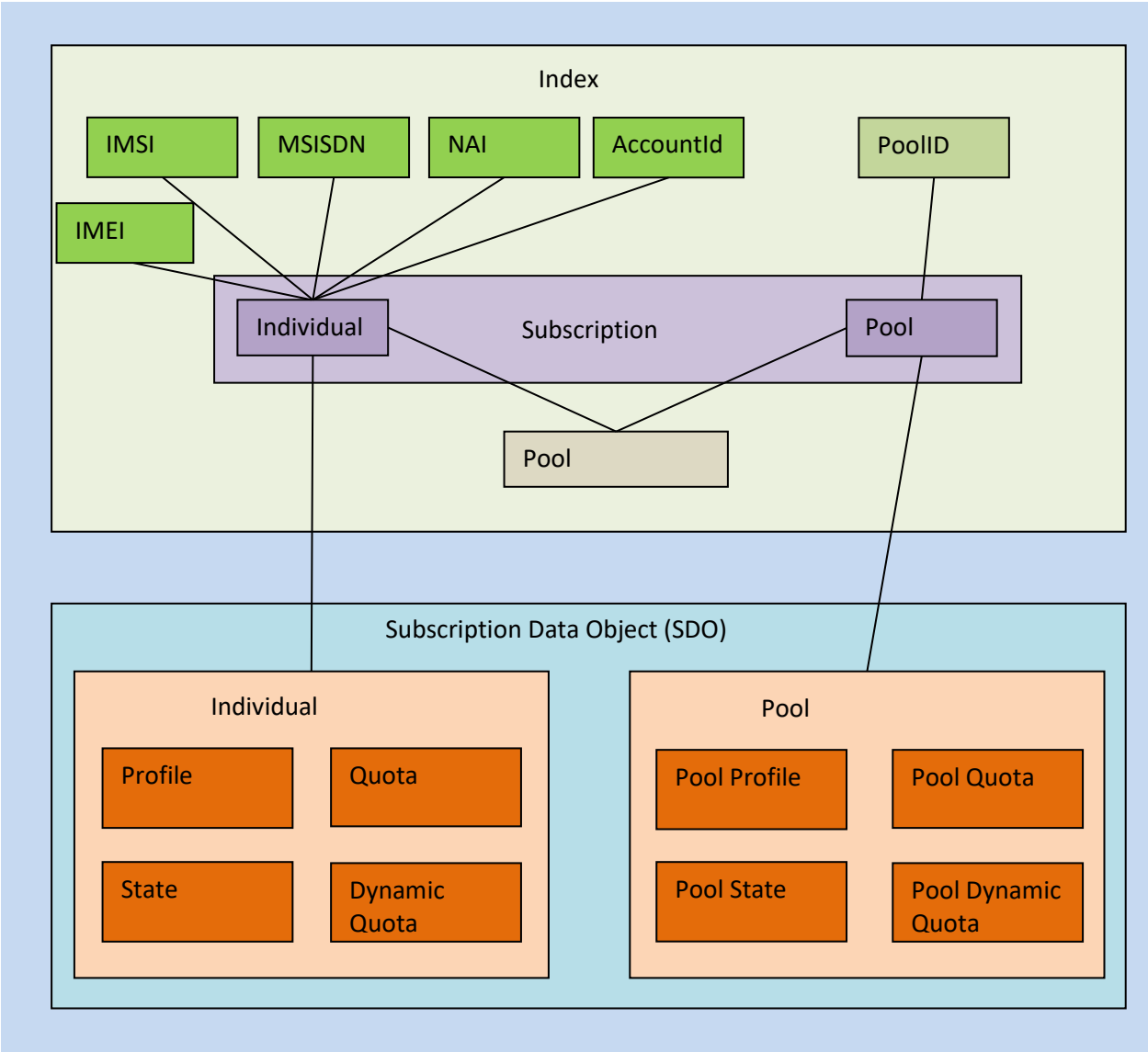
A field in an entity can have a default value. If an entity is created, and the field is not specified, it are created with the default value.

A field in an entity can be defined so that after it is created, it cannot be modified. Any attempt to update the field after creation fails.

A field in an entity can have a reset value. If a reset command is used on the entity, fields with a defined reset value are set to the defined value. This is only applicable to field values in a row for the Quota entity.

NOTE: This section describes the default UDR data model as defined in the Subscriber Entity Configuration (SEC). The data model can be customized via the UDR GUI.

Figure 5: Data Model



5.1 Subscriber Data

5.1.1 Subscriber Profile

The subscriber profile represents the identifying attributes associated with the user. In addition to the base fields indicated their level of service, it also includes a set of custom fields that the provisioning system can use to store information associated with the subscriber. The values in custom fields are generally set by the OSS and are read by the PCRF for use in policies.

The subscriber profile supports the following sequence of attributes. Each record must have at least one key value: MSISDN, IMSI, IMEI,NAI, or AccountId.

BillingDay must be defined with a default value if another value is not specified. The remaining fields are optional, based on the description provided for each.

NOTE: UDR only supports an MSISDN with 8 to 15 numeric digits. A preceding + (plus) symbol is not supported, and is rejected.

Table 8: Subscriber Profile Entity Definition

Name (XML tag)	Type	Description
subscriber		**Sequence (multiplicity = 1)**
MSISDN	String	List of MSISDNs (8 to 15 numeric digits). A separate entry is included for each MSISDN associated with the profile for the subscriber.
IMEI	String	List of IMEIs (8 to 14 numeric digits). A separate entry is included for each IMEI associated with the profile for the subscriber.
IMSI	String	List of IMSIs (10 to 15 numeric digits). A separate entry is included for each IMSI associated with the profile for the subscriber.
NAI	String	User or Domain length is between 0 to 63 characters **NOTE:** The limitation for 0 to 63 characters is because a NAI beyond 63 characters may not be possible to transfer through all devices. The user needs to ensure the combination of User and Domain does not exceed 63 characters (not including the @ character). List of NAIs. A separate entry is included for each NAI associated with the profile for the subscriber. Allowable formats are user@domain, user or @domain The user or domain can be empty. Characters that are allowed for the user: !, %, $, A to Z, a to z, 0 to 9, ., -, _, /, *, =, ^, `, \|, #, ‘, +, ?, {, }, ~ Characters that are allowed for the domain: A to Z, a to z, 0 to 9, ., -, _ **Example NAI Formats** `bob@privatecorp.example.net` `fred$@example.com` `eng.example.net!nancy@example.net` `eng%nancy@example.net` `bob#+ ?@example.net`
AccountId	String	Any string that can be used to identify the account for the subscriber (1 to 255 characters). Allowed values are any ASCII printable character, values x20 to x7e.
BillingDay	String	Allowed values are 0 to 31. The day of the month 1 to 31 when the associated quota for the subscriber is reset. 0 indicates that the default value configured at the PCRF level is used. This is automatically set in any record where BillingDay is not specified.
Entitlement	String	List of entitlements. A separate entry is included for each entitlement associated with the profile for the subscriber.
Tier	String	Tier for the subscriber.
Custom1	String	Fields used to store customer-specific data.
Custom2	String	Fields used to store customer-specific data.
Custom3	String	Fields used to store customer-specific data.
Custom4	String	Fields used to store customer-specific data.

Name (XML tag)	Type	Description
Custom5	String	Fields used to store customer-specific data.
Custom6	String	Fields used to store customer-specific data.
Custom7	String	Fields used to store customer-specific data.
Custom8	String	Fields used to store customer-specific data.
Custom9	String	Fields used to store customer-specific data.
Custom10	String	Fields used to store customer-specific data.
Custom11	String	Fields used to store customer-specific data.
Custom12	String	Fields used to store customer-specific data.
Custom13	String	Fields used to store customer-specific data.
Custom14	String	Fields used to store customer-specific data.
Custom15	String	Fields used to store customer-specific data.
Custom16	String	Fields used to store customer-specific data.
Custom17	String	Fields used to store customer-specific data.
Custom18	String	Fields used to store customer-specific data.
Custom19	String	Fields used to store customer-specific data.
Custom20	String	Fields used to store customer-specific data.

5.1.2 Quota

The Quota entity is used by the PCRF to record the current resource usage associated with a subscriber. A quota entity may contain multiple quota elements, each one tracking a different resource.

The Quota entity is associated with a subscriber record and supports the following sequence of attributes.

NOTES

- The Quota entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, only v3 of Quota is supported.
- The default value given in the table is used either:
  - When a Quota instance is created, and a value is not supplied for the field. In this case, the field is created with the value indicated
  - When a Quota instance is reset using the Reset command. If a field is defined as resettable, and the field exists, then it is set to the value indicated. If the field does not exist in the Quota, it is *not* created.

    NOTE: If a resettable field does not exist, *and* the field is also defined as defaultable, then the field is created with the value indicated

Table 9: Quota Entity Definition

Name (XML tag)	Type	Default Value	Description	Quota Versions
usage			**Sequence (multiplicity is 1)**	1/2/3
version	String		Version of the schema.	1/2/3
quota			**Sequence (multiplicity is N)**	1/2/3
name	String	---	Quota name (identifier)	1/2/3
cid	String	---	Internal identifier used to identity a quota in a subscriber profile.	1/2/3
time	String	Empty string “”	This element tracks the time-based resource consumption for a Quota.	1/2/3
totalVolume	String	“0”	This element tracks the bandwidth volume-based resource consumption for a Quota.	1/2/3
inputVolume	String	“0”	This element tracks the upstream bandwidth volume-based resource consumption for a Quota.	1/2/3
outputVolume	String	“0”	This element tracks the downstream bandwidth volume-based resource consumption for a Quota.	1/2/3
serviceSpecific	String	Empty string “”	This element tracks service-specific resource consumption for a Quota.	1/2/3
nextResetTime	String	Empty string “”	When set, it indicates the time after which the usage counters need to be reset. See section 5.3 for format details.	1/2/3
Type	String	Empty string “”	Type of the resource in use.	2/3
grantedTotalVolume	String	“0”	For pool quota, Granted Total Volume, represents the granted total volume of all the subscribers in the pool. For individual quota, it represents the granted volume to all the PDN connections for that subscriber.	2/3
grantedInputVolume	String	“0”	Granted Input Volume.	2/3
grantedOutputVolume	String	“0”	Granted Output Volume.	2/3
grantedTime	String	Empty string “”	Granted Total Time.	2/3
grantedServiceSpecific	String	Empty string “”	Granted Service Specific Units.	2/3
QuotaState	String	Empty string “”	State of the resource in use.	3
RefInstanceId	String	Empty string “”	Instance-id of the associated provisioned pass, top-up or roll-over.	3

5.1.3 State

The State entity is written by the PCRF to store the state of various properties managed as a part of the policy for the subscriber. Each subscriber may have a state entity. Each state entity may contain multiple properties.

The State entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, there is only one version number of 1.

NOTE: The default fields configured are not:

- Resettable
- Defaultable

The State entity supports the following sequence of attributes:

Table 10: State Entity Definition

Name (XML tag)	Type	Description
state		**Sequence (multiplicity is 1)**
version	String	Version of the schema.
property		**Sequence (multiplicity is N)**
name	String	The property name.
value	String	Value associated with the given property.

5.1.4 Dynamic Quota

The DynamicQuota entity records usage is associated with passes and top-ups. The DynamicQuota entity is associated with the subscriber profile and may be created or updated by either the PCRF or the OSS system.

The DynamicQuota entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, there is only one version number of 1.

NOTE: The default fields configured are not:

- Resettable
- Defaultable

The DynamicQuota entity supports the following sequence of attributes:

Table 11: Dynamic Quota Entity Definition

Name (XML tag)	Type	Description
definition		**Sequence (multiplicity is 1)**
version	String	Version of the schema
DynamicQuota		**Sequence (multiplicity is N)**
Type	String	Identifies the dynamic quota type.
name	String	The class identifier for a pass or top-up. This name is used to match top-ups to quota definitions on the PCRF. This name is used in policy conditions and actions on the PCRF.
InstanceId	String	A unique identifier to identify this instance of a dynamic quota object.

Name (XML tag)	Type	Description
Priority	String	An integer represented as a string. This number allows service providers to specify when one pass or top-up is used before another pass or top-up.
InitialTime	String	An integer represented as a string. The number of seconds initially granted for the pass/top-up.
InitialTotalVolume	String	An integer represented as a string. The number of bytes of total volume initially granted for the pass/top-up.
InitialInputVolume	String	An integer represented as a string. The number of bytes of input volume initially granted for the pass/top-up.
InitialOutputVolume	String	An integer represented as a string. The number of bytes of output volume initially granted for the pass/top-up.
InitialServiceSpecific	String	An integer represented as a string. The number of service specific units initially granted for the pass/top-up.
activationdatetime	String	The date/time after which the pass or top-up may be active. See section 5.3 for format details.
expirationdatetime	String	The date/time after which the pass or top-up is considered to be exhausted. See section 5.3 for format details.
purchasedatetime	String	The date/time when a pass was purchased. See section 5.3 for format details.
Duration	String	The number of seconds after first use in which the pass must be used or expired. If both Duration and expirationdatetime are present, the closest expiration time is used.
InterimReportingInterval	String	The number of seconds after which the GGSN/DPI/Gateway revalidates quota grants with the PCRF.

5.2 Pool Data

5.2.1 Pool Profile

The pool profile includes a set of custom fields that the provisioning system can use to store information associated with the pool. The values in custom fields are generally set by the OSS and are read by the PCRF for use in policies.

Each pool profile must have a unique key value called PoolID.

BillingDay must be defined with a default value if another value is not specified. The remaining fields are only included in the record if they are specified when the record is created/updated.

The pool profile record consists of the sequence of attributes in Table 12.

Table 12: Pool Profile Entity Definition

Name (XML tag)	Type	Description
pool		**Sequence (multiplicity is 1)**
PoolID	String	Pool identifier (1 to 22 numeric digits, minimum value 1).
BillingDay	Uint8	The day of the month 1 to 31 when the associated quota for the pool is reset. 0 indicates that the default value configured at the PCRF level is used.
BillingType	String	The billing frequency, monthly, weekly, daily.
Entitlement	String	List of entitlements. A separate entry is included for each entitlement associated with the profile for the pool.
Tier	String	Tier for the pool.
Type	String	Field used to identify an Enterprise Pool. Allowed value is enterprise and is not case-sensitive
Custom1	String	Fields used to store customer-specific data.
Custom2	String	Fields used to store customer-specific data.
Custom3	String	Fields used to store customer-specific data.
Custom4	String	Fields used to store customer-specific data.
Custom5	String	Fields used to store customer-specific data.
Custom6	String	Fields used to store customer-specific data.
Custom7	String	Fields used to store customer-specific data.
Custom8	String	Fields used to store customer-specific data.
Custom9	String	Fields used to store customer-specific data.
Custom10	String	Fields used to store customer-specific data.
Custom11	String	Fields used to store customer-specific data.
Custom12	String	Fields used to store customer-specific data.
Custom13	String	Fields used to store customer-specific data.
Custom14	String	Fields used to store customer-specific data.
Custom15	String	Fields used to store customer-specific data.
Custom16	String	Fields used to store customer-specific data.
Custom17	String	Fields used to store customer-specific data.
Custom18	String	Fields used to store customer-specific data.
Custom19	String	Fields used to store customer-specific data.

Name (XML tag)	Type	Description
Custom20	String	Fields used to store customer-specific data.

5.2.2 Pool Quota

The PoolQuota entity records usage associated with quotas, passes, top-ups, and roll-overs associated with the pool. The PoolQuota entity is associated with the pool profile and may be created or updated by either the PCRF or the OSS system.

The PoolQuota entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, there is only version number of 3.

The PoolQuota entity attributes are the same as defined for the Quota entity in section 5.1.2.

5.2.3 Pool State

The PoolState entity is written by the PCRF to store the state of various properties managed as a part of the policy for the pool. Each pool profile may have a PoolState entity. Each PoolState entity may contain multiple properties.

The PoolState entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, there is only one version number of 1.

NOTE: The default fields configured are not:

- Resettable
- Defaultable

The PoolState entity attributes are the same as defined for the State entity in section 5.1.3.

5.2.4 Pool Dynamic Quota

The PoolDynamicQuota entity records usage associated with passes and top-ups associated with the pool. The PoolDynamicQuota entity is associated with the pool profile and may be created or updated by either the PCRF or the OSS system.

The PoolDynamicQuota entity contains a version number. Different attributes maybe be present based on the version number value of the entity being accessed. In UDR, there is only one version number of 1.

NOTE: The default fields configured are not:

- Resettable
- Defaultable

The PoolDynamicQuota entity attributes are the same as defined for the DynamicQuota entity in section 5.1.4.

5.3 Date/Timestamp Format

The Date/Timestamp format used by many fields is:

```
CCYY-MM-DDThh:mm:ss[<Z|<+|->hh:mm>]
```

This corresponds to either:

1. *CCYY-MM-DD*T*hh*:*mm*:*ss* (local time)
2. *CCYY-MM-DD*T*hh*:*mm*:*ss*Z (UTC time)
3. *CCYY-MM-DD*T*hh*:*mm*:*ss*+*hh*:*mm* (positive offset from UTC)
4. *CCYY-MM-DD*T*hh*:*mm*:*ss*-*hh*:*mm* (negative offset from UTC)

where:

- CC is century
- YY is year
- MM is month
- DD is day
- T is Date/Time separator
- hh is hour
- mm is minutes
- ss is seconds
- Z is UTC (Coordinated Universal Time)
- +|- is time offset from UTC

The following are valid examples of a field in Date/Timestamp format:

- `2015-06-04T15:43:00` (local time)
- `2015-06-04T15:43:00Z` (UTC time)
- `2015-06-04T15:43:00+02:00` (positive offset from UTC)
- `2015-06-04T15:43:00-05:00` (negative offset from UTC)

Chapter 6. Subscriber Provisioning

NOTE: For command responses, the error code values described are listed in Appendix B.

6.1 Subscriber Profile Commands

Table 13: Summary of Subscriber Profile Commands

Command	Description	Keys	Command Syntax
Create Profile	Create a subscriber or subscriber profile		`<req name="insert">` `  <ent name="Subscriber"/>`
Get Profile	Get subscriber profile data	MSISDN, IMSI, IMEI, NAI or AccountId	`<req name="select">` `  <ent name="Subscriber"/>`
Delete Profile	Delete all subscriber profile data and all opaque data associated with the subscriber		`<req name="delete">` `  <ent name="Subscriber"/>`

6.1.1 Create Profile

Description

This operation creates a subscriber profile using the field-value pairs that are specified in the request content.

Unlike other subscriber commands, keyName and KeyValue are not specified in the request as part of the where element. Request content includes at least one key value (and up to 4 different key types), and field-value pairs, all as specified in the Subscriber Entity Configuration.

NOTES

- The subscriber profile data provided is fully validated against the definition in the SEC. If the validation check fails, then the request is rejected.
- An entire entity for the subscriber can be created by specifying a *cdataFieldName* corresponding to the interface entity name in the SEC, and supplying the entire XML blob value in *cdataFieldValue*.
- Multi-value fields can be specified by a single *fieldNameX* value with a delimited list of values, or multiple *fieldNameX* fields each containing a single value.

Prerequisites

A subscriber with any of the keys supplied in the profile must not exist.

Request

```
<req name="insert" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="keyName1"/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><value val="keyValueN"/></expr>
]
[
    <expr>
<
      <attr name="fieldName1"/><value val="fieldValue1"/>
|
      <attr name="cdataFieldName1"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue1]]></cdata>
>
    </expr>
```

```
    <expr>
<
      <attr name="fieldName2"/><value val="fieldValue2"/>
|
      <attr name="cdataFieldName2"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue2]]></cdata>
>
    </expr>
    :
    <expr>
<
      <attr name="fieldNameN"/><value val="fieldValueN"/>
|
      <attr name="cdataFieldNameN"/><op value="="/>
        <cdata><![CDATA[cdataFieldValueN]]></cdata>
>
    </expr>
]
  </set>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI, NAI or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *fieldNameX*: A user defined field in the subscriber profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *cdataFieldNameX*: A user defined field in the subscriber profile, that represents a transparent or opaque data entity, as per the defined interface entity name in the SEC

  Value is either Quota, State, or DynamicQuota

- *cdataFieldValueX*: Contents of the XML data blob for *cdataFieldNameX*

NOTES

- One key is mandatory. Any combination of key types are allowed. More than one occurrence of each key type (IMSI, MSISDN, IMEI, NAI, or AccountId) is supported, up to an engineering configured limit.
- Key/field order in the request is not important.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see Appendix A for other values
- *affected*: The number of subscribers created by the request. A value of 1 is expected for success

Error Codes 1: Create Profile

Error Code	Description
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field not defined. The given field is not a valid field in the entity as defined in the SEC
KEY_EXISTS	Key exists. A subscriber or pool exists with the given key
MULT_VER_TAGS_FOUND	Multiple Version Tags Found
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
INVALID_XML	Invalid Input XML
AE_KEY_EXISTS	An AE subscriber exists with the given key. Only applicable when option enableAEKeyAlreadyExistsErrCode is enabled

Create Profile Examples

Request 1

A subscriber is created, with an AccountId, MSISDN, and IMSI keys. The BillingDay and Entitlement fields are set. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass,DayPassPlus"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the subscriber was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A subscriber is created, with an AccountId, MSISDN and IMSI keys. Another subscriber exists with the given IMSI.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
   <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPassPlus"/></expr>
  </set>
</req>
```

Response 2

The request fails. The error value indicates a subscriber exists with the given IMSI, and the affected rows are 0.

```
<req name="insert" resonly="y">
  <res error="70020" affected="0"/>
</req>
```

Request 3

A subscriber is created, with an AccountId, MSISDN and IMSI keys. The BillingDay and Entitlement fields are set. The request is not required in the response. Provisioning has been disabled.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass,DayPassPlus"/></expr>
  </set>
</req>
```

Response 3

The request fails. The error value indicates that provisioning has been disabled.

```
<req name="insert" resonly="y">
  <res error="70031" affected="0"/>
</req>
```

Request 4

A subscriber is created, with an AccountId, 2 MSISDNs and IMSI keys. The BillingDay and Entitlement fields are set. The Quota and State entities are also created. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="AccountId"/><value val="178322212122"/></expr>
    <expr><attr name="MSISDN"/><value val="15145551234,15141234567"/></expr>
    <expr><attr name="IMSI"/><value val="302370123456789"/></expr>
    <expr><attr name="BillingDay"/><value val="6"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass,DayPassPlus"/></expr>
    <expr><attr name="Quota"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
                      <usage>
                        <version>3</version>
                        <quota name="Weekend">
                          <totalVolume>100</totalVolume>
                          <Type>quota</Type>
                          <QuotaState>active</QuotaState>
                          <nextResetTime>2014-01-10T02:00:00</nextResetTime>
```

```
                        </quota>
                        <quota name="Evenings">
                          <totalVolume>100</totalVolume>
                          <Type>quota</Type>
                          <QuotaState>active</QuotaState>
                          <nextResetTime>2014-02-01T00:00:00</nextResetTime>
                        </quota>
                      </usage>]]>
      </cdata>
    </expr>
    <expr><attr name="State"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <state>
          <version>1</version>
          <property>
            <name>mcc</name>
            <value>302</value>
          </property>
          <property>
            <name>expire</name>
            <value>2014-02-09T11:20:32</value>
          </property>
        </state>]]>
      </cdata>
    </expr>
  </set>
</req>
```

Response 4

The request is successful, and the subscriber was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A subscriber is created, with an invalid username and/or password in the SOAP header. The request is not required in the response.

```
<soapenv:Header>
<ns1:UserName
    soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
    soapenv:mustUnderstand="1"
    xsi:type="soapenc:string"
    xmlns:ns1="http://www.oracle.com/udr/"
    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">[bad UserName]</ns1:UserName>
<ns1:Passwd
    soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
    soapenv:mustUnderstand="1"
    xsi:type="soapenc:string"
    xmlns:ns2="http://www.oracle.com/udr/"
    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">[invalid Password]</ns1:Passwd>
</soapenv:Header>
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass,DayPassPlus"/></expr>
  </set>
</req>
```

Response 5

The request fails. The error value indicates that username/password authentication failed.

```
<req name="insert" resonly="y">
```

```
  <res error="70054" affected="0"/>
</req>
```

Request 6

A subscriber is created, with an AccountId, MSISDN and IMSI keys. An AE subscriber exists with the given IMSI and enableAEKeyAlreadyExistsErrCode option is enabled.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
   <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPassPlus"/></expr>
  </set>
</req>
```

Response 6

The request fails. The error value indicates an AE subscriber exists with the given IMSI, and the affected rows are 0.

```
<req name="insert" resonly="y">
  <res error="70055" affected="0"/>
</req>
```

Request 7

A subscriber is created, with an AccountId, MSISDN and IMSI keys. An AE subscriber exists with the given IMSI and “enableAEKeyAlreadyExistsErrCode” option is disabled (the default case).

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
   <expr><attr name="AccountId"/><value val="10404723525"/></expr>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="IMSI"/><value val="184569547984229"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPassPlus"/></expr>
  </set>
</req>
```

Response 7

The request fails. The error value indicates a subscriber exists with the given IMSI, and the affected rows are 0.

```
<req name="insert" resonly="y">
  <res error="70020" affected="0"/>
</req>
```

Request 8

A subscriber is created, with IMEI and IMSI keys. The request is not required in the response.

This is an example for UDR for DSR based EIR solution.

```
    <req name="insert" resonly="y">
      <ent name="Subscriber"/>
        <set>
         <expr>
            <attr name="IMEI"/>
            <value val="98765439876546"/>
         </expr>
         <expr>
            <attr name="IMSI"/>
```

```
            <value val="987654398765460"/>
          </expr>
        </set>
      </req>
```

Response 8

The request is successful, and the subscriber was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 9

A subscriber is created with IMEI range as key. The request is not required in the response.

This is an example of IMEI range for UDR for DSR based EIR solution.

```
    <req name="insert" resonly="y">
      <ent name="Subscriber"/>
        <set>
         <expr>
            <attr name="IMEI"/>
            <value val="44111111111111"/>
         </expr>
         <expr>
            <attr name="IMEI"/>
            <value val="44441111111111"/>
         </expr>
         <expr>
            <attr name="WL"/>
            <value val="1"/>
         </expr>
         <expr>
            <attr name="BL"/>
            <value val="0"/>
         </expr>
         <expr>
            <attr name="GL"/>
            <value val="0"/>
         </expr>
        </set>
      </req>
```

Response 9

The request is successful, and the subscriber was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.1.2 Get Profile

Description

This operation retrieves all field-value pairs created for a subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The keyNameX and keyValueX values are required in the request in order to identify the subscriber. The response content includes only valid field-value pairs which have been previously provisioned or created by default.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
          <![CDATA[cdataRowValue]]>
      </rv>
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected for success

  cdataRowValue: Contents of the subscriber profile XML data blob

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned, with a single <rv> (row value) element containing an XML CDATA construct containing the requested subscriber profile data (XML blob).

Error Codes 2: Get Profile

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Profile Examples

Request 1

A request is made to get profile data for a subscriber. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the subscriber profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <subscriber>
              <field name="AccountId">10404723525</field>
              <field name="MSISDN">33123654862</field>
              <field name="IMSI">184569547984229</field>
              <field name="BillingDay">1</field>
              <field name="Tier"></field>
              <field name="Entitlement">Weekpass</field>
              <field name="Entitlement">DayPass</field>
            </subscriber>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get profile data for a subscriber. An IMSI and MSISDN are supplied, and both keys are valid for the same subscriber. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the subscriber profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
```

```
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <subscriber>
              <field name="MSISDN">15145551234</field>
              <field name="IMSI">302370123456789</field>
              <field name="BillingDay">6</field>
              <field name="Tier">Gold</field>
              <field name="Entitlement">Weekpass</field>
            </subscriber>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get profile data for a subscriber. The request is not required in the response.

This is an example for UDR for DSR based EIR solution.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876547"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the subscriber profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <subscriber>
              <field name="IMEI">98765439876547</field>
              <field name="IMSI">987654398765470</field>
              <field name="BL">0</field>
              <field name="GL">0</field>
              <field name="SV">00</field>
              <field name="WL">1</field>
             </subscriber>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 4

A request is made to get profile data for a subscriber. The request is not included in the response.

These are examples with IMEI range for UDR for DSR based EIR solution.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="44111111111111"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the subscriber profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <subscriber>
              <field name="IMEI">44111111111111</field>
              <field name="IMEI">444411111111111</field>
              <field name="BL">0</field>
              <field name="GL">0</field>
              <field name="WL">1</field>
             </subscriber>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 5

A request is made to get profile data for a subscriber. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="44111111111122"/></expr>
  </where>
</req>
```

Response 5

The request is successful since the IMEI subscriber lies in the range and the subscriber profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <subscriber>
              <field name="IMEI">44111111111111</field>
              <field name="IMEI">444411111111111</field>
              <field name="BL">0</field>
              <field name="GL">0</field>
              <field name="WL">1</field>
             </subscriber>]]>
        </rv>
    </row>
  </rset>
</req>
```

6.1.3 Delete Profile

Description

This operation deletes all profile data (field-value pairs) and opaque data for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

The subscriber must not be a member of a pool, or the request fails.

Request

```
<req name="delete" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
```

```
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="delete" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers deleted. A value of 1 is expected for success.

Error Codes 3: Delete Profile

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
SUB_IN_POOL	Subscriber is pool member. The subscriber is a member of a pool. A subscriber cannot be deleted if they are a pool member
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Profile Examples

Request 1

The subscriber with the given MSISDN is deleted. The subscriber exists. The request (by default) is included in the response.

```
<req name="delete">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the original request is included in the response.

```
<req name="delete">
  <req name="delete">
    <ent name="Subscriber"/>
    <where>
      <expr><attr name="MSISDN"/><op value="="/>
            <value val="33123654862"/></expr>
    </where>
  </req>
  <res error="0" affected="1"/>
</req>
```

Request 2

The subscriber with the given MSISDN is deleted. The subscriber does not exist. The request is not included in the response.

```
<req name="delete">
  <ent name="Subscriber" resonly="y"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123655555"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates a subscriber with the given MSISDN does not exist, and the affected rows are 0. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="70019" affected="0"/>
</req>
```

Request 3

The subscriber with the given MSISDN and IMSI is deleted. Subscribers exist with the specified MSISDN and IMSI, but they are not the same subscriber. The request is not included in the response.

```
<req name="delete">
  <ent name="Subscriber" resonly="y"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123655555/></expr>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates a subscriber with the given MSISDN and IMSI does not exist, and the affected rows are 0. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="70043" affected="0"/>
</req>
```

Request 4

The subscriber with the given IMEI is deleted. The subscriber exists. The request (by default) is included in the response.

This is an example for UDR for DSR based EIR solution.

```
<req name="delete">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876547"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the original request is included in the response.

```
<req name="delete">
  <ent name="Subscriber"/>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
            <value val="98765439876547"/>
    </expr>
  </where>
  <res error="0" affected="1"/>
</req>
```

Request 5

The subscriber with the given IMEI range is deleted. The subscriber exists. The request (by default) is included in the response.

This is an example with IMEI range for UDR for DSR based EIR solution.

```
<req name="delete" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr>
      <attr name="IMEI"/>
      <op value="="/>
      <value val="44111111111111"/>
    </expr>
    <expr>
      <attr name="IMEI"/>
      <op value="="/>
      <value val="44441111111111"/>
    </expr>
  </where>
</req>
```

Response 5

The request is successful, and the original request is included in the response.

```
<req name="delete" resonly="y">
  <ent name="Subscriber"/>
  <where>
    <expr>
```

```
      <attr name="IMEI"/>
      <op value="="/>
      <value val="44111111111111"/>
    </expr>
    <expr>
      <attr name="IMEI"/>
      <op value="="/>
      <value val="44441111111111"/>
    </expr>
  </where>
</req>
```

6.2 Subscriber Profile Field Commands

Table 14: Summary of Subscriber Profile Field Commands

Command	Description	Keys	Command Syntax
Add Field Value	Add a value to the specified field. This operation does not affect any pre-existing values for the field	MSISDN, IMSI, IMEI, NAI or AccountId	`<req name="update"><ent name="Subscriber"/><oper name="AddToSet">`
Get Field	Retrieve the values for the specified field		`<req name="select"><ent name="Subscriber"/>`
Update Field	Update fields to the specified values		`<req name="update"><ent name="Subscriber"/>`
Delete Field	Delete all the values for the specified fields		`<req name="update"><ent name="Subscriber"/> … <value val="" isnull="y"/>…`
Delete Field Value	Delete a value for the specified field		`<req name="update"><ent name="Subscriber"/><oper name="RemoveFromSet">`

6.2.1 Add Field Value

Description

This operation adds one or more values to the specified multi-value field for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

This operation can only be performed for the fields defined as multi-value field in the Subscriber Entity Configuration. Any pre-existing values for the field are not affected.

All existing values are retained, and the new values specified are inserted. For example, if the current value of a field was a,b,c, and this command was used with value d, after the update the field has the value a,b,c,d.

NOTES

- If a value being added exists, the request fails.
- The *fieldValue* is case-sensitive. An attempt to add the value a to current field value of a,b,c fails, but an attempt to add the value A is successful and result in the field value being a,b,c,A
- A request to add fields values can also be mixed with a request to update or delete a fields. But, the same field for which an AddToSet operation is being performed cannot also be updated or deleted, else the request fails.
- A request to add fields values using the AddToSet operation can also contain a RemoveFromSet operation to delete fields values. If both operations are included in the same request, the AddToSet is performed before the RemoveFromSet, irrespective of the order in which they are supplied.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The field fieldName must be a valid field in the subscriber profile, and must be a multi-value field.
- Each fieldValueX being added must not be present in the field.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="fieldName1"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
[
      <expr><attr name="fieldName2"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
      :
      <expr><attr name="fieldNameX"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
]
    </oper>
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the subscriber profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTES

- One or more fieldValueX values for a fieldNameX can be supplied. To add more than one value, either supply a comma separated list of values, or include multiple <expr> elements for the field.
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 4: Add Field Value

Error Code	Description
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
VALUE_EXISTS	List value added exists
FLD_NOT_MULTI	Field is not a multi-value field. Add and remove from list operations can only be performed on a multi-value field, and the field supplied is not multi-value
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Add Field Value Examples

Request 1

A request is made to add the value DayPass to the Entitlement field. The Entitlement field is a valid multi-value field. The DayPass value is not present in the Entitlement field. The request is not required in the response. An id value is supplied, which is required in the response.

```
<req name="update" resonly="y" id="13579">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the value was added to the Entitlement field. The original request is not included. The id value was included.

```
<req name="update" resonly="y" id="13579">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to add the values HighSpeed and Unlimited to the Entitlement field. The Entitlement field is a valid multi-value field. Neither value is present in the Entitlement field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Entitlement"/><value val="HighSpeed"/></expr>
      <expr><attr name="Entitlement"/><value val="Unlimited"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the values were added to the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to add the value DayPass to the Entitlement field. The Entitlement field is a valid multi-value field. The DayPass value is present in the Entitlement field. The request is not required in the response. An id value is supplied, which is required in the response.

```
<req name="update" resonly="y" id="13579">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the given value is present, and the affected rows are 0. The original request is not included. The id value was included.

```
<req name="update" resonly="y" id="13579">
  <res error="70033" affected="0"/>
</req>
```

Request 4

A request is made to add the value Gold to the Tier field. The Tier field is not a valid multi-value field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Tier"/><value val="Gold"/></expr>
```

```
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 4

The request fails. The error value indicates the field is not a multi-value field, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70034" affected="0"/>
</req>
```

Request 5

A request is made to add the keys 14161234567 and 19191112222 to the MSISDN field, and also add the DayPass value to the Entitlement field. The subscriber has a single MSISDN value of 15145551234. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="MSISDN"/><value val="14161234567"/></expr>
      <expr><attr name="MSISDN"/><value val="19191112222"/></expr>
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the values were added to the MSISDN and Entitlement fields. The subscriber has 3 MSISDN values of 15145551234, 14161234567, and 19191112222. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 6

A request is made to add the value IMSI field. The IMSI field is a valid multi-value field.There exists only one value for the IMSI field. The request is not required in the response. An id value is supplied, which is required in the response.

```
<req name="update" resonly="y" id="13579">
  <ent name="Subscriber"/>
  <set>
    <oper name="AddToSet">
      <expr> <attr name="IMSI"/><value val="987654398765451"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876545"/></expr>
  </where>
</req>
```

Response 6

The request is successful and the IMSI value was added to the IMSI field. The original request is not included. The id value was included.

```
<req name="update" resonly="y" id="13579">
  <res error="0" affected="1"/>
</req>
```

6.2.2 Get Field

Description

This operation retrieves the values for the specified fields for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

NOTE: An entire entity for the subscriber can be retrieved by specifying an *opaqueDataType* corresponding to the interface entity name in the SEC.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

Each requested field fieldNameX must be a valid field in the subscriber profile.

Each requested opaqueDataTypeX must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="fieldName1"/></expr>
[
    <expr><attr name="fieldName2"/></expr>
    :
    <expr><attr name="fieldNameN"/></expr>
]
[
    <expr><attr name="opaqueDataType1"/></expr>
    <expr><attr name="opaqueDataType2"/></expr>
    :
    <expr><attr name="opaqueDataTypeN"/></expr>
]

  </select>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the subscriber profile
- *opaqueDataTypeX*: A user defined field in the subscriber profile, that represents a transparent or opaque data entity

  Value is either Quota, State, or DynamicQuota

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTES

- At least one fieldNameX/opaqueDataTypeX field must be requested
- The order in which fieldNameX/opaqueDataTypeX are specified in the request is not important
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
[
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
[
<     <rv>cdataRowValue1</rv> | <rv null="y"> >
<     <rv>cdataRowValue2</rv> | <rv null="y"> >
      :
<     <rv>cdataRowValueN</rv> | <rv null="y"> >
]
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected for success
- *rowValueX*: The value of the requested field (for normal fields, not for opaque/transparent entities)

  NOTE: For multi-value fields, the value contains a comma separated list of values on a single line. For example, a,b,c

- *cdataRowValueX*: Contents of the XML data blob (for requested fields that are opaque/transparent entities)

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned. One <rv> (row value) element exists for every fieldNameX or opaqueDataTypeX

supplied in the original request. The <rv> elements are ordered the same as the fieldNameX/opaqueDataTypeX fields were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 5: Get Field

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Field Examples

Request 1

A request is made to get the MSISDN, Entitlement, Tier, and BillingDay fields. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="MSISDN"/></expr>
    <expr><attr name="Entitlement"/></expr>
    <expr><attr name="Tier"/></expr>
    <expr><attr name="BillingDay"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the 4 requested values are returned (the Entitlement is a multi-value field). The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>33123654862</rv>
      <rv>DayPass,WeekPass,Weekend</rv>
      <rv>Prepaid</rv>
      <rv>23</rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the IMSI, Entitlement, Tier, and Custom20 fields. The Entitlement and Tier fields are set in the XML blob, the IMSI field is not set, and the Custom20 field is set, but has an empty value. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="IMSI"/></expr>
    <expr><attr name="Entitlement"/></expr>
```

```
    <expr><attr name="Tier"/></expr>
    <expr><attr name="Custom20"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the 4 requested values are returned (the Entitlement is a multi-value field). The IMSI field is indicated as unset, and the Custom20 field is indicated as empty. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y"/>
      <rv>1,14,2,8</rv>
      <rv>Prepaid</rv>
      <rv></rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the Tier, Rating, and BillingDay fields. The Rating field is not a valid field in a subscriber profile. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="Tier"/></expr>
    <expr><attr name="Rating"/></expr>
    <expr><attr name="BillingDay"/></expr>
  </select>
  <where>
    <expr><attr name="NAI"/><op value="="/>
          <value val="john.smith@operator.com"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates that the Rating field is undefined, and the affected rows are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70015" affected="0"/>
</req>
```

Request 4

A request is made to get the MSISDN and BillingDay fields, as well as the Quota and State entity data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="MSISDN"/></expr>
    <expr><attr name="BillingDay"/></expr>
    <expr><attr name="Quota"/></expr>
    <expr><attr name="State"/></expr>
  </select>
  <where>
```

```
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the 4 requested values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>33123654862</rv>
      <rv>23</rv>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <usage>
            <version>3</version>
            <quota name="AggregateLimit">
              <cid>9223372036854775807</cid>
              <time>3422</time>
              <totalVolume>1000</totalVolume>
              <inputVolume>980</inputVolume>
              <outputVolume>20</outputVolume>
              <serviceSpecific>12</serviceSpecific>
              <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
            </quota>
          </usage>]]>
        </rv>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <state>
            <version>1</version>
            <property>
              <name>mcc</name>
              <value>315</value>
            </property>
            <property>
              <name>expire</name>
              <value>2010-02-09T11:20:32</value>
            </property>
            <property>
              <name>approved</name>
              <value>yes</value>
            </property>
          </state>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 5

A request is made to get the MSISDN field, as well as the DynamicQuota and State entity data. The subscriber does not have any DynamicQuota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="MSISDN"/></expr>
    <expr><attr name="DynamicQuota"/></expr>
    <expr><attr name="State"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the 3 requested values are returned. The DynamicQuota is indicated as being not set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>33123654862</rv>
      <rv null="y"/>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <state>
            <version>1</version>
            <property>
              <name>mcc</name>
              <value>315</value>
            </property>
            <property>
              <name>expire</name>
              <value>2010-02-09T11:20:32</value>
            </property>
            <property>
              <name>approved</name>
              <value>yes</value>
            </property>
          </state>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 6

A request is made to get fields IMSI,GL,WL,BL,SV for the specified IMEI key. The request is not required in the response.

This is an example for UDR for DSR based EIR solution.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="IMSI"/></expr>
    <expr><attr name="GL"/></expr>
    <expr><attr name="BL"/></expr>
    <expr><attr name="WL"/></expr>
    <expr><attr name="SV"/></expr>
  </select>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876545"/></expr>
  </where>
</req>
```

Response 6

The request is successful, and the 5 requested values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>987654398765450</rv>
      <rv>0</rv>
      <rv>0</rv>
      <rv>0</rv>
      <rv>00</rv>
    </row>
  </rset>
</req>
```

Request 7

A request is made to get fields GL,WL,BL for the specified IMEI key in the IMEI range entry. The request is not required in the response.

This is an example for IMEI range for UDR for DSR based EIR solution.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="GL"/></expr>
    <expr><attr name="BL"/></expr>
    <expr><attr name="WL"/></expr>
  </select>
    <where>
      <expr>
        <attr name="IMEI"></attr>
        <op value="="></op>
        <value val="44111111111122"></value>
      </expr>
    </where>
</req>
```

Response 7

The request is successful since the IMEI is in the range, and the 5 requested values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>44111111111122</rv>
      <rv>0</rv>
      <rv>0</rv>
      <rv>0</rv>
    </row>
  </rset>
</req>
```

Request 8

A request is made to get fields GL,WL,BL for the specified IMEI key range. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="GL"/></expr>
    <expr><attr name="BL"/></expr>
    <expr><attr name="WL"/></expr>
  </select>
    <where>
      <expr>
        <attr name="IMEI"></attr>
        <op value="="></op>
        <value val="44111111111111"></value>
      </expr>
      <expr>
        <attr name="IMEI"></attr>
        <op value="="></op>
        <value val="44441111111111"></value>
      </expr>
    </where>
</req>
```

Response 8

The request is successful since the IMEI is in the range, and the 5 requested values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>44111111111122</rv>
      <rv>0</rv>
      <rv>0</rv>
      <rv>0</rv>
    </row>
  </rset>
</req>
```

6.2.3 Update Field

Description

This operation updates a fields to the specified values for the subscriber that is identified by the keys specified in keyNameX and keyValueX. This operation replaces (sets) the values of the fields, which means that any existing values for the fields are deleted first.

For multi-value fields, all existing values are removed and only the new values specified are inserted. Adding values to a current set is accomplished using Add Field Value. For example, if the current value of a field was a,b,c, and this command was used with value d, after the update the field has the value d (it is not a,b,c,d).

All fields are updated at once in the DB. All fields and all values must be valid for the update to be successful. That is, as soon as one error is detected during processing, the request is abandoned (and an error returned). For example, if the third specified field fails validation, then none of the fields are updated.

NOTES

- If the requested fields are valid, but not present, they are created.
- An entire entity for the subscriber can be replaced by specifying a *cdataFieldName* corresponding to the interface entity name in the SEC, and supplying the entire XML blob value in *cdataFieldValue*.
- Multi-value fields can be specified by a single *fieldNameX* value with a delimited list of values, or multiple *fieldNameX* fields each containing a single value.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- Each requested field fieldName must be a valid field in the subscriber profile.
- Each requested cdataFieldName must be a valid non pooled transparent/opaque interface entity name for a subscriber.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <expr>
<
      <attr name="fieldName1"/><value val="fieldValue1"/>
|
      <attr name="cdataFieldName1"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue1]]></cdata>
>
```

```
    </expr>
[
    <expr>
<
      <attr name="fieldName2"/><value val="fieldValue2"/>
|
      <attr name="cdataFieldName2"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue2]]></cdata>
>
    </expr>
    :
    <expr>
<
      <attr name="fieldNameN"/><value val="fieldValueN"/>
|
      <attr name="cdataFieldNameN"/><op value="="/>
        <cdata><![CDATA[cdataFieldValueN]]></cdata>
>
    </expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the subscriber profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *cdataFieldNameX*: A user defined field in the subscriber profile, that represents a transparent or opaque data entity, as per the defined interface entity name in the SEC

  Value is either Quota, State, or DynamicQuota

- *cdataFieldValueX*: Contents of the XML data blob for *cdataFieldNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
```

```
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 6: Update Field

Error Code	Description
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid Input XML
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Update Field Examples

Request 1

A request is made to update the value of the BillingDay field to 23, and the Tier field to Gold. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><value val="23"/></expr>
    <expr><attr name="Tier"/><value val="Gold"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="305801234567890"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the BillingDay value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to update the value of the BillingDay field to 55. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><value val="55"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="305801234567890"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates the value of BillingDay was invalid, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70006" affected="0"/>
</req>
```

Request 3

A request is made to update the value of the BillingDay field to 23, and the entire State entity. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><value val="23"/></expr>
    <expr><attr name="State"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <state>
          <version>1</version>
          <property>
            <name>mcc</name>
            <value>302</value>
          </property>
          <property>
            <name>expire</name>
            <value>2014-02-09T11:20:32</value>
          </property>
        </state>]]>
      </cdata>
    </expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="305801234567890"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the BillingDay and State values were updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to update the value of the Entitlement field using a single field with multiple values. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="Entitlement"/><value val="Weekend,Evening"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="305801234567890"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the Entitlement value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to update the value of the Entitlement field using multiple fields each containing a single value. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="Entitlement"/><value val="Weekend"/></expr>
    <expr><attr name="Entitlement"/><value val="Evening"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="305801234567890"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the Entitlement value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 6

A request is made to update the value of the MSISDN field to 14161234567. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="MSISDN"/>
          <value val="14161234567"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 6

The request is successful, and the MSISDN value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 7

A request is made to update the value of the MSISDN field to 14161234567. The subscriber has 3 existing MSISDN values of 15145551234, 14161234567, and 19191112222. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="MSISDN"/>
          <value val="14161234567"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 7

The request is successful, and the MSISDN value was updated, and has a single value of 14161234567. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 8

A request is made to update the value of the subscribers NAI to two values of mum@foo.com and cust514@op.com. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="NAI"/>
          <value val="mum@foo.com,cust514@op.com"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 8

The request is successful, the NAI field was updated. The subscriber has 2 NAIs. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 9

A request is made to update the value of the BL field to 1. The request is not required in the response.

This is an example for UDR for DSR based EIR solution.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
```

```
  <set>
    <expr><attr name="BL"/><value val="1"/></expr>
  </set>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876545"/></expr>
  </where>
</req>
```

Response 9

The request is successful, and the BL value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 10

A request is made to update the value of the WL field to 0. The request is not required in the response.

This is an example of IMEI range request for UDR for DSR based EIR solution.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="WL"/><value val="0"/></expr>
  </set>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="44111111111111"/></expr>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="44441111111111"/></expr>
  </where>
</req>
```

Response 10

The request is successful, and the WL value was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.2.4 Delete Field

Description

This operation deletes the specified fields for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

If the field is multi-value field then all values are deleted. Deletion of a field results removal of the entire field from the subscriber profile. That is, the field is not present, not just the value is empty.

NOTE: The field being deleted does not need to have a current value. It can be empty (deleted), and the request succeeds.

Prerequisites

- A subscriber with the keys of the keyNameX and keyValueX values supplied must exist.
- Each requested field fieldNameX must be a valid field in the subscriber profile.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="fieldName1"/><op value="="/>
```

```
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
    :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *fieldNameX*: A user defined field in the subscriber profile

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 7: Delete Field

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
ONE_KEY_REQUIRED	At least one key is required for a subscriber
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Field Examples

Request 1

A request is made to delete the BillingDay and Tier fields. Both fields are valid subscriber profile fields. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="BillingDay"/><op value="="/>
          <value val="" isnull="y"/></expr>
    <expr><attr name="Tier"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the two fields were deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the Message field. Message is not a valid subscriber profile fields. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="Message"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates the given field was not found, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70015" affected="0"/>
</req>
```

Request 3

A request is made to delete the MSISDN field. The subscriber has an IMSI and an MSISDN key field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the MSISDN field was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to delete the NAI field. The subscriber only has an NAI key field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="NAI"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="NAI"/><op value="="/>
          <value val="mum@foo.com"/></expr>
  </where>
</req>
```

Response 4

The request fails. The error value indicates the only key cannot be deleted, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70044" affected="0"/>
</req>
```

Request 5

A request is made to delete the IMSI field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="IMEI"/><op value="="/><value val=" 98765439876545"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the IMSI field was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.2.5 Delete Field Value

Description

This operation deletes one or more values from the specified field for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

This operation can only be performed for the fields defined as multi-value field in the Subscriber Entity Configuration.

Each individual value is removed from the subscriber profile. If a supplied value does not exist, then it is ignored. For example, if a profile contains values A,B,C and a request to delete A,B is made, this succeeds and the profile is left with C as the value. If the profile contains A,B,C and a request is made to delete C,D the request succeeds and the profile is left with A,B as the value.

If all values are removed, the entire field is removed from the subscriber profile (an XML element is not present).

NOTES

- The fieldValue is case-sensitive. An attempt to remove the value A from a current field value of A,B,C is successful, but an attempt to remove the value a fails.
- A request to delete fields values can also be mixed with a request to update or delete a fields. But, the same field for which a RemoveFromSet operation is being performed cannot also be updated or deleted, else the request fails.
- A request to delete fields values using the RemoveFromSet operation can also contain a AddToSet operation to add fields values. If both operations are included in the same request, the AddToSet is performed before the RemoveFromSet irrespective of the order in which they are supplied.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The field fieldName must be a valid field in the subscriber profile, and must be a multi-value field.
- Each fieldValueX being removed must be present in the field.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="fieldName1"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
[
      <expr><attr name="fieldName2"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
      :
      <expr><attr name="fieldNameX"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
]
    </oper>
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
```

```
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *fieldNameX*: A user defined field in the subscriber profile
- *fieldValueX*: Corresponding field value assigned to *fieldName*

NOTES

- One or more fieldValueX values for a fieldNameX can be supplied. To remove more than one value, either supply a comma separated list of values, or include multiple <expr> elements for the fielde.
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 8: Delete Field Value

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Error Code	Description
FLD_NOT_MULTI	Field is not a multi-value field. Add and remove from list operations can only be performed on a multi-value field, and the field supplied is not multi-value
ONE_KEY_REQUIRED	At least one key is required for a subscriber
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Field Value Examples

Request 1

A request is made to remove the value DayPass from the Entitlement field. The Entitlement field is a valid multi-value field. The DayPass value is present in the Entitlement field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the value was removed from the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to remove the values WeekendPass and Unlimited from the Entitlement field. The Entitlement field is a valid multi-value field. The WeekendPass value is present in the Entitlement field, but the Unlimited value is not. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="Entitlement"/><value val="WeekendPass"/></expr>
      <expr><attr name="Entitlement"/><value val="Unlimited"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the WeekendPass value was removed from the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
```

```
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to remove the key value 14161234567 from the MSISDN field. The subscriber has 3 MSISDN values, 14161234567, 151454551234 and 15141234567. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="MSISDN"/><value val="14161234567"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the value was removed from the MSISDN field. The subscriber has 2 MSISDN values, 151454551234 and 15141234567. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to remove the value of the IMSI field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="IMSI"/><value val="987654398765451"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="IMEI"/><op value="="/>
          <value val="98765439876545"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the value was removed from the IMSIfield. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.3 Subscriber Opaque Data Commands

Table 15: Summary of Subscriber Opaque Data Commands

Command	Description	Keys	Command Syntax
Create Opaque Data	Create opaque data of the specified type	MSISDN, IMSI, NAI or	`<req name="insert">` `  <ent name="Subscriber"/>`

Command	Description	Keys	Command Syntax
Get Opaque Data	Retrieve opaque data of the specified type	AccountId	`<req name="select">` `  <ent name="Subscriber"/>`
Update Opaque Data	Update opaque data of the specified type		`<req name="update">` `  <ent name="Subscriber"/>`

Delete Opaque Data	Delete opaque data of the specified type		`<req name="update">`
			`  <ent name="Subscriber"/>`
			`  … <value val="" isnull="y"/>…`

6.3.1 Create Opaque Data

Description

This operation creates the opaque data of the specified opaqueDataType for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The opaque data is provided in the request in a <cdata> construct.

NOTE: The opaque data provided in an XML blob is always checked to be valid XML. If the entity is defined as transparent in the SEC, then the XML blob is fully validated against the definition in the SEC. If either validation check fails, then the request is rejected.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The opaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.
- Opaque data of the opaqueDataType does not exist for the subscriber (unless the odk attribute is specified).

Request

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="opaqueDataType"/><op value="="/><cdata>
<![CDATA[
cdataFieldValue
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

Values: 1 to 4294967295

- *odk*: (Optional) Indicates that the insert request is converted to an update if the opaque data type specified exists
- *opaqueDataType*: A user defined type/name for the opaque data

  Value is either Quota, State, or DynamicQuota

- *cdataFieldValue*: Contents of the XML data blob
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers inserted/updated. A value of 1 is expected for success

Error Codes 9: Create Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
MULT_VER_TAGS_FOUND	Multiple Version Tags Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid Input XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Error Code	Description
REG_EXISTS	Register exists
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Create Opaque Data Examples

Request 1

A request is made to create the Quota opaque data. The Quota XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
   <expr><attr name="Quota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>92233720368547758O7</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the Quota opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create the State opaque data. The State XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="State"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
```

```
    <name>approved</name>
    <value>yes</value>
  </property>
</state>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the State opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create the DynamicQuota opaque data. The Quota XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="DynamicQuota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<definition>
  <version>1</version>
  <DynamicQuota name="AggregateLimit">
    <Type>pass</Type>
    <InstanceId>15678</InstanceId>
    <Priority>4</Priority>
    <InitialTime>135</InitialTime>
    <InitialTotalVolume>2000</InitialTotalVolume>
    <InitialInputVolume>1500</InitialInputVolume>
    <InitialOutputVolume>500</InitialOutputVolume>
    <InitialServiceSpecific>4</InitialServiceSpecific>
    <activationdatetime>2015-03-09T11:20:32</activationdatetime>
    <expirationdatetime>2015-04-09T11:20:32</expirationdatetime>
    <InterimReportingInterval>100</InterimReportingInterval>
    <Duration>10</Duration>
  </DynamicQuota>
</definition>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the DynamicQuota opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to create the Location opaque data. The Location XML blob is supplied whole. Location is not a valid opaque data type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Subscriber"/>
```

```
  <set>
    <expr><attr name="Location"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<location>
  <town>Montreal</town>
  <province>Quebec</province>
  <country>Canada</country>
</location>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 4

The request fails. The error value indicates the opaque data type is invalid, and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70015" affected="0"/>
</req>
```

6.3.2 Get Opaque Data

Description

This operation retrieves the opaque data of the specified opaqueDataType for the subscriber that is identified by the Keys in keyNameX and keyValueX.

The response contains the entire XML blob for the requested opaque data.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

The opaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.

The opaque data of the opaqueDataType must exist for the subscriber.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="opaqueDataType"/></expr>
  </select>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

Values: 1 to 4294967295

- *opaqueDataType*: A user defined type/name for the opaque data

  Value is either Quota, State, or DynamicQuota

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
          <![CDATA[cdataRowValue]]>
      </rv>
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected for success
- *cdataRowValue*: Contents of the XML data blob

NOTES

- The `<rset>` (row set) element is optional. It is only present if the request was successful. Only a single `<row>` element is returned, with a single `<rv>` (row value) element containing an XML CDATA construct containing the requested opaque data (XML blob).
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Error Codes 10: Get Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Opaque Data Examples

Request 1

A request is made to get the Quota opaque data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="Quota"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the Quota opaque data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <usage>
              <version>3</version>
              <quota name="AggregateLimit">
                <cid>92233720368547758O7</cid>
                <time>3422</time>
                <totalVolume>1000</totalVolume>
                <inputVolume>980</inputVolume>
                <outputVolume>20</outputVolume>
                <serviceSpecific>12</serviceSpecific>
                <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
              </quota>
            </usage>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the State opaque data. State is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="State"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and indicates that the requested opaque data type does not exist. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y"/>
```

```
    </row>
  </rset>
```

</req>

Request 3

A request is made to get the Location opaque data. Location is not a valid opaque data type. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
  <select>
    <expr><attr name="Location"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the opaque data type is invalid, and the affected rows are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70015" affected="0"/>
</req>
```

Request 4

A request is made to get the State and Quota Entities. State is a valid opaque data type, but the subscriber does not have this opaque data type. The subscriber does have Quota opaque data though. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Subscriber"/>
<select>
    <expr><attr name="Quota"/></expr>
    <expr><attr name="State"/></expr>
</select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and indicates that Quota exists and State does not exist. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <usage>
              <version>3</version>
              <quota name="AggregateLimit">
                <cid>9223372036854775807</cid>
                <time>3422</time>
                <totalVolume>1000</totalVolume>
                <inputVolume>980</inputVolume>
                <outputVolume>20</outputVolume>
                <serviceSpecific>12</serviceSpecific>
```

```
              <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
            </quota>
          </usage>]]>
        </rv>
       <rv null="y"/>
    </row>
  </rset>
</req>
```

6.3.3 Update Opaque Data

Description

This operation updates the opaque data of the specified opaqueDataType for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The opaque data is provided in the request in a <cdata> construct. The existing opaque data is completely replaced by the data supplied in the request.

NOTE: The opaque data provided in an XML blob is always checked to be valid XML. If the entity is defined as transparent in the SEC, then the XML blob is fully validated against the definition in the SEC. If either validation check fails, then the request is rejected.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

The opaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="opaqueDataType"/><op value="="/><cdata>
<![CDATA[
cdataFieldValue
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *opaqueDataType*: A user defined type/name for the opaque data

  Value is either Quota, State, or DynamicQuota

- *cdataFieldValue*: Contents of the XML data blob
- *keyNameX*: A key field in the subscriber profile

Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 11: Update Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid Input XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Update Opaque Data Examples

Request 1

A request is made to update the State opaque data. The State XML blob is supplied whole. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="State"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
```

```
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
    <name>approved</name>
    <value>yes</value>
  </property>
</state>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the State opaque data was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to update the Quota opaque data. Quota is a valid opaque data type, but the subscriber does not have this opaque data type. The Quota XML blob is supplied whole. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
   <expr><attr name="Quota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>92233720368547758O7</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the Quota opaque data was created. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="0"/>
</req>
```

6.3.4 Delete Opaque Data

Description

This operation deletes the opaque data of the specified opaqueDataType for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

Only one opaque data type can be deleted per request.

NOTE: The deletion of a non-existent opaque data type (but that is defined in the SEC) is not considered as an error.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The opaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="opaqueDataType"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *opaqueDataType*: A user defined type/name for the opaque data

  Value is either Quota, State, or DynamicQuota

  NOTE: The data is deleted by setting an empty field value, and also specifying the attribute `isnull="y"`

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers deleted. A value of 1 is expected for success

Error Codes 12: Delete Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Opaque Data Examples

Request 1

A request is made to delete the State opaque data. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="State"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the State opaque data was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the Quota opaque data. Quota is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Subscriber"/>
  <set>
    <expr><attr name="Quota"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, because an error is not returned if the subscriber does not have the opaque data type.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.4 Subscriber Data Row Commands

A transparent data entity may contain data that is organized in rows. An example of a row is a specific quota in the Quota entity.

The row commands allow operations (create, retrieve, update, and delete) at the row level. The required row is identified in the request by the rowIdName/rowIdValue.

NOTE: Subscriber data row commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 16: Summary of Subscriber Data Row Commands

Command	Description	Keys	Command Syntax

Create Row	Insert data row into transparent data of the specified type.	(MSISDN, IMSI, NAI or AccountId) and Row Identifier
		or
		(MSISDN, IMSI, NAI or AccountId) and Row Identifier and Instance Identifier
			`<req name="insert">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`

Get Row	Retrieve data row from transparent data of the specified type.		`<req name="select">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

Delete Row	Delete data row in transparent data of the specified type		`<req name="delete">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

6.4.1 Create Row

Description

This operation creates a data row for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. All fieldNameX fields specified are set in the row.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to update an existing row called DAYPASS is successful, and two rows called DayPass and DAYPASS is present.
- If the transparent entity specified in entityName does not exist for the subscriber, it is created.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.

Request

NOTE: This command allows 2 different formats. One with the keyNameX/keyValueX values in the <set> element, and another with the keyNameX/keyValueX values in a <where> element.

Format 1

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="keyName1"/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><value val="rowIdValue"/></expr>
[
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
</req>
```

Format 2

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="rowIdName"/><value val="rowIdValue"/></expr>
[
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *odk*: (Optional) Indicates that the insert request is converted to an update if the data row for the specified entity exists
- *entityName*: A user defined entity type/name for the transparent data
  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId
- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is name for Quota transparent data
  - Value is `name` for DynamicQuota transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

NOTES

- Rows that have the same *rowIdName*/*rowIdValue* are permitted. Where duplicate rows occur, and an additional field is set to define uniqueness (such as `<cid>` in the Quota entity) validation is not performed by UDR to ensure uniqueness. Unique values must be supplied by the provisioning client otherwise operations (such as updating an existing row) may fail if more than one matching row is found.
- If the `odk="yes"` attribute is set (implying that an update be made if the row exists), then if multiple rows exist for the specified rowIdName/rowIdValue, then the request fails because it is not known which of the multiple rows to update.
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 13 Create Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria **NOTE:** Only returned when the odk="yes" attribute is supplied, and duplicate candidate rows to update are found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Create Row Examples

Request 1

A request is made to create a data row in the QuotaEntity (Quota) data. The data row identifier field is name, and the value is Q1. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="name"/><value val="Q1"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create a data row in the QuotaEntity (Quota) data, using the alternate request format. The data row identifier field is name, and the value is Q2. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="name"/><value val="Q2"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create a data row in the QuotaEntity (Quota) data. Quota is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="15145551234"/></expr>
    <expr><attr name="name"/><value val="Q1"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 3

The request is successful, and the data row as well as the Quota entity is created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to create a data row in the QuotaEntity (Quota) data. The data row identifier field is name, and the value is Q2. The odk attribute is included requesting the data row be updated if it exists. A single row with the name of Q2 exists in the Quota data. The request is not required in the response.

```
<req name="insert" resonly="y" odk="yes">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="name"/><value val="Q2"/></expr>
    <expr><attr name="cid"/><value val="922337203685488888"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 4

The request is successful, and the existing Q2 data row was updated. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to create a data row in the QuotaEntity (Quota) data. The data row identifier field is name, and the value is Q3. The odk attribute is included requesting the data row be updated if it exists. Two rows with the name of Q3 exist in the Quota data. The request is not required in the response.

```
<req name="insert" resonly="y" odk="yes">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="name"/><value val="Q3"/></expr>
    <expr><attr name="cid"/><value val="922337203685477777"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 5

The request fails. The error value indicates that multiple existing rows are found (more than one row has a name of Q3, and hence it is not possible to know which of the two rows to update), and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 6

A request is made to create a data row in the QuotaEntity (Quota) data. The MSISDN, IMSI , and AccountId keys are supplied, which reference the same subscriber. The data row identifier field is name, and the value is Q1. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="15145551234"/></expr>
    <expr><attr name="IMSI"/><value val="302370123456789"/></expr>
    <expr><attr name="AccountId"/><value val="123456"/></expr>
```

```
    <expr><attr name="name"/><value val="Q1"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 6

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 7

A request is made to create a data row in the QuotaEntity (Quota) data, using the alternate request format. The MSISDN and NAI keys are supplied, which reference the same subscriber. The data row identifier field is name, and the value is Q2. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="name"/><value val="Q2"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><attr name="NAI"/><op value="="/>
          <value val="dad@foo.com"/></expr>
  </where>
</req>
```

Response 7

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 8

A request is made to create a data row in the DynamicQuotaEntity (DynamicQuota) data. The MSISDN key is supplied. The data row identifier field is name, and the value is DQ1. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="15145551234"/></expr>
    <expr><attr name="name"/><value val="DQ1"/></expr>
    <expr><attr name="Type"/><value val="top-up"/></expr>
    <expr><attr name="InstanceId"/><value val="15678"/></expr>
```

```
    <expr><attr name="Priority"/><value val="4"/></expr>
    <expr><attr name="InitialTime"/><value val="135"/></expr>
    <expr><attr name="InitialTotalVolume"/><value val="2000"/></expr>
    <expr><attr name="InitialInputVolume"/><value val="1500"/></expr>
    <expr><attr name="InitialOutputVolume"/><value val="500"/></expr>
    <expr><attr name="InitialServiceSpecific"/><value val="4"/></expr>
    <expr><attr name="activationdatetime"/><value val="2015-05-22T00:00:00-05:00"/></expr>
    <expr><attr name="expirationdatetime"/><value val="2015-05-29T00:00:00-05:00"/></expr>
    <expr><attr name="InterimReportingInterval"/><value val="100"/></expr>
    <expr><attr name="Duration"/><value val="10"/></expr>
  </set>
</req>
```

Response 8

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.4.2 Get Row

Description

This operation retrieves a data rows for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue.

All data rows that match the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified) are returned.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to retrieve a row called DayPass is successful, but an attempt to retrieve a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to retrieve a row with a field with the value Data is successful, but an attempt to retrieve a row with a field with the value DATA fails.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- The transparent entity must exist for the subscriber.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
```

```
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is name for Quota transparent data
  - Value is `name` for DynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the Quota transparent data
  - Value is `InstanceId` or `Type` for the DynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<
      <rv>
          <![CDATA[cdataRowValue1]]>
      </rv>
|
      <rv null="y"/>
>
    </row>
[
    <row>
      <rv>
          <![CDATA[cdataRowValue2]]>
      </rv>
    </row>
    :
    <row>
      <rv>
          <![CDATA[cdataRowValueN]]>
      </rv>
    </row>
]
```

```
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 or more is expected for success, whether or not a row was found
- *cdataRowValueN*: Contents of the XML data blob containing one requested/matching data row

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. One <row> element is returned per matching row, with a single <rv> (row value) element containing an XML CDATA construct containing a single requested data row instance.
- If the transparent entity exists, but the row value was not found, then the <rv> (row value) indicates the row does not exist by containing the value <rv null="y"/>.
- Multiple subscriber key values can be supplied. See section 2.11 for details.

Error Codes 14: Get Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Row Examples

Request 1

A request is made to get the Q1 data row from the Quota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the Quota data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
```

```
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Q1">
            <cid>9223372036854775807</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the Weekend data row from the Quota data. The Quota data contains two rows called Weekend. One with <cid> of 11223344, the other with a <cid> of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and 2 Quota data rows are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>11223344</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>99887766</cid>
            <time>1232</time>
            <totalVolume>2000</totalVolume>
            <inputVolume>440</inputVolume>
            <outputVolume>8220</outputVolume>
            <serviceSpecific>99</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
```

```
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the Weekend data row from the Quota data, with the <cid> value of 11223344. The Quota data contains two rows called Weekend. One with <cid> of 11223344, the other with a <cid> of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the Quota data with a <cid> of 11223344 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>11223344</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 4

A request is made to get the LateNight data row from the Quota data, with the <cid> value of 11223344. The Quota data contains four rows called LateNight. Two with <cid> of 11223344, one with a <cid> of 99887766, and one with a <cid> of 55556666. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="LateNight"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the 2 Quota data rows with a <cid> of 11223344 are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="LateNight">
            <cid>11223344</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="LateNight">
            <cid>11223344</cid>
            <time>1232</time>
            <totalVolume>2000</totalVolume>
            <inputVolume>440</inputVolume>
            <outputVolume>8220</outputVolume>
            <serviceSpecific>99</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 5

A request is made to get the Weekday data row in the Quota data. The Weekday data row does not exist in the Quota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekday"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and indicates that the requested row does not exist. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y"/>
    </row>
```

```
  </rset>
</req>
```

Request 6

A request is made to get the Weekday data row in the Quota data. Quota is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekday"/></expr>
  </where>
</req>
```

Response 6

The request fails. The error value indicates the opaque data type is not found, and the affected rows are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

Request 7

A request is made to get the DQ1 data row from the DynamicQuota data, with the InstanceId value of 11223344. The DynamicQuota data contains four rows called DQ1. Two with InstanceId of 11223344, one with an InstanceId of 99887766 and one with an InstanceId of 55556666. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="DQ1"/></expr>
    <expr><attr name="InstanceId"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 7

The request is successful and the 2 DynamicQuota data rows with an InstanceId of 11223344 are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <definition>
          <version>1</version>
          <DynamicQuota name="DQ1">
            <Type>pass</Type>
            <InstanceId>11223344</InstanceId>
            <Priority>4</Priority>
            <InitialTime>135</InitialTime>
            <InitialTotalVolume>2000</InitialTotalVolume>
            <InitialInputVolume>1500</InitialInputVolume>
            <InitialOutputVolume>500</InitialOutputVolume>
            <InitialServiceSpecific>4</InitialServiceSpecific>
            <activationdatetime>2015-05-22T00:00:00-05:00</activationdatetime>
            <expirationdatetime>2015-05-29T00:00:00-05:00</expirationdatetime>
            <InterimReportingInterval>100</InterimReportingInterval>
            <Duration>10</Duration>
```

```
          </DynamicQuota>
        </definition>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <definition>
          <version>1</version>
          <DynamicQuota name="DQ1">
            <Type>top-up</Type>
            <InstanceId>11223344</InstanceId>
            <Priority>3</Priority>
            <InitialTime>125</InitialTime>
            <InitialTotalVolume>1000</InitialTotalVolume>
            <InitialInputVolume>500</InitialInputVolume>
            <InitialOutputVolume>500</InitialOutputVolume>
            <InitialServiceSpecific>4</InitialServiceSpecific>
            <activationdatetime>2015-05-22T00:00:00-05:00</activationdatetime>
            <expirationdatetime>2015-05-29T00:00:00-05:00</expirationdatetime>
            <InterimReportingInterval>100</InterimReportingInterval>
            <Duration>10</Duration>
          </DynamicQuota>
        </definition>]]>
      </rv>
    </row>
  </rset>
</req>
```

6.4.3 Delete Row

Description

This operation deletes a data row for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then all matching rows are deleted.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to delete a row called DayPass is successful, but an attempt to delete a row called DAYPASS fails
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.
- The deletion of a non-existent data row is not considered an error.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- The transparent entity must exist for the subscriber.

Request

```
<req name="delete" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
```

```
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is name for Quota transparent data
  - Value is `name` for DynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the Quota transparent data
  - Value is `InstanceId` or `Type` for the DynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="delete" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values

- *affected*: A value of 1 indicates the rows existed and were deleted, or that the row did not exist

Error Codes 15: Delete Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Row Examples

Request 1

A request is made to delete the Q1 data row in the Quota data. The Q1 data row exists in the Quota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the data row in the Quota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the Weekend data row in the Quota data. The Weekend data row does not exist in the Quota data. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request is successful, because an error is not returned if the data row is not present. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to delete the Q3 data row in the Quota data. The Quota data contains two rows called Q3. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the data row in the Quota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to delete the Q4 data row from the Quota data, with the <cid> value of 11223344. The Quota data contains two rows called Q4. One with <cid> of 11223344, the other with a <cid> of 99887766. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q4"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the data row in the Quota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to delete the Bonus data row in the Quota data. QuotaEntity is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="QuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Bonus"/></expr>
  </where>
</req>
```

Response 5

The request fails. The error value indicates the opaque data type is not found, and the affected rows are 0. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

Request 6

A request is made to delete the DQ1 data row from the DynamicQuota data, with the Type value of pass. The DynamicQuota data contains two rows called DQ1. One with Type of pass the other with a Type of top-up. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
<expr><attr name="name"/><op value="="/>
      <value val="DQ1"/></expr>
<expr><attr name="Type"/><op value="="/>
      <value val="pass"/></expr>
  </where>
</req>
```

Response 6

The request is successful, and the data row in the DynamicQuota data was deleted that matched the Type. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.5 Subscriber Data Row Field Commands

A transparent data entity may contain data that is organized in rows. An example of a row is a specific quota in the Quota entity.

The row/field commands allow operations (retrieve/update/delete) at the row/field level. The required row is identified in the request by the rowIdName/rowIdValue, and the field is identified by the fieldName.

NOTE: Subscriber data row field commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 17: Summary of Subscriber Data Row Field Commands

Command	Description	Keys	Command Syntax

Get Row
Field
	Retrieve values for the specified fields	(MSISDN, IMSI, NAI or AccountId) and Row Identifier and Field name	`<req name="select">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

Command	Description	Keys	Command Syntax

Update Row Field	Update fields to the specified values	or (MSISDN, IMSI, NAI or AccountId) and Row Identifier, Instance Identifier and Field name	`<req name="update">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

Delete Row Field	Delete all values for the specified fields		`<req name="update">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

6.5.1 Get Row Field

Description

This operation retrieves a fields in a data row for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX.

All data rows that match the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified) are returned.

NOTES

- If the specified row does not exist, the request fails. If the specified row exists, but the field does not exist, this is not treated as an error, and empty field data returns.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to get a field in a row called DayPass is successful, but an attempt to get a field in a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- A data row with the given identifier/instance in the transparent data must exist for the subscriber.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <select>
    <expr><attr name="fieldName1"/><value val="[fieldValue1]"/></expr>
```

```
[
    <expr><attr name="fieldName2"/><value val="[fieldValue2]"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="[fieldValueN]"/></expr>
]
  </select>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: (Optional) Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is name for Quota transparent data
  - Value is `name` for DynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the Quota transparent data
  - Value is `InstanceId` or `Type` for the DynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
```

```
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
[
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
    :
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
]
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected if the specified row exists (whether or not the field was found). A value of 0 is expected if the row does not exist
- *rowValue*: The value of the requested field

  NOTE: for multi-value fields, the value contains a comma separated list of values on a single line. For example, a,b,c

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. One <row> element is returned per matching row. One <rv> (row value) element exists for every fieldNameX supplied in the original request. The <rv> elements are ordered the same as the fieldNameX fields were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 16: Get Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Row Field Examples

Request 1

A request is made to get the inputVolume field in the Q1 data row of the Quota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="inputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the requested field value 980 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>980</rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the outputVolume and cid fields in the Q2 data row of the Quota data. The Quota data contains two rows called Q2. One with <cid> of 11223344, the other with a <cid> of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
    <expr><attr name="cid"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q2"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the requested field values are returned from each row. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>220</rv>
      <rv>11223344</rv>
    </row>
    <row>
      <rv>1050</rv>
      <rv>99887766</rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the outputVolume field in the Q3 data row of the Quota data, with the <cid> value of 11223344. The Quota data contains two rows called Q3. One with <cid> of 11223344, the other with a <cid> of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the requested field value 4000 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>4000</rv>
    </row>
  </rset>
</req>
```

Request 4

A request is made to get the inputVolume, outputVolume, and totalVolume fields in the Q1 data row of the Quota data. The inputVolume field is present in the Q1 quota, the outputVolume field is present in the Q1 quota, but has an empty value, and the totalVolume field is not present in the Q1 quota (but is a valid field). The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="inputVolume"/></expr>
    <expr><attr name="outputVolume"/></expr>
    <expr><attr name="totalVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
```

```
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the requested field values are returned. The inputVolume field is set to 980, the outputVolume field is indicated as being present, but empty, and the totalVolume field is indicated as not being present. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>980</rv>
      <rv></rv>
      <rv null="y"/>
    </row>
  </rset>
</req>
```

Request 5

A request is made to get the outputVolume field in the Q1 data row of the Quota data. The Q1 row exists, but the outputVolume field is not set. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the field is indicated to not be set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y">
    </row>
  </rset>
</req>
```

Request 6

A request is made to get the outputVolume field in the Q2 data row of the Quota data. The Q2 row does not exist. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="QuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q2"/></expr>
  </where>
</req>
```

Response 6

The request fails. The error value indicates the row does not exist, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70032" affected="0"/>
</req>
```

Request 7

A request is made to get the InstanceId, InitialTotalVolume and InitialInputVolume fields in the DQ3 data row of the Dynamic Quota data, with the InstanceId value of 15678. The Dynamic Quota data contains two rows called DQ3. One with InstanceId of 15570, the other with an InstanceId of 15678. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <select>
    <expr><attr name="InstanceId"/></expr>
    <expr><attr name="InitialTotalVolume"/></expr>
    <expr><attr name="InitialInputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><attr name="name"/><op value="="/>
          <value val="DQ3"/></expr>
    <expr><attr name="InstanceId"/><op value="="/>
          <value val="15678"/></expr>
  </where>
</req>
```

Response 7

The request is successful, and the requested field values of InstanceId, InitialTotalVolume and InitialInputVolume fields are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>15678</rv>
      <rv>2000</rv>
      <rv>1500</rv>
    </row>
  </rset>
</req>
```

6.5.2 Update Row Field

Description

This operation updates a fields in a data row for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX. If the specified fields are valid, but do not exist, they are created.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then the update request fails.

NOTES

- If the specified row does not exist, the request fails.

- If the requested fields are valid, but not present, they are created.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to update a field in a row called DayPass is successful, but an attempt to update a field in a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.
- Multiple subscriber key values can be supplied. See section 2.11 for details.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- The data row with the given identifier/instance in the transparent data must exist for the subscriber.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
              :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is name for Quota transparent data
  - Value is `name` for Dynamic `Quota` transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance
  - Value is `cid` or `Type` for the Quota transparent data
  - Value is `InstanceId` or `Type` for the DynamicQuota transparent data
- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 17: Update Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Update Row Field Examples

Request 1

A request is made to update the inputVolume field in the Q1 data row of the Quota data. The Q1 data row exists in the Quota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req
```

Response 1

The request is successful, and the field in the data row in the Quota data was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to update the cid field in the Q1 data row in the Quota data. The Q1 data row exists in the Quota data, and is there is only one row called Q1. The cid field is not allowed to be updated. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="cid"/><value val="11223344"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates the cid field cannot be updated, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70016" affected="0"/>
</req>
```

Request 3

A request is made to update the outputVolume field in the Q6 data row of the Quota data. The Q6 data row exists in the Quota data, but there are two rows called Q6. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="outputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q6"/></expr>
  </where>
</req
```

Response 3

The request fails because there was more than one row called Q6. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 4

A request is made to update the InitialTotalVolume and InitialInputVolume fields in the DQ1 data row of the DynamicQuota data, with the InstanceId value of 15678. The DQ1 data row exists in the DynamicQuota data, but there are two rows called DQ1 one with InstanceId of 15570, the other with an InstanceId of 15678. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <set>
    <expr><attr name="InitialTotalVolume"/><value val="1000"/></expr>
    <expr><attr name="InitialInputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><attr name="name"/><op value="="/>
          <value val="DQ1"/></expr>
    <expr><attr name="InstanceId"/><op value="="/>
          <value val="15678"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the InitialTotalVolume and InitialInputVolume fields in the data row with InstanceId value of 15678 were updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.5.3 Delete Row Field

Description

This operation deletes a fields in a data row for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then the delete request fails.

NOTES

- If the specified row does not exist, the request fails. If the specified row exists, but the field does not exist, this is not treated as an error, and row/field data is not deleted.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to delete a field in a row called DayPass is successful, but an attempt to delete a field in a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a field in a row with a field with the value Data is successful, but an attempt to delete a field in a row with a field with the value DATA fails.
- Multiple subscriber key values can be supplied. See section 2.11 for details.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- At least one data row with the given identifier/instance in the transparent data must exist for the subscriber.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><op value="="/>
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
              :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
```

```
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is QuotaEntity for the Quota transparent data
  - Value is `DynamicQuotaEntity` for the DynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is name for Quota transparent data
  - Value is `name` for DynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the Quota transparent data
  - Value is `InstanceId` or `Type` for the DynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values

- *affected*: The number of subscribers updated. A value of 1 indicates the row existed and the field was deleted. A value of 0 indicates the field did not exist

Error Codes 18: Delete Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Row Field Examples

Request 1

A request is made to delete the inputVolume field in the Q1 data row of the Quota data. The Q1 data row exists in the Quota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the field in the data row in the Quota data was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the outputVolume field in the Q3 data row of the Quota data. The Quota data contains two rows called Q3. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="outputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
  </where>
</req>
```

Response 2

The request fails, because there are two Quota rows called Q3. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 3

A request is made to delete the outputVolume field in the Q4 data row of the Quota data with the cid 11223344. The Q4 data row exists in the Quota data, and is there are two rows called Q4, one with cid 11223344 and one with cid 99887766. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="outputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q4"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the outputVolume field in the Q4 data row in the Quota data was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to delete the InitialInputVolume field in the DQ1 data row of the DynamicQuota data with the InstanceId 11223344. The DQ1 data row exists in the DynamicQuota data, and is there are two rows called DQ1, one with InstanceId 11223344 and one with InstanceId 99887766. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="DynamicQuotaEntity"/>
  <set>
    <expr><attr name="InitialInputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
```

```
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
    <expr><attr name="name"/><op value="="/>
          <value val="DQ1"/></expr>
<expr><attr name="InstanceId"/><op value="="/>
      <value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the InitialInputVolume field in the DQ1 data row in the DynamicQuota data was deleted for the row with the specified InstanceId. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to delete the inputVolume field in the Q1 data row of the Quota data. The Q1 data row exists in the Quota data, there is only one row called Q1 and the inputVolume field does not exist. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="QuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 5

The request is successful and the original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

6.6 Subscriber Data Field Commands

A transparent data entity may contain data that is organized in fields where each field is defined as a name value pair ing an element. For example, the State entity has a <name> element for the name, and a <value> element for the value, in a <property> element.

```
<property>
  <name>fieldName</name>
  <value>fieldValue</value>
</property>
```

The data commands allow operations (create/retrieve/update/delete) at the field level. The required field is identified in the request by the fieldName.

NOTE: Subscriber data field commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 18: Summary of Subscriber Data Commands

Command	Description	Keys	Command Syntax
Create Data Field	Create/update data field in transparent data of the specified type.	(MSISDN, IMSI, NAI or AccountId) and Field Name	`<req name="insert"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Get Data Field	Retrieve data field from transparent data of the specified type.		`<req name="select"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Update Data Field	Update data field in transparent data of the specified type.		`<req name="update"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Delete Data Field	Delete data field in transparent data of the specified type.		`<req name="update"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`

6.6.1 Create Data Field

Description

This operation creates or updates a field in a transparent data for the subscriber identified by the keyNameX and keyValueX.

The field name is specified in fieldNameX, and the field value is specified in fieldValueX.

If the specified field does not exist, it is created. If the field does exist, it is updated/replaced only if the optional odk flag is set to yes.

NOTES

- The *fieldNameX* is not case-sensitive. If a field existed called mcc, then an attempt to create/update an existing field called MCC is successful.
- If the transparent entity specified in entityName does not exist for the subscriber, it is created.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.

Request

NOTE: This command allows 2 different formats. One with the *keyNameX*/*keyValueX* values in the <set> element, and another with the *keyNameX*/*keyValueX values* in a <where> element.

Format 1

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="keyName1"/><value val="keyValue1"/></expr>
[
```

```
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
<expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
              :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]

  </set>
</req>
```

Format 2

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
<expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
              :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]

  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
  </set>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  `Values: 1 to 4294967295`

- *odk*: (Optional) Indicates that the insert request is converted to an update if the field for the specified entity exists
- *entityName*: A user defined entity type/name for the transparent data

  Value is StateEntity for the State transparent data

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *fieldNameX:* The requested user defined field in the subscriber profile.

  For the State entity, this corresponds to a property in the entity

  - The *fieldNameX* case is stored exactly as it was sent in the request (This means the original case stored changes if an update is received)

- *fieldValueX:* Corresponding field value assigned to *fieldNameX.*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 19: Create Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber
REG_EXISTS	The property exists and the odk flag was not set to indicate the insert request be converted to an update.

Create Data Field Examples

Request 1

A request is made to create a property in the State transparent data for a subscriber. The property name is mcc and the property value is 315. The subscriber does not have an existing State property called mcc. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="15145551234"/></expr>
```

```
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the property mcc with value 315 was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create a property in the State transparent data for a subscriber, using the alternate request format. The property name is mcc and the property value is 315. The subscriber does not have an existing State property called mcc. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the property mcc with value 315 was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create a property in the State transparent data for a subscriber. State is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="15145551234"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 3

The request is successful, and the property as well as the State entity is created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to create a property in the State transparent data for a subscriber. The property name is mcc and the property value is 315. (The property exists) The odk attribute is included requesting the data be updated if it exists. The request is not required in the response.

```
<req name="insert" resonly="y" odk="yes">
  <ent name="StateEntity"/>
```

```
  <set>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 4

The request is successful, and the mcc property was updated. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to create a property in the State transparent data for a subscriber. The property name is mcc and the property value is 315. (The property exists) The odk attribute is not included (requests the data be updated if it exists.) The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="MSISDN"/><value val="33123654862"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 5

The request fails. The error value indicates the mcc property exists, and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70028" affected="0"/>
</req>
```

6.6.2 Get Data Field

Description

This operation retrieves a field for the subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The field is specified in fieldNameX. The fields that match the requested fieldNameX are returned.

NOTES

- If the specified field does not exist, `null="y"` is returned.
- The *fieldNameX* is not case-sensitive. If a field existed called mcc, then an attempt to get a field name called MCC is successful.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.
- A field with the given identifier in the transparent data must exist for the subscriber.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <select>
    <expr><attr name="fieldName1"/></expr>
[
```

```
    <expr><attr name="fieldName2"/></expr>
              :
    <expr><attr name="fieldNameN"/><expr>
]
  </select>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is StateEntity for the State transparent data

- *fieldNameX*: The requested user defined field in the subscriber profile.

  For the State entity, this corresponds to a property in the entity

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<     <rv>fieldValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>fieldValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>fieldValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected if the specified data exists (whether or not the field was found). A value of 0 is expected if the data does not exist
- *fieldValueX*: The value of the requested field

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. One <row> element is returned per matching data. One <rv> (field value) element exists for every fieldNameX supplied in the original request. The <rv> elements are ordered the same as the fieldNameX properties were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 20: Get Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Get Data Field Examples

Request 1

A request is made to get three state properties from the State transparent data for a subscriber. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="StateEntity"/>
  <select>
<expr><attr name="mcc"/></expr>
<expr><attr name="expire"/></expr>
    <expr><attr name="duration"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 1

The request is successful, two values are returned and one property was indicated to not be set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>315</rv>
      <rv>2015-02-09T11:20:32</rv>
      <rv null="y"/>
    </row>
```

```
  </rset>
</req>
```

Request 2

A request is made to get the mcc property in the State transparent data for a subscriber. The mcc property is not set. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="StateEntity"/>
  <select>
    <expr><attr name="mcc"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the property is indicated to not be set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y">
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the mcc property in the State transparent data for a subscriber. The State Entity does not exist. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="StateEntity"/>
  <select>
    <expr><attr name="mcc"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the state entity does not exist, and the affected subscribers are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

6.6.3 Update Data Field

Description

This operation updates an existing field in a transparent data for the subscriber identified by the keyNameX and keyValueX.

The field name is specified in fieldNameX, and the field value is specified in fieldValueX.

If more than one existing field matches the requested fieldNameX, then the update request fails.

NOTES

- If the requested fields are valid, but not present, they are created.
- The *fieldNameX* is not case-sensitive. If a field name existed called mcc, then an attempt to update a field called MCC is successful.
- Multiple subscriber key values can be supplied. See section 2.11 for details.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is StateEntity for the State transparent data

- *fieldNameX*: The requested user defined field in the subscriber profile.

  For the State entity, this corresponds to a property in the entity

  - The *fieldNameX* case is stored exactly as it was sent in the request (This means the original case stored changes if an update is received)

- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 is expected for success

Error Codes 21: Update Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Update Data Field Examples

Request 1

A request is made to update the mcc and approved properties of the State transparent data for a subscriber. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="mcc"/><value val="302"/></expr>
    <expr><attr name="approved"/><value val="no"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
```

```
  </where>
</req>
```

Response 1

The request is successful, and mcc and approved property values are updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
```

Request 2

A request is made to update the approved properties in the State data. The State Entity does not exist for the subscriber. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="approved"/><value val="no"/></expr>
  </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </where>
</req
```

Response 2

The request fails because the State entity does not exist for the subscriber. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

6.6.4 Delete Data Field

Description

This operation deletes a data field in a transparent data for the subscriber identified by the keyName and keyValue.

The field identifier is specified in fieldName.

If more than one data field matches the requested fieldName, then all matching fields are deleted.

NOTES

- The deletion of a non-existent field is not considered an error.
- The *fieldNameX* is not case-sensitive. If a field existed called mcc, then an attempt to delete a field called MCC is successful.
- Multiple subscriber key values can be supplied. See section 2.11 for details.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The entityName must reference a valid transparent Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
```

```
    <expr><attr name="fieldName1"/><op value="="/>
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
              :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
  </set>
  <where>
    <expr><attr name="keyName1"/><op value="="/><value val="keyValue1"/></expr>
[
    <expr><attr name="keyName2"/><op value="="/><value val="keyValue2"/></expr>
    :
    <expr><attr name="keyNameN"/><op value="="/><value val="keyValueN"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is StateEntity for the State transparent data

- *fieldNameX*: The requested user defined field in the subscriber profile.

  For the State entity, this corresponds to a property in the entity

- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers updated. A value of 1 indicates the field was deleted. A value of 0 indicates the field did not exist

Error Codes 22: Delete Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Delete Data Field Examples

Request 1

A request is made to delete the mcc property of the State transparent data for a subscriber. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="mcc"/><op value="="/><value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
  </where>
</req>
```

Response 1

The request is successful and mcc property is deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the mcc property in State data for a subscriber. The mcc property does not exist for the State data. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="mcc"/><op value="="/><value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
  </where>
</req>
```

Response 2

The request is successful and the original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to delete the mcc property in State data for a subscriber. The StateEntity does not exist for the subscriber. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="StateEntity"/>
  <set>
    <expr><attr name="mcc"/><op value="="/><value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the subscriber does not have State data, and the affected rows are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

6.7 Subscriber Special Operation Commands

A transparent data entity may contain data that is organized in rows. An example of a row is a specific quota in the Quota entity.

The required row is identified in the request by the rowIdName/rowIdValue.

A specific instance of a quota (a specified row) in the Quota transparent data entity can have its fields reset to pre-defined values using a provisioning command.

Table 19: Summary of Subscriber Special Operation Commands

Command	Description	Keys	Command Syntax
Reset Quota	Reset the fields in the specified Quota	(MSISDN, IMSI, NAI or AccountId) and Row Identifier	Format 1 <req name="operation"> <oper name="Reset" ent="entityName">
			(different/old supported format) Format 2 <req name="operation"> <oper name="ResetQuota">
GetSubscriptionStatus	Retrieve Subscriber's Notification Subscription Data	(MSISDN, IMSI, NAI or AccountId)	<req name="operation" resonly="y"> <oper name="GetSubscriptionStatus">

6.7.1 Reset Quota

Description

This operation resets a particular quota row in the Quota data associated with a subscriber.

If more than one row matches the requested rowIdName, then the reset request fails.

If the subscriber has Quota data, then the configured values in the specified quota row are reset to the configured default values.

NOTES

- The *rowIdName* is case-sensitive. If a row existed called DayPass, then an attempt to reset a quota row called DayPass is successful, but an attempt to reset a quota row called DAYPASS fails.
- When a Quota instance is reset using the Reset Quota command, each resettable field is set to its defined reset value. If the field does not exist, it is not created. But, if a resettable field does not exist, and the field has a default value, then the field is created with the default value.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The Quota transparent data must exist for the subscriber.
- The specified Quota row must exist in the Quota transparent data.

Request

Format 1

```
<req name="operation" [resonly="resonly"] [id="id"]>
 <oper name="Reset" ent="entityName">
    <expr><param name="keyName1"/><op value="="/>
          <value val="keyValue1"/></expr>
[
    <expr><param name="keyName2"/><op value="="/>
          <value val="keyValue2"/></expr>
    :
    <expr><param name="keyNameN"/><op value="="/>
          <value val="keyValueN"/></expr>
]
    <expr><param name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </oper>
</req>
```

Format 2

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="ResetQuota">
    <expr><param name="keyName1"/><op value="="/>
          <value val="keyValue1"/></expr>
[
    <expr><param name="keyName2"/><op value="="/>
          <value val="keyValue2"/></expr>
    :
    <expr><param name="keyNameN"/><op value="="/>
          <value val="keyValueN"/></expr>
]
    <expr><param name="name"/><op value="="/>
          <value val="quotaName"/></expr>
```

NOTE: Format 2 is deprecated and Format 1 must be used (Format 2 is still supported).

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request

  - o n—Includes the original request in the response (default)
- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295
- *entityName*: A user defined entity type/name for the transparent data

  Value is QuotaEntity for the Quota transparent data
- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId
- *keyValueX*: Corresponding key field value assigned to *keyNameX*
- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  Value is name for Quota transparent data
- *rowIdValue/quotaName*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  Value is cid for the Quota transparent data
- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers reset. A value of 1 is expected for success

Error Codes 23: Reset Quota

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria
MULTIPLE_KEYS_NOT_MATCH	Multiple keys supplied do not refer to the same subscriber

Reset Quota Examples

Request 1

A request is made to reset the Q1 Quota row for a subscriber. The subscriber has Quota data, and the Quota data contains a Quota row called Q1. The request is not required in the response.

```
<req name="operation">
 <oper name="ResetQuota">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><param name="name"/><op value="="/><value val="Q1"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the specified Quota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to reset the Monthly Quota row. The subscriber does not have Quota data. The request is not required in the response.

```
<req name="operation">
  <oper name="ResetQuota">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
    <expr><param name="name"/><op value="="/><value val="Monthly"/></expr>
  </oper>
</req>
```

Response 2

The request fails. The error value indicates the subscriber does not have Quota data, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

Request 3

A request is made to reset the Q6 Quota row. The subscriber has Quota data, but the Quota data does not contain a Quota row called Q6. The request is not required in the response.

```
<req name="operation">
  <oper name="ResetQuota">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><param name="name"/><op value="="/><value val="Q6"/></expr>
  </oper>
</req>
```

Response 3

The request fails, because the Q6 data row was not present. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70032" affected="0"/>
</req>
```

Request 4

A request is made to reset the Q1 Quota row for a subscriber. Three keys are provided for the subscriber, and all keys are valid for the subscriber. The subscriber has Quota data, and the Quota data contains a Quota row called Q1. The request is not required in the response.

```
<req name="operation">
  <oper name="ResetQuota">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
    <expr><param name="IMSI"/><op value="="/>
          <value val="184569547984229"/></expr>
    <expr><param name="NAI"/><op value="="/>
          <value val="mum@foo.com"/></expr>
    <expr><param name="name"/><op value="="/><value val="Q1"/></expr>
  </oper>
</req>
```

Response 4

The request is successful, and the specified Quota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to reset the Q1 Quota row for a subscriber. The subscriber has Quota data, and the Quota data contains a Quota row called Q1. The request is not required in the response.

```
<req name="operation">
  <oper name="Reset" ent="QuotaEntity">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
<expr><param name="name"/><op value="="/><value val="Q1"/></expr>
  </oper>
</req>
```

Response 5

The request is successful, and the specified Quota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 6

A request is made to reset the Q1 Quota row for a subscriber. The subscriber has Quota data, the Quota data contains a Quota row called Q1 and instanceFieldName cid field with value of 1234. The request is not required in the response.

```
<req name="operation">
  <oper name="Reset" ent="QuotaEntity">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
<expr><param name="name"/><op value="="/><value val="Q1"/></expr>
<expr><param name="cid" /><op value="="/><value val="1234"/></expr>
  </oper>
</req>
```

Response 6

The request is successful, and the specified Quota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
```

```
</req>
```

6.7.2 Get Subscription Status

Description

This operation retrieves all the notification subscriptions for a subscriber that is identified by the Keys specified in keyNameX and keyValueX.

The keyNameX and keyValueX values are required in the request in order to identify the subscriber. The response content includes Subscription information associated with the subscriber used for PNR purpose.

Prerequisites

- A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.
- The subscriber should contain alteast one subscription

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
 <oper name="GetSubscriptionStatus">
    <expr><param name="keyName1"/><op value="="/>
          <value val="keyValue1"/></expr>
[
    <expr><param name="keyName2"/><op value="="/>
          <value val="keyValue2"/></expr>
    :
    <expr><param name="keyNameN"/><op value="="/>
          <value val="keyValueN"/></expr>
]
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, IMEI,NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTE: Multiple subscriber key values can be supplied. See section 2.11 for details.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
          <SubscriptionStatus>
          :
          :
```

```
          </SubscriptionStatus>
        </rv>
      </row>
    </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected for success

NOTE:

- The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned.
- The time values(“creation time” and “expiration time”) are returned in epoch format not in DD:MM:YYYY hh:mm:ss format

Error Codes 24: Get Subscription Status

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
ROW_NOT_FOUND	Data row specified is not found

Get Subscriber Status Examples

Request 1

A request is made to retrieve the subscription information for a subscriber. The subscriber has only one subscription from a single client and on only one key(imsi:2222222222). The request is not required in the response.

```
<req name="operation">
 <oper name="GetSubscriptionStatus">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 1

The request is successful. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <SubscriptionStatus>
            <subscribingClient name="seagull1a.seagull1.com">
              <userIdentity name="sip:2222222222@ims.mnc480.mcc311.3gppnetwork.org">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"1545220213"</expirationTime>
              </userIdentity>
```

```
            </subscribingClient>
          </SubscriptionStatus>
        </rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to retrieve the subscription information for a subscriber. The subscriber has two subscriptions from a single client and on two keys(imsi:2222222222 and MSISDN: 33123654862). The request is not required in the response.

```
<req name="operation">
 <oper name="GetSubscriptionStatus">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 2

The request is successful. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <SubscriptionStatus>
            <subscribingClient name="seagull1a.seagull1.com">
              <userIdentity name="sip:2222222222@ims.mnc480.mcc311.3gppnetwork.org">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"1545220213"</expirationTime>
              </userIdentity>
              <userIdentity name="tel: 33123654862">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"1545220213"</expirationTime>
              </userIdentity>
            </subscribingClient>
          </SubscriptionStatus>
        </rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to retrieve the subscription information for a subscriber. The subscriber has three subscriptions from two clients and on two keys(imsi:2222222222 and MSISDN: 33123654862). The request is not required in the response.

```
<req name="operation">
 <oper name="GetSubscriptionStatus">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 3

The request is successful. The original request is not included.

```
<req name="operation" resonly="y">
```

```
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <SubscriptionStatus>
            <subscribingClient name="seagull1a.seagull1.com">
              <userIdentity name="tel: 33123654862">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"0"</expirationTime>
              </userIdentity>
              <userIdentity name="sip:2222222222@ims.mnc480.mcc311.3gppnetwork.org">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"0"</expirationTime>
              </userIdentity>
            </subscribingClient>
            <subscribingClient name="seagull1b.seagull1.com">
              <userIdentity name="tel: 33123654862">
                <creationTime>"1545220213"</creationTime>
                <expirationTime>"0"</expirationTime>
              </userIdentity>
            </subscribingClient>
          </SubscriptionStatus>
        </rv>
      </row>
    </rset>
</req>
```

Request 4

A request is made to retrieve the subscription information for a subscriber who doesn't have any subscription.

```
<req name="operation">
 <oper name="GetSubscriptionStatus">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 4

The request fails because the subscriber has no subscription information. The original request is not included.

```
<req name="operation" resonly="y">
    <res affected="0" error="70032" />
</req>
```

Chapter 7. Pool Provisioning

Pools are used to group subscribers that share common data. Subscribers in a pool share all the entities of that pool.

Provisioning clients can create, retrieve, modify, and delete pool data. Pool data is accessed via the PoolID value associated with the pool.

NOTE: For command responses, the error code values described are listed in Appendix B.

7.1 Pool Profile Commands

Table 20: Summary of Pool Profile Commands

Command	Description	Keys	Command Syntax
Create Pool	Creates a pool profile using the field-value pairs that are specified in the request content.		`<req name="insert">` `  <ent name="Pool"/>`
Get Pool	Get pool profile data	PoolID	`<req name="select">` `  <ent name="Pool"/>`
Delete Pool	Delete pool profile data and all opaque data associated with the pool		`<req name="delete">` `  <ent name="Pool"/>`

7.1.1 Create Pool

Description

This operation creates a pool profile using the field-value pairs that are specified in the request content.

Unlike other pool commands, the key value (PoolID) is not specified in the request as part of the where element. Request content includes poolId, and field-value pairs, all as specified in the Subscriber Entity Configuration.

NOTES

- The pool profile data provided is fully validated against the definition in the SEC. If the validation check fails, then the request is rejected.
- An entire entity for the pool can be created by specifying a *cdataFieldName* corresponding to the interface entity name in the SEC, and supplying the entire XML blob value in *cdataFieldValue*.
- Multi-value fields can be specified by a single *fieldNameX* value with a delimited list of values, or multiple *fieldNameX* fields each containing a single value.

Prerequisites

A pool with the supplied PoolID must not exist

Request

```
<req name="insert" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolID"/><value val="poolId"/></expr>
[
    <expr>
<
      <attr name="fieldName1"/><value val="fieldValue1"/>
|
      <attr name="cdataFieldName1"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue1]]></cdata>
>
    </expr>
```

```
    <expr>
<
      <attr name="fieldName2"/><value val="fieldValue2"/>
|
      <attr name="cdataFieldName2"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue2]]></cdata>
>
    </expr>
    :
    <expr>
<
      <attr name="fieldNameN"/><value val="fieldValueN"/>
|
      <attr name="cdataFieldNameN"/><op value="="/>
        <cdata><![CDATA[cdataFieldValueN]]></cdata>
>
    </expr>
]
  </set>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool being created. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *fieldNameX*: A user defined field in the pool profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: for multi-value fields, the value contains a comma separated list of values on a single line. For example, a,b,c

- *cdataFieldNameX*: A user defined field in the pool profile, that represents a transparent or opaque data entity, as per the defined interface entity name in the SEC

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *cdataFieldValueX*: Contents of the XML data blob for *cdataFieldNameX*

NOTE: PoolID/field order in the request is not important.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of Pools created. A value of 1 is expected for success

Error Codes 245: Create Pool

Error Code	Description
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_EXISTS	Key exists. A subscriber or pool exists with the given key
INVALID_KEY_VALUE	The key value supplied is invalid, due to invalid characters, format and so on
MULT_VER_TAGS_FOUND	Multiple Version Tags Found
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
INVALID_XML	Invalid Input XML
OPER_NOT_ALLOWED	Operation Not Allowed

Examples

Request 1

A pool is created, with PoolID. The BillingDay and Entitlement fields are set. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPassPlus"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the pool was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A pool is created, with PoolID. The BillingDay and Entitlement fields are set. The PoolQuota and PoolState entities are also created. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass,DayPassPlus"/></expr>
    <expr><attr name="PoolQuota"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
                    <usage>
                      <version>3</version>
                      <quota name="Weekend">
                        <totalVolume>500</totalVolume>
                        <Type>quota</Type>
                        <QuotaState>active</QuotaState>
                        <nextResetTime>2014-01-10T02:00:00</nextResetTime>
                      </quota>
                      <quota name="Evenings">
                        <totalVolume>300</totalVolume>
                        <Type>quota</Type>
                        <QuotaState>active</QuotaState>
                        <nextResetTime>2014-02-01T00:00:00</nextResetTime>
                      </quota>
                    </usage>]]>
      </cdata>
    </expr>
    <expr><attr name="PoolState"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <state>
          <version>1</version>
          <property>
            <name>shared</name>
            <value>yes</value>
          </property>
          <property>
            <name>expire</name>
            <value>2014-02-09T11:20:32</value>
          </property>
        </state>]]>
      </cdata>
    </expr>
  </set>
</req>
```

Response 2

The request is successful, and the pool was created.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A pool is created, with PoolID. The PoolID falls in a range that is maintained by a different UDR instance. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="BillingDay"/><value val="1"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    <expr><attr name="Entitlement"/><value val="DayPassPlus"/></expr>
    <expr><attr name="Type"/><value val="Enterprise"/></expr>
  </set>
</req>
```

Response 3

The request fails. The error indicates this operation is not allowed on non pool host UDR.

```
<req name="insert" resonly="y">
  <res error="70026" affected="0"/>
</req>
```

7.1.2 Get Pool

Description

This operation retrieves all field-value pairs created for a pool that is identified by the poolId.

A poolId is required in the request in order to identify the pool. The response content includes only valid field-value pairs which have been previously provisioned or created by default.

Prerequisites

A pool with a key of the poolId supplied must exist.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
          <![CDATA[cdataRowValue]]>
      </rv>
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected for success
- *cdataRowValue*: Contents of the pool profile XML data blob

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned, with a single <rv> (row value) element containing an XML CDATA construct containing the requested pool profile data (XML blob).

Error Codes 26: Get Pool

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
INTF_ENTY_NOT_FOUND	Interface Entity Not Found

Get Pool Examples

Request 1

A request is made to get pool profile data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the pool profile data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
    <rset>
      <row>
        <rv>
          <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
            <pool>
              <field name="PoolID">100000</field>
              <field name="BillingDay">5</field>
              <field name="Tier">12</field>
              <field name="Entitlement">Weekpass</field>
              <field name="Entitlement">Daypass</field>
              <field name="Custom15">allo</field>
            </pool>]]>
        </rv>
    </row>
  </rset>
</req>
```

7.1.3 Delete Pool

Description

This operation deletes all profile data (field-value pairs) and opaque data for the pool that is identified by the poolId.

Prerequisites

A pool with a key of the poolId supplied must exist.

The pool must not have subscriber members, or the request fails.

Request

```
<req name="delete" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="delete" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected for success
- *cdataRowValue*: Contents of the pool profile XML data blob

Error Codes 257: Delete Pool

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
HAS_POOL_MEMBERS	Has pool members. A pool cannot be deleted when it has member subscribers
INTF_ENTY_NOT_FOUND	Interface Entity Not Found

Delete Pool Examples

Request 1

The pool with the given PoolID is deleted. The pool exists. The request is not included in the response.

```
<req name="delete" resonly="y">
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the pool was deleted.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

The pool with the given PoolID is deleted. The pool does not exist. The request is not included in the response.

```
<req name="delete" resonly="y">
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates a pool with the given PoolID does not exist, and the affected rows are 0. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="70019" affected="0"/>
</req>
```

Request 3

The pool with the given PoolID is deleted. The pool exists, but has member subscribers. The request is not included in the response.

```
<req name="delete" resonly="y">
  <ent name="Pool"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the pool has member subscribers, and the affected rows are 0. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="70022" affected="0"/>
</req>
```

7.2 Pool Field Commands

Table 21: Summary of Pool Field Commands

Command	Description	Keys	Command Syntax

Add Field Value	Add a value to the specified field. This operation does not affect any pre-existing values for the field.	PoolID	`<req name="update">`
			`  <ent name="Pool"/>`
			`  <oper name="AddToSet">`

Command	Description	Keys	Command Syntax
Get Field	Retrieve values for the specified fields		`<req name="select">` `  <ent name="Pool"/>`
Update Field	Updates fields to the specified values		`<req name="update">` `  <ent name="Pool"/>`

Delete Field	Delete all values for the specified fields		`<req name="update">`
			`  <ent name="Pool"/>`
			`  … <value val="" isnull="y"/>…`

Delete Field Value	Delete fields with the specified values		`<req name="update">`
			`  <ent name="Pool"/>`
			`  <oper name="RemoveFromSet">`

7.2.1 Add Field Value

Description

This operation adds one or more values to the specified multi-value field for the pool identified by the poolId.

This operation can only be performed for the fields defined as multi-value field in the Subscriber Entity Configuration. Any pre-existing values for the field are not affected.

All existing values are retained and the new values specified are inserted. For example, if the current value of a field was a,b,c, and this command was used with value d, after the update the field has the value a,b,c,d.

NOTES

- If a value being added exists, the request fails.
- The *fieldValue* is case-sensitive. An attempt to add the value a to current field value of a,b,c fails, but an attempt to add the value A is successful and result in the field value being a,b,c,A.
- A request to add fields values can also be mixed with a request to update or delete a fields. But, the same field for which an AddToSet operation is being performed cannot also be updated or deleted, else the request fails.
- A request to add fields values using the AddToSet operation can also contain a RemoveFromSet operation to delete fields values. If both operations are included in the same request, the AddToSet is performed before the RemoveFromSet, irrespective of the order in which they are supplied.

Prerequisites

- A pool with a key of the poolId supplied must exist.
- The field fieldName must be a valid field in the pool profile, and must be a multi-value field.
- Each fieldValueX being added must not be present in the field.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="fieldName1"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
[
      <expr><attr name="fieldName2"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
      :
      <expr><attr name="fieldNameX"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
]
    </oper>
  </set>
  <where>
```

```
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldName*: A user defined field in the pool profile
- *fieldValueX*: Corresponding field value assigned to *fieldName*
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

NOTE: One or more *fieldValueX* values for a *fieldNameX* can be supplied. To add more than one value, either supply a comma separated list of values, or include multiple <expr> elements for the field.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected for success

Error Codes 268: Add Field Value

Error Code	Description
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
VALUE_EXISTS	List value added exists

Error Code	Description
FLD_NOT_MULTI	Field is not a multi-value field. Add and remove from list operations can only be performed on a multi-value field, and the field supplied is not multi-value

Examples

Request 1

A request is made to add the value DayPass to the Entitlement field. The Entitlement field is a valid multi-value field. The DayPass value is not present in the Entitlement field. The request is not required in the response.

```
<req name="update">
  <ent name="Pool"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the value was added to the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to add the values HighSpeed and Unlimited to the Entitlement field. The Entitlement field is a valid multi-value field. Neither value is present in the Entitlement field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Entitlement"/><value val="HighSpeed"/></expr>
      <expr><attr name="Entitlement"/><value val="Unlimited"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the values were added to the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to add the value Gold to the Tier field. The Tier field is not a valid multi-value field. The request is not required in the response.

```
<req name="update">
  <ent name="Pool"/>
  <set>
    <oper name="AddToSet">
      <expr><attr name="Tier"/><value val="Gold"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the Tier field is not a multi-value field, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70034" affected="0"/>
</req>
```

7.2.2 Get Field

Description

This operation retrieves the values for the specified fields for the pool identified by the specified poolId.

NOTE: An entire entity for the pool can be retrieved by specifying an opaqueDataType corresponding to the interface entity name in the SEC.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- Each requested field fieldNameX must be a valid field in the pool profile.
- Each requested opaqueDataTypeX must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <select>
[
    <expr><attr name="fieldName1"/></expr>
    <expr><attr name="fieldName2"/></expr>
    :
    <expr><attr name="fieldNameN"/></expr>
]
[
    <expr><attr name="opaqueDataType1"/></expr>
    <expr><attr name="opaqueDataType2"/></expr>
    :
    <expr><attr name="opaqueDataTypeN"/></expr>
]
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the pool profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *opaqueDataTypeX*: A user defined field in the subscriber profile, that represents a transparent or opaque data entity

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

NOTES

- At least one *fieldNameX*/*opaqueDataTypeX* field must be requested.
- The order in which *fieldNameX*/*opaqueDataTypeX* are specified in the request is not important.

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
[
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
[
<     <rv>cdataRowValue1</rv> | <rv null="y"> >
<     <rv>cdataRowValue2</rv> | <rv null="y"> >
      :
<     <rv>cdataRowValueN</rv> | <rv null="y"> >
]
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected for success
- *rowValueX*: The value of the requested field (for normal fields, not for opaque/transparent entities)

  NOTE: for multi-value fields, the value contains a comma separated list of values on a single line. For example, a,b,c

- *cdataRowValueX*: Contents of the XML data blob (for requested fields that are opaque/transparent entities)

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned. One <rv> (row value) element exists for every fieldNameX or opaqueDataTypeX supplied in the original request. The <rv> elements are ordered the same as the fieldNameX/opaqueDataTypeX fields were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 279: Get Field

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Get Field Examples

Request 1

A request is made to get the PoolID, Entitlement, Tier, and BillingDay fields. The request is not required in the response.

```
<req name="select" >
  <ent name="Pool"/>
  <select>
    <expr><attr name="PoolID"/></expr>
    <expr><attr name="Entitlement"/></expr>
    <expr><attr name="Tier"/></expr>
    <expr><attr name="BillingDay"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the 4 requested values are returned (the Entitlement is a multi-value field). The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>1000</rv>
      <rv>DayPass,WeekPass,Weekend</rv>
      <rv>Prepaid</rv>
      <rv>23</rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the MSISDN, and BillingDay fields, as well as the PoolQuota and PoolState entity data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Pool"/>
  <select>
    <expr><attr name="PoolID"/></expr>
    <expr><attr name="BillingDay"/></expr>
    <expr><attr name="PoolQuota"/></expr>
    <expr><attr name="PoolState"/></expr>
  </select>
```

```
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the 4 requested values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>2000</rv>
      <rv>11</rv>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <usage>
            <version>3</version>
            <quota name="AggregateLimit">
              <cid>9223372036854775807</cid>
              <time>3422</time>
              <totalVolume>1000</totalVolume>
              <inputVolume>980</inputVolume>
              <outputVolume>20</outputVolume>
              <serviceSpecific>12</serviceSpecific>
              <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
            </quota>
          </usage>]]>
        </rv>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <state>
            <version>1</version>
            <property>
              <name>mcc</name>
              <value>315</value>
            </property>
            <property>
              <name>expire</name>
              <value>2010-02-09T11:20:32</value>
            </property>
            <property>
              <name>approved</name>
              <value>yes</value>
            </property>
          </state>]]>
        </rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the Custom10, Entitlement, Tier, and Custom20 fields. The Entitlement and Tier fields are set in the XML blob, the Custom10 field is not set, and the Custom20 field is set, but has an empty value. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Pool"/>
  <select>
    <expr><attr name="Custom10"/></expr>
    <expr><attr name="Entitlement"/></expr>
    <expr><attr name="Tier"/></expr>
    <expr><attr name="Custom20"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the 4 requested values are returned (the Entitlement is a multi-value field). The Custom10 field is indicated as unset, and the Custom20 field is indicated as empty. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y"/>
      <rv>1,14,2,8</rv>
      <rv>Prepaid</rv>
      <rv></rv>
    </row>
  </rset>
</req>
```

7.2.3 Update Field

Description

This operation updates a fields to the specified values for the pool identified by the specified poolId. This operation replaces (sets) the values of the fields, which means that any existing values for the fields are deleted first.

For multi-value fields, all existing values are removed and only the new values specified are inserted. Adding values to a current set is accomplished using Add Field Value. For example, if the current value of a field was a,b,c, and this command was used with value d, after the update the field has the value d (it is not a,b,c,d).

All fields are updated at once in the DB. All fields and all values must be valid for the update to be successful. That is, as soon as one error is detected during processing, the request is abandoned (and an error returned). For example, if the third specified field fails validation, then none of the fields are updated.

NOTES

- If the requested fields are valid, but not present, they are created.
- An entire entity for the pool can be replaced by specifying a *cdataFieldName* corresponding to the interface entity name in the SEC, and supplying the entire XML blob value in *cdataFieldValue*.
- Multi-value fields can be specified by a single *fieldNameX* value with a delimited list of values, or multiple *fieldNameX* fields each containing a single value.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- Each requested field fieldName must be a valid field in the pool profile.
- Each requested cdataFieldName must be a valid pooled transparent/opaque interface entity name for a pool.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <expr>
<
      <attr name="fieldName1"/><value val="fieldValue1"/>
|
      <attr name="cdataFieldName1"/><op value="="/>
```

```
        <cdata><![CDATA[cdataFieldValue1]]></cdata>
>
    </expr>
[
    <expr>
<
      <attr name="fieldName2"/><value val="fieldValue2"/>
|
      <attr name="cdataFieldName2"/><op value="="/>
        <cdata><![CDATA[cdataFieldValue2]]></cdata>
>
    </expr>
    :
    <expr>
<
      <attr name="fieldNameN"/><value val="fieldValueN"/>
|
      <attr name="cdataFieldNameN"/><op value="="/>
        <cdata><![CDATA[cdataFieldValueN]]></cdata>
>
    </expr>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the pool profile
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *cdataFieldNameX*: A user defined field in the pool profile, that represents a transparent or opaque data entity, as per the defined interface entity name in the SEC

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *cdataFieldValueX*: Contents of the XML data blob for *cdataFieldNameX*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied

- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 28: Update Field

Error Code	Description
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid Input XML
OPER_NOT_ALLOWED	Operation Not Allowed

Examples

Request 1

A request is made to update the value of the BillingDay field to 23, and the Tier field to Gold. The request is not required in the response.

```
<req name="update">
  <ent name="Pool"/>
  <set>
    <expr><attr name="BillingDay"/><value val="23"/></expr>
    <expr><attr name="Tier"/><value val="Gold"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the BillingDay and Tier values were updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to update the value of the BillingDay field to 18, and the entire PoolState entity. The request is not required in the response.

```
<req name="update">
  <ent name="Pool"/>
  <set>
    <expr><attr name="BillingDay"/><value val="18"/></expr>
    <expr><attr name="PoolState"/><op value="="/>
      <cdata><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <state>
          <version>1</version>
          <property>
            <name>shared</name>
            <value>yes</value>
          </property>
          <property>
            <name>expire</name>
            <value>2014-02-09T11:20:32</value>
          </property>
        </state>]]>
      </cdata>
    </expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the BillingDay and PoolState values were updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to delete the Type field from an enterprise pool that has more than the maximum members allowed for a basic pool. The request is not required in the response. (**NOTE:** deleting the Type field triggers a conversion from an enterprise pool to a basic pool).

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
<expr><attr name="Type"/><op value="="/>
      <value val="" isnull=”y”/></expr>
  </set>
  <where>
<expr><attr name="PoolID"/><op value="="/>
<value val="100000"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the enterprise to basic pool conversion failed because the pool has more members than the maximum threshold for a basic pool. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70052" affected="1"/>
</req>
```

7.2.4 Delete Field

Description

This operation the specified fields for the pool identified by poolId in the request.

If the field is multi-value field then all values are deleted. Deletion of a field results removal of the entire field from the pool profile. That is, the field is not present, not just the value is empty.

NOTES

- The field being deleted does not need to have a current value. It can be empty (deleted), and the request succeeds.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied

Prerequisites

- A pool with the key of the poolId supplied must exist.
- Each requested field fieldNameX must be a valid field in the pool profile.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <expr><attr name="fieldName1"/><op value="="/>
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
    :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldNameX*: A user defined field in the pool profile
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 291: Delete Field

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Delete Field Examples

Request 1

A request is made to delete the BillingDay and Tier fields. Both fields are valid pool profile fields. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="BillingDay"/><op value="="/>
          <value val="" isnull="y"/></expr>
    <expr><attr name="Tier"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the two fields were deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.2.5 Delete Field Value

Description

This operation deletes one or more values from the specified field for the pool identified by the poolId in the request.

This operation can only be performed for the fields defined as multi-value field in the Subscriber Entity Configuration.

Each individual value is removed from the pool profile. If a supplied value does not exist, then it is ignored. For example, if a profile contains values A,B,C and a request to delete A,B is made, this succeeds and the profile is left with C as the value. If the profile contains A,B,C and a request is made to delete C,D the request succeeds and the profile is left with A,B as the value.

If all values are removed, the entire field is removed from the pool profile (there is not an XML element present).

NOTES

- The *fieldValue* is case-sensitive. An attempt to remove the value A from a current field value of A,B,C is successful, but an attempt to remove the value a fails.
- A request to delete fields values can also be mixed with a request to update or delete a fields. But, the same field for which a RemoveFromSet operation is being performed cannot also be updated or deleted, else the request fails.
- A request to delete fields values using the RemoveFromSet operation can also contain a AddToSet operation to add fields values. If both operations are included in the same request, the AddToSet is performed before the RemoveFromSet irrespective of the order in which they are supplied.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The field fieldName must be a valid field in the pool profile, and must be a multi-value field.
- Each fieldValueX being removed must be present in the field.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="fieldName1"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
[
      <expr><attr name="fieldName2"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
      :
      <expr><attr name="fieldNameX"/>
            <value val="fieldValue1[,fieldValue2[, ... fieldValueN]]"/></expr>
    </oper>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *fieldName*: A user defined field in the subscriber profile
- *fieldValueX*: Corresponding field value assigned to *fieldName*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

NOTE: One or more *fieldValueX* values for a *fieldNameX* can be supplied. To remove more than one value, either supply a comma separated list of values, or include multiple <expr> elements for the field.

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 30: Delete Field Value

Error Code	Description
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
FLD_NOT_MULTI	Field is not a multi-value field. Add and remove from list operations can only be performed on a multi-value field, and the field supplied is not multi-value

Delete Field Value Examples

Request 1

A request is made to remove the value DayPass from the Entitlement field. The Entitlement field is a valid multi-value field. The DayPass value is present in the Entitlement field. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="Entitlement"/><value val="DayPass"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the value was removed from the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to remove the values WeekendPass and Unlimited from the Entitlement field. The Entitlement field is a valid multi-value field. The WeekendPass value is present in the Entitlement field, but the Unlimited value is not. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <oper name="RemoveFromSet">
      <expr><attr name="Entitlement"/><value val="WeekendPass"/></expr>
      <expr><attr name="Entitlement"/><value val="Unlimited"/></expr>
    </oper>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the WeekendPass value was removed from the Entitlement field. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.3 Pool Opaque Data Commands

Table 22: Summary of Pool Opaque Data Commands

Command	Description	Keys	Command Syntax
Create Opaque Data	Insert pool opaque data of the specified type	PoolID	`<req name="insert">` `  <ent name="Pool"/>`
Get Opaque Data	Retrieve pool opaque data of the specified type		`<req name="select">` `  <ent name="Pool"/>`
Update Opaque Data	Update pool opaque data of the specified type		`<req name="update">` `  <ent name="Pool"/>`

Delete Opaque Data	Delete pool opaque data of the specified type		`<req name="update">`
			`  <ent name="Pool"/>`
			`  … <value val="" isnull="y"/>…`

7.3.1 Create Opaque Data

Description

This operation creates the pool opaque data of the specified poolOpaqueDataType for the pool identified by the poolId in the request.

The pool opaque data is provided in the request in a <cdata> construct.

NOTES

- The opaque data provided in an XML blob is always checked to be valid XML. If the entity is defined as transparent in the SEC, then the XML blob is fully validated against the definition in the SEC. If either validation check fails, then the request is rejected.

- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The poolOpaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.
- Pool opaque data of the poolOpaqueDataType must not exist for the pool (unless the odk attribute is specified).

Request

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="Pool"/>
  <set>
    <expr><attr name="poolOpaqueDataType"/><op value="="/><cdata>
<![CDATA[
cdataFieldValue
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *odk*: (Optional) Indicates that the insert request is converted to an update if the opaque data type specified exists
- *poolOpaqueDataType*: A user defined type/name for the pool opaque data

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *cdataFieldValue*: Contents of the XML data blob
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 9999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied

- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools inserted/updated. A value of 1 is expected for success

Error Codes 313: Create Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
MULT_VER_TAGS_FOUND	Multiple Version Tags Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid input XML
FIELD_UNDEFINED	Field not defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key not found. A subscriber/pool with the given key cannot be found
REG_EXISTS	Register exists

Create Opaque Data Examples

Request 1

A request is made to create the PoolQuota opaque data. The PoolQuota XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolQuota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>92233720368547758O7</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
 </where>
</req>
```

Response 1

The request is successful, and the PoolQuota opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create the PoolState opaque data. The PoolState XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolState"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
    <name>approved</name>
    <value>yes</value>
  </property>
</state>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the PoolState opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create the PoolDynamicQuota opaque data. The PoolDynamicQuota XML blob is supplied whole. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolDynamicQuota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<definition>
  <version>1</version>
  <DynamicQuota name="AggregateLimit">
    <Type>pass</Type>
    <InstanceId>15678</InstanceId>
    <Priority>4</Priority>
    <InitialTime>135</InitialTime>
    <InitialTotalVolume>2000</InitialTotalVolume>
    <InitialInputVolume>1500</InitialInputVolume>
    <InitialOutputVolume>500</InitialOutputVolume>
    <InitialServiceSpecific>4</InitialServiceSpecific>
    <activationdatetime>2015-03-09T11:20:32</activationdatetime>
```

```
    <expirationdatetime>2015-04-09T11:20:32</expirationdatetime>
    <InterimReportingInterval>100</InterimReportingInterval>
    <Duration>10</Duration>
  </DynamicQuota>
</definition>
]]></cdata></expr>
 </set>
 <where>
   <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
 </where>
</req>
```

Response 3

The request is successful, and the PoolDynamicQuota opaque data was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to create the PoolLocation opaque data. The PoolLocation XML blob is supplied whole. PoolLocation is not a valid opaque data type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolLocation"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<location>
  <town>Montreal</town>
  <province>Quebec</province>
  <country>Canada</country>
</location>
]]></cdata></expr>
  </set>
  <where>
   <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 4

The request fails. The error value indicates the opaque data type is invalid, and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70015" affected="0"/>
</req>
```

Request 5

A request is made to create the PoolQuota opaque data. The PoolQuota XML blob is supplied whole. The Pool has an associated PoolQuota. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolQuota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>92233720368547758O7</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
```

```
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="500000"/></expr>
 </where>
</req>
```

Response 5

The request fails. The error value indicates the PoolQuota exists, and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70028" affected="0"/>
</req>
```

Request 6

A request is made to create the PoolQuota opaque data. The PoolQuota XML blob is supplied whole. The Pool has an associated PoolQuota. The request includes the odk attribute, indicating that the PoolQuota is updated if it exists. The request is not required in the response.

```
<req name="insert" resonly="y" odk="yes">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolQuota"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<usage>
  <version>3</version>
  <quota name="AggregateLimit">
    <cid>92233720368547758O7</cid>
    <time>3422</time>
    <totalVolume>1000</totalVolume>
    <inputVolume>980</inputVolume>
    <outputVolume>20</outputVolume>
    <serviceSpecific>12</serviceSpecific>
    <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime>
  </quota>
</usage>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="600000"/></expr>
 </where>
</req>
```

Response 6

The request is successful, and the PoolQuota opaque data was updated. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.3.2 Get Opaque Data

Description

This operation retrieves the pool opaque data of the specified poolOpaqueDataType for the pool identified by the poolId in the request.

The response contains the entire XML blob for the requested pool opaque data.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The poolOpaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.
- The pool opaque data of the poolOpaqueDataType must exist for the pool.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <select>
    <expr><attr name="poolOpaqueDataType"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolOpaqueDataType*: A user defined type/name for the pool opaque data

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response Content

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
          <![CDATA[cdataRowValue]]>
      </rv>
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values

- *affected*: The number of pools returned. A value of 1 is expected for success
- *cdataRowValue*: Contents of the XML data blob

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned, with a single <rv> (row value) element containing an XML CDATA construct containing the requested pool opaque data (XML blob).

Error Codes 324: Get Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Get Opaque Data Examples

Request 1

A request is made to get the PoolQuota opaque data for a pool. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="Pool"/>
  <select>
    <expr><attr name="PoolQuota"/></expr>
  </select>
  <where>
   <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the PoolQuota opaque data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <usage>
            <version>3</version>
            <quota name="AggregateLimit">
              <cid>9223372036854775807</cid>
              <time>3422</time>
              <totalVolume>1000</totalVolume>
              <inputVolume>980</inputVolume>
              <outputVolume>20</outputVolume>
              <serviceSpecific>12</serviceSpecific>
              <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
            </quota>
          </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

7.3.3 Update Opaque Data

Description

This operation updates the pool opaque data of the specified poolOpaqueDataType for the pool identified by the poolId in the request.

The pool opaque data is provided in the request in a <cdata> construct. The existing pool opaque data is completely replaced by the data supplied in the request.

NOTES

- The opaque data provided in an XML blob is always checked to be valid XML. If the entity is defined as transparent in the SEC, then the XML blob is fully validated against the definition in the SEC. If either validation check fails, then the request is rejected.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The poolOpaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <expr><attr name="poolOpaqueDataType"/><op value="="/><cdata>
<![CDATA[
cdataFieldValue
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolOpaqueDataType*: A user defined type/name for the pool opaque data

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

- *cdataFieldValue*: Contents of the XML data blob
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
```

```
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 335: Update Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_XML	Invalid Input XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Update Opaque Data Examples

Request 1

A request is made to update the PoolState opaque data. The PoolState XML blob is supplied whole. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolState"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
    <name>approved</name>
    <value>yes</value>
  </property>
</state>
]]></cdata></expr>
  </set>
```

```
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the PoolState opaque data was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.3.4 Delete Opaque Data

Description

This operation deletes the opaque data of the specified poolOpaqueDataType for the pool identified by the poolId in the request.

Only one opaque data type can be deleted per request.

NOTES

- The deletion of a non-existent opaque data type (but that is defined in the SEC) is not considered as an error.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The poolOpaqueDataType must reference a valid Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="Pool"/>
  <set>
    <expr><attr name="opaqueDataType"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *keyName*: A user defined field identified as key for the subscriber
- *keyValue*: A key value identifying the subscriber
- *poolOpaqueDataType*: A user defined type/name for the pool opaque data

  Value is either PoolQuota, PoolState, or PoolDynamicQuota

  NOTE: The data is deleted by setting an empty field value, and also specifying the attribute `isnull="y"`
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools deleted. A value of 1 is expected for success

Error Codes 346: Delete Opaque Data

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Delete Opaque Data Examples

Request 1

A request is made to delete the PoolDynamicQuota opaque data. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolDynamicQuota"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the PoolDynamicQuota opaque data was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the PoolState opaque data. PoolState is a valid opaque data type, but the subscriber does not have this opaque data type. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="Pool"/>
  <set>
    <expr><attr name="PoolState"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, because an error is not returned if the pool does not have the opaque data type.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.4 Pool Data Row Commands

A transparent data entity may contain data that is organized in rows. An example of a row is a specific quota in the PoolQuota entity.

The row commands allow operations (create/retrieve/update/delete) at the row level. The required row is identified in the request by the rowIdName/rowIdValue.

NOTE: Pool data row commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 23: Summary of Pool Data Row Commands

Command	Description	Keys	Command Syntax

Create Row	Insert data row into transparent data of the specified type.	(PoolID and Row Identifier) Or (PoolID, Row Identifier and Instance Identifier)	`<req name="insert">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`

Get Row	Retrieve data row from transparent data of the specified type.		`<req name="select">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name= "instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

Delete Row	Delete data row in transparent data of the specified type.		`<req name="delete">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

7.4.1 Create Row

Description

This operation creates a data row for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. All fieldNameX fields specified are set in the row.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to update an existing row called DAYPASS is successful, and two rows called DayPass and DAYPASS are present.
- If the transparent entity specified in entityName does not exist for the pool, it is created.

- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.

Request

NOTE: This command allows 2 different formats. One with the poolId in the <set> element, and another with the poolId in a <where> element.

Format 1

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="PoolID"/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><value val="rowIdValue"/></expr>
[
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
              :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
</req>
```

Format 2

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="rowIdName"/><value val="rowIdValue"/></expr>
[
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
              :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
  </set>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *odk*: (Optional) Indicates that the insert request is converted to an update if the data row for the specified entity exists
- *entityName*: A user defined entity type/name for the transparent data
  - Value is `PoolQuotaEntity` for the PoolQuota transparent data

  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

NOTES

- Rows that have the same *rowIdName/rowIdValue* are permitted. Where duplicate rows occur, and an additional field is set to define uniqueness (such as `<cid>` in the PoolQuota entity) validation is not performed by UDR to ensure uniqueness. Unique values must be supplied by the provisioning client otherwise operations (such as updating an existing row) may fail if more than one matching row is found.
- If the `odk="yes"` attribute is set (implying that an update be made if the row exists), then if multiple rows exist for the specified *rowIdName/rowIdValue*, then the request fails because it is not known which of the multiple rows to update.

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 357: Create Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field

Error Code	Description
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria **NOTE:** Only returned when the odk=”yes” attribute is supplied, and duplicate candidate rows to update are found

Examples

Request 1

A request is made to create a data row in the PoolQuotaEntity (PoolQuota) data. The data row identifier field is name, and the value is Q1. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="name"/><value val="Q1"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the data row Q1 was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create a data row in the PoolQuotaEntity (PoolQuota) data. PoolQuota is a valid opaque data type, but the pool does not have this opaque data type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="PoolID"/><value val="300000"/></expr>
    <expr><attr name="name"/><value val="Q2"/></expr>
    <expr><attr name="cid"/><value val="9223372036854999999"/></expr>
    <expr><attr name="time"/><value val="10:10"/></expr>
    <expr><attr name="totalVolume"/><value val="55000"/></expr>
    <expr><attr name="inputVolume"/><value val="50000"/></expr>
    <expr><attr name="outputVolume"/><value val="5000"/></expr>
    <expr><attr name="serviceSpecific"/><value val="serviceSpecific"/></expr>
```

```
    <expr><attr name="nextResetTime"/>
          <value val="1961-12-15T09:04:03"/></expr>
  </set>
</req>
```

Response 2

The request is successful, and the data row as well as the PoolQuota entity is created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create a data row in the PoolDynamicQuotaEntity (PoolDynamicQuota) data. The PoolID key is supplied, which references the pool. The data row identifier field is name, and the value is PDQ1. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <set>
    <expr><attr name="PoolID"/><value val="400000"/></expr>
    <expr><attr name="name"/><value val="PDQ1"/></expr>
    <expr><attr name="Type"/><value val="top-up"/></expr>
    <expr><attr name="InstanceId"/><value val="15678"/></expr>
    <expr><attr name="Priority"/><value val="4"/></expr>
    <expr><attr name="InitialTime"/><value val="135"/></expr>
    <expr><attr name="InitialTotalVolume"/><value val="2000"/></expr>
    <expr><attr name="InitialInputVolume"/><value val="1500"/></expr>
    <expr><attr name="InitialOutputVolume"/><value val="500"/></expr>
    <expr><attr name="InitialServiceSpecific"/><value val="4"/></expr>
    <expr><attr name="activationdatetime"/><value val="2015-05-22T00:00:00-05:00"/></expr>
    <expr><attr name="expirationdatetime"/><value val="2015-05-29T00:00:00-05:00"/></expr>
    <expr><attr name="InterimReportingInterval"/><value val="100"/></expr>
    <expr><attr name="Duration"/><value val="10"/></expr>
  </set>
</req>
```

Response 3

The request is successful, and the data row was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.4.2 Get Row

Description

This operation retrieves a data rows for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue.

All data rows that match the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified) are returned.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to retrieve a row called DayPass is successful, but an attempt to retrieve a row called DAYPASS fails.

- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to retrieve a row with a field with the value Data is successful, but an attempt to retrieve a row with a field with the value DATA fails.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- The transparent entity must exist for the pool.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  `Values: 1 to 4294967295`

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolQuotaEntity` for the PoolQuota transparent data
  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the PoolQuota transparent data
  - Value is `InstanceId` or `Type` for the PoolDynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
```

```
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<
      <rv>
          <![CDATA[cdataRowValue1]]>
      </rv>
|
      <rv null="y"/>
>
    </row>
[
    <row>
      <rv>
          <![CDATA[cdataRowValue2]]>
      </rv>
    </row>
    :
    <row>
      <rv>
          <![CDATA[cdataRowValueN]]>
      </rv>
    </row>
]
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 or more is expected for success, whether or not a row was found
- *cdataRowValueN*: Contents of the XML data blob containing one requested/matching data row

NOTES

- The `<rset>` (row set) element is optional. It is only present if the request was successful. One `<row>` element is returned per matching row, with a single `<rv>` (row value) element containing an XML CDATA construct containing a single requested data row instance.
- If the transparent entity exists, but the row value was not found, then the `<rv>` (row value) indicates the row does not exist by containing the value `<rv null="y"/>`.

Error Codes 368: Get Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found

Get Row Examples

Request 1

A request is made to get the Q1 data row from the PoolQuota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the PoolQuota data is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Q1">
            <cid>9223372036854775807</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the Weekend data row from the PoolQuota data. The PoolQuota data contains two rows called Weekend. One with cid of 11223344, the other with a cid of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and 2 PoolQuota data rows are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>11223344</cid>
            <time>3422</time>
```

```
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>99887766</cid>
            <time>1232</time>
            <totalVolume>2000</totalVolume>
            <inputVolume>440</inputVolume>
            <outputVolume>8220</outputVolume>
            <serviceSpecific>99</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the Weekend data row from the PoolQuota data, with the cid value of 11223344. The PoolQuota data contains two rows called Weekend. One with cid of 11223344, the other with a cid of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the PoolQuota data with a cid of 11223344 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="Weekend">
            <cid>11223344</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 4

A request is made to get the LateNight data row from the PoolQuota data, with the cid value of 11223344. The PoolQuota data contains four rows called LateNight. Two with cid of 11223344, one with a cid of 99887766, and one with a cid of 55556666. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="LateNight"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the 2 PoolQuota data rows with a cid of 11223344 are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="LateNight">
            <cid>11223344</cid>
            <time>3422</time>
            <totalVolume>1000</totalVolume>
            <inputVolume>980</inputVolume>
            <outputVolume>20</outputVolume>
            <serviceSpecific>12</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>3</version>
          <quota name="LateNight">
            <cid>11223344</cid>
            <time>1232</time>
            <totalVolume>2000</totalVolume>
            <inputVolume>440</inputVolume>
            <outputVolume>8220</outputVolume>
            <serviceSpecific>99</serviceSpecific>
            <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
          </quota>
        </usage>]]>
      </rv>
    </row>
  </rset>
</req>
```

Request 5

A request is made to get the Weekday data row in the PoolQuota data. The Weekday data row does not exist in the PoolQuota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekday"/></expr>
```

```
  </where>
</req>
```

Response 5

The request is successful, and indicates that the requested row does not exist. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y"/>
    </row>
  </rset>
</req>
```

Request 6

A request is made to get the Weekday data row in the PoolQuota data. PoolQuota is a valid opaque data type, but the pool does not have this opaque data type. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekday"/></expr>
  </where>
</req>
```

Response 6

The request fails. The error value indicates the opaque data type is not found, and the affected rows are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

Request 7

A request is made to get the PDQ1 data row from the PoolDynamicQuota data, with the InstanceId value of 11223344. The PoolDynamicQuota data contains four rows called PDQ1. Two with InstanceId of 11223344, one with an InstanceId of 99887766, and one with an InstanceId of 55556677. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="4000000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="PDQ1"/></expr>
    <expr><attr name="InstanceId"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 7

The request is successful, and the 2 PoolDynamicQuota data rows with an InstanceId of 11223344 are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
```

```
        <definition>
          <version>1</version>
          <DynamicQuota name="PDQ1">
            <Type>top-up</Type>
            <InstanceId>11223344</InstanceId>
            <Priority>4</Priority>
            <InitialTime>135</InitialTime>
            <InitialTotalVolume>2000</InitialTotalVolume>
            <InitialInputVolume>1500</InitialInputVolume>
            <InitialOutputVolume>500</InitialOutputVolume>
            <InitialServiceSpecific>4</InitialServiceSpecific>
            <activationdatetime>2015-05-22T00:00:00-05:00</activationdatetime>
            <expirationdatetime>2015-05-29T00:00:00-05:00</expirationdatetime>
            <InterimReportingInterval>100</InterimReportingInterval>
            <Duration>10</Duration>
          </DynamicQuota>
        </definition>]]>
      </rv>
    </row>
    <row>
      <rv>
       <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <definition>
          <version>1</version>
          <DynamicQuota name="DQ1">
            <Type>pass</Type>
            <InstanceId>11223344</InstanceId>
            <Priority>2</Priority>
            <InitialTime>135</InitialTime>
            <InitialTotalVolume>1000</InitialTotalVolume>
            <InitialInputVolume>500</InitialInputVolume>
            <InitialOutputVolume>500</InitialOutputVolume>
            <InitialServiceSpecific>4</InitialServiceSpecific>
            <activationdatetime>2015-05-22T00:00:00-05:00</activationdatetime>
            <expirationdatetime>2015-05-29T00:00:00-05:00</expirationdatetime>
            <InterimReportingInterval>100</InterimReportingInterval>
            <Duration>10</Duration>
          </DynamicQuota>
        </definition>]]>
      </rv>
    </row>
  </rset>
</req>
```

7.4.3 Delete Row

Description

This operation deletes a data row for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then all matching rows are deleted.

NOTES

- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to delete a row called DayPass is successful, but an attempt to delete a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.
- The deletion of a non-existent data row is not considered an error.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- The transparent entity must exist for the pool.

Request

```
<req name="delete" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolQuotaEntity` for the PoolQuota transparent data
  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  - Value is `cid` or `Type` for the PoolQuota transparent data
  - Value is `InstanceId` or `Type` for the PoolDynamicQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="delete" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: A value of 1 indicates the rows existed, or that the row did not exist

Error Codes 379: Delete Row

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found

Delete Row Examples

Request 1

A request is made to delete the Q1 data row in the PoolQuota data. The Q1 data row exists in the PoolQuota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the data row in the PoolQuota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the Weekend data row in the PoolQuota data. The Weekend data row does not exist in the PoolQuota data. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request is successful, because an error is not returned if the data row is not present. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
```

```
</req>
```

Request 3

A request is made to delete the Q3 data row in the PoolQuota data. The PoolQuota data contains two rows called Q3. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the data row in the PoolQuota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to delete the Q4 data row from the PoolQuota data, with the cid value of 11223344. The PoolQuota data contains two rows called Q4. One with cid of 11223344, the other with a cid of 99887766. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q4"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the data row in the PoolQuota data was deleted. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to delete the PDQ1 data row from the PoolDynamicQuota data, with the Type value of pass. The PoolDynamicQuota data contains two rows called PDQ1. One with a Type of pass the other with a Type of quota. The request is not required in the response.

```
<req name="delete" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="500000"/></expr>
<expr><attr name="name"/><op value="="/>
      <value val="PDQ1"/></expr>
<expr><attr name="Type"/><op value="="/>
      <value val="pass"/></expr>
  </where>
</req>
```

Response 5

The request is successful, and the data row in the PoolDynamicQuota data was deleted that matched the Type. The original request is not included.

```
<req name="delete" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.5 Pool Data Row Field Commands

A pooled transparent data entity may contain data that is organized in rows. An example of a row is a specific quota in the PoolQuota entity.

The row/field commands allow operations (retrieve/update/delete) at the row/field level. The required row is identified in the request by the rowIdName/rowIdValue., and the field is identified by the fieldName.

NOTE: Pool data row field commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 24: Summary of Pool Data Row Field Commands

Command	Description	Keys	Command Syntax

Get Row Field	Retrieve values for the specified fields	(PoolID and Row Identifier and Field name) Or (PoolID and Row Identifier, Instance Identifier and Field name)	`<req name="select">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`

Update Row Field	Update fields to the specified values		`<req name="update">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

Delete Row Field	Delete all values for the specified fields		`<req name="update">`
			`  <ent name="entityName"/>`
			`  … <expr>`
			`  <attr name="rowIdName">`
			`  <value val="rowIdValue">`
			`  </expr> …`
			`[`
			`  <expr>`
			`  <attr name="instanceFieldName">`
			`  <value val="instanceFieldValue">`
			`  </expr> …`
			`]`

7.5.1 Get Row Field

Description

This operation retrieves a fields in a data row for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX.

All data rows that match the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified) are returned.

NOTES

- If the specified row does not exist, the request fails. If the specified row exists, but the field does not exist, this is not treated as an error, and empty field data returns.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to get a field in a row called DayPass is successful, but an attempt to get a field in a row called DAYPASS fails.
- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- A data row with the given identifier/instance in the transparent data must exist for the subscriber.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <select>
    <expr><attr name="fieldName1"/><value val="[fieldValue1]"/></expr>
[
    <expr><attr name="fieldName2"/><value val="[fieldValue2]"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="[fieldValueN]"/></expr>
]
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolQuotaEntity` for the PoolQuota transparent data
  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: (Optional) Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 9999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance
  - Value is `cid` or `Type` for the PoolQuota transparent data
  - Value is `InstanceId` or `Type` for the PoolDynamicQuota transparent data
- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
[
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
    :
    <row>
<     <rv>rowValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>rowValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>rowValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
]
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied

- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected if the specified row exists (whether or not the field was found). A value of 0 is expected if the row does not exist
- *rowValue*: The value of the requested field

  NOTE: for multi-value fields, the value contains a comma separated list of values on a single line. For example, a,b,c

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. One <row> element is returned per matching row. One <rv> (row value) element exists for every fieldNameX supplied in the original request. The <rv> elements are ordered the same as the fieldNameX fields were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 40: Get Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found

Examples

Request 1

A request is made to get the inputVolume field in the Q1 data row of the PoolQuota data. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <select>
    <expr><attr name="inputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the requested field value 980 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>980</rv>
    </row>
  </rset>
```

```
</req>
```

Request 2

A request is made to get the outputVolume and cid fields in the Q2 data row of the PoolQuota data. The PoolQuota data contains two rows called Q2. One with cid of 11223344, the other with a cid of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
    <expr><attr name="cid"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q2"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the requested field values are returned from each row. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>220</rv>
      <rv>11223344</rv>
    </row>
    <row>
      <rv>1050</rv>
      <rv>99887766</rv>
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the outputVolume field in the Q3 data row of the PoolQuota data, with the cid value of 11223344. The PoolQuota data contains two rows called Q3. One with cid of 11223344, the other with a cid of 99887766. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <select>
    <expr><attr name="outputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the requested field value 4000 is returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>4000</rv>
    </row>
  </rset>
```

```
</req>
```

Request 4

A request is made to get the InstanceId, InitialTotalVolume and InitialInputVolume fields in the PDQ3 data row of the PoolDynamicQuota data, with the InstanceId value of 15678. The PoolDynamicQuota data contains two rows called PDQ3. One with InstanceId of 15570, the other with an InstanceId of 15678. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <select>
    <expr><attr name="InstanceId"/></expr>
    <expr><attr name="InitialTotalVolume"/></expr>
    <expr><attr name="InitialInputVolume"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/>
          <value val="PDQ3"/></expr>
    <expr><attr name="InstanceId"/><op value="="/>
          <value val="15678"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the requested field values are returned. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>15678</rv>
      <rv>2000</rv>
      <rv>1500</rv>
    </row>
  </rset>
</req>
  </rset>
</req>
```

7.5.2 Update Row Field

Description

This operation updates a fields in a data row for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX. If the specified fields are valid, but do not exist, they are created.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then the update request fails.

NOTES

- If the specified row does not exist, the request fails.
- If the requested fields are valid, but not present, they are created.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to update a field in a row called DayPass is successful, but an attempt to update a field in a row called DAYPASS fails.

- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a row with a field with the value Data is successful, but an attempt to delete a row with a field with the value DATA fails.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- A data row with the given identifier/instance in the transparent data must exist for the pool.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolQuotaEntity` for the PoolQuota transparent data
  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

  NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance
  - Value is `cid` or `Type` for the PoolQuota transparent data
  - Value is `InstanceId` or `Type` for the PoolDynamicQuota transparent data
- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 381: Update Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria

Update Row Field Examples

Request 1

A request is made to update the inputVolume field in the Q1 data row of the PoolQuota data. The Q1 data row exists in the PoolQuota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req
```

Response 1

The request is successful, and the field in the data row in the PoolQuota data was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to update the cid field in the Q1 data row in the PoolQuota data. The Q1 data row exists in the PoolQuota data, and is there is only one row called Q1. The cid field is not allowed to be updated. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="cid"/><value val="11223344"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Weekend"/></expr>
  </where>
</req>
```

Response 2

The request fails. The error value indicates the cid field cannot be updated, and the affected rows are 0. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70016" affected="0"/>
</req>
```

Request 3

A request is made to update the outputVolume field in the Q6 data row of the PoolQuota data. The Q6 data row exists in the PoolQuota data, but there are two rows called Q6. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="outputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q6"/></expr>
  </where>
```

```
</req
```

Response 3

The request fails because there was more than one row called Q6. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 4

A request is made to update the InitialTotalVolume and InitialInputVolume fields in the PDQ1 data row of the PoolDynamicQuota data where InstanceId is 15678. The PDQ1 data row exists in the PoolDynamicQuota data, but there are two rows called PDQ1 one with InstanceId of 15570, the other with an InstanceId of 15678. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <set>
    <expr><attr name="InitialTotalVolume"/><value val="1000"/></expr>
    <expr><attr name="InitialInputVolume"/><value val="1000"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/>
          <value val="PDQ1"/></expr>
    <expr><attr name="InstanceId"/><op value="="/>
          <value val="15678"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the field in the data row in the PoolDynamicQuota data was updated. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.5.3 Delete Row Field

Description

This operation deletes a fields in a data row for the pool identified by the poolId.

The data row identifier field is specified in rowIdName, and the row identifier value is specified in rowIdValue. An additional field can be specified to indicate a unique row in instanceFieldName/instanceFieldValue. The field names are specified in fieldNameX.

If more than one row matches the requested rowIdName/rowIdValue and instanceFieldName/instanceFieldValue (if specified), then the delete request fails.

NOTES

- If the specified row does not exist, the request fails. If the specified row exists, but the field does not exist, this is not treated as an error, and row/field data is not deleted.
- The *rowIdValue* is case-sensitive. If a row existed called DayPass, then an attempt to delete a field in a row called DayPass is successful, but an attempt to delete a field in a row called DAYPASS fails.

- The *instanceFieldValue* is case-sensitive. If a field contained the value Data, then an attempt to delete a field in a row with a field with the value Data is successful, but an attempt to delete a field in a row with a field with the value DATA fails.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- At least one data row with the given identifier/instance in the transparent data must exist for the pool.
- The field names specified must be valid fields for the Entity as defined in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><op value="="/>
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
              :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><attr name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><attr name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolQuotaEntity` for the PoolQuota transparent data
  - Value is `PoolDynamicQuotaEntity` for the PoolDynamicQuota transparent data

- *fieldNameX*: A user defined field in the data row
- *fieldValueX*: Corresponding field value assigned to *fieldNameX*

NOTE: For multi-value fields, the value can contain a comma separated list of values on a single line. For example, a,b,c

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob
  - Value is `name` for PoolQuota transparent data
  - Value is `name` for PoolDynamicQuota transparent data
- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance
  - Value is `cid` or `Type` for the PoolQuota transparent data
  - Value is `InstanceId` or `Type` for the PoolDynamicQuota transparent data
- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 indicates the row existed and the field was deleted. A value of 0 indicates the field did not exist

Error Codes 392: Delete Row Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found

Error Code	Description
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria

Delete Row Field Examples

Request 1

A request is made to delete the inputVolume field in the Q1 data row of the PoolQuota data. The Q1 data row exists in the PoolQuota data, and is there is only one row called Q1. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q1"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and the field in the data row was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the outputVolume field in the Q3 data row of the PoolQuota data. The PoolQuota data contains two rows called Q3. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="outputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q3"/></expr>
  </where>
</req>
```

Response 2

The request fails, because there are two PoolQuota rows called Q3. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 3

A request is made to update delete the outputVolume field in the Q4 data row of the PoolQuota data with the cid 11223344. The Q4 data row exists in the PoolQuota data, and is there are two rows called Q4, one with cid 11223344 and one with cid 99887766. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
```

```
    <expr><attr name="outputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="300000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="Q4"/></expr>
    <expr><attr name="cid"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 3

The request is successful, and the outputVolume field in the Q4 data row in the PoolQuota data was deleted. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 4

A request is made to delete the InitialInputVolume field in the PDQ1 data row of the PoolDynamicQuota data with the InstanceId 11223344. The PDQ1 data row exists in the PoolDynamicQuota data, and is there are two rows called PDQ1, one with InstanceId 11223344 and one with InstanceId 99887766. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolDynamicQuotaEntity"/>
  <set>
    <expr><attr name="InitialInputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="PDQ1"/></expr>
    <expr><attr name="InstanceId"/><op value="="/><value val="11223344"/></expr>
  </where>
</req>
```

Response 4

The request is successful, and the InitialInputVolume field in the PDQ1 data row in the PoolDynamicQuota data was deleted for the row with the specified InstanceId. The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to delete the inputVolume field in the PQ1 data row of the PoolQuota data. The PQ1 data row exists in the PoolQuota data, there is only one row called PQ1 and the inputVolume field does not exist. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolQuotaEntity"/>
  <set>
    <expr><attr name="inputVolume"/><op value="="/>
          <value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
    <expr><attr name="name"/><op value="="/><value val="PQ1"/></expr>
  </where>
</req>
```

Response 5

The request is successful and the original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.6 Pool Data Field Commands

A transparent data entity may contain data that is organized in fields where each field is defined as a name value pair in an element. For example, the PoolState entity has a <name> element for the name, and a <value> element for the value, in a <property> element.

```
<property>
  <name>fieldName</name>
  <value>fieldValue</value>
</property>
```

The data commands allow operations (create/retrieve/update/delete) at the field level. The required field is identified in the request by the fieldName.

NOTE: Pool data commands may only be performed on entities defined as transparent in the SEC. Attempting to perform a command on an entity defined as opaque results in an OPER_NOT_ALLOWED error being returned.

Table 25: Summary of Pool Data Commands

Command	Description	Keys	Command Syntax
Create Data Field	Create/update data field in transparent data of the specified type.	PoolID and Field Name	`<req name="insert"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Get Data Field	Retrieve data field from transparent data of the specified type.		`<req name="select"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Update Data Field	Update data field in transparent data of the specified type.		`<req name="update"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`
Delete Data Field	Delete data field in transparent data of the specified type.		`<req name="update"><ent name="entityName"/> … <expr><attr name="fieldName"><value val="fieldValue"></expr> …`

7.6.1 Create Data Field

Description

This operation creates or updates a field in a transparent data for the pool identified by the poolId.

The field name is specified in fieldNameX, and the field value is specified in fieldValueX.

If the specified field does not exist, it is created. If the field does exist, it is updated/replaced only if the optional odk flag is set to yes.

NOTES

- The *fieldName* is not case-sensitive. If a field existed called mcc, then an attempt to create/update an existing field called MCC is successful.
- If the transparent entity specified in entityName does not exist for the pool, it is created.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.

Request

NOTE: This command allows 2 different formats. One with the *PoolID* in the <set> element, and another with the *PoolID* in a <where> element.

Format 1

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="PoolID"/><value val="poolId"/></expr>
<expr><attr name="fieldName1"/><value val="fieldValue"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
</req>
```

Format 2

```
<req name="insert" [resonly="resonly"] [id="id"] [odk="yes"]>
  <ent name="entityName"/>
  <set>
<expr><attr name="fieldName"/><value val="fieldValue"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]

  <where>
    <expr><attr name="PoolID"/><value val="poolId"/></expr>
  </where>
  </set>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *odk*: (Optional) Indicates that the insert request is converted to an update if the field for the specified entity exists
- *entityName*: A user defined entity type/name for the transparent data

  Value is `PoolStateEntity` for the PoolState transparent data
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999
- *fieldNameX:* The requested user defined field in the pool profile.

  For the `PoolState` entity, this corresponds to a property in the entity

  - The *fieldNameX* case is stored exactly as it was sent in the request (This means the original case stored changes if an update is received)
- *fieldValueX:* Corresponding field value assigned to *fieldNameX*

Response

```
<req name="insert" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters
- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 403: Create Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	Invalid Repeatable Element
INVALID_SOAP_XML	Invalid SOAP XML
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found

Create Data Field Examples

Request 1

A request is made to create a property in the PoolState transparent data for a pool. The property name is mcc and the property value is 315. The pool does not have an existing PoolState property called mcc. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 1

The request is successful, and the property mcc with value 315 was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to create a property in the PoolState transparent data for a pool, using the alternate request format. The property name is mcc and the property value is 315. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
  <where>
<expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the property was created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to create a property in the PoolState transparent data for a pool. PoolState is a valid data type, but the pool does not have this entity type. The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
<expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 3

The request is successful, and the property as well as the PoolState entity is created. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
```

```
</req>
```

Request 4

A request is made to create a property in the PoolState transparent data for a pool. The property name is mcc and the property value is 315. The odk attribute is included requesting the data be updated if it exists. The request is not required in the response.

```
<req name="insert" resonly="y" odk="yes">
  <ent name="PoolStateEntity"/>
  <set>
<expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 4

The request is successful, and the existing property was updated. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 5

A request is made to create a property in the PoolState transparent data for a pool. The property name is mcc and the property value is 315. (The property exists) The odk attribute is not included (requests the data be updated if it exists.) The request is not required in the response.

```
<req name="insert" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="PoolID"/><value val="100000"/></expr>
    <expr><attr name="mcc"/><value val="315"/></expr>
  </set>
</req>
```

Response 5

The request fails. The error value indicates the mcc property exists, and the affected rows are 0. The original request is not included.

```
<req name="insert" resonly="y">
  <res error="70028" affected="0"/>
</req>
```

7.6.2 Get Data Field

Description

This operation retrieves a data field in a transparent data for the pool identified by the poolId.

All fields that match the requested fieldNameX are returned.

If more than one field matches the requested fieldNameX, then all matching fields returns.

The transparent data field is specified in fieldNameX.

NOTES

- If the specified field does not exist, `null=”y”` is returned.
- The *fieldNameX* is not case-sensitive. If a field existed called mcc, then an attempt to get a field name called MCC is successful.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.
- A field with the given identifier in the transparent data must exist for the pool.

Request

```
<req name="select" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <select>
    <expr><attr name="fieldName1"/></expr>
[
    <expr><attr name="fieldName2"/></expr>
            :
    <expr><attr name="fieldNameN"/><expr>
]
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is `PoolStateEntity` for the PoolState transparent data

- *fieldNameX*: The requested user defined field in the pool profile.

  For the `PoolState` entity, this corresponds to a property in the entity

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 9999999999999999999

Response

```
<req name="select" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<     <rv>fieldValue1</rv> | <rv null="y"> | <rv></rv> >
[
<     <rv>fieldValue2</rv> | <rv null="y"> | <rv></rv> >
      :
<     <rv>fieldValueN</rv> | <rv null="y"> | <rv></rv> >
]
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 is expected if the specified data exists (whether or not the field was found). A value of 0 is expected if the data does not exist
- *fieldValue*: The value of the requested field

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. One <row> element is returned per matching data. One <rv> (field value) element exists for every fieldNameX supplied in the original request. The <rv> elements are ordered the same as the fieldNameX properties were specified in the original request. If the field is valid, but not present in the entity, this is indicated with <rv null="y">. If the field is present, but has an empty value, this is indicated with <rv></rv>.

Error Codes 414: Get Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found

Get Data Field Examples

Request 1

A request is made to get three PoolState properties from the PoolState transparent data for a pool. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolStateEntity"/>
  <select>
<expr><attr name="mcc"/></expr>
<expr><attr name="expire"/></expr>
    <expr><attr name="duration"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, two values are returned and one was not set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
```

```
      <rv>315</rv>
      <rv>2015-02-09T11:20:32</rv>
      <rv null="y"/>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the mcc property in the PoolState transparent data for a pool. The mcc property is not set. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolStateEntity"/>
  <select>
    <expr><attr name="mcc"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 2

The request is successful, and the property is indicated to not be set. The original request is not included.

```
<req name="select" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv null="y">
    </row>
  </rset>
</req>
```

Request 3

A request is made to get the mcc property in the PoolState transparent data for a pool. The PoolState Entity does not exist. The request is not required in the response.

```
<req name="select" resonly="y">
  <ent name="PoolStateEntity"/>
  <select>
    <expr><attr name="mcc"/></expr>
  </select>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 3

The request fails. The error value indicates the PoolState entity does not exist, and the affected subscribers are 0. The original request is not included.

```
<req name="select" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

7.6.3 Update Data Field

Description

This operation updates an existing field in a transparent data for the pool identified by the poolId.

The field name is specified in fieldNameX, and the field value is specified in fieldValueX.

If more than one existing fields matches the requested fieldNameX, then the update request fails.

NOTES

- If the requested fields are valid, but not present, they are created.
- The *fieldNameX* is not case-sensitive. If a field name existed called mcc, then an attempt to update a field called MCC is successful.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied.
- If a field being updated is specified more than once in a request, the last value specified is used.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><value val="fieldValue1"/></expr>
[
    <expr><attr name="fieldName2"/><value val="fieldValue2"/></expr>
            :
    <expr><attr name="fieldNameN"/><value val="fieldValueN"/></expr>
]
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - `y`—Provides the result only, does not include the original request
  - `n`—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  - Value is `PoolStateEntity` for the PoolState transparent data

- *fieldNameX*: The requested user defined field in the pool profile.

  - For the PoolState entity, this corresponds to a property in the entity
  - The *fieldNameX* case is stored exactly as it was sent in the request (This means the original case stored changes if an update is received)

- *fieldValueX* Corresponding field value assigned to *fieldNameX*
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
```

```
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 is expected for success

Error Codes 425: Update Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_VAL_INVALID	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found

Update Data Field Examples

Request 1

A request is made to update the mcc and approved properties of the PoolState transparent data for a pool. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="mcc"/><value val="302"/></expr>
    <expr><attr name="approved"/><value val="no"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful, and mcc and approved property values are updated The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
```

Request 2

A request is made to update the approved property in the PoolState transparent data for a pool. The PoolState Entity does not exist for the pool. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="approved"/><value val="no"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req
```

Response 2

The request fails because the PoolState entity does not exist for the pool. The original request is not included.

```
<req name="update" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

7.6.4 Delete Data Field

Description

This operation deletes a data field in a transparent data for the pool identified by the poolId.

The field identifier is specified in fieldNameX.

If more than one data field matches the requested fieldNameX, then all matching fields are deleted.

NOTES

- The deletion of a non-existent field is not considered an error.
- The *fieldNameX* is not case-sensitive. If a field existed called mcc, then an attempt to delete a field called MCC is successful.
- If a request both updates and deletes the same field, then the update is applied first, followed by the delete, irrespective of the order in which they are supplied
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The entityName must reference a valid pooled transparent Entity in the Interface Entity Map table in the SEC.

Request

```
<req name="update" [resonly="resonly"] [id="id"]>
  <ent name="entityName"/>
  <set>
    <expr><attr name="fieldName1"/><op value="="/>
          <value val="" isnull="y"/></expr>
[
    <expr><attr name="fieldName2"/><op value="="/>
          <value val="" isnull="y"/></expr>
              :
    <expr><attr name="fieldNameN"/><op value="="/>
          <value val="" isnull="y"/></expr>
]
```

```
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </where>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is `PoolStateEntity` for the PoolState transparent data

- *fieldNameX*: The requested user defined field in the pool profile.

  For the `PoolState` entity, this corresponds to a property in the entity

- *fieldValueX*: Corresponding field value assigned to *fieldNameX*
- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

Response

```
<req name="update" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 indicates the field was deleted. A value of 0 indicates the field did not exist

Error Codes 436: Delete Data Field

Error Code	Description
INTF_ENTY_NOT_FOUND	Interface Entity Not Found
OCC_CONSTR_VIOLATION	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
FIELD_UNDEFINED	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC

Error Code	Description
FIELD_NOT_UPDATABLE	Field Cannot be Updated. The field is defined in the SEC as not be updatable
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found

Delete Data Field Examples

Request 1

A request is made to delete the mcc property of the PoolState transparent data for a pool. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="mcc"/><op value="="/><value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 1

The request is successful and mcc property is deleted The original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to delete the mcc property in PoolState transparent data for a pool. The mcc property does not exist for the PoolState data. The request is not required in the response.

```
<req name="update" resonly="y">
  <ent name="PoolStateEntity"/>
  <set>
    <expr><attr name="mcc"/><op value="="/><value val="" isnull="y"/></expr>
  </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="100000"/></expr>
  </where>
</req>
```

Response 2

The request is successful and the original request is not included.

```
<req name="update" resonly="y">
  <res error="0" affected="1"/>
</req>
```

7.7 Additional Pool Commands

Table 26: Summary of Additional Pool Commands

Command	Description	Keys	Command Syntax
Add Member to Pool	Add subscriber to a pool	PoolID and (MSISDN, IMSI, NAI or AccountId)	`<req name="operation"><oper name="AddPoolMember">`
Remove Member from Pool	Remove subscriber from a pool		`<req name="operation"><oper name="DelPoolMember">`
Get Pool Members	Retrieve pool member subscribers by PoolID	PoolID	`<req name="operation"><oper name="GetPoolMembers">`
Get Pool by Member (Key)	Retrieve PoolID for specified member subscriber	MSISDN, IMSI, NAI or AccountId	`<req name="operation"><oper name="GetPoolID">`
Get All Pool Members	Retrieve pool member subscribers from all local or local/remote systems by PoolID	PoolID	`<req name="operation"><oper name="GetAllPoolMembers">`

7.7.1 Add Member to Pool

Description

This operation adds one or more subscribers to a pool.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- Separate subscribers with the Keys of the keyNameX/keyValueX supplied must exist.
- Each subscriber must not be a member of a pool.
- The pool must have less than the maximum number of member subscribers allowed.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><param name="subKeyName1"/><op value="="/>
          <value val="subKeyValue1"/></expr>
[
    <expr><param name="subKeyName2"/><op value="="/>
          <value val="subKeyValue2"/></expr>
             :
    <expr><param name="subKeyName25"/><op value="="/>
          <value val="subKeyValue25"/></expr>
]
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *subKeyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *subKeyValueX*: Corresponding key field value assigned to *keyNameX*

NOTES

- Up to 25 subscribers can be added in one request.
- On a low capacity server configuration, the maximum number of AddPoolMember requests that can be included in a <tx> is 3, if each request adds 25 members. Although nothing in the software limits the number of requests to 3, this is the recommended value.
- The number of subscribers being added must not cause the number of members in the pool to exceed the maximum allowed value, else the request fails.
- If any subscriber specified is a member of a pool, the request fails.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 or more is expected for success

Error Codes 47: Add Member to Pool

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
ALREADY_POOL_MEMBER	Pool member exists. The subscriber is a member of a pool
POOL_NOT_FOUND	Pool does not exist. A subscriber cannot be added, retrieved or removed from a pool that does not exist
MAX_MEMBERS_BASIC_POOL	The maximum number of subscribers in a basic pool has been exceeded.

Add Member to Pool Examples

Request 1

A request is made to add a subscriber to a pool. Both the pool and the subscriber exist. The subscriber is not a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the subscriber is added to the pool. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to add a subscriber to a pool. The pool exists, but the subscriber does not. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="200002"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
  </oper>
</req>
```

Response 2

The request fails. The error value indicates that the subscriber does not exist, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70019" affected="0"/>
</req>
```

Request 3

A request is made to add a subscriber to a pool. The subscriber exists, but the pool does not. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="300003"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 3

The request fails. The error value indicates that the pool does not exist, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70036" affected="0"/>
</req>
```

Request 4

A request is made to add a subscriber to a pool (either local or remote). Both the pool and the subscriber exist. The subscriber is a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 4

The request fails. The error value indicates the subscriber is a member of a pool, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70023" affected="0"/>
</req>
```

Request 5

A request is made to add a subscriber to a basic pool. Both the pool and the subscriber exist. The subscriber is not a member of a pool. The pool has the maximum number of members allowed. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="400000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 5

The request fails. The error value indicates the basic pool has the maximum number of members allowed, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70051" affected="0"/>
</req>
```

Request 6

A request is made to add 3 subscribers to a pool. The pool and all subscribers exist. Subscribers are not a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="AddPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="800000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><param name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="14162221234"/></expr>
  </oper>
</req>
```

Response 6

The request is successful, and the 3 subscribers are added to the pool. The original request is not included.

```
<req name="operation" resonly="y">
```

```
  <res error="0" affected="1"/>
</req>
```

7.7.2 Remove Member from Pool

Description

This operation removes one or more subscribers from a pool.

Prerequisites

A pool with the key of the poolId supplied must exist.

Separate subscribers with the Keys of the keyNameX and keyValueX supplied must exist.

Each subscriber must be a member of the specified pool.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="DelPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="poolId"/></expr>
    <expr><param name="subKeyName1"/><op value="="/>
          <value val="subKeyValue1"/></expr>
[
    <expr><param name="subKeyName2"/><op value="="/>
          <value val="subKeyValue2"/></expr>
             :
    <expr><param name="subKeyName25"/><op value="="/>
          <value val="subKeyValue25"/></expr>
]
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *subKeyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *subKeyValueX*: Corresponding key field value assigned to *keyName*

NOTES

- Up to 25 subscribers can be removed in one request.
- On a low capacity server configuration, the maximum number of DelPoolMember requests that can be included in a <tx> is 3, if each request deletes 25 members. Although nothing in the software limits the number of requests to 3, this is the recommended value.
- If any subscriber specified is not a member of the pool, the request fails.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
```

```
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools updated. A value of 1 or more is expected for success

Error Codes 448: Remove Member from Pool

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
NOT_POOL_MEMBER	Not a pool member
POOL_NOT_FOUND	Pool does not exist. A subscriber cannot be added, retrieved or removed from a pool that does not exist

Remove Member from Pool Examples

Request 1

A request is made to remove a subscriber from a pool. Both the pool and the subscriber exist. The subscriber is a member of the pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="DelPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the subscriber is removed from the pool. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 2

A request is made to remove a subscriber from a pool. Both the pool and the subscriber exist. The subscriber is not a member of the pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="DelPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="200000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 2

The request fails. The error value indicates the subscriber is not a member of the pool, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70025" affected="0"/>
</req>
```

Request 3

A request is made to remove 3 subscribers from a pool. The pool and all subscribers exist. All subscribers are a member of the pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="DelPoolMember">
    <expr><param name="PoolID"/><op value="="/><value val="800000"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15145551234"/></expr>
    <expr><param name="IMSI"/><op value="="/>
          <value val="302370123456789"/></expr>
    <expr><param name="MSISDN"/><op value="="/>
          <value val="14162221234"/></expr>
  </oper>
</req>
```

Response 3

The request is successful, and the 3 subscribers are removed from the pool. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="3"/>
</req>
```

7.7.3 Get Pool Members

Description

This operation gets the list of subscriber members of a pool by poolId. This operation only gets the list of subscribers and addresses for a local pool on the UDR instance where the request was received.

Prerequisites

A pool with the key of the poolId supplied must exist.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="GetPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="poolId"/></expr>
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

Values: 1 to 999999999999999999999

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
[
            <member>
              <id><name>keyName1</name><value>keyValue1</value></id>
[
              <id><name>keyName2</name><value>keyValue2</value></id>
              :
              <id><name>keyNameN</name><value>keyValueN</value></id>
]
            </member>
]
[
            <member>
              <id><name>keyName1</name><value>keyValue1</value></id>
[
              <id><name>keyName2</name><value>keyValue2</value></id>
              :
              <id><name>keyNameN</name><value>keyValueN</value></id>
]
            </member>
            :
            <member>
              <id><name>keyName1</name><value>keyValue1</value></id>
[
              <id><name>keyName2</name><value>keyValue2</value></id>
              :
              <id><name>keyNameN</name><value>keyValueN</value></id>
]
            </member>
]
          </members>]]>
      </rv>
    </row>
  </rset>
]
</req>
```

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of Pools returned. A value of 1 is expected for success
- *keyNameX*: A key field for the member subscriber

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned, with one <rv> (row value) element.
- The <member> element is optional. There can be zero, one or many <member> elements. It is only present if the pool has member subscribers. One instance is present for every subscriber that is a member of the pool. A <member> element contains details about a single subscriber, containing all known user identities for that subscriber, one user identity per <id> element. There can be one or many <id> elements per <member> element.
- The format of this response can be returned in a legacy SPR compatible mode if UDR is configured to do so. See 7.8.1Appendix C for more details.

Error Codes 49: Get Pool Members

Error Code	Description
POOL_NOT_FOUND	Pool does not exist. A subscriber cannot be added, retrieved or removed from a pool that does not exist

Get Pool Members Examples

Request 1

A request is made to get the list of subscribers for a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the 3 member subscribers are returned. The original request is not included.

```
<req name="operation">
  <res error="0" affected="1"></res>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
            <member>
              <id><name>IMSI</name><value>311480100000001</value></id>
              <id><name>IMSI</name><value>311480100532432</value></id>
              <id><name>NAI</name><value>dad@operator.com</value></id>
            </member>
            <member>
              <id><name>MSISDN</name><value>380561234777</value></id>
              <id><name>IMSI</name><value>311480100000999</value></id>
            </member>
            <member>
              <id><name>NAI</name><value>joe@wireless.com</value></id>
              <id><name>NAI</name><value>p12321@mynet.com</value></id>
            </member>
          </members>]]>
      </rv>
    </row>
    </rset>
</req>
```

Request 2

A request is made to get the list of subscribers for a pool. The pool exists, but has no member subscribers. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="200000"/></expr>
  </oper>
</req>
```

Response 2

The request is successful, and no member subscribers are returned. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 3

A request is made to get the list of subscribers for a pool. The pool does not exist. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="300000"/></expr>
  </oper>
</req>
```

Response 3

The request fails. The error value indicates that the pool was not found, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70036" affected="0"/>
</req>
```

7.7.4 Get PoolID

Description

This operation gets the PoolID related to a subscriber, based on the given user identities of the subscriber.

Prerequisites

A subscriber with the Keys of the keyNameX/keyValueX values supplied must exist.

The subscriber must be a member of a pool.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="GetPoolID">
    <expr><param name="keyName1"/><op value="="/>
          <value val="keyValue1"/></expr>
[
    <expr><param name="keyName2"/><op value="="/>
          <value val="keyValue2"/></expr>
    :
    <expr><param name="keyNameN"/><op value="="/>
          <value val="keyValueN"/></expr>
]
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *keyNameX*: A key field in the subscriber profile

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
      <rv>poolId</rv>
    </row>
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of subscribers returned. A value of 1 is expected for success
- *poolId*: PoolID value of the pool the subscriber is a member of. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful, and the subscriber is a member of a pool. Only a single <row> element is returned, with one <rv> (row value) element, which contains the PoolID of the subscriber.

Error Codes 50: Get PoolID

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A subscriber/pool with the given key cannot be found
NOT_POOL_MEMBER	Not a pool member. The subscriber is not a member of a pool

Get PoolID Examples

Request 1

A request is made to get the PoolID for a subscriber. The subscriber is a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolID">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="33123654862"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the PoolID value was returned. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>100000</rv>
    </row>
  </rset>
</req>
```

Request 2

A request is made to get the PoolID for a subscriber. The subscriber exists, but is not a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolID">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
  </oper>
</req>
```

Response 2

The request fails. The error value indicates that the subscriber is not a member of a pool. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70025" affected="0"/>
</req>
```

Request 3

A request is made to get the PoolID for a subscriber. The subscriber does not exist. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolID">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15145556789"/></expr>
  </oper>
</req>
```

Response 3

The request fails. The error value indicates that the subscriber does not exist, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70019" affected="0"/>
```

```
</req>
```

Request 4

A request is made to get the PoolID for a subscriber. Both MSISDN and AccountId keys are supplied, and reference the same subscriber. The subscriber is a member of a pool. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetPoolID">
    <expr><param name="MSISDN"/><op value="="/>
          <value val="15141234567"/></expr>
    <expr><param name="AccountId"/><op value="="/>
          <value val="111222333"/></expr>
  </oper>
</req>
```

Response 4

The request is successful, and the PoolID value was returned. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
  <rset>
    <row>
      <rv>100000</rv>
    </row>
  </rset>
</req>
```

7.7.5 Get All Pool Members

Description

This operation has the option to get the list of subscriber members of a pool by poolId, from the local or from the local and all remote UDR systems.

NOTE: The addressList values (IMSI and ALL) are not case-sensitive.

Prerequisites

A pool with the key of the poolId supplied must exist.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/>
      <value val="poolId"/></expr>
[   <expr><param name="AddressList"/><op value="="/>
    <value val="addressList"/></expr> ]
  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

Values: 1 to 999999999999999999999

- *addressList:* (Optional) The requested address type of the subscriber for a pool is returned in the response

  Values:

  - IMSI—Only pool members with an IMSI address type are returned in the response
  - All—All pool members are returned in the response (default)

NOTES

- If a timeout occurs while waiting for a response from a remote UDR instance, then the UDR fails the request with a REQUEST_TIMEOUT error.
- If a request fails to be sent to a remote UDR instance, then the UDR fails the provisioning request with a REQUEST_TIMEOUT.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[ originalXMLRequest ]
  <res error="error" affected="affected"/>
[ <rset>
    <row>
      <rv>
 <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
   <members>
[           <member>
[              <udrId>udrId</udrId> ]
         <id><name>keyName1</name><value>keyValue1</value></id>
[              <id><name>keyName2</name><value>keyValue2</value></id>
          :
         <id><name>keyNameN</name><value>keyValueN</value></id> ]
     </member> ]

[           <member>
[              <udrId>udrId</udrId> ]
         <id><name>keyName1</name><value>keyValue1</value></id>
[              <id><name>keyName2</name><value>keyValue2</value></id>
         :
         <id><name>keyNameN</name><value>keyValueN</value></id> ]
     </member> ]
     :
[           <member>
[              <udrId>udrId</udrId> ]
         <id><name>keyName1</name><value>keyValue1</value></id>
[              <id><name>keyName2</name><value>keyValue2</value></id>
         :
         <id><name>keyNameN</name><value>keyValueN</value></id> ]
            </member> ]

   </members>]]>
</rv>
     </row>
   </rset> ]
  </req>
```

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request Values:A string with 1 to 4096 characters
- *udrId*: (Optional) A subscriber key range that is hosted by each UDR in the remote pool network. The response only includes the *udrId*.
  Value: 1 to 10 digits

- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of Pools returned. A value of 1 is expected for success
- *keyNameX*: A key field for the member subscriber

  Value is either IMSI, MSISDN, NAI, or AccountId

- *keyValueX*: Corresponding key field value assigned to *keyNameX*

NOTES

- The <rset> (row set) element is optional. It is only present if the request was successful. Only a single <row> element is returned, with one <rv> (row value) element.
- The <member> element is optional. There can be zero, one or many <member> elements. It is only present if the pool has member subscribers. One instance is present for every subscriber that is a member of the pool. A <member> element contains details about a single subscriber, containing all known user identities for that subscriber, one user identity per <id> element. There can be one or many <id> elements per <member> element.
- The response includes only the address types specified in the *addresslist* parameter in the request. (that is, those where *keyNameX* is in the list). Only the requested address types for a subscriber is returned in the response. If a subscriber is a pool member but does not have any of the address types, then the pool member is not included in the response.

Error Codes 51: Get All Pool Members

Error Code	Description
POOL_NOT_FOUND	Pool does not exist. A subscriber cannot be added, retrieved or removed from a pool that does not exist
REQUEST_TIMEOUT	Provisioning Request Timeout, a response was not received from Remote UDR

Get All Pool Members Examples

Request 1

A request is made to get the list of subscriber members for a pool.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the 3 subscriber members are returned. Only pool members from the local UDR instance are returned. The original request is not included.

```
<req name="operation">
  <res error="0" affected="1"></res>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
            <member>
              <id><name>IMSI</name><value>311480100000001</value></id>
              <id><name>IMSI</name><value>311480100532432</value></id>
              <id><name>NAI</name><value>dad@operator.com</value></id>
            </member>
```

```
            <member>
              <id><name>MSISDN</name><value>380561234777</value></id>
              <id><name>IMSI</name><value>311480100000999</value></id>
            </member>
            <member>
              <id><name>NAI</name><value>joe@wireless.com</value></id>
              <id><name>NAI</name><value>p12321@mynet.com</value></id>
            </member>
          </members>]]>
      </rv>
    </row>
    </rset>
</req>
```

Request 2

A request is made to get the list of subscriber members for a pool. The pool exists, but has no subscriber members. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
    <expr><param name="PoolID"/><op value="="/><value val="200000"/></expr>
  </oper>
</req>
```

Response 2

The request is successful, and subscriber members are not returned. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/></res>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
          </members>]]>
      </rv>
    </row>
    </rset>
</req>
```

Request 3

A request is made to get the list of subscriber members for a pool. The pool does not exist (local or any remote UDR instances). The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/><value val="300000"/></expr>
  </oper>
</req>
```

Response 3

The request fails. The error value indicates that the pool does not exist on all queried UDR instances (local or remote), and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70036" affected="0"/>
```

</req>

Request 4

A request is made to get the list of subscriber members for a pool across all UDR instances in the pool network.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
  </oper>
</req>
```

Response 4

The request is successful, and the 3 member subscribers are returned. The response includes pool members across all UDR instances in the pool network. The original request is not included.

```
<req name="operation">

  <res error="0" affected="1"></res>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
            <member>
              <udrId>1</udrId>
              <id><name>IMSI</name><value>311480100000001</value></id>
              <id><name>IMSI</name><value>311480100532432</value></id>
              <id><name>NAI</name><value>dad@operator.com</value></id>
            </member>
            <member>
              <udrId>2</udrId>
              <id><name>MSISDN</name><value>380561234777</value></id>
              <id><name>IMSI</name><value>311480100000999</value></id>
            </member>
            <member>
              <udrId>3</udrId>
              <id><name>NAI</name><value>joe@wireless.com</value></id>
              <id><name>NAI</name><value>p12321@mynet.com</value></id>
            </member>
          </members>]]>
      </rv>
    </row>
    </rset>
</req>
```

Request 5

A request is made to get the list of pool members across all UDR instances in the pool network. The request is not required in the response. There is a connection issue between the local and remote UDRs.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
</req>
```

Response 5

The request fails. The error value indicates a provisioning request timeout, the request is not sent to the remote UDR due to the connection being down, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70053" affected="0"/>
```

</req>

Request 6

A request is made to get the list of subscribers for a pool on all UDRs. The request is not required in the response. For this case, a response is not received from the remote UDR.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/><value val="100000"/></expr>
```

```
  </oper>
</req>
```

Response 6

The request fails. The error value indicates a provisioning request timeout, a response was not received from the remote UDR. The affected rows are 0 and the original request is not included.

```
<req name="operation" resonly="y">
  <res error="70053" affected="0"/>
```

</req>

Request 7

A request is made to get the list of subscriber members for a pool. The requested addressList type is IMSI and none of the subscriber members have IMSIs. The request is not required in the response.

```
<req name="operation" resonly="y">
  <oper name="GetAllPoolMembers">
<expr><param name="PoolID"/><op value="="/><value val="200000"/></expr>
<expr><param name="AddressList"/><op value="="/><value val="IMSI"/></expr>
  </oper>
</req>
```

Response 7

The request is successful, and subscriber members are not returned. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/></res>
  <rset>
    <row>
      <rv>
        <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
          <members>
          </members>]]>
      </rv>
    </row>
    </rset>
```

</req>

7.8 Pool Special Operation Commands

A transparent data entity may contain data that is organized in rows. An example of a row is a specific PoolQuota in the PoolQuota entity.

The required row is identified in the request by the rowIdName.

A specific instance of a PoolQuota (a specified row) in the PoolQuota transparent data entity can have its fields reset to pre-defined values using a provisioning command.

Table 27: Summary of Pool Special Operation Commands

Command	Description	Keys	Command Syntax
Reset Pool Quota	Reset the fields in the specified PoolQuota	Pool ID and Row Identifier	`<req name="operation">` `<oper name="Reset" ent="PoolQuotaEntity">`

7.8.1 Reset PoolQuota

Description

This operation resets a particular quota row in the PoolQuota data associated with a pool.

If more than one row matches the requested quotaName, then the reset request fails.

If the pool has PoolQuota data, then the configured values in the specified PoolQuota row are reset to the configured default values.

NOTES

- The rowIdName is case-sensitive. If a row existed called DayPass, then an attempt to reset a quota row called DayPass is successful, but an attempt to reset a quota row called DAYPASS fails.
- When a PoolQuota instance is reset using the Reset command, each resettable field is set to its defined reset value. If the field does not exist, it is not created. But, if a resettable field does not exist, and the field has a default value, then the field is created with the default value.
- This operation is ignored on an NPHO and a success is returned. Updates are not made to the database for these requests on NPHO.

Prerequisites

- A pool with the key of the poolId supplied must exist.
- The PoolQuota transparent data must exist for the pool.
- The specified PoolQuota row must exist in the PoolQuota transparent data.

Request

```
<req name="operation" [resonly="resonly"] [id="id"]>
  <oper name="Reset" ent="entityName">
<expr><param name="PoolID"/><op value="="/>
          <value val="poolID"/></expr>
    <expr><param name="rowIdName"/><op value="="/>
          <value val="rowIdValue"/></expr>
[
    <expr><param name="instanceFieldName"/><op value="="/>
          <value val="instanceFieldValue"/></expr>
]

  </oper>
</req>
```

- *resonly*: (Optional) Indicates whether the response consists of the result only, without including the original request in the response

  Values:

  - y—Provides the result only, does not include the original request
  - n—Includes the original request in the response (default)

- *id*: (Optional) Transaction ID value in the request, and passed back in the response

  Values: 1 to 4294967295

- *entityName*: A user defined entity type/name for the transparent data

  Value is `PoolQuotaEntity` for the PoolQuota transparent data

- *poolId*: PoolID value of the pool. Numeric value, 1 to 22 digits in length

  Values: 1 to 999999999999999999999

- *rowIdName*: Name of the XML attribute that identifies the row in the data blob

Value is name for Quota transparent data

- *rowIdValue*: The row name value that identifies the row in the data blob
- *instanceFieldName*: A user defined field in the data row that is used to define a unique row instance

  Value is cid for the PoolQuota transparent data

- *instanceFieldValue*: Corresponding field value assigned to *instanceFieldName*

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools reset. A value of 1 is expected for success

Error Codes 452: Reset PoolQuota

Error Code	Description
KEY_NOT_FOUND	Key Not Found. A pool with the given key cannot be found
REG_DATA_NOT_FOUND	Register Data Not Found
ROW_NOT_FOUND	Data row specified is not found
MULTIPLE_ROWS_FOUND	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria

Reset PoolQuota Examples

Request 1

A request is made to reset the PQ1 PoolQuota row for a pool. The pool has PoolQuota data, and the PoolQuota data contains a PoolQuota row called PQ1. The request is not required in the response.

```
<req name="operation">
 <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="100000"/></expr>
    <expr><param name="name"/><op value="="/><value val="PQ1"/></expr>
  </oper>
</req>
```

Response 1

The request is successful, and the specified PoolQuota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
```

```
</req>
```

Request 2

A request is made to reset the Monthly PoolQuota row. The pool does not have PoolQuota data. The request is not required in the response.

```
<req name="operation">
  <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="200000"/></expr>
    <expr><param name="name"/><op value="="/><value val="Monthly"/></expr>
  </oper>
</req>
```

Response 2

The request fails. The error value indicates the pool does not have PoolQuota data, and the affected rows are 0. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70027" affected="0"/>
</req>
```

Request 3

A request is made to reset the PQ6 PoolQuota row. The pool has PoolQuota data, but the PoolQuota data does not contain a PoolQuota row called PQ6. The request is not required in the response.

```
<req name="operation">
  <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="300000"/></expr>
    <expr><param name="name"/><op value="="/><value val="PQ6"/></expr>
  </oper>
</req>
```

Response 3

The request fails, because the PQ6 data row was not present. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70032" affected="0"/>
</req>
```

Request 4

A request is made to reset the PQ6 PoolQuota row. The pool has PoolQuota data with multiple rows called PQ6. The request is not required in the response.

```
<req name="operation">
  <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
    <expr><param name="name"/><op value="="/><value val="PQ6"/></expr>
  </oper>
```

</req>

Response 4

The request fails, because multiple rows exist with the rows called PQ6. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="70035" affected="0"/>
</req>
```

Request 5

A request is made to reset the PQ1 PoolQuota row for a pool with cid field 1234. The pool has PoolQuota data, and the PoolQuota data contains a PoolQuota row called PQ1. The request is not required in the response.

```
<req name="operation">
 <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="400000"/></expr>
<expr><param name="name"/><op value="="/><value val="PQ1"/></expr>
<expr><param name="cid" /><op value="="/><value val="1234"/></expr>
  </oper>
</req>
```

Response 5

The request is successful, and the specified PoolQuota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Request 6

A request is made to reset the PQ1 PoolQuota row for a pool with cid field 1234. The pool has PoolQuota data, the PoolQuota data contains a PoolQuota row called PQ1 and cid field. The request is not required in the response.

```
<req name="operation">
 <oper name="Reset" ent="PoolQuotaEntity">
    <expr><param name="PoolID"/><op value="="/>
          <value val="500000"/></expr>
<expr><param name="name"/><op value="="/><value val="PQ1"/></expr>
    <expr><param name="cid" /><op value="="/><value val="1234"/></expr>
  </oper>
</req>
```

Response 6

The request is successful, and the specified PoolQuota row was reset. The original request is not included.

```
<req name="operation" resonly="y">
  <res error="0" affected="1"/>
</req>
```

Appendix A. SOAP Interface Error Codes

SOAP error codes are returned by the SOAP interface in the `error` attribute parameter of the `<res>` message (see section 5.2.2). The `error` parameter of a response message indicates the success or failure of a request.

The complete set of response error codes and their associated values are defined in the following table.

The Type column indicates if an error is permanent (P) or temporary (T), or indicates success (S). A request that results in a permanent error is discarded and not sent again. A request that results in a temporary can be sent again at a different time, and may be successful.

Error codes that are marked with an * (asterisk) are permanent errors that can be fixed by means of configuration, such as configuring the entities or fields in the SEC.

Error Codes 53: SOAP Interface

Error Code	Value	Type	Description
NOT_PROCESSED	1	P	Not processed. The request was in a block transaction, and was not processed due to an error with another request in the same block transaction
INTF_ENTY_NOT_FOUND	70000	P*	Interface Entity Not Found
ENTY_DEF_NOT_FOUND	70002	P	Entity Definition Not Found
VER_BFS_NOT_FOUND	70003	P	Versioned Base Field Set for the Transparent Entity Not Found
NON_VER_BFS_NOT_FOUND	70004	P	Non Versioned Base Field Set for the Transparent Entity Not Found
MULT_VER_TAGS_FOUND	70005	P	Multiple Version Tags Found
FIELD_VAL_INVALID	70006	P*	Field Value Not Valid. The value for a given field is not valid based on the definition in the SEC
OCC_CONSTR_VIOLATION	70007	P*	Occurrence Constraint Violation. There are too many instances of a given field. Likely more than one instance of a non-repeatable field
INVAL_REPEATABLE_ELEM	70008	P	Invalid Repeatable Element
INVALID_XML	70009	P	Invalid Input XML
FLD_SET_NOT_FOUND	70010	P	Field Set Not Found
FLD_SET_EXISTS	70011	P	Field Set Exists
FIELD_NOT_FOUND	70012	P	Field Not Found
FIELD_EXISTS	70013	P	Field Exists
FLD_SET_UNDEFINED	70014	P	Field Set Not Defined
FIELD_UNDEFINED	70015	P	Field Not Defined. The given field is not a valid field in the entity as defined in the SEC

Error Code	Value	Type	Description
FIELD_NOT_UPDATABLE	70016	P	Field Cannot be Updated. The field is defined in the SEC as not be updatable
ENT_CANNOT_RESET	70017	P	Entity Cannot be Reset. The reset command cannot be used on the requested entity
DB_OPER_FAILED	70018	P	Database Operation Failed
KEY_NOT_FOUND	70019	P	Key Not Found. A subscriber/pool with the given key cannot be found
KEY_EXISTS	70020	P	Key Exists. A subscriber/pool exists with the given key
SUB_IN_POOL	70021	P	Subscriber is pool member. The subscriber is a member of a pool. A subscriber cannot be deleted if they are a pool member
HAS_POOL_MEMBERS	70022	P	Has pool members. A pool cannot be deleted when it has member subscribers
ALREADY_POOL_MEMBER	70023	P	Pool member exists. The subscriber is a member of a pool
MAX_POOL_MEMBERS	70024	P	Pool member List Max Limit Reached
NOT_POOL_MEMBER	70025	P	Not a pool member
OPER_NOT_ALLOWED	70026	P	Operation Not Allowed
REG_DATA_NOT_FOUND	70027	P	Register Data Not Found
REG_EXISTS	70028	P	This error code is utilized for two scenarios: 1. Register exists 2. A property exists and the odk flag was not set to indicate the insert request be converted to an update.
UNEXPECTED_ERROR	70029	P	Un-Expected Error
INV_SOAP_XML	70030	P	Invalid SOAP XML
SERVICE_UNAVAILABLE	70031	T	Service is unavailable. Provisioning has been disabled
ROW_NOT_FOUND	70032	P	Data row specified is not found
VALUE_EXISTS	70033	P	List value added exists
FLD_NOT_MULTI	70034	P	Field is not a multi-value field. Add and remove from list operations can only be performed on a multi-value field, and the field supplied is not multi-value
MULTIPLE_ROWS_FOUND	70035	P	Multiple rows match the given criteria. When updating a row, only one row can exist that match the given row criteria

Error Code	Value	Type	Description
POOL_NOT_FOUND	70036	P	Pool does not exist. A subscriber cannot be added, retrieved or removed from a pool that does not exist
INVALID_KEY_VALUE	70037	P	The key value supplied is invalid, due to invalid characters or format.
DB_RETRY_EXHAUSTED	70038	T	Data is not committed to database as the total number of retries to commit database transactions exhausted. **NOTE:** The client retries the command again
DURABILITY_DEGRADED	70039	T	Data is not committed as Durability is degraded. **NOTE:** The client retries the command again
DURABILITY_TIMEOUT	70040	T	Data is not made durable in the configured Durability Timeout. **NOTE:** The client retries the command again to get the data sent in the failed request to verify that it was stored by last request
TOO_BIG_MESSAGE	70041	P	The provisioning request size exceeded the maximum allowed size
MEMORY_FULL	70042	P	Free system memory is low. Request cannot be performed
MULTIPLE_KEYS_NOT_MATCH	70043	P	Multiple keys supplied do not refer to the same subscriber
ONE_KEY_REQUIRED	70044	P	At least one key is required for a subscriber
SYSTEM_CONGESTION	70045	T	Request rejected due to system congestion
CONNECTION_ERROR	70046	P	Request to send to different UDR instance is not sent because a valid connection is not available to send the request
MAX_MEMBERS_BASIC_POOL	70051	P	The maximum number of subscribers in a basic pool has been exceeded
ENTERPRISE_TO_BASIC_POOL_ FAILED	70052	P	Enterprise to Basic Pool Conversion failed because the Pool has more members than the maximum threshold for a basic pool.
REQUEST_TIMEOUT	70053	P	Provisioning Request Timeout, a response was not received from Remote UDR
INVALID_USER_CREDENTIALS	70054	P	Authentication of the Username/Password received in the SOAP message header has failed validation.
AE_KEY_EXISTS	70055	P	An AE subscriber exists with the given key. Only applicable when option enableAEKeyAlreadyExistsErrCode is enabled

Appendix B. SOAP Interface System Variables

The SOAP interface has a set of system variables that affect its operation as it runs. SOAP interface variables (Table 28) can be set via the UDR GUI and can be changed at runtime to effect dynamic server reconfiguration.

Table 28: SOAP Interface System variables

Parameter	Description
SOAP Interface Port	SOAP Interface TCP Listening Port. NOTE: Changes to the TCP listening port do not take effect until the udrprov process is restarted. Also, you must specify a different port than the REST interface. Default is 62001; Range is 0 to 65535
SOAP Interface Idle Timeout	The maximum time (in seconds) that an open SOAP connection remains active without a request being sent, before the connection is dropped. Default is 1200; Range is 1 to 86400
Maximum SOAP Connections	Maximum number of simultaneous SOAP Interface client connections. **NOTE:** Changes to the Maximum SOAP Connections option do not take effect until the udrprov process is restarted. Default is 100; Range is 1 to 100
Allow SOAP Connections	Whether or not to allow incoming provisioning connections on SOAP Interface. Default is UNCHECKED
Transaction Durability Timeout*	The amount of time (in seconds) allowed between a transaction being committed and it becoming durable. If Transaction Durability Timeout lapse, DURABILITY_TIMEOUT response is sent to the originating client. The associated request is resent to ensure that the request was committed. Default is 5; Range is 2 to 3600
Compatibility Mode*	Indicates whether backwards compatibility is enabled. NOTE: Change to Compatibility Mode may cause the existing provisioning connections to be dropped. Default is R10.0+
Maximum Requests in SOAP <tx> XML	The maximum number of requests in a single SOAP tx transaction. Default is 12; RANGE=1 to 50

NOTE: Parameters labeled with an * (asterisk) are existing system variables defined and used by other components of UDR.

Appendix C. Legacy SPR Compatibility Mode

UDR can be configured to run in a compatibility mode with the legacy SPR.

When the `Compatibility Mode` system option (see Appendix B), which is configurable by the UDR GUI, is set to R10+ then UDR behaves as described in the main body of this document. When `Compatibility Mode` is set to R9.x, then the differences contained in this appendix apply.

Enabling this configuration option results in the format of some requests and responses being different to the default UDR behavior. This appendix lists the different requests and responses that enabling the option applies to.

Get Pool Members Response Format

UDR returns the list of pool members in the format using a `<members>` XML element, as returned by the REST interface.

When configured in legacy SPR mode, UDR returns the list of pool members in the format as described below.

Response

```
<req name="operation" [resonly="resonly"] [id="id"]>
[
  originalXMLRequest
]
  <res error="error" affected="affected"/>
[
  <rset>
    <row>
<     <rv>publicIdentity</rv> | <rv/> >
<     <rv>MSISDN1[,MSISDN2[,MSISDN3]]</rv> | <rv/> >
<     <rv>IMSI1[,IMSI2[,IMSI3]]</rv> | <rv/> >
<     <rv>NAI1[,NAI2[,NAI3]]</rv> | <rv/> >
<     <rv>accountId</rv> | <rv/> >
    </row>
]
[
    <row>
<     <rv>publicIdentity</rv> | <rv/> >
<     <rv>MSISDN1[,MSISDN2[,MSISDN3]]</rv> | <rv/> >
<     <rv>IMSI1[,IMSI2[,IMSI3]]</rv> | <r/> >
<     <rv>NAI1[,NAI2[,NAI3]]</rv> | <rv/> >
<     <rv>accountId</rv> | <rv/> >
    </row>
    :
    <row>
<     <rv>publicIdentity</rv> | <rv/> >
<     <rv>MSISDN1[,MSISDN2[,MSISDN3]]</rv> | <rv/> >
<     <rv>IMSI1[,IMSI2[,IMSI3]]</rv> | <rv/> >
<     <rv>NAI1[,NAI2[,NAI3]]</rv> | <rv/> >
<     <rv>accountId</rv> | <rv/> >
    </row>
]
  </rset>
]
</req>
```

- *originalXMLRequest*: (Optional) The text of the original XML request that was sent.

  NOTE: This is always present unless the `resonly="y"` attribute is set in the original request

  Values:A string with 1 to 4096 characters

- *resonly*: (Optional) The *resonly* value from the original XML request, if supplied
- *id*: (Optional) The *id* value from the original XML request, if supplied
- *error*: Error code indicating outcome of request. 0 means success, see below for other values
- *affected*: The number of pools returned. A value of 1 or more is expected for success

- *publicIdentity*: The internal public identity value for the subscriber. This field is not used, and a value is not present
- *MSISDNX*: Comma separated list of (up to 3) MSISDN values corresponding to subscriber in the pool. Values are not present if an MSISDN is not provisioned for the subscriber

  Values:A string with 8 to 15 digits (if value is set)

- *IMSIX*: Comma separated list of (up to 3) IMSI values corresponding to subscriber in the pool. Values are not present if an IMSI is not provisioned for the subscriber

  Values:A string with 10 to 15 digits (if value is set)

- *NAIX*: Comma separated list of (up to 3) NAI values corresponding to subscriber in the pool. Values are not present if an NAI is not provisioned for the subscriber
- Refer to Table 8 for supported NAI formats and length
- *accountId*: AccountId corresponding to subscriber in the pool. This value is not present if an AccountId is not provisioned for the subscriber

  Values:A string with 1 to 255 characters (if value is set)

NOTE: The <rset> (row set) element is optional. It is only present if the request was successful. One subscriber is returned per <row> element returned, each always containing five <rv> (row value) elements.

C.1 LEGACY SPR SOAP REQUEST FORMAT

The legacy SPR uses a different SOAP request format as described below. Requests can be sent using the same format as done for the legacy SPR.

NOTE: The <soapenv:Header> element in the request is optional and can be omitted. It can be provided, but are ignored. Authentication is not performed using the UserName/Passwd in UDR.

Figure 6: Legacy SPR SOAP Request Format

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

  <soapenv:Header>
    <ns1:UserName
      soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
      soapenv:mustUnderstand="0"
      xsi:type="soapenc:string"
      xmlns:ns1="blueslice.com"
      xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">UserName</ns1:UserName>

  <ns2:Passwd
    soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
    soapenv:mustUnderstand="0"
    xsi:type="soapenc:string"
    xmlns:ns2="blueslice.com"
    xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">Password</ns2:Passwd>
  </soapenv:Header>

  <soapenv:Body>

    <processTransaction xmlns="http://webservice.blueslice.com">

        <![CDATA[REQUEST]]>

    </processTransaction>

  </soapenv:Body>

</soapenv:Envelope>
```

Legacy SPR SOAP Response Format

When UDR is configured in legacy SPR mode, even when SOAP requests are sent using the SOAP request format as specified in Figure 6: Legacy SPR SOAP Request Format, the SOAP response format is different to the format that the legacy SPR returns. Based on the implementation of UDR, this is unavoidable.

The response does not cause a provisioning client that uses a native SOAP interface any issues (for example, one that uses the WSDL file), as it is a valid SOAP response. But, if any provisioning clients have been implemented to look for specific XML elements (such as <soapenv:Envelope> instead of <SOAP-ENV:Envelope>), this problems may arise.

The format of the SOAP response returned by UDR is listed below in Figure 7.

NOTE: The <SOAP-ENV:Header> is only returned if a <SOAP-ENV:Header> is included in the request. In UDR, the <SOAP-ENV:Header> is optional in the request, and is ignored.

Figure 7: Legacy SPR SOAP Response Format

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://webservice.blueslice.com">

  <SOAP-ENV:Header/>

<
  <SOAP-ENV:Body>

    <ns1:message error="ErrorCode">

      <![CDATA[RESPONSE]]>

    </ns1:message>

  </SOAP-ENV:Body>
|
  <SOAP-ENV:Body
    SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">

    <SOAP-ENV:Fault>
    ...
    </SOAP-ENV:Fault>

  </SOAP-ENV:Body>
>

</SOAP-ENV:Envelope>
```

Example of a successful SOAP response in legacy SPR mode:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns1="http://webservice.blueslice.com">
  <SOAP-ENV:Header/>
  <SOAP-ENV:Body>
    <ns1:message error="0">
      <![CDATA[<req name="insert" resonly="y">
                 <res affected="1" error="0"/>
               </req>]]>
    </ns1:message>
  </SOAP-ENV:Body>
```

```
</SOAP-ENV:Envelope>
```

soapAttributeOrderInResponse

In ProvOptions table, if soapAttributeOrderInResponse flag is set as TRUE then SOAP Response has error followed by attribute in res element, otherwise the order is reversed.

Example of a successful SOAP response when soapAttributeOrderInResponse flag is set as FALSE (Deafult case):

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC=http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi=http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd=http://www.w3.org/2001/XMLSchema"
xmlns:ns1=http://www.oracle.com/udr/"
xmlns:ns2="http://www.3gpp.org/udc/notification">
<SOAP-ENV:Body>
     <ns1:message error="0">
      <![CDATA[<?xml version="1.0" encoding="UTF-8"?><req name="insert" resonly="y">
        <res affected="1" error="0"/>
        </req>]]>
     </ns1:message>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a successful response when soapAttributeOrderInResponse flag is set as TRUE:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
xmlns:SOAP-ENV=http://schemas.xmlsoap.org/soap/envelope/
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ns1="http://www.oracle.com/udr/"
xmlns:ns2="http://www.3gpp.org/udc/notification">
<SOAP-ENV:Body>
     <ns1:message error="0">
     <![CDATA[<?xml version="1.0" encoding="UTF-8"?><req name="insert" resonly="y">
     <res error="0" affected="1"/>
                                                                              </req>]]>
     </ns1:message>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

validateProvResponse

In ProvOptions table, if validateProvResponse is set as TRUE then the response for the provisioning Read/Get requests are validated and changed as per the SEC configuration.

Example of a successful SOAP response when validateProvResponse flag is set as FALSE (Deafult case):

BillingDay field is changed to billingday for the subscriber. Provisioning Read/Get request is not validated as per SEC configuration while retrieving subscriber. See the response below:

```
<?xml version="1.0" encoding="UTF-8"?>
```

<SOAP-ENV:Envelope

```
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ns1="http://www.oracle.com/udr/"
xmlns:ns2="http://www.3gpp.org/udc/notification">
<SOAP-ENV:Body>
    <ns1:message error="0">
    <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
    <req name="select" resonly="y">
    <res affected="1" error="0"/>
       <rset>
              <row>
```

```
                <rv>
                   <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
                   <subscriber>
                     <field name="MSISDN">9876543210</field>
                     <field name="billingday">23</field>
                     <field name="Entitlement">DayPass</field>
                     <field name="Custom20">xyz</field>
                     <field name="Entitlement">DayPassPlus</field>
                     </subscriber>]]]]>
                    <![CDATA[>
                   </rv>
                </row>
              </rset>
        </req>]]>
        </ns1:message>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example of a successful SOAP response when "validateProvResponse" flag is set as TRUE:

BillingDay field is changed to billingday for subscriber. Provisioning Read/Get request is validated as per SEC configuration while retrieving subscriber. See the response below:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ns1="http://www.oracle.com/udr/"
xmlns:ns2="http://www.3gpp.org/udc/notification">
<SOAP-ENV:Body>
    <ns1:message error="0">
    <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
    <req name="select" resonly="y">
    <res affected="1" error="0"/>
       <rset>
              <row>
                <rv>
                   <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
                   <subscriber>
                     <field name="MSISDN">9876543210</field>
                     <field name="BillingDay">23</field>
                     <field name="Entitlement">DayPass</field>
                     <field name="Custom20">xyz</field>
                     <field name="Entitlement">DayPassPlus</field>
                     </subscriber>]]]]>
                    <![CDATA[>
                   </rv>
                </row>
              </rset>
        </req>]]>
        </ns1:message>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

C.2 ENABLE AE KEY ALREADY EXISTS ERROR

In ProvOptions table, if enableAEKeyAlreadyExistsErrCode is set as TRUE (default set as FALSE) then error AE_KEY_EXISTS (70055) returns when following criterias are met:

A create subscriber request encounters key exists failure

The key which exists belongs to an AE subscriber

Example of a SOAP response when enableAEKeyAlreadyExistsErrCode flag set to TRUE and create subscriber request failed when key exists failure:

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope
xmlns:SOAP-ENV=http://schemas.xmlsoap.org/soap/envelope/
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:ns1="http://www.oracle.com/udr/"
xmlns:ns2="http://www.3gpp.org/udc/notification">
<SOAP-ENV:Body>
     <ns1:message error="0">
     <![CDATA[<?xml version="1.0" encoding="UTF-8"?><req name="insert" resonly="y">
              <res error="70055" affected="0"/>
              </req>]]>
     </ns1:message>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Appendix D. My Oracle Support

My Oracle Support (*https://support.oracle.com*) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with My Oracle Support registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. When calling, select the options in sequence on the Support telephone menu:

1. Select 2 for New Service Request
2. Select **3** for Hardware, Networking and Solaris Operating System Support
3. Select one of the following options:
    - For Technical issues such as creating a Service Request (SR), Select **1**
    - For Non-technical issues such as registration or assistance with My Oracle Support, Select **2**

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.

Appendix E. Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, *http://docs.oracle.com*. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at *http://www.adobe.com*.

1. Access the Oracle Help Center site at *http://docs.oracle.com*
2. Click **Industries**.
3. Under the Oracle Communications subheading, click the **Oracle Communications documentation** link.
4. The Communications Documentation page displays. Most products covered by these documentation sets are under the headings Network Session Delivery and Control Infrastructure or Platforms.
5. Click your Product and then the Release Number.
6. A list of the entire documentation set for the selected product and release displays.
7. To download a file to your location, right-click the **PDF** link, select **Save target as** (or similar command based on your browser), and save to a local folder.