## Contents

**Preface** ................................................................................................................................. vii  
  Audience........................................................................................................................................ vii  
  Related Documentation ........................................................................................................ vii  
  Documentation Accessibility ................................................................................................ viii  
  Document Revision History .................................................................................................. ix  

### 1 GSM 3GPP Technology Pack Overview

**About GSM 3GPP Services** .................................................................................................. 1-1  
**About the GSM 3GPP Technology Pack** ........................................................................... 1-2  
**Contents of the GSM 3GPP Technology Pack** .................................................................. 1-8  
  GSM 3GPP Technology Pack Super Individual JAR Files .................................................. 1-9  
  GSM 3GPP Technology Pack Super JAR Archive File ......................................................... 1-10  
  GSM 3GPP Technology Pack ZIP Archive Files ................................................................. 1-10  
  Address, Location, Party and Voicemail Cartridges ......................................................... 1-10  
  GSM 3GPP Cartridges ........................................................................................................... 1-11  
  Model Projects ......................................................................................................................... 1-11  
  Common Library ...................................................................................................................... 1-11  
  GSM 3GPP Technology Pack Sample Ant Build Scripts .................................................. 1-12  
  GSM 3GPP Technology Pack Javadoc .................................................................................. 1-12  
  GSM 3GPP Technology Pack Readiness Data .................................................................. 1-12  
  GSM 3GPP Technology Pack Sample XML for Web Service Requests .......................... 1-12  

**Using the GSM 3GPP Technology Pack** ........................................................................... 1-12  
  Opening the Technology Pack in Design Studio ................................................................. 1-12  
  Deploying the Technology Pack into UIM ........................................................................ 1-13  
  Defining GSM 3GPP-Specific Inventory Items .................................................................. 1-13  

### 2 Address, Location, Party, and Voicemail Content

**Entity Specifications** .......................................................................................................... 2-1  
  Logical Device Specifications ............................................................................................... 2-2  
  Logical Device Account Specifications ................................................................................... 2-2  
  Party Specifications .............................................................................................................. 2-2  
  Place Specifications ............................................................................................................ 2-2  
  Role Specifications ............................................................................................................. 2-4  
  Service Specifications .......................................................................................................... 2-4  
  Service Configuration Specifications .................................................................................... 2-5
3 GSM 3GPP Content

Entity Specifications ................................................................................................................. 3-1
Inventory Group Specifications .................................................................................................. 3-1
Logical Device Account Specifications ...................................................................................... 3-1
Logical Device Specifications .................................................................................................... 3-2
Service Configuration Specifications ......................................................................................... 3-3
Subscription Configuration Items ............................................................................................... 3-3
Service Location Configuration Items ....................................................................................... 3-4
Service Registries Configuration Items ..................................................................................... 3-4
Service Features Configuration Items ....................................................................................... 3-5
Service Specifications ................................................................................................................ 3-6
Service Profile Specifications ..................................................................................................... 3-6
CircuitSwitchedDataProfile ......................................................................................................... 3-7
PDPContextProfile ...................................................................................................................... 3-7
SupplementaryServiceProfile .................................................................................................... 3-8
TeleserviceProfile ..................................................................................................................... 3-9

Rulesets ................................................................................................................................... 3-10

4 Extending the GSM 3GPP Technology Pack

Extending Rulesets ..................................................................................................................... 4-1
Extending Mobile Service Configuration Specification Rulesets .............................................. 4-2
Extending Mobile Service Specification Rulesets ....................................................................... 4-2
Extending Voicemail Service Configuration Specification Rulesets ........................................ 4-2
Extending the Mobile Service Configuration ........................................................................... 4-3
Extending Mobile Service Configuration when Automating Configurations through the User Interface ........................................................................................................ 4-3
Extending Mobile Service Configuration Automation Logic through Web Services .................. 4-3
Extending the Voicemail Service Configuration ...................................................................... 4-4
Enabling the Voicemail Service Feature Implementation ....................................................... 4-4

5 Automating Mobile Services through Web Services

About the UIM Service Fulfillment Web Service ........................................................................ 5-1
About GSM 3GPP Custom Service Actions and Parameters ...................................................... 5-2
createMobileGSMService .......................................................................................................... 5-2
Understanding Service Registries ............................................................................................. 5-7
Understanding the Request ......................................................................................................... 5-7
About the Interaction, Item, and Service ..................................................................................... 5-10
About the Parameters .................................................................................................................. 5-10
Understanding the CreateMobileGSMService Action within a Request ................................. 5-11
Understanding How Characteristics are Represented in the Request ....................................... 5-12
Understanding How Primitive Data Types are Represented in the Request .............................. 5-12
addData ..................................................................................................................................... 5-13
Example ..................................................................................................................................... 5-14
Understanding addData Actions within a Request ..................................................................... 5-14
6 GSM 3GPP Technology Pack Implementation Example

Overview.................................................................................................................. 6-1
Creating GSM 3GPP Inventory Resources................................................................. 6-1
  Creating SIM Cards................................................................................................. 6-2
  Creating IMSI Accounts......................................................................................... 6-2
  Creating a Service Location.................................................................................... 6-2
  Creating Serving Areas.......................................................................................... 6-2
  Creating Home Location Registers........................................................................ 6-2
  Creating SMSC Registers....................................................................................... 6-3
  Creating Voicemail Servers.................................................................................... 6-3
  Creating Subscription Profiles.............................................................................. 6-3
  Creating Telephone Numbers and Reservations.................................................. 6-3
Creating the GSM 3GPP Service................................................................................. 6-3
  Reviewing the Service in UIM............................................................................... 6-4
Oracle Communications Unified Inventory Management (UIM) technology packs provide support for specific technology domains and a base for project-specific adaptation. Wherever possible, technology packs include elements and business logic based on relevant industry standards.

Technology packs are separately licensed and may evolve over multiple releases. Guidelines are provided to facilitate uptake of new or enriched elements while preserving field-developed implementations.

The GSM 3GPP Technology Pack provides business entities and behaviors required by providers of 3G Mobile services offered over GSM (Global System for Mobile Communications) networks. This technology pack provides the ability to model 3G services, the devices on which these services are provisioned, supporting logical resources, and other supporting business entities and structures.

This guide contains the following information about the GSM 3GPP Technology Pack:

- Background and introductory information about GSM 3GPP technology and the technology pack
- Contents of the technology pack
- Instructions for configuring a GSM 3GPP service
- Example implementation scenario
- Extension points for the technology pack

**Audience**

This document is intended for business analysts and the following groups of people who design and implement a GSM 3GPP service:

- Customer-service subject-matter experts who model products in the application
- Network design engineers who model equipment, connections, and networks in the application
- Service provisioners who model services in the application

The guide assumes that you have a working knowledge of GSM 3GPP technology and of UIM.

**Related Documentation**

For more information, see the following documents in the Oracle Communications Unified Inventory Management documentation set:
- **UIM Installation Guide**: Describes the requirements for installing UIM, installation procedures, and post-installation tasks.
- **UIM System Administrator’s Guide**: Describes administrative tasks such as working with cartridges and technology packs, maintaining security, managing the database, configuring Oracle Map Viewer, and troubleshooting.
- **UIM Security Guide**: Provides guidelines and recommendations for setting up UIM in a secure configuration.
- **UIM Concepts**: Provides an overview of important concepts and an introduction to using both UIM and Design Studio.
- **UIM Developer’s Guide**: Explains how to customize and extend many aspects of UIM, including the data model, life-cycle management, topology, security, rulesets, user interface, and localization.
- **UIM Web Services Developer’s Guide**: Describes the UIM Service Fulfillment Web Service operations and how to use them, and describes how to create custom Web services.
- **UIM API Overview**: Provides detailed information and code examples of numerous APIs presented within the context of a generic service fulfillment scenario, and within the context of a channelized connectivity enablement scenario.
- **UIM Information Model Reference**: Describes the UIM information model entities and data attributes, and explains patterns that are common across all entities.
- **Oracle Communications Information Model Reference**: Describes the Oracle Communications information model entities and data attributes, and explains patterns that are common across all entities. The information described in this reference is common across all Oracle Communications products.
- **UIM Cartridge and Technology Pack Guide**: Provides information about how you use cartridges and technology packs with UIM. Describes the content of the base cartridges.
- **UIM technology pack implementation guides**: Describe the content of product technology packs as well as configuration guidelines and implementation considerations.

For step-by-step instructions for performing tasks, log in to each application to see the following:
- **UIM Help**: Provides step-by-step instructions for tasks you perform in UIM.

**Documentation Accessibility**


**Access to Oracle Support**

Document Revision History

The following table lists the revision history for this book.

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E51358-01</td>
<td>July 2014</td>
<td>Initial release.</td>
</tr>
</tbody>
</table>
This chapter provides an overview of the GSM 3GPP Technology Pack for Oracle Communications Unified Inventory Management (UIM). This chapter contains the following sections:

- About GSM 3GPP Services
- About the GSM 3GPP Technology Pack
- Contents of the GSM 3GPP Technology Pack
- Using the GSM 3GPP Technology Pack

About GSM 3GPP Services

Global System for Mobile (GSM) communications is the technology most often used for global mobile communications. Since its introduction in the early 1980s, GSM has undergone constant enhancement to expand the variety of mobile services it delivers.

Figure 1–1 displays an overview of the GSM service:

Figure 1–1  GSM 3GPP High Level Overview

The 3rd Generation Partnership Project (3GPP) enabled a global third-generation (3G) mobile phone system specification based on GSM specifications, including:
Radio access technologies such as general packet radio service (GPRS) and enhanced data rates for GSM evolution (EDGE)

3GPP core networks

IP multimedia subsystems (IMS)

GSM 3GPP service enables users with GSM 3GPP handsets (mobile phones) and other GSM-enabled mobile communications devices to place and receive calls, send text messages, and exchange other media over the public switched telephone network (PSTN).

A call from a GSM 3GPP communications device to a land line telephone travels by radio wave to the nearest cell tower. From there, the call travels by copper wire or optical fiber over the PSTN to the central office (CO). The CO routes the call back through the PSTN to the dialed device.

Information on the subscriber identification module (SIM) card in each GSM 3GPP device identifies that device to the network. A database on each subscriber’s home network also holds this information, which identifies the intended recipient for a given message.

About the GSM 3GPP Technology Pack

The GSM 3GPP Technology Pack enables you to model instances of mobile telephony services in UIM. This technology pack provides the specifications, characteristics, and rules required to model and deploy a GSM 3GPP service into UIM.

The GSM 3GPP Technology Pack also supports the modeling and managing of key logical resources including international mobile subscriber identification (IMSI), SIM cards, and the mobile subscriber integrated services digital network (MSISDN) number, all of which are required to configure GSM 3GPP services. The technology pack supports the modeling of key devices used to register service components in the network, including the home location register (HLR) and voicemail server.

The GSM 3GPP Technology Pack enables you to model a GSM 3GPP service and service configurations. You can create, change, and discontinue the service and the service configurations using Web service operations. The technology pack also supports operation in a standalone mode, where you can add, change, or disconnect GSM 3GPP services and invoke configuration automation logic manually using the UIM user interface.

You can deploy the technology pack directly into UIM or customize it by using Oracle Communications Design Studio. Design Studio enables you to view the contents of the technology pack and extend its capabilities to meet your business needs. See UIM Concepts, UIM Developer’s Guide, and the Design Studio Help for more information.

You can modify the default specifications and rules and create new specifications and rules. See “Extending the GSM 3GPP Technology Pack” for more information about extending the GSM 3GPP Technology Pack.

Figure 1–2 displays a high-level overview of the GSM 3GPP mobile service model. The figure also displays a key that applies to all remaining figures in this chapter.
Figure 1–2  GSM 3GPP Mobile Service Model

Figure 1–3 displays an expanded view of the GSM 3GPP service model Subscription configuration item:
Figure 1–3  GSM 3GPP Model for the Subscription Configuration Item

Figure 1–4 displays an expanded view of the GSM 3GPP service model Service Location and Service Registries configuration items:
Figure 1–4  GSM 3GPP Model for the Service Location and Service Registries
Configuration Items

1..1 Service Location
   0..1 Serving Area
      1..1 Service Registries
         1..2 Home Location Register (HLR)
            0..2 Short Message Service Center (SMSC)
               0..1 Voicemail Server (VMS)
                  0..2 HSS (stub)
                     0..2 AUC (stub)

Figure 1–5 displays an expanded view of the GSM 3GPP service model Service
Features configuration item Teleservices child configuration item:
Figure 1–5  GSM 3GPP Model for the Service Features Configuration Item Teleservices Child Configuration Item

![Diagram of the GSM 3GPP model showing Service Features, Teleservices, and Supplementary Services with their child configuration items]

<table>
<thead>
<tr>
<th>Property</th>
<th>Boolean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice (TS11)</td>
<td>y/n</td>
</tr>
<tr>
<td>alternateSpeech (TS61)</td>
<td>y/n</td>
</tr>
<tr>
<td>automaticTransmission (TS62)</td>
<td>y/n</td>
</tr>
<tr>
<td>smsMTTP (TS21)</td>
<td>y/n</td>
</tr>
<tr>
<td>smsMOP (TS22)</td>
<td>y/n</td>
</tr>
</tbody>
</table>

Figure 1–6 displays an expanded view of the GSM 3GPP service model Service Features Configuration Item Bearer Services and Application Services Child Configuration Items:

<table>
<thead>
<tr>
<th>Property</th>
<th>Boolean</th>
</tr>
</thead>
<tbody>
<tr>
<td>callForwardUnconditional (CFU)</td>
<td>y/n</td>
</tr>
<tr>
<td>callForwardOnSubscriberBusy (CFB)</td>
<td>y/n</td>
</tr>
<tr>
<td>callForwardOnNoReply (CFNRy)</td>
<td>y/n</td>
</tr>
<tr>
<td>callForwardOnSubscriberNotReachable (CFNRC)</td>
<td>y/n</td>
</tr>
<tr>
<td>barIncomingRoamingOutsideHc (BIC-Roam)</td>
<td>y/n</td>
</tr>
<tr>
<td>barAllOutgoingCalls (BAOC)</td>
<td>y/n</td>
</tr>
<tr>
<td>barAllIncomingCalls (BAIC)</td>
<td>y/n</td>
</tr>
<tr>
<td>barInternationalOutgoingCalls (BOIC)</td>
<td>y/n</td>
</tr>
<tr>
<td>barOutIntlExcpHomCountry (BOIC-exHC)</td>
<td>y/n</td>
</tr>
<tr>
<td>callingLineIdRestriction (CLIR)</td>
<td>y/n</td>
</tr>
<tr>
<td>callingLineDPresentation (CLIP)</td>
<td>y/n</td>
</tr>
<tr>
<td>connectedLineIdRestriction (Col.R)</td>
<td>y/n</td>
</tr>
<tr>
<td>connectedLineDPresentation (Col.P)</td>
<td>y/n</td>
</tr>
<tr>
<td>callWaiting (CW)</td>
<td>y/n</td>
</tr>
<tr>
<td>callHold (HOLD)</td>
<td>y/n</td>
</tr>
<tr>
<td>multiParty (MPTY)</td>
<td>y/n</td>
</tr>
<tr>
<td>adviceOfChargeChg (AoCC)</td>
<td>y/n</td>
</tr>
<tr>
<td>adviceOfChargeInf (AoCI)</td>
<td>y/n</td>
</tr>
</tbody>
</table>
You can configure an alternate Voicemail service implementation if you prefer to assign voiceMailService to a GSM 3GPP service configuration. Figure 1–7 displays an alternate implementation of the GSM 3GPP service model Voicemail service:
Figure 1–7  GSM 3GPP Model for the Alternate Voicemail Service Implementation

Contents of the GSM 3GPP Technology Pack

Table 1–1 describes the contents of the GSM 3GPP Technology Pack, which is delivered as a single ZIP file.

### Table 1–1  GSM 3GPP Technology Pack ZIP File Contents

<table>
<thead>
<tr>
<th>Directory</th>
<th>Directory Content Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>deploy/individualJarsForSuperJar</td>
<td>Individual JAR files that comprise the super JAR archive file. See &quot;GSM 3GPP Technology Pack Super Individual JAR Files&quot; for more information.</td>
</tr>
<tr>
<td>deploy/superJarToDeploy</td>
<td>The super JAR archive file. See &quot;GSM 3GPP Technology Pack Super JAR Archive File&quot; for more information.</td>
</tr>
<tr>
<td>designStudio/cartridgeZips</td>
<td>Cartridge project ZIP files and sample code. See &quot;GSM 3GPP Technology Pack ZIP Archive Files&quot; for more information.</td>
</tr>
<tr>
<td>designStudio/libForStudioDesignTime</td>
<td>The common library. See &quot;Common Library&quot; for more information.</td>
</tr>
<tr>
<td>designStudio/sampleBuildScripts</td>
<td>Sample Ant build scripts. See &quot;GSM 3GPP Technology Pack Sample Ant Build Scripts&quot; for more information.</td>
</tr>
</tbody>
</table>
The GSM 3GPP Technology Pack contains the individual JAR files that comprise the super JAR archive file. Each individual JAR file is deployable.

Important: Before deploying the GSM 3GPP Technology Pack, you must deploy the base cartridges if not previously deployed. For information on how to deploy the base cartridges, see UIM Cartridge and Technology Pack Guide.

Oracle recommends that you deploy the super JAR archive file first before deploying individual JAR files. If you deploy all of the JAR files individually, you must install them in a specific order, noted below.

The individual JAR files delivered with the GSM 3GPP Technology Pack must be deployed in the following order:

- ora_uim_common_cartproj-*.jar
- ora_uim_party_customer_cartproj-*.jar
- ora_uim_address_cartproj-*.jar
- ora_uim_us_address_cartproj-*.jar
- ora_uim_canada_address_cartproj-*.jar
- ora_uim_norway_address_cartproj-*.jar
- ora_uim_uk_address_cartproj-*.jar
- ora_uim_saudi_arabia_address_cartproj-*.jar
- ora_uim_service_location_cartproj-*.jar
- ora_uim_voice_mail_cartproj-*.jar
- ora_uim_mobile_subscription_cartproj-*.jar
- ora_uim_mobile_service_registries_cartproj-*.jar
- ora_uim_mobile_activation_profiles_cartproj-*.jar
- ora_uim_mobile_service_profiles_cartproj-*.jar
- ora_uim_mobile_cartproj-*.jar

### Table 1-1 (Cont.) GSM 3GPP Technology Pack ZIP File Contents

<table>
<thead>
<tr>
<th>Directory</th>
<th>Directory Content Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>doc/ javadocForTechPacks</td>
<td>Javadoc that is specific to this technology pack. See &quot;GSM 3GPP Technology Pack Javadoc&quot; for more information.</td>
</tr>
<tr>
<td>test/ readinessDataLoader</td>
<td>Readiness data loader script. See &quot;GSM 3GPP Technology Pack Readiness Data&quot; for more information.</td>
</tr>
<tr>
<td>test/ webServiceRequestXML</td>
<td>Web service sample XML requests. See &quot;GSM 3GPP Technology Pack Sample XML for Web Service Requests&quot; for more information.</td>
</tr>
</tbody>
</table>
The GSM 3GPP Technology Pack super JAR archive file contains the entire contents of the technology pack and is ready for deployment using the Cartridge Deployer Tool. You use the Cartridge Deployer Tool to simultaneously deploy multiple cartridges to UIM run-time environments.

See UIM Cartridge and Technology Pack Guide for more information about the Cartridge Deployer Tool.

The GSM 3GPP Technology Pack contains one project ZIP archive file for every cartridge or model project, and each ZIP file contains a project in its pre-compiled state (the project name is the root directory). Import cartridge ZIP archive files into Design Studio. See the Design Studio Help for information about importing archive files.

All source code provided in the src directory is sample code. Sample code for the ora_uim_common cartridge project is not provided. However, the technology pack includes the ora_uim_commonLib.jar file with compiled classes. See “Common Library” for more information.

When working with the ZIP archive files, see the following sections:

- Address, Location, Party and Voicemail Cartridges
- GSM 3GPP Cartridges
- Model Projects

Address, Location, Party and Voicemail Cartridges

The address, location, party and voicemail cartridges include entities that are used to define places and people. There are separate address cartridges for several different countries, as well as generic service location and address cartridges. The country-specific cartridges provide similar capabilities with minor variations based on local standards.

The address, location, party, and voicemail cartridges are:

- Address cartridge: ora_uim_address
- Canada address cartridge: ora_uim_canada_address
GSM 3GPP Technology Pack Overview

- Norway address cartridge: ora_uim_norway_address
- Saudi Arabia address cartridge: ora_uim_saudi_arabia_address
- United Kingdom address cartridge: ora_uim_uk_address
- United States address cartridge: ora_uim_us_address
- Service location cartridge: ora_uim_service_location
- Party cartridge: ora_uim_party_customer
- Voicemail cartridge: ora_uim_voice_mail

For detailed information on each cartridge, see "Address, Location, Party, and Voicemail Content".

See UIM Cartridge and Technology Pack Guide for information about the telephone number specifications and rulesets included in the telephone number cartridges.

GSM 3GPP Cartridges

GSM 3GPP cartridges model inventory entities related to the GSM 3GPP service. GSM 3GPP cartridges are dependent on the telephone number base cartridges.

- ora_uim_mobile
- ora_uim_mobile_activation_profiles
- ora_uim_mobile_service_profiles
- ora_uim_mobile_service_registries
- ora_uim_mobile_subscription

See "GSM 3GPP Content" for more information.

Model Projects

The GSM 3GPP Technology Pack includes one model project called ora_dict_mobile. This project includes data elements that you can use in multiple cartridge projects, including Oracle Communications ASAP and Oracle Communications Order and Service Management (OSM) cartridge projects, enabling you to define attributes once and reuse them across the workspace. The ora_dict_mobile project is not deployable; rather, it is required to build the cartridge projects that reference it.

Common Library

The common library is a JAR file that provides utility methods that are independent of the technology domain. These utility methods can be used across multiple technology packs, so they reside in a common JAR file that is included in multiple technology packs. The library is referenced by some .classpath files, so you must save this file to the same location as the path you defined for the UIM_LIB variable.

The common library is:

- ora_uim_commonLib.jar

See UIM Cartridge and Technology Pack Guide for more information on the contents of the common library.
Using the GSM 3GPP Technology Pack

---

**Note:** The common library is not considered a cartridge because it does not contain content that can be imported into Design Studio to view. The common library contains Java class files only; it does not contain the viewable Java source files from which the classes are compiled.

---

**GSM 3GPP Technology Pack Sample Ant Build Scripts**

The GSM 3GPP Technology Pack includes sample Ant build scripts for automating cartridge project builds. See *Design Studio System Administrator’s Guide* for more information about automating builds.

**GSM 3GPP Technology Pack Javadoc**

From the javadocForTechPacks directory, open the javadoc_rel.date.time.build.zip file and extract the javadoc directory. Double-click the extracted javadoc/index.html file to access the Javadoc provided with the GSM 3GPP Technology Pack, including information that summarizes classes, methods, and parameters.

**GSM 3GPP Technology Pack Readiness Data**

The GSM 3GPP Technology Pack includes SQL scripts to load a UIM database with seed data for testing. Use these SQL files to generate scenarios when learning and testing the functionality in the technology pack. Run the SQL files only once, and only after you deploy the GSM 3GPP Technology Pack into UIM.

**Note:** Oracle does not recommend that you use these SQL scripts in a production environment.

**GSM 3GPP Technology Pack Sample XML for Web Service Requests**

The GSM 3GPP Technology Pack includes sample XML files that you can use as a starting point for customizing the Service Fulfillment Web service requests provided with the technology pack.

**Using the GSM 3GPP Technology Pack**

When using the GSM 3GPP Technology Pack, see the following:

- Opening the Technology Pack in Design Studio
- Deploying the Technology Pack into UIM
- Defining GSM 3GPP-Specific Inventory Items
- Extending the GSM 3GPP Technology Pack
- Automating Mobile Services through Web Services

**Opening the Technology Pack in Design Studio**

You can open individual ZIP files in Design Studio to review or extend the Cable TV Technology Pack.
See the Design Studio Help for information about opening files in Design Studio, and see “Extending the GSM 3GPP Technology Pack” for information about extending this technology pack.

**Deploying the Technology Pack into UIM**

Oracle recommends that you use the Cartridge Deployer Tool to deploy the GSM 3GPP Technology Pack super JAR archive file into a UIM run-time environment. Deploying the technology pack with the Cartridge Deployer Tool ensures that all cartridges and dependencies are deployed in the proper order. See *UIM Cartridge and Technology Pack Guide* for more information about the Cartridge Deployer Tool.

---

**Important:** Before deploying the GSM 3GPP Technology Pack, you must deploy the base cartridges if not previously deployed. For information on how to deploy the base cartridges, see *UIM Cartridge and Technology Pack Guide*.

---

For information about how to deploy individual cartridges into a UIM test environment, see the Design Studio Help. For information about how to deploy a cartridge into a UIM production environment, see *UIM Cartridge and Technology Pack Guide*.

**Defining GSM 3GPP-Specific Inventory Items**

You define GSM 3GPP-specific inventory items prior to provisioning GSM 3GPP services.

---

**Note:** To define GSM 3GPP-specific inventory items, you must first deploy the GSM 3GPP Technology Pack to the UIM run-time environment. See “Deploying the Technology Pack into UIM” for more information.

---

1. Do the following in Design Studio:
   a. Extend the ora_uim_basespecifications cartridge.
      
      See *UIM Concepts* for information about extending technology packs and base cartridges.
   b. In the ora_uim_basespecifications cartridge, open the Business Interaction specification named Service Order.
   c. In the Business Interaction Specification editor, click the **Rules** tab.
   d. Click **Select**.
      
      The Add Entities dialog box appears.
   e. Add the following ruleset extension points from the ora_uim_mobile cartridge.
      
      - createBLAttachmentMobileServiceConfigBeforeExtPt: validates incoming Web service request data for correct data types and validates that required parameters are included.
      
      - preProcessInteractionItemsMobileServiceConfigurationInsteadExtPt: Organizes Web service request items in the correct order. For example, if a
Web service request contains a service request that includes an `addData` action, the associated ruleset ensures that the request is processed after the `createMobileGSMService` request.

f. Save the changes and reseal the cartridge.

2. In the UIM run-time environment, create a single instance of the following services:
   - **CircuitSwitchedDataProfile**: The name of the instance that you create must be `CircuitSwitchedData`.
   - **PDPContextProfile**: The name of the instance that you create must be `PDPContext`.

3. In the UIM run-time environment, create three instances of **TeleserviceProfile**. Each instance represents a different scenario. Create the following instances named:
   - **Teleservices (SMS, Telephony)**: Select all service check boxes.
   - **Teleservices (Telephony Only)**: Select only the three Telephony check boxes.
   - **Teleservices (SMS Only)**: Select only the two SMS check boxes.
This chapter lists the entity specifications included in the address, location, party, and voicemail cartridges in the GSM 3GPP Technology Pack for Oracle Communications Unified Inventory Management (UIM). These cartridges model standard phone services that can be used in most telephony domains and can be reused with other services, such as plain old telephony service (POTS) or Consumer voice over IP (VoIP) services.

You can deploy only the selection of cartridges that your business requires. For example, if you need to provision a Global System for Mobile (GSM) 3rd Generation Partnership Project (3GPP) service for subscribers in the US and Canada, you do not need to deploy the Norway address cartridge. If necessary, you can install any of the cartridges after the initial installation.

The cartridges are:

- Address cartridge: ora_uim_address
- Canada address cartridge: ora_uim_canada_address
- Norway address cartridge: ora_uim_norway_address
- Saudi Arabia address cartridge: ora_uim_saudi_arabia_address
- United Kingdom address cartridge: ora_uim_uk_address
- United States address cartridge: ora_uim_us_address
- Service location cartridge: ora_uim_service_location
- Party cartridge: ora_uim_party_customer
- Voicemail cartridge: ora_uim_voice_mail

See UIM Cartridge and Technology Pack Guide for information about the telephone number specifications and rulesets included in the telephone number cartridges.

Entity Specifications

This section lists the specifications included in the address, location, party, and voicemail cartridges. You can view the details of the specifications by opening the cartridges in Oracle Communications Design Studio.
**Logical Device Specifications**

Table 2–1 describes the Logical Device specification included in the address, location, party, and voicemail cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceMailServer</td>
<td>Models a voicemail server. Allocated in the MobileGSMServiceConfiguration.</td>
</tr>
</tbody>
</table>

**Logical Device Account Specifications**

Table 2–2 describes the Logical Device Account specifications included in the address, location, party, and voicemail cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceMailAccess</td>
<td>Models a voicemail user account. Allocated in the MobileGSMServiceConfiguration. The voiceMailAccess specification includes the following characteristics:</td>
</tr>
<tr>
<td></td>
<td>- Language</td>
</tr>
<tr>
<td></td>
<td>- Time Zone</td>
</tr>
<tr>
<td></td>
<td>- User Name</td>
</tr>
<tr>
<td></td>
<td>- Password</td>
</tr>
</tbody>
</table>

**Party Specifications**

Table 2–3 describes the Party specifications included in the address, location, party, and voicemail cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Models an organization such as a business or a government agency; can be assigned the Subscriber role.</td>
</tr>
<tr>
<td>Individual</td>
<td>Models a single individual such as a subscriber; can be assigned the Subscriber role. The Individual specification includes the following characteristic:</td>
</tr>
<tr>
<td></td>
<td>- Account Number characteristic.</td>
</tr>
</tbody>
</table>

**Place Specifications**

Table 2–4 describes the Place specifications included in the address, location, party, and voicemail cartridges.
### Table 2–4  Place Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>canadaAddress</td>
<td>Postal address for subscribers in Canada. The canadaAddress specification contains the following characteristics:</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 1</strong>: The first line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 2</strong>: The second line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>City</strong>: Name of the Canada city where the subscriber is located.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Postal Code</strong>: Postal code of the area where the subscriber is located. This field is seven characters long.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Province</strong>: Canada province where the subscriber is located.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Country</strong>: Name of the country where the subscriber is located.</td>
</tr>
<tr>
<td>canadaCity</td>
<td>Location specification used to populate the City field in Canadian addresses.</td>
</tr>
<tr>
<td>canadaProvinceCode</td>
<td>Location specification used to populate the Province field in Canadian addresses.</td>
</tr>
<tr>
<td>country</td>
<td>Location specification for countries.</td>
</tr>
<tr>
<td>norwayAddress</td>
<td>Postal address for subscribers in Norway. The norwayAddress specification contains the following characteristics:</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 1</strong>: The first line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 2</strong>: The second line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>City</strong>: Name of the Norway city where the subscriber is located.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Country</strong>: Name of the country where the subscriber is located.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>PostalCode</strong>: Postal code of the Norway state where the subscriber is located. This field is five characters long.</td>
</tr>
<tr>
<td>norwayCity</td>
<td>Location specification used to populate the City field in Norwegian addresses.</td>
</tr>
<tr>
<td>saudiArabiaAddress</td>
<td>Postal address for subscribers in Saudi Arabia. The saudiArabiaAddress specification contains the following characteristics:</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 1</strong>: The first line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>Address Line 2</strong>: The second line of the Address field. This field has a 100-character maximum.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>City</strong>: Name of the Saudi Arabia city where the subscriber is located.</td>
</tr>
<tr>
<td></td>
<td>■  <strong>PostalCode</strong>: Postal code of the Saudi Arabia state where the subscriber is located. This field is seven characters long.</td>
</tr>
<tr>
<td>saudiArabiaCity</td>
<td>Location specification used to populate the City field in Saudi Arabia addresses.</td>
</tr>
<tr>
<td>serviceLocation</td>
<td>Location specification used to define where a service is delivered. Additionally, you use this specification to create ZIP codes that you associate to inventory group serving areas.</td>
</tr>
</tbody>
</table>
Role Specifications

Table 2–5 describes the Role specifications included in the address, location, party, and voicemail cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscriber</td>
<td>Designates an Organization or Individual entity as a GSM 3GPP subscriber.</td>
</tr>
<tr>
<td>Customer</td>
<td>Models a subscriber. You can assign the Organization or Individual role to a Customer entity.</td>
</tr>
</tbody>
</table>

Service Specifications

Table 2–6 describes the Service specifications included in the address, location, party, and voicemail cartridges.
Service Configuration Specifications

Table 2–7 describes the Service Configuration specifications included in the address, location, party, and voicemail cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>voiceMailService</td>
<td>Contains information about the voicemail service for customers, including the service registry and subscription component. Note: The default implementation does not use the voicemailService service specification; rather, the default implementation assigns the voicemail server and voicemail access account directly to MobileGSMServiceConfiguration. You can enable this implementation if you prefer to assign this service to a GSM 3GPP service configuration. See “Enabling the Voicemail Service Feature Implementation” for more information.</td>
</tr>
</tbody>
</table>

Rulesets

Table 2–8 describes the rulesets that are included in the address, location, party, and voicemail cartridges.

You can modify the rules and their extension point. See UIM Developer’s Guide for more information.
## Table 2–8 Rulesets

<table>
<thead>
<tr>
<th>Rulesets/Extension Points</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOICEMAIL_SERVICE_VALIDATION</td>
<td>Validates the Voicemail Server and Voicemail Access account that have been allocated to the configuration.</td>
</tr>
<tr>
<td>VOICEMAIL_SERVICE_VALIDATION_EXT</td>
<td></td>
</tr>
<tr>
<td>AUTOMATE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION</td>
<td>Automates the configuration of a Voicemail Service that has been created and assigned to the GSM 3GPP Service configuration. This ruleset is triggered by the GSM 3GPP Service automate configuration process.</td>
</tr>
<tr>
<td>automateServiceConfigVoicemailServiceConfigurationExtPt</td>
<td></td>
</tr>
<tr>
<td>GET_ENTITY_ACTION_VOICEMAIL_SERVICE_INSTEAD</td>
<td>Maps the GSM 3GPP Technology Pack actions to the correct generic Web service action, such as create, change, disconnect, and so forth. For example an addData action request triggers this ruleset, which directs the Web services to process it as a change request. This ruleset is required if you are using Web services.</td>
</tr>
<tr>
<td>getEntityActionVoicemailServiceInsteadExtPt</td>
<td></td>
</tr>
<tr>
<td>CANCEL_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_AFTER</td>
<td>Deactivates the service-bound resources (such as the voicemail access logical device account) that remain unassigned when a Voicemail Service configuration is canceled.</td>
</tr>
<tr>
<td>cancelServiceConfigVoicemailServiceConfigurationAfterExtPt</td>
<td></td>
</tr>
<tr>
<td>COMPLETE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_AFTER</td>
<td>Deactivates the service-bound resources that remain unassigned (due to disconnects or cancellations) when a Voicemail Service configuration is completed.</td>
</tr>
<tr>
<td>completeServiceConfigVoicemailServiceConfigurationAfterExtPt</td>
<td></td>
</tr>
<tr>
<td>COMPLETE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_BEFORE</td>
<td>Validates configuration details prior to completing a Voicemail Service configuration.</td>
</tr>
<tr>
<td>completeServiceConfigVoicemailServiceConfigurationBeforeExtPt</td>
<td></td>
</tr>
<tr>
<td>ISSUE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_BEFORE</td>
<td>Triggers custom validation prior to issuing a Voicemail Service configuration.</td>
</tr>
<tr>
<td>issueServiceConfigVoicemailServiceConfigurationBeforeExtPt</td>
<td></td>
</tr>
<tr>
<td>VALIDATE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION</td>
<td>Performs custom validation of the configuration details when a Voicemail Service configuration is validated.</td>
</tr>
<tr>
<td>validateServiceConfigVoicemailServiceConfigurationExtPt</td>
<td></td>
</tr>
</tbody>
</table>
This chapter lists and describes the entity specifications and rulesets included in the GSM 3GPP-specific cartridges in the GSM 3GPP Technology Pack for Oracle Communications Unified Inventory Management (UIM).

The GSM 3GPP-specific cartridges are:
- ora_uim_mobile
- ora_uim_mobile_activation_profiles
- ora_uim_mobile_service_profiles
- ora_uim_mobile_service_registries
- ora_uim_mobile_subscription

Entity Specifications

This section lists and describes the specifications included in the GSM 3GPP-specific cartridges, organized by specification type. You can view the details of the specifications by opening the cartridges in Oracle Communications Design Studio.

Inventory Group Specifications

Table 3–1 lists and describes the Inventory Group specifications included in the GSM 3GPP-specific cartridges.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MobileServingAreaInventoryGroup</td>
<td>Models service location information, such as the ZIP code and the network elements of a network (for example, the home location register (HLR), Short Message Service Center (SMSC), and Voicemail Server (VMS). Use the serving area to find and assign the network elements to the service configuration’s service registries components.</td>
</tr>
</tbody>
</table>

Logical Device Account Specifications

Table 3–2 lists and describes the Logical Device Account specifications included in the GSM 3GPP-specific cartridges.
Table 3–2 Logical Device Account Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
</table>
| MobileSubscriptionProfile| Models a subscription profile. You associate this logical device account to a home location register (HLR), and you use a profile number to activate the profile on the associated HLR. For reference, there is one subscriber profile for the HLR service registry. You can extend the model to include additional registry profiles for any of the service registries included in the GSM 3GPP Technology Pack or for any service registries that you add to the technology pack. The MobileSubscriptionProfile specification includes the following characteristics:  
  ■ Profile Number: A user-defined number given to the profile and used to activate known profiles on the HLR.  
  ■ Class of Subscriber: Specifies the type of subscription to be activated. For example, values may include Prepaid (to describe subscriptions paid prior to service use) and Postpaid (to describe subscriptions that include contractual arrangements to bill for mobile service usage). |
| IMEI                     | Identifies the subscriber identification module (SIM) card on an operator network. The international mobile subscriber identification (IMSI) maximum length is 15 digits, and is physically stored on the SIM card. The IMEI specification includes the following attributes:  
  ■ Mobile Country Code (MCC): A 3-digit number to identify mobile stations. MCC is used with the mobile network code to uniquely identify a mobile network operator.  
  ■ Mobile Network Code (MNC): A 2-digit number used with the MCC to uniquely identify a mobile network operator.  
  ■ Mobile Station Identification Number (MSIN): A 10-digit number used to identify the mobile station within the network’s customer base. |

Logical Device Specifications

Table 3–3 lists and describes the Logical Device specifications included in the GSM 3GPP-specific cartridges.
The GSM 3GPP cartridges include a single service configuration specification, called MobileGSMServiceConfiguration. When working with this service configuration, see the following sections:

- **Subscription Configuration Items**
- **Service Location Configuration Items**
- **Service Registries Configuration Items**
- **Service Features Configuration Items**

### Subscription Configuration Items

Table 3–4 lists and describes the Subscription configuration items included in the MobileGSMServiceConfiguration service configuration specification. Subscription configuration items contain specific details about the mobile service subscription, including the primary MSISDN, subscriber profile, SIM card, and operator determined barring (ODB).

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HomeLocationRegister</td>
<td>Models a central database network element that stores details of mobile subscribers, such as subscriber identification module (SIM), IMSI, SIM (Subscriber Identity Module) card details, service selections, and general packet radio service (GPRS) settings.</td>
</tr>
<tr>
<td>ShortMessageServiceCenter</td>
<td>Models network information for processing SMS operations.</td>
</tr>
</tbody>
</table>
| SIMCard                  | Stores network specific information to identify and authenticate a subscriber on the network. SIM Card is a required component in any mobile telephony device that uses a Global System for Mobile (GSM) network, and is a required subscription component. The SIMCard specification includes the following attributes:  
  - **ICC ID**: The integrated circuit card identifier is a serial number that is unique to the SIM card. The range for this attribute is 19 to 20 digits.  
  - **Ki**: A unique 128-bit value assigned by the operator during SIM card personalization, and used for authenticating the SIM on the mobile network. This attribute is stored on the subscriber SIM card, as well as in the network's authentication center (AUC).  
  - **Encryption Algorithm**: Used by the network to generate a random number when performing subscriber authentication, and used by the network and the subscriber to calculate the signature response from the Ki. Standard algorithms are A3 and A8; network operators can define their own.  
  - **Service Provider Name**: Stores the name of the service provider. |
Table 3-4  Service Configuration Subscription Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscriber Profile</td>
<td>The subscriber profile for the HLR service registry. A subscriber profile contains a profile name and specifies the type of subscription to be activated.</td>
</tr>
</tbody>
</table>
| Primary MSISDN (Mobile Subscriber Integrated Services Digital Network Number) | Stores the telephone number associated with the SIM card. It uniquely identifies a subscription to a GSM network. The Primary MSISDN is a required MobileGSMServiceConfiguration attribute. The Primary MSISDN configuration item includes the following child configuration items:

- **IMSI**: Identifies the SIM card on an operator network. The IMSI maximum length is 15 digits and is physically stored on the SIM card. The IMSI is a required MobileGSMServiceConfiguration service configuration attribute. The IMSI and the MSISDN identify a mobile subscriber. |
| Device | Stores the SIM (Subscriber Identity Module) card. The SIM card stores network-specific information to identify and authenticate a subscriber on the network. SIM card is a required component in any mobile telephony device that uses a GSM network, and is a required MobileGSMServiceConfiguration attribute. |
| Operator Determined Barring (ODB) | A type of call barring used by network operators and service providers to suspend service subscriptions. This configuration item is optional. To suspend service, you add an ODB configuration item to the MobileGSMServiceConfiguration service configuration. The Operator Determined Barring configuration item includes the following attribute:

- **barAllOutgoingIncomingCalls** |

Table 3-5  Service Configuration Service Location Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Area</td>
<td>Contains location information, such as the ZIP code, and network element information, such as the HLR, SMSC, and VMS. You define the serving area as an inventory group and use it to find and assign network elements to the MobileGSMServiceConfiguration service configuration service registries configuration items.</td>
</tr>
</tbody>
</table>

Service Location Configuration Items

Table 3–5 lists and describes the Service Location configuration item included in the MobileGSMServiceConfiguration service configuration specification. The Service Location configuration item enables you to locate the serving area containing the network elements or service registries required to complete a service subscription.

Table 3–5  Service Configuration Service Location Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Area</td>
<td>Contains location information, such as the ZIP code, and network element information, such as the HLR, SMSC, and VMS. You define the serving area as an inventory group and use it to find and assign network elements to the MobileGSMServiceConfiguration service configuration service registries configuration items.</td>
</tr>
</tbody>
</table>

Service Registries Configuration Items

Table 3–6 lists and describes the Service Registries configuration items included in the MobileGSMServiceConfiguration service configuration specification. The Service Registries configuration items contain the network elements required to activate subscriptions and services on a service provider network.
Table 3–6  Service Configuration Service Registries Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Location Register (HLR)</td>
<td>Refers to the central database network element that stores details of mobile subscribers, such as MSISDN, IMSI, SIM card details, service selections, and GPRS settings. An HLR is a required MobileGSMServiceConfiguration service configuration attribute.</td>
</tr>
<tr>
<td>Short Message Service Center (SMSC)</td>
<td>Stores network information for processing SMS operations.</td>
</tr>
<tr>
<td>Home Subscriber Server (HSS)</td>
<td>A stub configuration item for the central database network element that stores details of mobile subscribers for third-generation (3G) networks only.</td>
</tr>
<tr>
<td>Authentication Center (AUC)</td>
<td>A stub configuration item for the database that stores the Ki and encryption algorithm, and performs authentication of mobile subscribers.</td>
</tr>
<tr>
<td>Voicemail Server (VMS)</td>
<td>References the voiceMailServer specification, which models the server. The voiceMailServer specification is included in the ora_uim_voice_mail cartridge.</td>
</tr>
</tbody>
</table>

Table 3–7  Service Configuration Service Features Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teleservices</td>
<td>Enables the modeling of the basic services supported by GSM 3GPP. This configuration item references the TeleserviceProfile service specification in the ora_uim_mobile_service_profiles cartridge. See “Service Profile Specifications” for more information. The Teleservices configuration item includes a single child configuration item, Supplementary Services, described below.</td>
</tr>
<tr>
<td>Supplementary Services</td>
<td>Enables the modeling of the independent services that are applicable to one or more teleservices. You must select one or more teleservices before activating a supplementary service. This configuration item references the SupplementaryServiceProfile service specification in the ora_uim_mobile_service_profiles cartridge. See “Service Profile Specifications” for more information.</td>
</tr>
</tbody>
</table>
| Bearer Services               | Enables the bearer services supported by the public land mobile network (PLMN). Bearer services enable and provide capacity to a user to transmit signals between network access points and user network interfaces. This configuration item contains the following child configuration items:  
  - Circuit  
  - GPRS (General Packet Radio Service)  
  These configuration items are described below.                                                                                                                                                             |
| Circuit                       | This configuration item provides capacities. It references the CircuitSwitchedDataProfile service specification in the ora_uim_mobile_service_profiles cartridge. See “Service Profile Specifications” for more information. |
Table 3–7 (Cont.) Service Configuration Service Features Configuration Items

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPRS</td>
<td>Supports data service requests. GPRS (General Packet Radio Service) includes the PDP Context configuration item, described below.</td>
</tr>
<tr>
<td>PDP Context</td>
<td>Enables the modeling of subscriber session information. The PDP (Packet Data Protocol) context is a data structure stored on the GPRS serving and gateway nodes and is required when GPRS service is requested. The GSM 3GPP Technology Pack default implementation supports one PDP context when requesting a new service. This configuration item references the PDPCoexpContextProfile service specification in the ora_uim_mobile_service_profiles cartridge. See “Service Profile Specifications” for more information.</td>
</tr>
<tr>
<td>Application Services</td>
<td>Enables the modeling and assignment of a voicemail account. This configuration item includes a single child configuration item, Voicemail. The Voicemail configuration item has a child configuration item, Access, which assigns access to a voicemail account using the voiceMailAccess specification in the ora_uim_voice_mail cartridge. You can extend application services configuration items to add other applications, such as Multimedia Messaging Service. See “Enabling the Voicemail Service Feature Implementation” for information about extending the technology pack to create a voicemail service and assign the service to the MobileGSMServiceConfiguration.</td>
</tr>
</tbody>
</table>

Table 3–8 Service Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MobileService</td>
<td>Enables the creation of a GSM 3GPP service and the ability to assign logical resources and other entities which define a complete GSM 3GPP service.</td>
</tr>
</tbody>
</table>

Service Profile Specifications

The GSM 3GPP Technology Pack includes the following service profile specifications:

- CircuitSwitchedDataProfile
- PDPCoexpContextProfile
- SupplementaryServiceProfile
- TeleserviceProfile

The GSM service model uses service profiles to simplify the allocation of common sets of parameters. These service profiles define characteristics that you model for specific service features. The characteristics are used by the Service Fulfillment Web service when creating mobile services. Specifically, when you create a new mobile service using the Web service, the request contains custom parameters that are defined by the GSM 3GPP Technology Pack. The technology pack correlates each custom parameter to multiple characteristics defined in a service profile. For example, the createMobileGSMService Web service operation defines the circuitSwitchedData parameter. This parameter correlates to the CircuitSwitchedDataProfile service profile. When the createMobileGSMService Web service operation includes the circuitSwitchedData parameter defined as true, UIM references the CircuitSwitchedDataProfile service profile instance (that you created during readiness steps) to the Circuit configuration item in the MobileGSMServiceConfiguration service.
configuration. See “Defining GSM 3GPP-Specific Inventory Items” for more information about readiness steps.

After you create a service using Web services, you can add data to that service. Specifically, you can add a GPRS configuration item to an existing service. You use the PDPContextProfile service profile to model the characteristics that are included in the GPRS configuration item.

See “Automating Mobile Services through Web Services” for more information about using Web services.

**CircuitSwitchedDataProfile**

The CircuitSwitchedDataProfile service profile specification enables the modeling of characteristics applicable to circuit switched data. The instance of this service profile that you create during readiness steps is referenced to the Circuit configuration item, which is a child of the Bearer Services configuration item in the MobileGSMServiceConfiguration service configuration. See “Defining GSM 3GPP-Specific Inventory Items” for more information about readiness steps.

Table 3–9 lists the CircuitSwitchedDataProfile specification attributes, each a type of capacity.

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asynchronous General Bearer Service (BS20)</td>
</tr>
<tr>
<td>Asynchronous 300 bps (BS21)</td>
</tr>
<tr>
<td>Asynchronous 1.2 kbps (BS22)</td>
</tr>
<tr>
<td>Asynchronous 1200/75 bps (BS23)</td>
</tr>
<tr>
<td>Asynchronous 2.4 kbps (BS24)</td>
</tr>
<tr>
<td>Asynchronous 4.8 kbps (BS25)</td>
</tr>
<tr>
<td>Asynchronous 9.6 kbps (BS26)</td>
</tr>
<tr>
<td>Synchronous General Bearer Service (BS30)</td>
</tr>
<tr>
<td>Synchronous 1.2 kbps (BS31)</td>
</tr>
<tr>
<td>Synchronous 2.4 kbps (BS32)</td>
</tr>
<tr>
<td>Synchronous 4.8 kbps (BS33)</td>
</tr>
<tr>
<td>Synchronous 9.6 kbps (BS34)</td>
</tr>
</tbody>
</table>

**PDPContextProfile**

The PDPContextProfile service profile specification enables the modeling of characteristics applicable to general packet radio services. The instance of this service profile that you create during readiness steps is referenced to the PDP Context configuration item, which is a child of the GPRS configuration item, which is a child of the Bearer Services configuration item in the MobileGSMServiceConfiguration service configuration. See “Defining GSM 3GPP-Specific Inventory Items” for more information about readiness steps.

Table 3–10 lists the PDPContextProfile specification attributes.
SupplementaryServiceProfile

The SupplementaryServiceProfile service profile specification enables the modeling of characteristics applicable to supplementary teleservices. The instance of this service profile that you create during readiness steps is referenced to the Supplementary Services configuration item, which is a child of the Teleservices configuration item in the MobileGSMServiceConfiguration service configuration. See “Defining GSM 3GPP-Specific Inventory Items” for more information about readiness steps.

The SupplementaryServiceProfile specification contains independent services that are applicable to one or more teleservices. You must select one or more teleservices before activating a supplementary service.

Table 3–11 lists and describes the SupplementaryServiceProfile specification attributes.

Table 3–10  PDPContextProfile Specification Attributes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDP Context ID</td>
<td></td>
</tr>
<tr>
<td>PDP Address</td>
<td></td>
</tr>
<tr>
<td>PDP Context Charging Characteristics</td>
<td></td>
</tr>
<tr>
<td>PDP Context Type</td>
<td></td>
</tr>
<tr>
<td>Extended QOS ID</td>
<td></td>
</tr>
<tr>
<td>Access Point Name ID</td>
<td></td>
</tr>
<tr>
<td>Access Point Password</td>
<td></td>
</tr>
<tr>
<td>Access Point User Name</td>
<td></td>
</tr>
<tr>
<td>Visited PLMA Allowed</td>
<td></td>
</tr>
</tbody>
</table>

Table 3–11  SupplementaryServiceProfile Specification Attributes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advice of Charge - Changing</td>
<td>Enables mobile stations to provide mobile subscribers with actual charges for telecommunication services.</td>
</tr>
<tr>
<td>Advice of Charge - Information</td>
<td>Enables mobile stations to provide mobile subscribers with estimates for call charges.</td>
</tr>
<tr>
<td>Bar All Outgoing Calls</td>
<td>Enables subscribers to prevent all outgoing calls, except emergency calls.</td>
</tr>
<tr>
<td>Bar All Incoming Calls</td>
<td>Enables subscribers to prevent all incoming calls.</td>
</tr>
<tr>
<td>Bar Outgoing International Calls Except Home Country</td>
<td>Enables subscribers to bar outgoing calls except to subscribers of the PLMNs and fixed networks of the country where the mobile subscriber is presently located, and to mobile subscribers of the home PLMN or of fixed networks in the home country of the served subscriber.</td>
</tr>
<tr>
<td>Bar all Incoming Calls when Roaming Outside Home PLMN Country</td>
<td>Enables subscribers to prevent incoming calls if the subscriber is roaming outside the home PLMN country.</td>
</tr>
<tr>
<td>Bar Outgoing International Calls</td>
<td>Enables subscribers to bar outgoing calls except to subscribers of the PLMNs and fixed networks of the country where the mobile subscriber is presently located.</td>
</tr>
<tr>
<td>Call Forward On No Reply</td>
<td>Enables mobile subscribers to send all incoming calls, or those from a specific basic service group, to another directory number if the incoming call meets no reply.</td>
</tr>
<tr>
<td>Call Forward on Subscriber Busy</td>
<td>Enables mobile subscribers to send all incoming calls, or those from a specific basic service group, to another directory number if the incoming call meets mobile subscriber busy.</td>
</tr>
</tbody>
</table>
The TeleserviceProfile service profile specification enables the modeling of characteristics applicable to teleservices. An instance of this service profile that you create during readiness steps is referenced to the Teleservices configuration item in the MobileGSMServiceConfiguration service configuration. See "Defining GSM 3GPP-Specific Inventory Items" for more information about readiness steps.

Table 3–12 lists and describes the TeleserviceProfile specification attributes.

### Table 3–12  TeleserviceProfile Specification Attributes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call Forward On Subscriber Not Reachable</td>
<td>Enables mobile subscribers to send all incoming calls, or those from a specific basic service group, to another directory number if the mobile subscriber’s called number is unreachable.</td>
</tr>
<tr>
<td>Call Forward Unconditional</td>
<td>Enables mobile subscribers to send all incoming calls, or those from a specific basic service group, to another directory number.</td>
</tr>
<tr>
<td>Calling Line ID Restriction</td>
<td>Enables the calling party to prevent presentation of identity to the called party.</td>
</tr>
<tr>
<td>Calling Line ID Presentation</td>
<td>Enables the called party the ability to receive the line identity of the calling party.</td>
</tr>
<tr>
<td>Connected Line ID Restriction</td>
<td>Enables the connected party the ability to prevent presentation of its identity to the calling party.</td>
</tr>
<tr>
<td>Connected Line ID Presentation</td>
<td>Enables the calling party the ability to receive the line identity of the connected party.</td>
</tr>
<tr>
<td>Call Waiting</td>
<td>Notifies subscribers of incoming calls during established calls. Subscribers can answer, reject, or ignore incoming calls. Call waiting is applicable to all GSM telecommunications services using a circuit-switched connection.</td>
</tr>
<tr>
<td>Call Hold</td>
<td>Enables subscribers to interrupt then reestablish calls. This service is applicable to normal telephony only.</td>
</tr>
<tr>
<td>Multiparty</td>
<td>Enables mobile subscribers to establish a conversation between three and six subscribers, simultaneously. This service is applicable to normal telephony only.</td>
</tr>
</tbody>
</table>

### TeleserviceProfile

The TeleserviceProfile service profile specification enables the modeling of characteristics applicable to teleservices. An instance of this service profile that you create during readiness steps is referenced to the Teleservices configuration item in the MobileGSMServiceConfiguration service configuration. See "Defining GSM 3GPP-Specific Inventory Items" for more information about readiness steps.

Table 3–12 lists and describes the TeleserviceProfile specification attributes.

### Table 3–12  TeleserviceProfile Specification Attributes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice</td>
<td>The standard telephony service for speech transmission.</td>
</tr>
<tr>
<td>Alternate Speech and Fax</td>
<td>Enables ITU-T group 3 fax devices to send and receive fax calls to and from mobile devices.</td>
</tr>
<tr>
<td>Automatic Transmission</td>
<td>Enables ITU-T group 3 fax devices to send and receive fax calls to and from mobile devices in auto-calling and auto-answering mode only.</td>
</tr>
<tr>
<td>SMS MOPP</td>
<td>The short message service mobile terminating point-to-point service that enables subscribers to receive text messages.</td>
</tr>
<tr>
<td>SMS MTPP</td>
<td>The short message service mobile originating point-to-point service that enables subscribers to send text messages.</td>
</tr>
</tbody>
</table>

**Note:** You must create instances of the service profiles in the UIM run-time environment before using Service Fulfillment Web services to create mobile services. See "Using the GSM 3GPP Technology Pack" for more information.
Rulesets

This section lists and describes the rulesets included in the GSM 3GPP-specific cartridges. You can view the rulesets by opening the cartridges in Design Studio.

A ruleset is a file containing code that extends UIM code at a specified point called an extension point, which defines a UIM method signature. A ruleset is configured to run at a particular extension point through a ruleset extension point. You can modify rulesets to meet specific business requirements. See UIM Developer’s Guide for information about rulesets, extension points, and ruleset extension points.

Numerous base extension points are provided in the ora_uim_baseextpts cartridge. The GSM 3GPP-specific cartridges require the ora_uim_baseextpts cartridge to execute the rulesets. See UIM Cartridge and Technology Pack Guide for information about the ora_uim_baseextpts cartridge.

Table 3–13 lists and describes the rulesets and ruleset extension points that are included in the GSM 3GPP Technology Pack.

Table 3–13  Rulesets in the GSM 3GPP Technology Pack

<table>
<thead>
<tr>
<th>Rulesets/Extension Point</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTOMATE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION</td>
<td>Automates the configuration of a GSM 3GPP Service within the context of a Web service business interaction and from a user interface-initiated process. This ruleset is triggered by the processInteraction Web service.</td>
</tr>
<tr>
<td>automateServiceConfigMobileServiceConfigurationExtPt</td>
<td></td>
</tr>
<tr>
<td>COMPLETE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_AFT</td>
<td>Cleans up service-bound resources that went unassigned (due to disconnects or cancellations) and completes Suspend and Resume service action processing when a GSM 3GPP service configuration is completed.</td>
</tr>
<tr>
<td>completeServiceConfigMobileServiceConfigurationAfterExtPt</td>
<td></td>
</tr>
<tr>
<td>GET_ENTITY_ACTION_MOBILE_SERVICE_INSTEAD</td>
<td>Maps generic incoming Web service requests to specific actions in UIM.</td>
</tr>
<tr>
<td>getEntityActionMobileServiceInsteadExtPt</td>
<td></td>
</tr>
<tr>
<td>PRE_PROCESS_INTERACTION_ITEMS_MOBILE_SERVICE_CONFIGURATION_BEFORE</td>
<td>Enables the GSM 3GPP Technology Pack to sort interaction items in the correct sequence for processing when the automateConfiguration and processInteraction Web service operations are executed for a GSM 3GPP service request.</td>
</tr>
<tr>
<td>preProcessInteractionItemsMobileServiceConfigurationBeforeExtPt</td>
<td></td>
</tr>
<tr>
<td>RESUME_SERVICE_MOBILE_SERVICE_INSTEAD</td>
<td>Deletes Operator Determined Barring when the ruleset is initiated by a resume request. The configuration must be completed (either by an updateInteraction Web service call or by a user interface manual request) before the configuration status moves to In Service.</td>
</tr>
<tr>
<td>resumeServiceMobileServiceExtPt</td>
<td></td>
</tr>
<tr>
<td>SUSPENDSERVICE_MOBILE_SERVICE_INSTEAD</td>
<td>Adds Operator Determined Barring when the ruleset is initiated by a suspend request. The configuration must be completed (either by an updateInteraction Web service call or by a user interface manual request) before the configuration status moves to Suspended.</td>
</tr>
<tr>
<td>suspendServiceMobileServiceExtPt</td>
<td></td>
</tr>
</tbody>
</table>
You can extend the GSM 3GPP Technology Pack to meet the business needs of your organization. For example, you can extend the technology pack to include new application services, new service registers, and new serving areas, and to support new releases of the 3GPP standard (such as 4G services). This chapter describes the content included in the technology pack to facilitate extension.

For more information about extending technology packs:
- See UIM Concepts to understand the concept of extending technology packs and the impact of doing so.
- See UIM Cartridge and Technology Pack Guide for information about the leading practices for extending technology packs.
- See UIM Developer’s Guide for information about how to extend technology packs, and for information about Java class naming standards, locating methods, and searching for classes in the Javadoc.
- See the Oracle Communications Design Studio Help for instructions on how to extend technology packs through specifications, characteristics, and rulesets.

**Important:** To ensure that your extensions can be upgraded and supported, you must follow the guidelines and policies described in UIM Concepts.

When extending the GSM 3GPP Technology Pack, see the following sections:
- Extending Rulesets
- Extending the Mobile Service Configuration
- Extending the Voicemail Service Configuration

**Extending Rulesets**

The extension points and rulesets provided in the GSM 3GPP Technology Pack call APIs to perform business logic required to create a Global System for Mobile (GSM) 3rd Generation Partnership Project (3GPP) service. You can extend the business logic in the implementation classes. Additionally, you can extend the rulesets to call APIs that are not included in the GSM 3GPP Technology Pack. Finally, you modify or extend the extension points included in the Mobile Technology Pack.

Extension points are enabled on some business interaction, base, and service configuration manager APIs. Rulesets can be triggered from these extension points...
Extending Rulesets

from the UI or from Web services; ruleset logic can leverage any information populated on the service or service configuration.

There are three categories of rulesets that you can extend:

- Extending Mobile Service Configuration Specification Rulesets
- Extending Mobile Service Specification Rulesets
- Extending Voicemail Service Configuration Specification Rulesets

Extending Mobile Service Configuration Specification Rulesets

You can extend the following rulesets in the Mobile Service Configuration specification:

- AUTOMATE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION
- COMPLETE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_AFTER
- COMPLETE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_BEFORE
- ISSUE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_BEFORE
- CANCEL_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_AFTER
- VALIDATE_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION

Note: The GSM 3GPP Technology Pack cartridges contain ruleset code that you can review and edit in Design Studio.

Extending Mobile Service Specification Rulesets

You can extend the following rulesets in the Mobile Service specification:

- RESUME_SERVICE_MOBILE_SERVICE_INSTEAD
- SUSPEND_SERVICE_MOBILE_SERVICE_INSTEAD

Note: The GSM 3GPP Technology Pack cartridges contain ruleset code that you can review and edit in Design Studio.

Extending Voicemail Service Configuration Specification Rulesets

You can extend the following rulesets in the Voicemail Service Configuration specification:

- AUTOMATE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION
- COMPLETE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_AFTER
- COMPLETE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_BEFORE
- ISSUE_SERVICE_CONFIG_VOICEMAIL_SERVICE_CONFIGURATION_BEFORE
- CANCEL_SERVICE_CONFIG_MOBILE_SERVICE_CONFIGURATION_AFTER
- VOICEMAIL_SERVICE_VALIDATION
Extending the Mobile Service Configuration

You can extend the business logic in the Mobile Service Configuration when automating configurations from the user interface and from Web services. When extending the Mobile Service configuration, see the following sections:

- Extending Mobile Service Configuration when Automating Configurations through the User Interface
- Extending Mobile Service Configuration Automation Logic through Web Services

Extending Mobile Service Configuration when Automating Configurations through the User Interface

You can extend the MobileGSMServiceConfiguration specification by customizing the business logic used to automate service configurations when initiated from the Oracle Communications Unified Inventory Management (UIM) user interface. You can customize the business logic to:

- Locate service registries based on criteria other than or in addition to ZIP codes
- Reference an additional home location register
- Conditionally reference the Short Message Service Center (SMSC)
  - The SMSC is the part of the network responsible for handling the SMS operations
- Perform additional processing, such as finding the subscriber identification module (SIM) card and the associated international mobile subscriber identification (IMSI), then assigning the IMSI to the configuration
- Locate an HSS registry and reference it to the HSS configuration item
- Locate the AUC registry and reference it to the AUC configuration item
- Locate and assign a telephone number, IMSI, or SIM card

Extending Mobile Service Configuration Automation Logic through Web Services

You can extend the MobileGSMServiceConfiguration specification by customizing the business logic used to automate service configurations when initiated from Web services. You can customize the business logic to:

- Locate and reference subscriber profiles (up to 10) using customized criteria that best matches the requested services
  - The GSM 3GPP Technology Pack includes one subscriber profile for the home location register (HLR) service registry, but you can extend the model to include additional registry profiles for the service registries included in the Technology Pack or for service registries that you add to the Technology Pack.
- Locate an HSS registry and reference it to the HSS configuration item
- Locate the AUC registry and reference it to the AUC configuration item
- Support one additional telephone number
- Locate SIM cards based on ICCID values, and support up to 2 SIM/IMSI combinations

Note: The GSM 3GPP Technology Pack cartridges contain ruleset code that you can review and edit in Design Studio.
Extending the Voicemail Service Configuration

You can extend the Voicemail service configuration specification by customizing the business logic used to automate voicemail configurations when initiated from Web services. You can customize the business logic to:

- Locate voicemail service registries based on criteria other than or in addition to ZIP codes
- Modify the user name and password characteristics default values
- Populate time zone and language parameters with default values

You can also enable the voicemail service feature implementation if you prefer to assign `voiceMailService` to a GSM 3GPP service configuration. See “Enabling the Voicemail Service Feature Implementation” for more information.

Enabling the Voicemail Service Feature Implementation

The GSM 3GPP Technology Pack includes a default implementation that assigns the voicemail server and voicemail access account directly to the `MobileGSMServiceConfiguration` configuration specification.

If you prefer to create a voicemail service and assign the service to `MobileGSMServiceConfiguration`, you must extend the technology pack.

To enable the voicemail service feature implementation:

1. From the Design Studio Package Explorer tab, open the `mobileTechpack-config.properties` file.
   
   This file is located in the ora_uim_mobile cartridge at the following location:
   
   `model/content/product_home/config`

2. Change `mobileTechPack.createVoicemailService=false` to `true`.

3. Save the change.

4. Open the MobileGSMServiceConfiguration specification.

5. Expand the Service Features configuration item, then expand the Application Services child configuration item.

6. In the Application Services configuration item, select the Voicemail child configuration item.

7. On the Specification Options tab, assign the `voiceMailService` specification to the Voicemail configuration item.

8. Save all changes, then redeploy `ora_uim_mobile`.

   This alternate implementation creates a Voicemail service when voicemail is requested.
This chapter provides information on using the GSM 3GPP Technology Pack with the Oracle Communications Unified Inventory Management (UIM) Service Fulfillment Web service to automate the fulfillment of mobile services. This chapter assumes that you are familiar with the UIM Service Fulfillment Web service, as described in *UIM Web Services Developer’s Guide*.

**Note:** Before reading this chapter, read the documentation about integrating UIM using Web services in *UIM Web Services Developer’s Guide*. The *UIM Web Services Developer’s Guide* describes the UIM Service Fulfillment Web service operations in detail.

---

**About the UIM Service Fulfillment Web Service**

The UIM Service Fulfillment Web service enables an external system to create new business interactions and change existing unprocessed business interactions in UIM. Through business interactions, an external system can manage services, including the relationships between services, and the resources associated with them.

The UIM Service Fulfillment Web service defines the following operations, as described in detail in *UIM Web Services Developer’s Guide*:

- *CaptureInteraction*
- *ProcessInteraction*
- *UpdateInteraction*
- *GetInteraction*
- *GetConfiguration*

The *CaptureInteraction* operation captures a service order request, and saves it in UIM in the form of a business interaction. The *ProcessInteraction* operation performs the work that is necessary to move the business interaction into live inventory. *ProcessInteraction* retrieves the business interaction and, based on the items defined in the request, creates or updates services and service configurations, and provides the means to execute customizations that create or update service configuration items. In the case of the GSM 3GPP Technology Pack, the content of the technology pack provides the customizations that create and update mobile services.

The *UpdateInteraction* operation enables external systems to transition UIM business entities to specific life cycle states within the context of a business interaction. The
GetInteraction and GetConfiguration operations enable you to retrieve information from UIM.

About GSM 3GPP Custom Service Actions and Parameters

The CaptureInteraction request defines an interaction with multiple items, and each item defines a service or service change. The request also defines several actions: interaction action, item action, and service action. The interaction action and item action are defined as enumerations, while the service action is a custom action that is recognized by, and acted upon by, custom code. The GSM 3GPP Technology Pack provides the custom code, and it defines custom mobile service actions that drives the custom logic.

The CaptureInteraction request defines custom parameters for each service that are recognized by, and acted upon by, custom code. The GSM 3GPP Technology Pack provides the custom code, and it defines custom parameters that are used with a specific service action.

The focus of this chapter is the custom service actions and custom parameters that the GSM 3GPP Technology Pack defines, which you need to know to populate the CaptureInteraction request to automate the fulfillment of mobile services. Example requests are included with the first few actions that are described.

For more information about extending a technology pack to create additional custom service actions, see UIM Developer’s Guide.

The GSM 3GPP Technology Pack defines the following custom service actions, each of which define a specific set of custom parameters:

- createMobileGSMService
- addData
- removeData
- disconnectMobileGSMService
- suspendMobileGSMService
- resumeMobileGSMService

createMobileGSMService

The createMobileGSMService action creates a mobile service configuration in UIM.

Table 5–1 shows the parameter names that are recognized by, and processed by, the GSM 3GPP Technology Pack when the service action is createMobileGSMService. The corresponding parameter values specify data, which must reflect the specific data type that each parameter name expects, such as String, Boolean, or EntityName Type. The table also shows specific data values where applicable.

Additional information regarding each parameter is described in the proceeding sections.

<table>
<thead>
<tr>
<th>Name</th>
<th>Value Data Type</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>serviceAddress</td>
<td>GeographicAddressType</td>
<td>Y</td>
</tr>
<tr>
<td>party</td>
<td>PartyType</td>
<td>Y</td>
</tr>
</tbody>
</table>
**serviceAddress**

This parameter defines the service address where the mobile service is to be established (or may be established in the future, if tracking homes that can possibly be serviced). The technology pack defines several Place specifications you can use to specify the service address. See Table 2–4, "Place Specifications".

The service address is referenced to the service.

In the request, you specify the parameter name, and the corresponding parameter value as a GeographicAddressType structure. The structure defines a place name, a Place specification, and specific address information such as street address, city, state, and ZIP code. (For information on Place specifications and how they are realized as GeographicAddress entities in UIM, see the Place Entity chapter in UIM Information Model Reference.)

In the GeographicAddressType structure, you must specify a place name; supplying a Place specification is optional. If the place is found, it is used. If the place is not found, it is created based on the supplied Place specification name, or, if not supplied, on the default Place specification (usAddress). If the place is being created, the request must also supply the specific address information, such as street address, city, state, and ZIP code. These address elements are based on the supplied Place specification.

**party**

This parameter defines the party for the mobile service. The technology pack defines Party specifications you can use to specify the party. See Table 2–3, "Party Specifications". The technology pack also defines Role specifications you can use to further describe the party. See Table 2–5, "Role Specifications".

The subscriber is referenced to the service.

---

### Table 5–1 (Cont.) Parameters for createMobileGSMService Action

<table>
<thead>
<tr>
<th>Name</th>
<th>Value Data Type</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>classOfSubscriber</td>
<td>String</td>
<td>N</td>
</tr>
<tr>
<td>telephoneNumber</td>
<td>TelephoneNumberType</td>
<td>Y</td>
</tr>
<tr>
<td>voicemail</td>
<td>LogicalDeviceAccountType</td>
<td>N</td>
</tr>
<tr>
<td>reservedFor</td>
<td>String</td>
<td>N</td>
</tr>
<tr>
<td>reservedForType</td>
<td>String</td>
<td>N</td>
</tr>
<tr>
<td>iccid</td>
<td>String</td>
<td>Y</td>
</tr>
<tr>
<td>circuitSwitchedData</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>telephony</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>sms</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>callForwarding</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>callBarring</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>callerId</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>callWaiting</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>callHold</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>multiparty</td>
<td>Boolean</td>
<td>N</td>
</tr>
<tr>
<td>adviceOfCharge</td>
<td>Boolean</td>
<td>N</td>
</tr>
</tbody>
</table>

---

*prepaid* or *postpaid*
In the request, you specify the parameter name and the corresponding parameter value as a PartyType structure. The structure defines a party name, a Party specification, and specific party information such as name and account number. The account number is important in case people have the same name. In addition, the structure defines a role name and Role specification for the party, such as Subscriber. (For information on Party and Role specifications, see the Party Entity and Role Pattern chapters in UIM Information Model Reference.)

In the PartyType structure, you must specify a party name; supplying a Party specification is optional. If the party is found, it is used. If the party is not found, it is created based on the supplied Party specification name, or, if not supplied, on the default Party specification (Individual). If the party is being created, the request must also supply the specific party information, such as name and account number. These party elements are based on the supplied Party specification.

classOfSubscriber
The MobileGSMServiceConfiguration specification defines several configuration items, including Subscriber Profile. This configuration item defines the classOfSubscriber character. A logical device account is referenced to this configuration item. The logical device account is based on the Mobile Subscription Profile specification. The classOfSubscriber characteristic is also defined on the Mobile Subscription Profile specification.

This parameter is used to find the logical device account that the Subscriber Profile configuration item needs to reference. The logical device account must be associated to the home location register (HLR) configuration item, and must be established in UIM beforehand.

In the request, you specify the parameter name and corresponding parameter value as a String, which defines the value of the characteristic cited by the parameter name.

televisionNumber
This parameter defines a configuration item that is used to establish the mobile service. The MobileGSMServiceConfiguration specification defines several configuration items, including Primary mobile subscriber integrated services digital network (MSISDN). A telephone number is assigned to this configuration item. The telephone number is based on one of the following Telephone Number specifications: usTelephoneNumber, canadaTelephoneNumber, ukTelephoneNumber, norwayTelephoneNumber, or saudiArabiaTelephoneNumber. These specifications are defined in the telephone number base technology packs (ora_uim_us_tn_cartproj, ora_uim_canada_tn_cartproj, ora_uim_uk_tn_cartproj, ora_uim_norway_tn_cartproj, and ora_uim_saudi_arabia_tn_cartproj).

In the request, you specify the parameter name, and the corresponding parameter value as a TelephoneNumberType structure. The structure defines a telephone number, a Telephone Number specification, and additional information for the telephone number such as TN type and responsible provider.

In the TelephoneNumberType structure, you must specify a telephone Number and TN type, and you may optionally specify a Telephone Number specification:

- If the specified TN type is PORTEDIN and the specified telephone number is not yet in inventory, the telephone number is created based on the specified Telephone Number specification, if supplied. If the request did not supply a Telephone Number specification, the telephone number is created based on the default Telephone Number specification (usTelephoneNumber).
If the specified TN type is **PORTEDIN** and the telephone number reflects a ported out state in UIM, the TN type in UIM is changed to **OWNED** and it is reactivated for use.

If the specified TN type is **OWNED**, it indicates that the telephone number exists in inventory. An existing telephone number is reserved prior to use for a Global System for Mobile (GSM) service. When the telephone number is reserved, the reservedFor and reservedForType parameters must also be supplied to redeem the reservation. See "reservedFor, reservedForType".

**voicemail**

This parameter defines a configuration item that is used to establish the mobile service. The MobileGSMServiceConfiguration specification defines several configuration items, including Voicemail and Access. A logical device account is assigned to the Access configuration item. The logical device account is based on the voicemailAccess Logical Device Account specification.

In the request, you specify the parameter name and corresponding parameter value as a LogicalDeviceAccountType structure. In the structure, you specify a valid Logical Device Account specification, such as voiceMailAccess.

**reservedFor, reservedForType**

If the TN type is **OWNED**, it indicates that the telephone number is reserved. These parameters are used to directly set UIM data values for a reserved telephone number. In UIM, the **Reserved For** and **Reserved For Type** data fields display in the Reservations page. See “tnType”.

In the request, you specify the parameter name and corresponding parameter value as a String, which defines the value of the UIM data cited by the parameter name.

**iccId**

The MobileGSMServiceConfiguration specification defines several configuration items, including Device. A logical device is assigned to this configuration item. The logical device is based on the SIMCard Logical Device specification, which defines the Integrated Circuit Card Identifier (ICCID) characteristic. The iccId parameter value specified by the request is used to find the SIMCard, which is then assigned to the Device configuration item.

In the request, you specify the parameter name and corresponding parameter value as a String, which defines the iccId used to find the SIMCard. The iccId must be a minimum of 19 digits and a maximum of 20 digits in length.

**Remaining Boolean Parameters**

The MobileGSMServiceConfiguration specification defines several configuration items, including Circuit, Teleservices, and Supplementary Services. These configuration items reference services, which are based on the CircuitSwitchedProfile, TeleserviceProfile, and SupplementaryServiceProfile Service specifications. Each specification defines characteristics that correlate to the parameters, and each parameter correlates to one or more characteristics.

Table 5–2 lists each parameter name, the specification that defines the characteristics that correlate to the parameter, and the list of characteristics defined for the specification.

The circuitSwitchedData parameter is used to find the circuit service (Bearer Services configuration item). If the service is not found, the Web service operation errors. The telephony and sms parameters are used to find the telephone service (Teleservices
configuration item). If the service is not found, the Web service operation errors. The remaining parameters are used to find the supplementary service (Supplementary Services configuration item). If the service is not found, it is created using the parameter values that are specific to the SupplementaryServiceProfile.

In the request, you specify the parameter name and corresponding parameter value as a Boolean value of true or false, which represents the value of the characteristic cited by the parameter name.

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Specification Name</th>
<th>Characteristics on Specification</th>
<th>MobileGSMServiceConfiguration Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>circuitSwitchedData</td>
<td>CircuitSwitchedDataProfile</td>
<td>asyncGeneralBearerService, async300bps, async1_2kbps, async1200_75bps, async2_4kbps, async4_8kbps, async9_6kbps, syncGeneralBearerService, sync1_2kbps, sync2_4kbps, sync4_8kbps, sync9_6kbps</td>
<td>Service Features/Bearer Services, Circuit</td>
</tr>
<tr>
<td>telephony</td>
<td>TeleserviceProfile</td>
<td>alternateSpeech, automateTransmission, voice</td>
<td>Service Features/Teleservices</td>
</tr>
<tr>
<td>sms</td>
<td>TeleserviceProfile</td>
<td>smsMOPP, smsMTTP</td>
<td>Service Features/Teleservices</td>
</tr>
<tr>
<td>callForwarding</td>
<td>Supplementary ServiceProfile</td>
<td>callForwardOnNoReply, callForwardOnSubscriberBusy, callForwardOnSubscriberNotReachable, callForwardUnconditional</td>
<td>Service Features/Teleservices/Supplementary Services</td>
</tr>
<tr>
<td>callBarring</td>
<td>Supplementary ServiceProfile</td>
<td>barAllOutgoingCalls, barAllIncomingCalls, barOutIntelExceptHomeCountry, barIncomingRoamingOutsideHc, barOutgoingInternationalCalls</td>
<td>Service Features/Teleservices/Supplementary Services</td>
</tr>
<tr>
<td>callerId</td>
<td>Supplementary ServiceProfile</td>
<td>callingLineIdPresentation, callingLineIdRestriction, connectedLineIdPresentation, connectedLineIdRestriction</td>
<td>Service Features/Teleservices/Supplementary Services</td>
</tr>
</tbody>
</table>
Understanding Service Registries

The MobileGSMServiceConfiguration specification defines the following service registries as configuration items:

- Home Location Register (HLR)
- Short Message Service Center (SMSC)
- Home Subscriber Server (HSS)
- Authentication Center (AUC)
- Voicemail Server (VMS)

The HLR is required for mobile service, so the HLR configuration item is always added to the service. If the request specifies the sms parameter value as true, the SMSC configuration item is added to the service. The HSS and AUC configuration items are not used by the GSM 3GPP Technology Pack, but are included for extension purposes. The VMS configuration item is required if the service has voicemail. So, if the request specifies the voicemail parameter, the VMS configuration item is added to the service.

Understanding the Request

Example 5–1 is a condensed version of the CaptureInteraction request that highlights specific content to better understand what is required when using the UIM Service Fulfillment Web service with the GSM 3GPP Technology Pack. The example is numbered so that information describing the example can be referenced.

Example 5–1  Condensed CaptureInteraction Request

```
01  <biws:captureInteractionRequest>
02      <biws:interaction>
03          <invbi:specification>
04              <invspec:name>Service Order</invspec:name>
05          </invbi:specification>
06          <invbi:action>CREATE</invbi:action>
07          <invbi:name>AutoAllocateRequest</invbi:name>
08          <invbi:effectiveDate>2011-06-24T00:00:00Z</invbi:effectiveDate>
09          <invbi:item>
10              <invbi:action>ADD</invbi:action>
11          </invbi:service>
```
createMobileGSMService

<invsvc:specification>
  <invspec:name>MobileService</invspec:name>
</invsvc:specification>

<invsvc:action>createMobileGSMService</invsvc:action>

<invsvc:name>San Diego Mobile Service</invsvc:name>
</invbi:service>

<invbi:parameter>
  <invbi:serviceAddress/>
  <invbi:value xsi:type="invplace:GeographicAddressType">
    <invplace:specification>
      <invspec:name>usAddress</invspec:name>
    </invplace:specification>
    <invplace:property>
      <invprop:name>addressLine1</invprop:name>
      <invprop:value>123 Main Street</invprop:value>
    </invplace:property>
    <invplace:property>
      <invprop:name>americanCity</invprop:name>
      <invprop:value>San Diego</invprop:value>
    </invplace:property>
    <invplace:property>
      <invprop:name>americanState</invprop:name>
      <invprop:value>CA</invprop:value>
    </invplace:property>
    <invplace:property>
      <invprop:name>countryCode</invprop:name>
      <invprop:value>USA</invprop:value>
    </invplace:property>
  </invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>party</invbi:name>
  <invbi:value xsi:type="invparty:PartyType">
    <invparty:specification>
      <invspec:name>Individual</invspec:name>
    </invparty:specification>
    <invparty:name>Joseph Schmow</invparty:name>
    <invparty:property>
      <invprop:name>accountNumber</invprop:name>
      <invprop:value>033</invprop:value>
    </invparty:property>
    <invparty:role>
      <invrole:specification>
        <invspec:name>Subscriber</invspec:name>
      </invrole:specification>
    </invparty:role>
  </invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>classOfSubscriber</invbi:name>
  <invbi:value xsi:type="xs:string">postpaid</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>telephoneNumber</invbi:name>
  <invbi:value xsi:type="invnum:TelephoneNumberType">
    <invnum:id>9722675078</invnum:id>
  </invbi:value>
</invbi:parameter>
<invnum:property>
  <invprop:name>tnType</invprop:name>
  <invprop:value>PORTEDIN</invprop:value>
</invnum:property>

<invnum:property>
  <invprop:name>responsibleProvider</invprop:name>
  <invprop:value>Joseph Schmow</invprop:value>
</invnum:property>

<invbi:parameter>
  <invbi:name>voicemail</invbi:name>
  <invbi:value xsi:type="invld:LogicalDeviceAccountType">
    <invld:specification>
      <invspec:name/>
    </invld:specification>
    <invld:property>
      <invprop:name>language</invprop:name>
      <invprop:value>English</invprop:value>
    </invld:property>
    <invld:property>
      <invprop:name>timeZone</invprop:name>
      <invprop:value>Central Standard</invprop:value>
    </invld:property>
  </invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>iccId</invbi:name>
  <invbi:value xsi:type="xs:string">8765679000090000462</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>circuitSwitchedData</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>telephony</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>sms</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>callForwarding</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>callerId</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:parameter>
  <invbi:name>callWaiting</invbi:name>
  <invbi:value xsi:type="xs:boolean">true</invbi:value>
</invbi:parameter>

<invbi:item>
  <invbi:action>ADD</invbi:action>
  <invbi:service>
    <invsvc:specification>
      <invspec:name>MobileService</invspec:name>
    </invsvc:specification>
  </invbi:service>
</invbi:item>
About the Interaction, Item, and Service
The request defines an interaction (line 02-140) that results in the creation of a business interaction in UIM. The business interaction is based on the Service Order Business Interaction specification (line 04), which is defined in the ora_uim_base_specifications base cartridge. The creation is based on the interaction action of CREATE (line 06). The business interaction that gets created in UIM is named AutoAllocateRequest (line 07). The effective date (line 08) is required.

The request also defines two items (lines 09-112 and lines 113-127), each with an item action of ADD (line 10 and line 114). Within the first item, the request defines a service (lines 11-17), and custom parameters for the service (lines 18-111). The first item’s service is based on the MobileService Service specification (line 13). The service action of createMobileGSMService (line 15) is the GSM 3GPP Technology Pack custom service action. The service that gets created in UIM is named San Diego Mobile Service (line 16).

The second item in Example 5–1 (lines 127-139) defines a service action of addData, which is described in the "addData" section.

Note: See UIM Web Services Developer’s Guide for more information about the CREATE and UPDATE interaction actions.

About the Parameters
The custom parameters for the service (lines 18-126) are based on the parameters for the createMobileGSMService action, as described in Table 5–1. For example, the first parameter name in the table is serviceAddress, which is a required parameter with a corresponding value that must reflect a data type of GeographicAddressType. In the request, this parameter is defined (lines 18-45) with the parameter name of serviceAddress (line 19), and the parameter value of GeographicAddressType (lines 20-44). The GeographicAddressType structure defines a Place specification of usAddress (lines 21-23), which is a Place specification that is defined in the technology pack. The usAddress Place specification defines several characteristics, including addressLine1, americanCity, americanState, and americanZipCode. These characteristics, and their corresponding values, are represented as properties of GeographicAddressType (lines 24-43).

The second parameter name in the table is party, which is a required parameter with a corresponding value that must reflect a data type of PartyType. In the request, this parameter is defined (lines 46-63) with the parameter name of party (line 47), and the parameter value of PartyType (lines 48-62). The PartyType structure defines a Party specification of Individual (lines 49-51), which is a Party specification that is defined in the technology pack. The Individual Party specification defines the accountNumber characteristic. This characteristic, and it’s corresponding value, is represented as a
property of PartyType (lines 53-56). You can also specify a role for the party (lines 57-61).

The classOfSubscriber parameter (lines 64-67) is an optional parameter that defines a value of postpaid in this example.

The telephoneNumber parameter (lines 68-81) is a required parameter with a corresponding value that must reflect a data type of TelephoneNumberType. In the request, this parameter is defined with the parameter name of telephoneNumber (line 69), and the parameter value of TelephoneNumberType (lines 70-80). The TelephoneNumberType structure defines the telephone number as 9722675078 (line 71). In this example, a specification name is not provided, so the default TelephoneNumber specification is used (usTelephoneNumber). The usTelephoneNumber specification defines the tnType and responsibleProvider characteristics. These characteristics, and their corresponding values, are represented as properties of TelephoneNumberType (lines 72-79).

The voicemail parameter (lines 82-97) is an optional parameter with a corresponding value that reflects a data type of LogicalDeviceAccountType. In the request, this parameter is defined with the parameter name of voicemail (line 83), and the parameter value of LogicalDeviceAccountType (lines 84-96). In this example, a specification name is not provided, so the default specification is used (voiceMailAccess). The voiceMailAccess specification defines the language and timeZone characteristics. These characteristics, and their corresponding values, are represented as properties of LogicalDeviceAccountType (lines 88-95).

The iccId parameter (lines 98-101) is a required parameter that defines a value of 8765679000090000462 in this example.

Lastly, several of the optional parameters that are defined as booleans are shown:

- cirucitSwitchedData (lines 102-105)
- telephony (lines 106-109)
- sms (lines 110-113)
- callForwarding (lines 114-117)
- callerId (lines 118-121)
- callWaiting (lines 122-125)

**Understanding the CreateMobileGSMService Action within a Request**

When a request defines an item that specifies the createMobileGSMService action, the request can define, at most, two items: It can define just the createMobileGSMService action, or it can define the createMobileGSMService with one addData action, as shown in Example 5–1. A request cannot specify the createMobileGSMService action with multiple addData actions.

Each item in the request is processed independently. So, if a request specifies two items, one that specifies the createMobileGSMService action and one that specifies the addData action, and both actions are intended to act upon the same service, then each item must also specify the same externalObjectId. The Web service processes the createMobileGSMService action first. Then it processes the addData action. When the Web service processes the addData action, it uses the specified externalObjectId to find the service it just created when processing the createMobileGSMService action. If the externalObjectId is not specified for each item, then the Web service creates two different services.
For additional information on understanding actions within a request, see "Understanding addData Actions within a Request".

Understanding How Characteristics are Represented in the Request

In the request, characteristic values are set one of two ways: As a parameter value, or as a property value.

The value of a characteristic may be set by a parameter value. For example, createMobileGSMService action defines the callWaiting parameter. If a supplementary service is created, the callWaiting characteristic for the supplementary service is set to the specified parameter value. In Example 5–1, the value of the callWaiting characteristic is set to true.

The value of a characteristic may also be set by a property value. For example, the usAddress specification defines the following characteristics: addressLine1, addressLine2, americanState, americanCity, americanZipCode, and countryCode. In Example 5–1, the value of these characteristics are set by the properties (lines 24-43) that the usAddress specification defines (lines 21-23).

Understanding How Primitive Data Types are Represented in the Request

Throughout this chapter, tables list the parameters that are applicable for each action. These tables list the data type that is expected in the value element, such as String, Boolean, or Long. The data is actually a primitive instance of the specified data type. For example, string, boolean, or long.

In the request, you must include the namespace that defines primitive instances, which is "http://www3.org/2001/XMLSchema-instance". You can define the namespace in the heading of your XML, which is then referenced from within the value element. For example:

```xml
<invbi:parameter>
  <invbi:name>classOfSubscriber</invbi:name>
  <invbi:value xsi:type="xs:string">postpaid</invbi:value>
</invbi:parameter>
```

You can also define the namespace within the value element that contains string, boolean, or long data, in which case the namespace does not need to be defined in the header. For example:

```xml
<invbi:parameter>
  <invbi:name>classOfSubscriber</invbi:name>
</invbi:parameter>
```

All of the examples in this chapter assume that the namespace is defined in the header, so they do not show the namespace defined within the value element.
addData

The addData action further defines an existing mobile service by adding a general packet radio service (GPRS) configuration item to the service configuration.

Table 5–3 shows the parameter name that is recognized by, and processed by, the GSM 3GPP Technology Pack when the service action is addData. The corresponding parameter value specifies data, which must reflect the specific data type that the parameter name expects, such as String.

Additional information regarding the parameter is described in the section following the table.

Table 5–3 Parameters for addData Action

<table>
<thead>
<tr>
<th>Name</th>
<th>Value Data Type</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDPContextProfile</td>
<td>String</td>
<td>N</td>
</tr>
</tbody>
</table>

PDPContextProfile

The PDPContextProfile parameter is a String value that represents the service name you wish to use for the PDP Context Profile. For example, if you create a service named PDPContext based on the PDPContextProfile specification, the String value would be PDPContext.

The MobileGSMServiceConfiguration specification defines several configuration items, including PDP Context. This configuration item references a service, which is based on the PDPContextProfile Service specification.

In the request, you specify the parameter name and corresponding parameter value as a String, which defines the service name you wish to use for the PDP Context Profile.

---

**Note:** This example uses the default service name that is specified in the code (PDPContext). If you choose to create a service named something other than PDPContext, such as myCustomPDPContext, then you must modify the default name in the code, recompile, and redeploy the technology pack. The request would then specify a parameter value of myCustomPDPContext.

For example, in MobileGSMConstants.java, you would change this:

```java
public static final String PROFILENAME_PDP_CONTEXT="PDPContext";
```

To this:

```java
public static final String PROFILENAME_PDP_CONTEXT="MyCustomPDPContext";
```

---

PDPContextProfile Characteristics

The MobileGSMServiceConfiguration specification defines several configuration items, including PDP Context. This configuration item references a service. The service is based on the PDPContextProfile Service specification, which defines the characteristics listed in Table 5–4. The profile, and the characteristics it defines, are used to establish the mobile service.

The only characteristic that defines a default value is the extendedQoSId characteristic, which upon installation is set to 100.
Example

In Example 5–1, the captureInteraction request defines two items: The first item defines the `createMobileGSMService` action, and the second item defines the `addData` action.

The second item defines an item action of `ADD` (line 128), the service (lines 129-134), and a custom parameter for the service (lines 135-138). In this example, the `addData` action adds a PDP Context service configuration item to the service that was created by the `createMobileGSMService` action, as specified by the first item in the request.

Understanding addData Actions within a Request

When a request defines an item that specifies the `createMobileGSMService` action, the request can define, at most, two items: It can define just the `createMobileGSMService` action, or it can define the `createMobileGSMService` with one `addData` action, as shown in Example 5–1. A request cannot specify the `createMobileGSMService` action with multiple `addData` actions.

A request can also define just the `addData` action to define an existing mobile service. For example, a request can specify just the `createMobileGSMService` action, and a subsequent request can specify the `addData` action for the service created by a prior request. In this scenario, the `addData` action item must specify the serviceld so that the Web service knows which service to add the data to.

A service can have at most one `addData` action applied against it at any given time. For example, an initial request may specify the `createMobileGSMService` and `addData` actions. A subsequent request cannot specify another `addData` request for this service until another request first specifies the `removeData` action for this service.

A request that does not define the `createMobileGSMService` action can also define multiple `addData` actions, as long as each item specifies a different service to which to add the data. For example, a request defines three items, and each item defines the `addData` action: The first item specifies service 1, the second item specifies service 2, and the third item specifies service 3.

removeData

The `removeData` action removes the GPRS configuration item from an existing mobile service configuration.
The **removeData** action defines no parameters. For this action, you provide the interaction and item data, but the only information needed to perform the action is the service ID or externalObjectId. Since both of these elements are defined within the service structure of the request, no parameters are needed.

### disconnectMobileGSMService

The **disconnectMobileGSMService** action disconnects a mobile service in UIM.

**Table 5–5** shows the only parameter name that is recognized by, and processed by, the GSM 3GPP Technology Pack when the service action is **disconnectMobileGSMService**. The corresponding parameter value specifies data, which must reflect the specific data type that the parameter name expects, such as String. The table also shows specific data values where applicable.

**Table 5–5** Parameters for **disconnectMobileGSMService** Action

<table>
<thead>
<tr>
<th>Name</th>
<th>Value Data Type</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>tnType</td>
<td>String PORTEDOUT</td>
<td>N</td>
</tr>
</tbody>
</table>

**tnType**

The tnType parameter is used to optionally indicate whether the number being disconnected is being ported out to another service provider. For example, a customer may wish to change service providers but keep their telephone number.

In the request, you specify the parameter name and corresponding parameter value as a String value of **PORTEDOUT**.

### suspendMobileGSMService

The **suspendMobileGSMService** action suspends a mobile service in UIM.

The **suspendMobileGSMService** action defines no parameters. For this action, you provide the interaction and item data, but for the service, the only information needed to suspend the mobile service is the service ID or externalObjectId. Since both of these elements are defined within the service structure of the request, no parameters are needed.

The MobileGSMServiceConfiguration specification defines several configuration items, including Operator Determined Barring. This configuration item is defined as a characteristic of type boolean, and the default value is set to **false**. The end result of the **suspendMobileGSMService** action is the Operator Determined Barring configuration item gets added to the configuration, and the **Bar All Outgoing/Incoming Calls** characteristic defined for the configuration item gets set to **true**.

### resumeMobileGSMService

The **resumeMobileGSMService** action resumes a suspended mobile service in UIM.

The **resumeMobileGSMService** action defines no parameters. For this action, you provide the interaction and item data, but for the service, the only information needed to resume the mobile service is the service ID or externalObjectId. Since both of these elements are defined within the service structure of the request, no parameters are needed.
The MobileGSMServiceConfiguration specification defines several configuration items, including Operator Determined Barring. This configuration item is defined as a characteristic of type boolean. The default value is set to false, and suspending the service sets the Operator Determined Barring configuration item to true. However, resuming the service does not reset the Operator Determined Barring configuration item back to false. Rather, the end result of the resumeMobileGSMService action is the Operator Determined Barring configuration item is removed from the current service configuration version.

About the GSM-3GPP Test XML

The GSM-3GPP Technology Pack contains test XML files that provide mobile-specific examples of Service Fulfillment Web service requests. The test XML files are located within the technology pack, within the ZIP file, within the test/WebServiceRequestXML directory.
This chapter provides an example of using the GSM 3GPP Technology Pack for Oracle Communications Unified Inventory Management (UIM), including steps that demonstrate an example implementation.

Overview

This example demonstrates how to add a Global System for Mobile (GSM) 3rd Generation Partnership Project (3GPP) service subscription with voice, voicemail, messaging, and data options, and how to redeem a reserved telephone number.

Note: Typically, you would use Web services to capture order data on a business interaction, automate the configuration design, track the configurations and assigned resources, and update the state of the business interaction as the provisioning process moves through the life cycle.

To set up a GSM 3GPP service for a subscriber, you first define the required inventory resources in UIM. See "Creating GSM 3GPP Inventory Resources" for a list of typical inventory resources to define.

Next, you define a mobile service in UIM. A GSM 3GPP service represents a your implementation of a subscription. You model you service using the Mobile Service specification. See "Creating the GSM 3GPP Service" for more information.

Note: This example is based on the use of the default specifications and characteristics supplied with the technology pack. Extending the technology pack may influence how you configure the service.

Creating GSM 3GPP Inventory Resources

See the following sections for information about creating resources for a typical GSM 3GPP services:

- Creating SIM Cards
- Creating IMSI Accounts
- Creating a Service Location
- Creating Serving Areas
Creating SIM Cards

In UIM, create a logical device using the SIMCard specification. On the UIM Logical Device Summary page, ensure that you populate the ICCID field with a value, as it is required on the order.

Populating UIM with multiple, pre-activated subscriber identification module (SIM) cards enables you to associate the SIM cards (identified by their Integrated Circuit Card Identifier [ICCID]) with international mobile subscriber identifications (IMSI), which identify pre-activated services in the home location register and authentication center.

Creating IMSI Accounts

In UIM, create an IMSI logical device account using the imsi specification. On the UIM Logical Device Account Summary page, associate the IMSI logical device account to a SIM card in the Logical Device ID field.

Creating a Service Location

Create Place entities using the entity type of Location type and the serviceLocation specification. Define the Place entity names with ZIP code values.

Creating Serving Areas

In UIM, create an inventory group using the MobileServingAreaInventoryGroup specification. On the UIM Inventory Group Summary page, associate to the inventory group the service locations that you created previously. This inventory group represents a serving area, consisting of one or more geographic areas (the ZIP codes). When a customer service representative is creating an order, the representative populates the service order fields with a ZIP code. The ZIP code is used to locate the inventory group and the associated home location register (HLR) that serves the address location.

Note: In this example, a service area is used to reference the correct HLR for a subscriber. Real-world Implementations will likely include complex logic and custom extensions.

Creating Home Location Registers

In UIM, create a logical device for the home location register (HLR) using the HomeLocationRegister Logical Device specification. On the Logical Device Summary page, associate to the HLR logical device the serving area inventory group that you previously created. A single HLR, for example, may serve multiple serving areas.
Creating SMSC Registers

In UIM, create a logical device for the Short Message Service Center (SMSC) using the ShortMessageServiceCenter logical device specification. On the Logical Device Summary page, associate to the SMSC logical device the serving area inventory group that you previously created. A single SMSC, for example, may serve multiple serving areas.

Creating Voicemail Servers

In UIM, create a logical device for the voicemail server using the voiceMailServer Logical Device specification. On the Logical Device Summary page, associate to the voicemail server logical device the serving area inventory group that you previously created. A single voicemail server, for example, may serve multiple serving areas.

Creating Subscription Profiles

In UIM, create a logical device account for the mobile subscription profile using the MobileSubscriptionProfile specification. On the Logical Device Account Summary page, define the Class of Subscriber as Postpaid or Prepaid, and associate to the profile (in the Logical Device ID field) the HLR logical device you previously created.

Creating Telephone Numbers and Reservations

Populate UIM with telephone number blocks and the individual telephone number instances corresponding to those blocks, and add those blocks as member of the serving area where they can be utilized.

Use these telephone numbers when new service requests require a reservation for an existing telephone number. When creating the reservation for the telephone number, define the Reserved for Type as Order and specify the order ID.

Creating the GSM 3GPP Service

The GSM 3GPP service is represented by an instance of the mobileService specification. This specification has an associated GSM 3GPP Service Configuration specification.

1. Create a new GSM 3GPP service.
2. Associate to the service a party and role.
3. Create a service address.
   Use a Place entity with a place type of Address.
4. Create a service location using a Place entity.
   Use an entity type of Location and the serviceLocation specification.
   In the Place Hierarchy section, add the service address (that you created in the previous step) as a child to the service location.
5. Create the first service configuration.
6. On the Service Configuration page in the Configurations Items section, expand the configuration.
7. For the Subscription configuration item, select a specification for the primary mobile subscriber integrated services digital network (MSISDN), then assign a telephone number to the service configuration.
You can redeem a reservation (if owned) or create a new telephone number (if ported-in).

8. For the **Device** configuration item, assign a SIM card to the service configuration.

9. For the **IMSI** configuration item, assign an IMSI to the service configuration.

10. Expand the **Service Location** configuration item and reference the service location that you created in step 4.

11. (Optional) Add additional child configuration items to the **Service Registries** configuration item.
   
   For example, you can right-click **Service Registries** and add a configuration item for **Short Message Service Center** and **Voicemail Server**.

12. (Optional) Add additional child configuration items to the **Service Features** configuration item.

   The **Service Features** configuration item contains optional attributes typically selected on an order, such as SMS, circuit capacities, call forwarding, and so forth.

13. Autoconfigure the service configuration.

   UIM autoconfigures references for the **Serving Area** configuration item and all **Service Registries** child configuration items. See “Creating GSM 3GPP Inventory Resources” for information about setting up resources.

   You can autoconfigure the service configuration as many times as necessary.

**Reviewing the Service in UIM**

After the order completes, you can review the service in UIM.

To review the service:

1. Search for **Services**, and select the service that contains the unique order ID.

   A service status of **In Service** indicates that the configuration has been delivered in the network and the service is now active.

2. In the Service Summary page in the Configurations area, click the **Configuration ID** associated to the new service configuration.

   The configuration opens in the Service Configuration Information page. The Configuration contains an MSISDN (the telephone number reserved in UIM). The autodesign process created an IMSI associated with the subscriber. It displays the SIM card selected for the subscriber. It displays a service location, which is the serving area assigned to the subscriber. Within that serving area it has assigned a home location register and a short message service center, and the autodesign has also populated information to represent mobile data and all service features selected on the original order (caller ID, call forwarding, and so forth).

   In the Parties area, the customer is associated with the service.