

# Generic PIM Profile (GPP)

## **Bluetooth® Test Suite**

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# 1 Scope

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This Bluetooth document contains the Test Suite Structure (TSS) and test cases to test the implementation of the Bluetooth Generic PIM Profile (GPP) with the objective to provide a high probability of air interface interoperability between the tested implementation and other manufacturers' Bluetooth devices.

GPP delivers basic recurring functions to PIM profiles such as CTN and will not be implemented as a standalone version. Tests specified in this document may be referenced by profiles based on GPP.

## 2 References, definitions, and abbreviations

### 2.1 References

This document incorporates provisions from other publications by dated or undated reference. These references are cited at the appropriate places in the text, and the publications are listed hereinafter. Additional definitions and abbreviations can be found in [1], [2], and [3].

- [1] Bluetooth Core Specification, Version 2.1 or later
- [2] Test Strategy and Terminology Overview
- [3] Generic PIM Profile, Version 1.0 or later
- [4] Bluetooth Specification Guidelines
- [5] ITU-T X.290 series, OSI CONFORMANCE TESTING METHODOLOGY AND FRAMEWORK  
PROTOCOL RECOMMENDATIONS FOR ITU-T APPLICATIONS, ITU Recommendation X.290  
series (equivalent to ISO 9646)

### 2.2 Definitions

In this Bluetooth document, the definitions from [1], [2], and [3] apply.

### 2.3 Acronyms and abbreviations

In this Bluetooth document, the definitions, acronyms, and abbreviations from [1], [2], and [3] apply.

Acronyms and abbreviations	Definition
PAS	PIM Access Service
PIM	Personal Information Management
PIMCE	PIM Client Equipment
PIMSE	PIM Server Equipment
PNS	PIM Notification Service

Table 2.1: Acronyms and abbreviations

## 3 Test Suite Structure (TSS)

### 3.1 Test Strategy

The Generic PIM Profile (GPP) delivers basic, recurring functions to PIM profiles and will not be implemented as a standalone profile. Therefore, the test cases in this document can be conducted only in combination with a GPP-based application profile that instantiates the functions and requirements defined by GPP.

In particular, the following conventions apply:

- Tests defining the establishment or termination of GPP OBEX services (PIM Access/notification Service) require a corresponding test of the related services of the application profile.
- While the description of the data objects hereunder is abstract (PIM objects), it is strongly recommended to perform testing for any PIM application object that is supported by the application profile based on GPP.

### 3.2 Test groups

This section defines test groups to structure the GPP tests. The following test groups are defined:

- Session management
- Instance Handling
- Notification Registration
- Browsing
- Object Handling
- Notification
- Account Handling

GPP session management tests are related to the OBEX session management functionality.

#### 3.2.1 GPP instance handling

Tests verifying the instance-related functions of GPP, i.e., getting instance information and updating instances. These functions are part of PIM Access Service.

#### 3.2.2 GPP notification registration

Tests verifying the control of the notification. This function is part of the PIM Access Service.

#### 3.2.3 Notification

Tests verifying the notification i.e., functionality for sending events from the PIMSE to the PIMCE. This function is part of the PIM Notification Service.

#### 3.2.4 Browsing

Tests verifying that the PIMCE can browse through the PIMSE's object repository. This function is part of the PIM Access Service.

### 3.2.5 Object handling

Tests verifying the handling of literal objects, i.e., download, upload and deletion of literal objects in the PIMSE's repository by the PIMCE. These functions are part of the PIM Access Service.

### 3.2.6 GPP account handling

Tests verifying the account-related functions of GPP, i.e., getting account information and updating accounts. These functions are part of PIM Access Service.



## 4 Test cases (TC)

### 4.1 Introduction

#### 4.1.1 Test case identification conventions

Test cases are assigned unique identifiers per the conventions in [2]. The convention used here is: **<spec abbreviation>/<IUT role>/<class>/<feat>/<func>/<subfunc>/<cap>/<xx>-<nn>-<y>**.

Identifier Abbreviation	Specification Identifier <spec abbreviation>
GPP	Generic PIM Profile
Identifier Abbreviation	Feature Identifier <feat>
GBR	GPP Browsing functions
GIH	GPP Instance Handling functions
GNO	GPP Notification functions
GNR	GPP Notification Registration functions
GOH	GPP Object Handling functions
GSM	GPP Session Management functions

Table 4.1: GPP TC feature naming conventions

#### 4.1.2 Conformance

When conformance is claimed for a particular specification, all capabilities are to be supported in the specified manner. The mandated tests from this Test Suite depend on the capabilities to which conformance is claimed.

The Bluetooth Qualification Program may employ tests to verify implementation robustness. The level of implementation robustness that is verified varies from one specification to another and may be revised for cause based on interoperability issues found in the market.

Such tests may verify:

- That claimed capabilities may be used in any order and any number of repetitions not excluded by the specification
- That capabilities enabled by the implementations are sustained over durations expected by the use case
- That the implementation gracefully handles any quantity of data expected by the use case
- That in cases where more than one valid interpretation of the specification exists, the implementation complies with at least one interpretation and gracefully handles other interpretations
- That the implementation is immune to attempted security exploits

A single execution of each of the required tests is required to constitute a Pass verdict. However, it is noted that to provide a foundation for interoperability, it is necessary that a qualified implementation consistently and repeatedly pass any of the applicable tests.

In any case, where a member finds an issue with the test plan generated by the Bluetooth SIG qualification tool, with the test case as described in the Test Suite, or with the test system utilized, the member is required to notify the responsible party via an erratum request such that the issue may be addressed.

### 4.1.3 Pass/Fail verdict conventions

Each test case has an Expected Outcome section. The IUT is granted the Pass verdict when all the detailed pass criteria conditions within the Expected Outcome section are met.

The convention in this Test Suite is that, unless there is a specific set of fail conditions outlined in the test case, the IUT fails the test case as soon as one of the pass criteria conditions cannot be met. If this occurs, then the outcome of the test is a Fail verdict.

## 4.2 Session management

The purpose of the tests described in this section is to verify that OBEX sessions of profiles based on GPP can be established and terminated properly.

### 4.2.1 IUT – PIM Client Equipment (PIMCE)

Verify that the PIM Client Equipment can properly establish and terminate GPP-based sessions.

#### GPP/GSM/BV-01-C [PIMCE opens a GPP session with PAS only]

- Test Purpose
 

Verify that the PIMCE device can start an OBEX session that involves only the GPP PIM Access Service.
- Reference
 

[3] 4.2.1
- Initial Condition
  - IUT: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP.
  - Lower Tester: The Lower Tester is in discoverable and connectable mode.
- Test Procedure
  1. The IUT establishes an OBEX session with the Lower Tester by sending an OBEX CONNECT to the Lower Tester according to the connection parameters defined by the Lower Tester's application profile SDP record that instantiates the GPP PAS SDP record template.
- Expected Outcome
 

Pass verdict

The OBEX CONNECT response message related to the application profile based on the GPP PAS has been exchanged properly so the service is established. Additional fields may be present in the requests and responses.

#### GPP/GSM/BV-02-C [PIMCE opens a GPP session with PAS and PNS]

- Test Purpose
 

Verify that the PIMCE can start a GPP-based session that involves both the PIM Access Service and PIM Notification Service.
- Reference
 

[3] 4.2.2

- Initial Condition
  - IUT: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP. Both IUT and Lower Tester support a notification feature based on the requirements of the PIM Notification Service.
  - Lower Tester: The Lower Tester is in discoverable and connectable mode.
- Test Procedure
  1. The IUT establishes a GPP session with the Lower Tester by connecting to the OBEX PIM Access Service of the Lower Tester.
  2. The IUT sends the notification status 'on' to the Lower Tester using the function 'SetNotificationRegistration'.
  3. The Lower Tester connects to the OBEX PIM Notification Service of the IUT.

- Expected Outcome

Pass verdict

The OBEX response messages of both the PAS and PNS have been exchanged properly.

Both the PIM Access Service and the PIM Notification Service are established.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-03-C [PIMCE closes a GPP session when only the PAS is active]**

- Test Purpose
 

Verify that the PIMCE can terminate a GPP session.
- Reference
 

[3] 4.2.3
- Initial Condition
  - The IUT is engaged in a GPP session with the Lower Tester. Only the PIM Access Service is in use.
- Test Procedure
  1. The IUT disconnects the PAS session by sending an OBEX DISCONNECT.
- Expected Outcome

Pass verdict

The OBEX session for PIM Access Service is closed.

The OBEX DISCONNECT response message of the PAS has been exchanged properly.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-04-C [PIMCE closes a GPP session when both the PAS and the PNS are active]**

- Test Purpose
 

Verify that the PIMCE can terminate a GPP session.
- Reference
 

[3] 4.2.3



- Initial Condition
  - The IUT is engaged in a GPP session with the Lower Tester. Both the PIM Access Service and PIM Notification Service are in use.
- Test Procedure
  1. The IUT finishes the PNS session by switching the Notification 'off' (function SetNotificationRegistration).
  2. The Lower Tester disconnects the PNS session by sending an OBEX DISCONNECT.
  3. The IUT disconnects the PAS session by sending an OBEX DISCONNECT.
- Expected Outcome

Pass verdict

Both the PIM Access Service session and the PIM Notification Service sessions are closed.

The OBEX DISCONNECT response messages of both the PAS and PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

### GPP/GSM/BV-05-C [PIMCE opens a GPP session with multiple PAS instances and PNS]

- Test Purpose
 

Verify that the PIMCE can start a GPP-based session that involves two PIM Access Service instances and a PIM Notification Service.
- Reference
 

[3] 4.2.2
- Initial Condition
  - IUT: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP. Both IUT and Lower Tester support a notification feature based on the requirements of the PIM Notification Service.
  - Lower Tester: The Lower Tester is in discoverable and connectable mode.
  - Both the Lower Tester and the IUT support multiple PAS instances simultaneously.

- Test Procedure
  1. The IUT establishes a GPP session with the Lower Tester by connecting to two OBEX PIM Access Service instances of the Lower Tester.
  2. The IUT sends the notification status 'on' to both PAS instances of the Lower Tester using the function 'SetNotificationRegistration'.
  3. The Lower Tester connects to the OBEX PIM Notification Service of the IUT.

- Expected Outcome

Pass verdict

The OBEX response messages of both the multiple PAS instances and PNS have been exchanged properly.

The two PIM Access Service instances and the PIM Notification Service are established.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-06-C [PIMCE closes a GPP session with multiple active PAS instances and an activated PNS including deregistration of the Notification Service]**

- Test Purpose

Verify that the PIMCE can terminate a GPP session that involves two PIM Access Service instances and a PIM Notification Service, including the deregistration of the PIM Notification Service.

- Reference

[3] 4.2.3

- Initial Condition

- The IUT is engaged in a GPP session with the Lower Tester. Two PIM Access Service instance connections and the PIM Notification Service are in use.

- Test Procedure

1. The IUT finishes the PNS session by switching the Notification 'off' (function SetNotificationRegistration) for both PAS instances.
2. The Lower Tester disconnects the PNS session by sending an OBEX DISCONNECT.
3. The IUT disconnects the two PAS sessions by sending an OBEX DISCONNECT.

- Expected Outcome

Pass verdict

Both the two PIM Access Service sessions and the PIM Notification Service session are closed.

The OBEX DISCONNECT response messages of both the multiple PAS instances and the PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-07-C [PIMCE closes a GPP session with multiple active PAS connections and an activated PNS without deregistration of the Notification Service]**

- Test Purpose

Verify that the PIMCE can terminate a GPP session that involves two PIM Access Service instances and a PIM Notification Service, without deregistration of the PIM Notification Service.

- Reference

[3] 4.2.3

- Initial Condition

- The IUT is engaged in a GPP session with the Lower Tester. Two PIM Access Service instance connections and the PIM Notification Service are in use.

- Test Procedure

1. The IUT disconnects the two PAS connections by sending an OBEX DISCONNECT.
2. The Lower Tester disconnects the PNS session by sending an OBEX DISCONNECT.

- Expected Outcome

Pass verdict

Both the PIM Access Service sessions and the PIM Notification Service session are closed.

The OBEX response messages of both the multiple PAS instances and PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

#### 4.2.2 IUT – PIM Server Equipment (PIMSE)

Check that the PIM Server Equipment device can properly respond to a GPP-based session establishment and termination requests of the PIM Client Equipment (PIMCE) device.

##### GPP/GSM/BV-11-C [PIMSE responds to an open GPP session request for the PAS]

- Test Purpose
 

Verify that the PIMSE can properly respond to a GPP-based request for an OBEX session establishment.
- Reference
 

[3] 4.2.1
- Initial Condition
  - Lower Tester: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP.
  - IUT: The IUT is in discoverable and connectable mode.
- Test Procedure
  1. The Lower Tester connects to the IUT by sending an OBEX CONNECT request to the PIM Access Service of the IUT.

- Expected Outcome

##### Pass verdict

The IUT responds with a well formed OBEX CONNECT response.

Additional fields may be present in the requests and responses.

##### GPP/GSM/BV-12-C [PIMSE responds to an open GPP session request with PAS and PNS]

- Test Purpose
 

Verify that the PIMSE can properly respond to a GPP-based session establishment request.
- Reference
 

[3] 4.2.2
- Initial Condition
  - Lower Tester: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP. Both IUT and Lower Tester support a notification feature based on the requirements of the PIM Notification Service.
  - IUT: the IUT is in discoverable and connectable mode.
- Test Procedure
  1. The Lower Tester connects to the IUT by sending an OBEX CONNECT request to the PIM Access Service of the IUT.

2. The Lower Tester sends the notification status 'on' to the IUT using the function 'SetNotificationRegistration'.
  3. The IUT connects to the Lower Tester by sending an OBEX CONNECT request to the PIM Notification Service of the Lower Tester.
- Expected Outcome

Pass verdict

The IUT responds to the PIM Access Service connection request with a well formed OBEX CONNECT response and subsequently connects to the PIM Notification Service of the Lower Tester.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-13-C [PIMSE closes a GPP session when only the PAS is active]**

- Test Purpose
 

Verify that the PIMSE can close a GPP session.
- Reference
 

[3] 4.2.3
- Initial Condition
  - A GPP session with an active PAS session is ongoing between the IUT and the Lower Tester.
- Test Procedure
  1. The Lower Tester disconnects the GPP PAS session by sending an OBEX DISCONNECT.
  2. The IUT receives an OBEX DISCONNECT request and finishes the PAS session.
- Expected Outcome

Pass verdict

The PIM Access Service session is closed.

The OBEX DISCONNECT response message of the PAS has been exchanged properly.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-14-C [PIMSE closes a GPP session when both PAS and PNS are active]**

- Test Purpose
 

Verify that the PIMSE can close a GPP session.
- Reference
 

[3] 4.2.3
- Initial Condition
  - A GPP session with active PAS and PNS sessions is ongoing between the IUT and the Lower Tester.
- Test Procedure
  1. The Lower Tester sends the notification status 'off' to the IUT using the function 'SetNotificationRegistration'.
  2. The IUT disconnects the GPP PNS session by sending an OBEX DISCONNECT request.

3. The Lower Tester disconnects the GPP PAS session by sending an OBEX DISCONNECT request.

- Expected Outcome

Pass verdict

Both the PIM Access Service session and the PIM Notification Service sessions are closed.

The OBEX DISCONNECT response messages of both the PAS and PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-15-C [PIMSE responds to an open GPP session request with multiple PAS and PNS]**

- Test Purpose

Verify that the PIMSE can properly respond to a GPP-based session establishment request that involves two PIM Access Service instances and a PIM Notification Service.

- Reference

[3] 4.2.2

- Initial Condition

- Lower Tester: The IUT and the Lower Tester have been paired and have implemented an application profile based on GPP. Both IUT and Lower Tester support a notification feature based on the requirements of the PIM Notification Service.
- IUT: The IUT is in discoverable and connectable mode.
- Both the Lower Tester and the IUT support multiple PAS instances simultaneously.

- Test Procedure

1. The Lower Tester connects to the IUT by sending an OBEX CONNECT request to two PIM Access Service instances of the IUT.
2. The Lower Tester sends the notification status 'on' to the IUT using the function 'SetNotificationRegistration' for both PAS instances.
3. The IUT connects to the Lower Tester by sending an OBEX CONNECT request to the PIM Notification Service of the Lower Tester.

- Expected Outcome

Pass verdict

The OBEX CONNECT response messages of both the PAS and PNS have been exchanged properly.

The two PIM Access Service instances and the PIM Notification Service are established.

Additional fields may be present in the requests and responses.

### **GPP/GSM/BV-16-C [PIMSE closes a GPP session with multiple active PAS instances and an activated PNS including deregistration of the Notification Service]**

- Test Purpose

Verify that the PIMSE can close a GPP session that involves two PIM Access Service instances and a PIM Notification Service, including the deregistration of the PIM Notification Service.





- Reference

[3] 4.2.3

- Initial Condition

- The Lower Tester is engaged in a GPP session with the IUT. Two PIM Access Service instance connections and the PIM Notification Service are in use.

- Test Procedure

1. The Lower Tester sends the notification status 'off' to the IUT using the function 'SetNotificationRegistration' for both PAS instances.
2. The IUT disconnects the PNS session by sending an OBEX DISCONNECT request.
3. The Lower Tester disconnects the two PAS sessions by sending an OBEX DISCONNECT request.

- Expected Outcome

Pass verdict

Both the two PIM Access Service session and the PIM Notification Service sessions are closed.

The OBEX DISCONNECT response messages of both the PAS and PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

**GPP/GSM/BV-17-C [PIMSE closes a GPP session with multiple active PAS instances and an activated PNS without deregistration of the Notification Service]**

- Test Purpose

Verify that the PIMSE can close a GPP session that involves two PIM Access Service instances and a PIM Notification Service, without deregistration of the PIM Notification Service.

- Reference

[3] 4.2.3

- Initial Condition

- The Lower Tester is engaged in a GPP session with the IUT. Two PIM Access Service instance connections and the PIM Notification Service are in use.

- Test Procedure

1. The Lower Tester disconnects the two PAS sessions by sending an OBEX DISCONNECT request.
2. The IUT disconnects the PNS session by sending an OBEX DISCONNECT request.

- Expected Outcome

Pass verdict

Both the two PIM Access Service sessions and the PIM Notification Service session are closed.

The OBEX DISCONNECT response messages of both the PAS and PNS have been exchanged properly.

Additional fields may be present in the requests and responses.

## 4.3 Instance Handling

Verify the instance management of the PIM devices.

### 4.3.1 IUT – PIM Client Equipment (PIMCE)

Verify that the PIM Client Equipment device can properly handle PIM instances.

#### GPP/GIH/BV-01-C [PIMCE retrieves PAS instance description from the PIMSE]

- Test Purpose
 

Verify that the PIMCE can retrieve a description of the PAS-instance from the PIMSE.
- Reference
 

[3] 5.9
- Initial Condition
  - The IUT and the Lower Tester have established a PAS connection.
- Test Procedure
  1. The IUT sends a 'GetInstanceInformation' request to the Lower Tester.
  2. The Lower Tester delivers the requested PAS-instance description and optional further instance information in its response.

- Expected Outcome

#### Pass verdict

The request of the 'GetInstanceInformation' function is well formatted according to [3].

The PAS-instance description string can be displayed properly on the IUT.

Additional fields may be present in the requests and responses.

### 4.3.2 IUT – PIM Server Equipment (PIMSE)

Verify that the PIM Server Equipment device can properly handle PIM instances.

#### GPP/GIH/BV-11-C [PIMSE returns PAS instance description to the PIMCE]

- Test Purpose
 

Verify that the PIMSE can return a description of the PAS-instance to the PIMCE.
- Reference
 

[3] 5.9
- Initial Condition
  - The IUT and the Lower Tester have established a PAS connection.
- Test Procedure
  1. The IUT receives a 'GetInstanceInformation' request from the Lower Tester.
  2. The IUT delivers the requested PAS-instance description by the 'Description' header in its response.

- Expected Outcome

Pass verdict

The response of the 'GetInstanceInformation' function is well formatted according to [3].

Additional fields may be present in the requests and responses.

### **GPP/GIH/BI-11-C [PIMSE rejects an invalid request for PAS instance description]**

- Test Purpose

Verify that the PIMSE can reject a PAS-instance-description request for an invalid PAS-instance.

- Reference

[3] 5.9

- Initial Condition

- The IUT and the Lower Tester have established a PAS connection.

- Test Procedure

1. The IUT receives a 'GetInstanceInformation' request from the Lower Tester with an invalid InstanceID.

- Expected Outcome

Pass verdict

The IUT rejects the 'GetInstanceInformation' request and sends an error in its response.

Additional fields may be present in the requests and responses.

### **GPP/GIH/BV-12-C [PIMSE initiates an external synchronization of the PAS instance]**

- Test Purpose

Verify that, on demand of the PIMCE, the PIMSE is able to update or synchronize the repository of a PAS instance, e.g., to update it with new objects loaded from an external server.

- Reference

[3] 5.10

- Initial Condition

- The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.

- Test Procedure

1. A new literal object not currently included in the IUT's repository has been sent to or created on the remote server of the IUT.  
 2. The Lower Tester sends a 'SyncInstance' request to the IUT and the IUT contacts the remote server and loads the new object to the related folder (e.g., its 'Inbox').  
 3. The Lower Tester requests the object-listing of the folder.

- Expected Outcome

Pass verdict

The response of the 'SyncInstance' function is well formatted according to [3].

The Lower Tester is able to receive the object-listing of the IUT's folder and correctly display it with the new object.

Additional fields may be present in the requests and responses.

## 4.4 Notification Registration

Verify the normal behavior of the components necessary to realize the PIM Notification Registration feature.

### 4.4.1 IUT – PIM Client Equipment (PIMCE)

Check that the PIM Client Equipment device can properly take advantage of the PIM Notification Registration feature.

#### GPP/GNR/BV-01-C [PIMCE switches Notification to 'off' status]

- Test Purpose

Verify that the PIMCE can switch off the Notification Service of the PIMSE.

- Reference

[3] 5.3

- Initial Condition

- The IUT and the Lower Tester have established a GPP session and both the PIM Access Service and the PIM Notification Service are active (Notification status 'on').

- Test Procedure

1. The IUT sends the notification status 'off' to the Lower Tester using the function 'SetNotificationRegistration'.

- Expected Outcome

Pass verdict

The request of the 'SetNotificationRegistration' function is well formatted according to [3].

The PNS session can be properly terminated by the Lower Tester by sending an OBEX DISCONNECT to the IUT.

Additional fields may be present in the requests and responses.

#### GPP/GNR/BV-02-C [PIMCE switches Notification to 'on' status]

- Test Purpose

Verify that the PIMCE can switch on the Notification Service of the PIMSE.

- Reference

[3] 5.3

- Initial Condition

- The IUT and the Lower Tester have established a GPP PAS session, and the PIM Notification Service is not connected (Notification status 'off').

- Test Procedure
  1. The IUT sends the notification status 'on' to the Lower Tester using the function 'SetNotificationRegistration'.
  2. The Lower Tester connects to the OBEX PIM Notification Service of the IUT.

- Expected Outcome

Pass verdict

The request of the 'SetNotificationRegistration' function is well formatted according to [3].

The PIM Notification Service is connected following the OBEX CONNECT sent by the Lower Tester to the IUT.

Additional fields may be present in the requests and responses.

#### 4.4.2 IUT – PIM Server Equipment (PIMSE)

Verify that the PIM Server Equipment device can properly implement the PIM Notification Registration feature.

##### GPP/GNR/BV-11-C [PIMSE terminates PIM Notification]

- Test Purpose
 

Verify that the PIMSE can terminate the PIM Notification Service.
- Reference
 

[3] 5.3
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session and both the PIM Access Service and the PIM Notification Service are active (Notification status 'on').
- Test Procedure
  1. The Lower Tester sends the notification status 'off' to the IUT using the function 'SetNotificationRegistration'.

- Expected Outcome

Pass verdict

The response of the 'SetNotificationRegistration' function is well formatted according to [3].

The IUT terminates the PNS session by sending an OBEX DISCONNECT to the Lower Tester.

Additional fields may be present in the requests and responses.

##### GPP/GNR/BV-12-C [PIMSE starts PIM Notification]

- Test Purpose
 

Verify that the PIMSE can establish the PIM Notification Service.
- Reference
 

[3] 5.3

- Initial Condition
  - The IUT and the Lower Tester have established a GPP PAS session and the PIM Notification Service is not connected (Notification status 'off').
- Test Procedure
  1. The Lower Tester sends the notification status 'on' to the IUT using the function 'SetNotificationRegistration'.

- Expected Outcome

Pass verdict

The response of the 'SetNotificationRegistration' function is well formatted according to [3].

The IUT connects to the Lower Tester's PNS by sending an OBEX CONNECT to the Lower Tester.

Additional fields may be present in the requests and responses.

## 4.5 Browsing

Verify that the Browsing in the PIMSE's repository is properly implemented.

### 4.5.1 IUT – PIM Client Equipment (PIMCE)

Verify that the functions specific to the Browsing in the object repository are properly implemented by the PIMCE.

#### GPP/GBR/BV-01-C [PIMCE selects the current folder on PIMSE]

- Test Purpose
 

Verify that the PIMCE can set the current folder on the PIMSE.
- Reference
 

[3] 5.4
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session.
  - Lower Tester: The Lower Tester's repository contains at least one folder.
- Test Procedure
  1. The IUT sends a 'SetFolder' command to the Lower Tester, targeting one of the GPP virtual folders supported by the Lower Tester.

- Expected Outcome

Pass verdict

The request of the 'SetFolder' function is well formatted according to [3].

The current folder on the PIMSE is set to the requested folder.

Additional fields may be present in the requests and responses.

#### GPP/GBR/BV-02-C [PIMCE retrieves a Listing Object]

- Test Purpose
 

Verify that the PIMCE can retrieve a listing of literal objects from the PIMSE.



- Reference  
[3] 5.5
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
  - IUT: The IUT has set the current folder of the Lower Tester to a non-empty folder.
  - Lower Tester: The Lower Tester contains at least one folder that is not empty.
- Test Procedure
  1. The IUT requests the object-listing of the current folder.
  2. The Lower Tester delivers the requested object-listing object.

- Expected Outcome

Pass verdict

The request of the 'GetObjectListing' function is well formatted according to [3].

The IUT is able to receive the object-listing and correctly display it.

Additional fields may be present in the requests and responses.

#### 4.5.2 IUT – PIM Server Equipment (PIMSE)

Verify that the functions specific to the Browsing in the object repository are properly implemented by the PIMSE.

##### GPP/GBR/BV-11-C [PIMSE sets its Current Folder]

- Test Purpose  
Verify that the PIMSE changes the current folder as requested by the PIMCE.
- Reference  
[3] 5.4
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session.
  - IUT: The IUT's repository contains at least one folder.
- Test Procedure
  1. The Lower Tester sends a 'SetFolder' request targeting one of the GPP virtual folders supported by the IUT.

- Expected Outcome

Pass verdict

The response of the 'SetFolder' function is well formatted according to [3].

The current folder on the PIMSE is set to the requested folder.

Additional fields may be present in the requests and responses.

**GPP/GBR/BI-11-C [PIMSE rejects an Invalid Folder Request]**

- Test Purpose  
Verify that the PIMSE can reject requests from the PIMCE to non-existing folders.
- Reference  
[\[3\]](#) 5.4
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session.
- Test Procedure
  1. The Lower Tester sends a 'SetFolder' request targeting a folder that doesn't exist in the IUT's repository.
- Expected Outcome  
Pass verdict  
The IUT rejects the request and sends an error in its response.  
Additional fields may be present in the requests and responses.

**GPP/GBR/BV-12-C [PIMSE returns a Listing Object]**

- Test Purpose  
Verify that the PIMSE can return a listing of literal objects to the PIMCE.
- Reference  
[\[3\]](#) 5.5
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
  - Lower Tester: The Lower Tester has set the current folder to a non-empty folder.
  - IUT: The IUT contains at least one folder that is not empty.
- Test Procedure
  1. The Lower Tester requests the object-listing of the current folder.
- Expected Outcome  
Pass verdict  
The response of the 'GetObjectListing' function is well formatted according to [\[3\]](#).  
Additional fields may be present in the requests and responses.

**4.6 Object Handling**

Verify that handling of the literal objects is properly implemented.

**4.6.1 IUT – PIM Client Equipment (PIMCE)**

Verify that the functions specific to the handling of the literal objects in the PIMSE's repository are properly implemented by the PIMCE.





**GPP/GOH/BV-01-C [PIMCE retrieves a literal PIM object]**

- Test Purpose
 

Verify that the PIMCE can retrieve a literal PIM object from the PIMSE.
- Reference
 

[3] 5.6
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
  - IUT: The IUT has set the current folder of the Lower Tester to a folder that includes at least one literal PIM object. The IUT has retrieved the listing of this folder.
  - Lower Tester: The Lower Tester contains at least one folder that includes at least one literal PIM object.
- Test Procedure
  1. The IUT requests one of the PIM objects contained in the folder.
  2. The Lower Tester delivers the requested literal PIM object.
- Expected Outcome
 

Pass verdict

The request of the 'GetObject' function is well formatted according to [3].

The IUT is able to receive the literal PIM object and correctly display it.

Additional fields may be present in the requests and responses.

**GPP/GOH/BV-02-C [PIMCE uploads a literal object to the PIMSE]**

- Test Purpose
 

Verify that the PIMCE can upload a literal PIM object to the PIMSE.
- Reference
 

[3] 5.7
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In this session, the PIM Access Service is active.
  - IUT: The IUT contains at least one literal PIM object. The IUT has set the current folder on the Lower Tester to the folder it wants to push an object to.
- Test Procedure
  1. The IUT sends a 'PushObject' request to one of the GPP virtual folders supported by the Lower Tester.

- Expected Outcome

Pass verdict

The request of the 'PushObject' function is well formatted according to [3].

The literal object is received by the Lower Tester and stored correctly in the addressed folder.

Additional fields may be present in the requests and responses.

#### **GPP/GOH/BV-03-C [PIMCE deletes a literal object on the PIMSE]**

- Test Purpose

Verify that the PIMCE can delete a literal PIM object on the PIMSE.

- Reference

[3] 5.8

- Initial Condition

- IUT: The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
- IUT: The IUT has set the current folder of the Lower Tester to one non-empty folder. The IUT has retrieved an object-listing of this folder.
- Lower Tester: The Lower Tester contains at least one non-empty folder.

- Test Procedure

1. The IUT requests the Lower Tester to delete one literal object that was contained in the folder.

- Expected Outcome

Pass verdict

The request of the 'DeleteObject' function is well formatted according to [3].

The literal PIM object has been deleted from the Lower Tester's folder.

Additional fields may be present in the requests and responses.

#### **4.6.2 IUT – PIM Server Equipment (PIMSE)**

Verify that the functions specific to the handling of the literal objects in the PIMSE's repository are properly implemented by the PIMSE.

#### **GPP/GOH/BV-11-C [PIMSE returns a literal PIM object]**

- Test Purpose

Verify that the PIMSE can return a literal PIM object to the PIMCE.

- Reference

[3] 5.6

- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
  - Lower Tester: The Lower Tester has set the current folder of the IUT to a folder that includes at least one literal PIM object. The Lower Tester has retrieved the listing of this folder.
  - IUT: The IUT contains at least one folder that includes at least one literal PIM object.
- Test Procedure
  1. The Lower Tester requests one of the literal PIM objects contained in the folder.
  2. The IUT delivers the requested literal PIM object.

- Expected Outcome

Pass verdict

The response of the 'GetObject' function is well formatted according to [3]. Additional fields may be present in the requests and responses.

### GPP/GOH/BI-11-C [PIMSE rejects an invalid request for a literal PIM object]

- Test Purpose
 

Verify that the PIMSE can reject a request for a non-existing literal PIM object.
- Reference
 

[3] 5.6
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
  - Lower Tester: The Lower Tester has set the current folder of the IUT to a folder that includes at least one literal PIM object.
  - IUT: The IUT contains at least one folder that includes at least one literal PIM object.
- Test Procedure
  1. The Lower Tester requests a literal PIM object that doesn't exist in the folder.
- Expected Outcome
 

Pass verdict

The IUT rejects the request of the Lower Tester to retrieve the non-existing object and sends an error in its response.

Additional fields may be present in the requests and responses.

### GPP/GOH/BV-12-C [PIMSE receives a literal object from the PIMCE]

- Test Purpose
 

Verify that the PIMSE can receive a literal PIM object uploaded by the PIMCE.
- Reference
 

[3] 5.7

- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In this session, the PIM Access Service is active.
  - IUT: The IUT has at least one folder.
  - Lower Tester: The Lower Tester contains at least one literal PIM object. The PIMCE has set the current folder on the Lower Tester to the folder it wants to push the literal object to.

- Test Procedure

1. The Lower Tester sends a 'PushObject' request to the IUT.

- Expected Outcome

Pass verdict

The response of the 'PushObject' function is well formatted according to [3].

The literal PIM object is received by the IUT and stored correctly in the addressed folder.

Additional fields may be present in the requests and responses.

### GPP/GOH/BV-13-C [PIMSE deletes a literal object]

- Test Purpose

Verify that the PIMSE can delete a literal PIM object on request of the PIMCE.

- Reference

[3] 5.8

- Initial Condition

- The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
- IUT: The current folder of the IUT has been set to one non-empty folder.
- Lower Tester: The Lower Tester has received an object listing of this folder.

- Test Procedure

1. The Lower Tester requests the IUT to delete one literal object from its folder.

- Expected Outcome

Pass verdict

The response of the 'DeleteObject' function is well formatted according to [3].

The literal PIM object has been deleted from the IUT's folder.

Additional fields may be present in the requests and responses.

## 4.7 Notification

Verify the normal behavior of the components necessary to realize the PIM Notification.

### 4.7.1 IUT – PIM Client Equipment (PIMCE)

Verify that the PIM Client Equipment device can properly take advantage of the PIM Notification.

**GPP/GNO/BV-01-C [PIMCE receives a Notification]**

- Test Purpose
 

Verify that the PIMCE is properly notified about changes in the PIMSE's object repository.
- Reference
 

[3] 5.2
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session and the PIM Notification Service is active.
- Test Procedure
  1. The Lower Tester sends a notification event to the IUT, in order to advertise a change in its object repository.
- Expected Outcome
 

Pass verdict

The IUT can receive and decode the notification-event object.

The response of the 'SendEvent' function is well formatted according to [3].

Additional fields may be present in the requests and responses.
- Notes
 

The kind of change in the PIMSE's repository has to be defined by the application profile (e.g., new object, deleted object etc.). It is recommended to perform this test for each event type of the application profile.

**4.7.2 IUT – PIM Server Equipment (PIMSE)**

Verify that the PIM Server Equipment device has properly implemented the PIM Notification.

**GPP/GNO/BV-11-C [PIMSE receives a Notification]**

- Test Purpose
 

Verify that the PIMSE can send a notification.
- Reference
 

[3] 5.2
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session and the PIM Notification Service is active.
  - IUT: The attribute 'PASInstanceID' of the related SDP record has the value i (see also 'Notes' below).
- Test Procedure
  1. Take action so there is a change in the IUT's object repository. Accordingly, the IUT sends a notification event to the Lower Tester.

- Expected Outcome

#### Pass verdict

The IUT sends a notification event to the Lower Tester.

The request of the 'SendEvent' function is well formatted according to [3] and its application parameter PASInstanceID has the value i.

Additional fields may be present in the requests and responses.

- Notes
  - The kind of change in the PIMSE's repository has to be defined by the application profile (e.g., new object, deleted object etc.). It is recommended to perform this test for each event type of the application profile.
  - The test should be repeated for each instance of the application profile.
  - The instance-ID 'i' (see 'initial condition' above) should be defined in the IXIT of the application profile.

## 4.8 Account Handling

Verify that the GPP accounts can be handled properly.

### 4.8.1 IUT – PIM Client Equipment (PIMCE)

Verify that the PIM Client Equipment PIMCE can properly handle GPP PAS accounts.

#### **GPP/GAH/BV-01-C [PIMCE initiates an external synchronization of the PAS instance]**

- Test Purpose
 

Verify that the PIMCE can initiate an update or synchronization of the repository of a PAS instance, e.g., to update it with new objects loaded from an external server.
- Reference
 

[3] 5.10
- Initial Condition
  - The IUT and the Lower Tester have established a GPP session. In that GPP session, the PIM Access Service is active.
- Test Procedure
  1. The IUT requests the update or sync of the object listing of a suitable folder on the Lower Tester (e.g., 'Inbox') by a 'SyncInstance' request.
  2. The Lower Tester simulates an external sync or update with a remote server and adds new objects to the listing in the folder.
  3. The IUT requests the updated listing of folder.

- Expected Outcome

Pass verdict

The request of the 'SyncInstance' function is well formatted according to [\[3\]](#).

The IUT is able to receive the listing of the Lower Tester's folder updated by the new objects.

Additional fields may be present in the requests and responses.

## 5 Test case mapping

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As GPP is an abstract profile there is no test case mapping for the test case templates defined in this document. Hence, the test case mapping is defined in the specific application profile Test Suite.

For the same reason, GPP provides no ICS or IXIT documents.



## 6 Revision history and acknowledgments

### Revision History

Publication Number	Revision Number	Date	Comments
0	1.0.0r01	2014-04-23	Template Conversion (Template.TS.2014r03)
	1.0.1.0r00	2015-10-28	Updated version numbering to align with Specification version change from 1.0 to 1.0.1 for ESR09.
1	1.0.1.0	2015-12-22	Prepared for TCRL 2015-2 publication
	1.0.1.1r00	2016-10-07	Converted to new Test Case ID conventions as defined in TSTO v4.1
2	1.0.1.1	2016-12-13	Approved by BTI. Prepared for TCRL 2016-2 publication.
	1.0.1.1 edition 2r00	2018-11-20	Editorial changes only. Template updated. Revision History and contributors moved to the end of the document.
	1.0.1.1	2019-12-11	Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication.
	p3r00–r05	2023-09-12 – 2023-12-13	TSE 23961 (rating 1): Converted -I tests to -C tests as appropriate; updated the TCRL accordingly. Updated to align the document with the latest standards.
3	p3	2024-07-01	Approved by BTI on 2024-05-22. Prepared for TCRL 2024-1 publication.

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