Object Push Profile (OPP)

***Bluetooth*®** Test Suite

- ▪ **Revision:** OPP.TS.p19 edition 2
- ▪ **Revision Date:** 2021-08-20
- ▪ **Group Prepared By:** BTI

Contents

1 Scope

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

2   References, definitions, and abbreviations

2.1   References

This Bluetooth document incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. The most current version of the listed reference shall be used unless a specific version is noted.

[1]   Specification of the Bluetooth System, Version 4.0

[2]   Object Push Profile

[3]   ICS proforma for Object Push Profile

[4]   The Internet Mail Consortium, vCard – The Electronic Business CardExchange Format, Version 2.1, September 1996

[5]   Bluetooth Test Strategy and Terminology Overview

[6]   Implementation eXtra Information for Test (IXIT) for Object Push Profile

2.2   Definitions

For the purpose of this Bluetooth document, the definitions given in [1], [2], and [5] apply.

2.3   Acronyms and abbreviations

For the purpose of this Bluetooth document, the definitions given in [1], [2], and [5] apply.

3   Test Suite Structure (TSS)

3.1   Overview

This test suite defines the test requirements to qualify Bluetooth capable devices implementing the Object Push Profile. OPP is dependent upon the Generic Object Exchange Profile (GOEP) and tests from the GOEP test suite are required to test parts of the OPP funtionality. The GOEP tests are refered to in test case mapping table within this document.

Figure 3.1 shows the Object Push Profile Test Suite Structure (TSS) including its subgroups defined for interoperability testing.

Object Push test suite structure

Object Push

Business Card Pull

Business Card Exchange
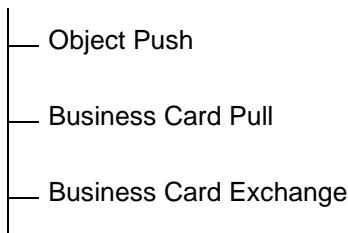
Figure 3.1: TSS for the Object Push Profile

3.2   Test strategy

3.2.1   Applications, Features, Object Formats and Roles

Each Bluetooth Profile defines a series of features and the way they should be implemented using the available protocol stack.

Within the Object Push Profile, the features are Object Push, Business Card Pull and Business Card Exchange.

Object Push that is based on the Generic Object Exchange (OBEX) profile uses pre-defined object formats. The object formats are vcard, vcal, vmsg, and vnote.

From interoperability testing point of view, features and object formats must be de-correlated. That means that all the possible combinations (feature and object format to which it is applied) are to be covered by test cases.

The Object Push Profile requires the presence of SDP, L2CAP, RFCOMM and OBEX. This is illustrated in Figure 3.2.
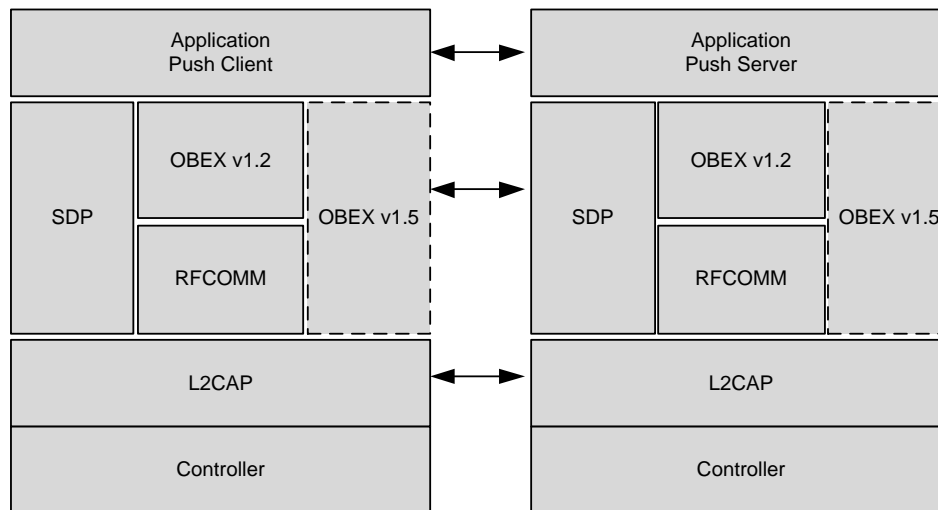
Figure 3.2: Object Push Profile Test Model

3.2.2 Profile Procedure Groups

The profile procedure groups identify the Bluetooth Object Push Profile services: Object Push, Business Card Pull and Business Card Exchange as defined in [2]. The tables below show example of user scenarios.

3.2.2.1 Object Push

Push Client	Push Server
	The user sets the device **into Object Exchange mode**.
The user of the Push Client selects the **Object Push function** on the device.	
A list of Push Servers that may support the Object Push service is displayed to the user.	
The user selects a Push Server to push the object to. If the selected device does not support the Object Push service the user is prompted to select another device.	
	When an object is received in the Push Server it is recommended that the user of the Push Server be asked to accept or reject the object.
It is recommended that the user is notified of the result of the operation.	

3.2.2.2 Business Card Pull

Push Client	Push Server
	The user sets the device into **Object Exchange mode**.
The user of the Push Client selects the **Business Card Pull function** on the device.	
A list of Push Servers that may support the Object Push service is displayed to the user.	

Push Client	Push Server
The user selects a Push Server to pull the business card from. If the selected device does not support the Object Push service the user is prompted to select another device.	
	Some devices might ask the user whether to accept the request to pull the business card from his device or not.
It is recommended that the user is notified of the result of the operation.	

3.2.2.3 Business Card Exchange

Push Client	Push Server
	The user sets the device into **Object Exchange mode**.
The user of the Push Client selects the **Business Card Exchange function** on the device.	
A list of Push Servers that may support the Object Push service is displayed to the user.	
The user selects a Push Server to exchange business cards with. If the selected device does not support the Object Push service the user is prompted to select another device.	
	When a Push Client tries to exchange business cards with the Push Server it is recommended that the user of the Push Server is asked to accept or reject the business card offered by the Push Client. Some devices might also ask the user whether to accept the request to pull the business card from his device or not.
It is recommended that the user is notified of the result of the operation.	

3.3 Test groups

The test groups are organized in 3 levels. The first level defines the protocol groups representing the protocol services. The second level, if the third level exists, separates the protocol services in functional modules. The last level in each branch contains the standard ISO subgroups BV and BI.

3.3.1 Main test group

The main test groups are the capability group, the valid behavior group and the invalid behavior group.

3.3.1.1 Valid Behavior (BV) tests

This sub group provides testing to verify that the IUT reacts in conformity with the Bluetooth standard, after receipt or exchange of a valid Protocol Data Units (PDUs). Valid PDUs means that the exchange of messages and the content of the exchanged messages are considered as valid.

3.3.1.2 Invalid Behavior (BI) tests

This sub group provides testing to verify that the IUT reacts in conformity with the Bluetooth standard, after receipt of a syntactically or semantically invalid PDU.

4   Test cases (TC)

4.1   Introduction

4.1.1   Test case identification conventions

Test cases shall be assigned unique identifiers per the conventions in [5]. The convention used here is **<spec abbreviation>/<IUT role>/**<class>/<feat>/<func>/<subfunc>**/<cap>/<xx>-<nn>-<y>**.

Bolded ID parts shall appear in the order prescribed. Non-bolded ID parts (if applicable) shall appear between the bolded parts. The order of the non-bolded parts may vary from test suite to test suite, but shall be consistent within each individual test suite.

Testing of OPP funtionality includes a set of tests from the GOEP test suite the required GOEP tests are refered to in this TCMT per the following convention <spec abbreviation>/<IUT role>/GOEP/<GOEP TC Identification>.

Identifier Abbreviation	Spec Identifier <spec abbreviation>
OPP	Object Push Profile
Identifier Abbreviation	**Role Identifier <IUT role>**
CL	Client Role
SR	Server Role
Identifier Abbreviation	**Feature Identifier <feat>**
BCE	Business Card Exchange
BCP	Business Card Pull
GOEP	Generic Object Exchange Profile
OPH	Object Push

Table 4.1: OPP TC feature naming convention

4.1.2   Conformance

When conformance is claimed for a particular specification, all capabilities are to be supported in the specified manner (process-mandatory). 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 that is 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 in order to constitute a pass verdict. However, it is noted that in order 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 Launch Studio, 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 errata request such that the issue may be addressed.

4.1.3   Building of Sample Objects

When qualifying towards this Specification, each IUT requires sample objects , for each of the four predefined formats.

The sample objects must include the following fields that are mandatory:

vcards	*Name*, *Version* and *Telephone Number*.
vcals	the event fields *Version*, *Description* and *Start Date/Time*
	OR
	the ToDo fields *Version*, *Categories*, *Date/Time Completed*, *Description*, *Priority*, *Status* and *Summary*
vmsgs	*Version* and *Message Body*
vnotes	*Version* and *Body*.

The sample objects that are to be used throughout the testing process must contain at least all the mandatory fields and should contain all the fields supported by the IUT in order to provide more complete application testing.

By building sample objects that include both mandatory supported fields and jointly supported optional fields, it can be verified that mandatory supported fields and jointly supported fields are properly processed and that optional fields that are only supported by one of the 2 devices do not cause any malfunction upon reception by the other device; i.e., **are properly discarded**. That means for the test cases:

1. The object/item that is sent from a device, either by pushing or being pulled must contain all mandatory fields and all supported fields of the corresponding device where it is stored. If two objects/items are required, in addition all fields shall have a different content.
2. The object(s)/item(s) that are received by a device, either by pulling or being pushed must contain:

   - All mandatory fields with the same content as on the device from which the object was received,

   - All optional fields supported by both devices with the same content as on the device from which the object was received from,

   - Optional fields supported only by one device are properly discarded or erased.

4.1.4   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, the outcome of the test is a Fail verdict.

4.2   Object Push test cases

4.2.1   Push - List

*   Test Case ID(s)

    OPP/CL/OPH/BV-01-I

    OPP/SR/OPH/BV-01-I

*   Test Purpose

    Client:

    To verify the accuracy of the list of surrounding devices that support Object Push provided by the client.

    Server:

    To verify that Object Exchange mode is entered and the server is discoverable and connectable.

*   Reference

    [2] 3.3.1

*   Initial Condition

    Client:

    Standby mode.

    Server:

    Standby mode.

*   Test Procedure

    Server:

    Select Object Exchange mode, if supported on the UI.

    Client:

    -    After setting the server into Object Exchange mode select the Object Push Function on the client.

    -    If possible, configure the client to look for the surrounding devices that support Object push service, otherwise look for all services.

- If client is configured to display also Object Push format indication, the client has to perform a Service Record search.

- Expected Outcome

  Pass verdict

  Client:

  - The list of surrounding devices (server) that support Object Push (if configured) or all services is correct. The list of supported vObject, if indicated, must be correct and at a minimum the support of vCards must be included.

  - If the client is configured to display also Object Push format indication, this information must be correct corresponding to the supported Object Push formats of the server.

  Server:

  - A notification that Object Exchange mode has been entered may be given.

- Notes

  Server:

  The Object Exchange mode should be set by user action, but automatic setting will also be tolerated.

4.2.2   PIN Check

- Test Case ID(s)

  OPP/CL/OPH/BV-02-I

  OPP/SR/OPH/BV-02-I

- Test Purpose

  To verify whether bonding is handled correctly by the Client and Server

  Client:

  To verify that, if requested, the PIN code is handled correctly and the next state of the application is reached.

  Server:

  To verify that, if requested, the PIN code is handled correctly and the next state of the application is reached.

- Reference

  [2] 3.3.1

- Initial Condition

  It is required that either the Client or the Server has been configured to initiate Bonding.

Client:

- Object Push application is activated.
- The item to be pushed is prepared (see Section 4.1.3).
- A server to push the item to is selectable.

Server:

- Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the item to and activate the Object Push function.
  - If a Bluetooth PIN code is requested, enter the same PIN code as on the server.

  Server:

  - If a Bluetooth PIN code is requested, enter the same PIN code as on the client.

- Expected Outcome

  Pass verdict

  Client:

  - Bluetooth PIN exchange and subsequent bonding occurred between devices.
  - If the Bluetooth PIN code is requested from the user prior to the Object Push function, the entered PIN code is treated correctly and the application progresses to the next state.

  Server:

  - If the Bluetooth PIN code is requested from the user prior to the Object Push function, the entered PIN code is treated correctly and the application progresses to the next state.

- Notes

  If Bluetooth PIN exchange did not explicitly happen on the either devices, verify that Bonding has happened between the devices by whatever test means available. This condition would be applicable when both devices use default PIN codes.

4.2.3 Push vCard – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-03-I

  OPP/SR/OPH/BV-03-I

- Test Purpose

  Client:

  To verify that a sample vCard item is correctly sent from the client to the inbox of the server.

Server:

To verify that a sample vCard item sent from the client is correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vCard item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vCard item, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  Server:

  - The pushed vCard item is in the corresponding application or the object store and is pushed correctly (see Section 4.1.3).

4.2.4   Push Two vCard Items – Accepted

- Test Case ID(s)

    OPP/CL/OPH/BV-04-I

    OPP/SR/OPH/BV-04-I

- Test Purpose

    Client:

    To verify that, if supported by the client, two sample vCard items which are sent subsequently (using one OBEX PUT operation for each vCard) in a single Object Push operation are correctly sent from the client to the inbox of the server.

    Server:

    To verify that two sample vCard items which are sent subsequently (using one OBEX PUT operation for each vCard) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

    [2] 3.3.1

- Initial Condition

    Client:

    - The application for Object Push is activated.

    - The vCard items for Object Push are prepared (see Section 4.1.3).

    - The server is selectable from a list.

    Server:

    - Object Exchange mode is set.

- Test Procedure

    Client:

    - Select the server to push the vCard items to.

    - Perform Bluetooth PIN exchange, if requested.

    - Start the Object Push function with two subsequent vCard items.

    Server:

    - Perform Bluetooth PIN exchange, if requested on the UI.

    - Accept the received vCard items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  Server:

  - The pushed vCard items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.5   Push vCard – Rejected

- Test Case ID(s)

  OPP/CL/OPH/BV-05-I

  OPP/SR/OPH/BV-05-I

- Test Purpose

  Client:

  To verify that, after rejecting a vCard item on the server, the reject is notified correctly on the client. Only for clients displaying rejects to the user.

  Server:

  To verify that, if a vCard item is rejected by the user, it is not stored in the corresponding application or the object store.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vCard item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard items to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.
  - Reject the received vCard item.

- Test Condition

  The client shall be able to display errors to the user.

- Expected Outcome

  <u>Pass verdict</u>

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.
  - The client user is notified that the vCard item was rejected.

  Server:

  - The user is asked or can set to reject the vCard item.
  - The pushed vCard item cannot be found in the corresponding application or the object store.

4.2.6   Push vCal – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-07-I

  OPP/SR/OPH/BV-07-I

- Test Purpose

  Client:

  To verify that a sample vCal item is correctly sent from the client to the inbox of the server.

  Server:

  To verify that a sample vCal item sent from the client is correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vCal item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCal item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  Server:

  - The pushed vCal item is in the corresponding application or the object store and pushed correctly (see Section 4.1.3).

4.2.7   Push Two vCal Items – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-08-I

  OPP/SR/OPH/BV-08-I

- Test Purpose

  Client:

  To verify that, if supported by the client, two sample vCal items which are sent subsequently (using one OBEX PUT operation for each vCal) in a single Object Push operation are correctly sent from the client to the inbox of the server.

  Server:

  To verify that two sample vCal items which are sent subsequently (using one OBEX PUT operation for each vCal) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The vCal items for Object Push are prepared (see Section 4.1.3).
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCal items to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function with two subsequent vCal items.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

Client:

- The Object Push function is initiated by user action and not automatically.

- The client may be notified that the Object Push operation was successful.

Server:

- The pushed vCal items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.8 Push vCal – Rejected

- Test Case ID(s)

    OPP/CL/OPH/BV-09-I

    OPP/SR/OPH/BV-09-I

- Test Purpose

    Client:

    To verify that, after rejecting a vCal item on the server, the reject is notified correctly on the client. Only for clients displaying rejects to the user.

    Server:

    To verify that, if a vCal item is rejected by the user, it is not stored in the corresponding application or the object store.

- Reference

    [2] 3.3.1

- Initial Condition

    Client:

    - The application for Object Push is activated.

    - The vCal item for Object Push is prepared (see Section 4.1.3).

    - The server is selectable from a list.

    Server:

    - Object Exchange mode is set.

- Test Procedure

    Client:

    - Select the server to push the vCal item to.

    - Perform Bluetooth PIN exchange, if requested.

    - Start the Object Push function.

Server:

- Perform Bluetooth PIN exchange, if requested.

- Reject the received vCal item, if possible.

• Test Condition

The client shall be able to display errors to the user.

• Expected Outcome

<u>Pass verdict</u>

The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

Client:

- The Object Push function is initiated by user action and not automatically.

- The client user is notified that the vCal item was rejected.

Server:

- The user is asked or can set to reject the vCal item.

- The pushed vCal item cannot be found in the corresponding application or the object store.

4.2.9 Push vCal – non support

• Test Case ID(s)

OPP/CL/OPH/BV-10-I

OPP/SR/OPH/BV-10-I

• Test Purpose

Client:

To verify that if the server does not support Object Push of vCal items, this is notified correctly on the client.

Server:

To verify that if the server does not support Object Push of vCal items, this is handled correctly on the server side.

• Reference

[2] 3.3.1

• Initial Condition

Client:

- The application for Object Push is activated.

- The vCal item for Object Push is prepared (see Section 4.1.3).

- The server is selectable from a list.

Server:

- Object Exchange mode is set.

- Test Procedure

Client:

- Select the server to push the vCal item to.

- Perform Bluetooth PIN exchange, if requested.

- Start the Object Push function.

Server:

- Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

Pass verdict

Client:

- The client is notified that Object Push of vCal items is not supported on the server.

Server:

- The incoming vCal item cannot be found in the corresponding application or the object store.

- Notes

This test is only applicable if the server does not support Object Push of vCal items.

4.2.10   Push vMsg – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-11-I

  OPP/SR/OPH/BV-11-I

- Test Purpose

Client:

To verify that a sample vMsg item is correctly sent from the client to the inbox of the server.

Server:

To verify that a sample vMsg item sent from the client is correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vMsg item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vMsg item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  <u>Pass verdict</u>

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  Server:

  - The Object Push operation is processed correctly (see Section 4.1.3).

4.2.11   Push Two vMsg Items – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-12-I

  OPP/SR/OPH/BV-12-I

- Test Purpose

  Client:

  To verify that, if supported by the client, two sample vMsg items which are sent subsequently (using one OBEX PUT operation for each vMsg) in a single Object Push operation are correctly sent from the client to the inbox of the server.

Server:

To verify that two sample vMsg items which are sent subsequently (using one OBEX PUT operation for each vMsg) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The vMsg items for Object Push are prepared (see Section 4.1.3).
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vMsg items to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function with two subsequent vMsg items.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.
  - Accept the received vMsg items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.
  - The client may be notified that the Object Push operation was successful.

  Server:

  - The pushed vMsg items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.12   Push vMsg – Rejected

- Test Case ID(s)

  OPP/CL/OPH/BV-13-I

  OPP/SR/OPH/BV-13-I

- Test Purpose

  Client:

  To verify that, after rejecting a vMsg item on the server, the reject is notified correctly on the client. Only for clients displaying rejects to the user.

  Server:

  To verify that, if a vMsg item is rejected by the user, it is not stored in the corresponding application or the object store.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vMsg item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vMsg item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

  - Reject the received vMsg item.

- Test Condition

  The client shall be able to display errors to the user.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the vMsg item was rejected.

  Server:

  - The user is asked or can set to reject the vMsg item.

  - The pushed vMsg item cannot be found in the corresponding application or the object store.

4.2.13 Push vMsg – Non Support

- Test Case ID(s)

  OPP/CL/OPH/BV-14-I

  OPP/SR/OPH/BV-14-I

- Test Purpose

  Client:

  To verify that if the server does not support Object Push of vMsg items, this is notified correctly on the client.

  Server:

  To verify that if the server does not support Object Push of vMsg items, this is handled correctly on the server side.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vMsg item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vMsg item to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  Client:

  - The client is notified that the vMsg item was rejected.

  Server:

  - The incoming vMsg item cannot be found in the corresponding application or the object store.

- Notes

  This test is only applicable if the server does not support Object Push of vMsg items.

4.2.14   Push vNote – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-15-I

  OPP/SR/OPH/BV-15-I

- Test Purpose

  Client:

  To verify that a sample vNote item is correctly sent from the client to the inbox of the server.

  Server:

  To verify that a sample vNote item sent from the client is correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The vNote item for Object Push is prepared (see Section 4.1.3).

- The server is selectable from a list.

Server:

- Object Exchange mode is set.

- Test Procedure

Client:

- Select the server to push the vNote item to.
- Perform Bluetooth PIN exchange, if requested.
- Start the Object Push function.

Server:

- Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

Pass verdict

The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

Client:

- The Object Push operation is performed by a user action and not automatically.
- The client may be notified that the Object Push operation was successful.

Server:

- The pushed vNote item is in the corresponding application or the object store and is pushed correctly (see Section 4.1.3).

4.2.15   Push Two vNote Items – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-16-I

  OPP/SR/OPH/BV-16-I

- Test Purpose

Client:

To verify that, if supported by the client, two sample vNote items which are sent subsequently (using one OBEX PUT operation for each vNote) in a single Object Push operation are correctly sent from the client to the inbox of the server.

Server:

To verify that two sample vNote items which are sent subsequently (using one OBEX PUT operation for each vNote) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

    [2] 3.3.1

- Initial Condition

    Client:

    - The application for Object Push is activated.

    - The vNote items for Object Push are prepared (see Section 4.1.3).

    - The server is selectable from a list.

    Server:

    - Object Exchange mode is set.

- Test Procedure

    Client:

    - Select the server to push the vNote items to.

    - Perform Bluetooth PIN exchange, if requested.

    - Start the Object Push function with two subsequent vNote items.

    Server:

    - Perform Bluetooth PIN exchange, if requested on the UI.

    - Accept the received vNote items, if requested on the UI.

- Expected Outcome

    <u>Pass verdict</u>

    The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

    Client:

    - The Object Push function is initiated by user action and not automatically.

    - The client may be notified that the Object Push operation was successful.

    Server:

    - The pushed vNote items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.16   Push vNote – Rejected

- Test Case ID(s)

  OPP/CL/OPH/BV-17-I

  OPP/SR/OPH/BV-17-I

- Test Purpose

  Client:

  To verify that, after rejecting a vNote item on the server, the reject is notified correctly on the client. Only for clients displaying rejects to the user.

  Server:

  To verify that, if a vNote item is rejected by the user, it is not stored in the corresponding application or the object store.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The vNote item for Object Push is prepared (see Section 4.1.3).
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vNote item to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.
  - Reject the received vNote item.

- Test Condition

  The client shall be able to display errors to the user.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the vNote item was rejected.

  Server:

  - The user is asked or can set to reject the vNote item.

  - The pushed vNote item cannot be found in the corresponding application or the object store.

4.2.17   Push vNote – Non Support

- Test Case ID(s)

  OPP/CL/OPH/BV-18-I

  OPP/SR/OPH/BV-18-I

- Test Purpose

  Client:

  To verify that if the server does not support Object Push of vNote items, this is notified correctly on the client.

  Server:

  To verify that if the server does not support Object Push of vNote items, this is handled correctly on the server side.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vNote item for Object Push is prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vNote item to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The client is notified that Object Push of vNote items is not supported on the server.

  Server:

  - The incoming vNote item cannot be found in the corresponding application or the object store.

- Notes

  This test is only applicable if the server does not support Object Push of vNote items.

4.2.18   Push other content formats- Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-19-I

  OPP/SR/OPH/BV-19-I

- Test Purpose

  Client:

  To verify that a sample file of other supported content format is correctly sent from the client to the object store or corresponding application in the server.

  Server:

  To verify that a sample file of other supported content format sent from the client is correctly received in object store or corresponding application in the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The item that is to be pushed for Object Push is prepared.

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the file to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  <u>Pass verdict</u>

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push operation is performed by a user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  Server:

  - The pushed item is in the object store or corresponding application and is pushed correctly.

- Notes

  This test case shall be performed for each of the other formats listed as supported in the IXIT [6]; in case the IUT supports all content formats, a selection of them will be used instead: mp3, wav, jpeg, pdf, doc.

OPP/CL/OPH/BV-20-I [Push other content formats - Non Support, Client side]

- Test Purpose

  To verify that the Client notification is correct if an object of a Server-unsupported content format is pushed to the Server.

  The IUT is Client. The Lower Tester is Server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The item for Object Push is prepared; use a file format that isn't listed as supported by the Server. For example, if a JPG file is not supported it shall be used.

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

  - With the Lower Tester as the Server, the Lower Tester is set to not support the formats that the Client claims it supports.

- Test Procedure

  Client:

  - Select the server to push the item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  <u>Pass verdict</u>

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The client is notified that object push operation is not successful.

- Notes

  This test is only applicable for the formats the Server does not support in Objects Push.

OPP/SR/OPH/BV-21-I [Push other content formats - Non Support, Server side]

- Test Purpose

  To verify that Object Push of unsupported contents formats to the Server is handled correctly on the Server side.

  The IUT is Server. The Lower Tester is Client.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The item for Object Push is prepared; use a file format that isn't listed as supported by the Server. For example, if a JPG file is not supported it shall be used.

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client

  - Select the server to push the item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Server:

  - The incoming item cannot be found in the object store or corresponding application.

- Notes

  This test is only applicable for the formats the server does not support in Objects Push.

4.2.19   Push large 2 MB other content format - Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-22-I

  OPP/SR/OPH/BV-22-I

- Test Purpose

  Client:

  To verify that a 2 MB file of other supported content format is correctly sent from the client to the server.

  Server:

  To verify that a 2 MB file of other supported content format sent from the client is correctly received on the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The 2 MB file (or larger) that is to be pushed is available.
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.
  - Enough resources are free to accept a 2 MB file.

- Test Procedure

  Client:

  - Select the server to which to push the 2 MB file.
  - Perform pairing, if requested.
  - Push the 2 MB file to the server using Object Push.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  Client:

  - The Object Push operation is performed by a user action and not automatically.
  - The client may be notified that the Object Push operation was successful.
  - The 2 MB file is not altered in any way.
  - If the server does not support a 2 MB file size, then the client will be notified of an error.

Server:

- The pushed 2 MB file is pushed correctly onto the server.

- If the server does not support a 2 MB file size, then the client will be notified of an error.

4.2.20   Push Two vCard Items using a single PUT operation – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-23-I

  OPP/SR/OPH/BV-23-I

- Test Purpose

  Client:

  To verify that, if supported by the client, two sample vCard items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly sent from the client to the inbox of the server.

  Server:

  To verify that two sample vCard items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vCard items for Object Push are prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard items to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function with two subsequent vCard items.

Server:

- Perform Bluetooth PIN exchange, if requested on the UI.

- Accept the received vCard items, if requested on the UI.

• Expected Outcome

Pass verdict

The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

Client:

- The Object Push function is initiated by user action and not automatically.

- The client may be notified that the Object Push operation was successful.

- A single OBEX PUT operation is used.

Server:

- The pushed vCard items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.21   Push Two vCal Items using a single PUT operation – Accepted

• Test Case ID(s)

OPP/CL/OPH/BV-24-I

OPP/SR/OPH/BV-24-I

• Test Purpose

Client:

To verify that, if supported by the client, two sample vCal items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly sent from the client to the inbox of the server.

Server:

To verify that two sample vCal items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly received in the inbox of the server.

• Reference

[2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vCard items for Object Push are prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCal items to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function with two subsequent vCal items.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vCal items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  - A single OBEX PUT operation is used.

  Server:

  - The pushed vCal items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.22   Push Two vMsg Items using a single PUT operation – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-25-I

  OPP/SR/OPH/BV-25-I

- Test Purpose

  Client:

  To verify that, if supported by the client, two sample vMsg items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly sent from the client to the inbox of the server.

  Server:

  To verify that two sample vMsg items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

  - The application for Object Push is activated.

  - The vMsg items for Object Push are prepared (see Section 4.1.3).

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vMsg items to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function with two subsequent vMsg items.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vMsg items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

Client:

- The Object Push function is initiated by user action and not automatically.

- The client may be notified that the Object Push operation was successful.

- A single OBEX PUT operation is used.

Server:

- The pushed vMsg items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.23   Push Two vNote Items using a single PUT operation – Accepted

- Test Case ID(s)

  OPP/CL/OPH/BV-26-I

  OPP/SR/OPH/BV-26-I

- Test Purpose

  Client:

  To verify that, if supported by the client, two sample vNote items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly sent from the client to the inbox of the server.

  Server:

  To verify that two sample vNote items which are sent subsequently (using a single OBEX PUT operation for both of them) in a single Object Push operation are correctly received in the inbox of the server.

- Reference

  [2] 3.3.1

- Initial Condition

  Client:

- The application for Object Push is activated.

- The vNote items for Object Push are prepared (see Section 4.1.3).

- The server is selectable from a list.

  Server:

- Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vNote items to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function with two subsequent vNote items.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vNote items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Object Push function is initiated by user action and not automatically.

  - The client may be notified that the Object Push operation was successful.

  - A single OBEX PUT operation is used.

  Server:

  - The pushed vNote items are in the corresponding application or the object store and have been pushed correctly (see Section 4.1.3).

4.2.24   Close an OBEX Session

- Test Case ID(s)

  OPP/CL/OPH/BV-34-I

  OPP/SR/OPH/BV-34-I

- Test Purpose

  Client:

  To verify a client can terminate an OBEX session by sending an OBEX Disconnect to the server.

  Server:

  To verify that the server responds to a disconnect request from the client.

- Reference

  [2] 5.1

- Initial Condition

  Client:

  - An OBEX session is ongoing between client and server.

  Server:

  - An OBEX session is ongoing between client and server.

- Test Procedure

  The client attempts to terminate the OBEX session by sending an OBEX Disconnect command to the server.

- Expected Outcome

  Pass verdict

  Client:

  - The client sends an OBEX disconnection request to the Lower Tester.

  Server:

  - The server responds with an OBEX disconnection response.

OPP/CL/OPH/BI-01-I [Prevent use of NULL characters in objects]

- Test Purpose

  To verify NULL characters are not used by the client when pushing a vCard object to the server.

- Reference

  [2] 3.3.1

  2.1.9: the vCard 2.1 specification

- Initial Condition

  Client:

  - The application for Object Push is activated.
  - The vCard items for Object Push are prepared (see Section 4.1.3).
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard item.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vCard items, if requested on the UI.

- Expected Outcome

  <u>Pass verdict</u>

  The retrieved vCard-Listing object is encoded in Base 64 (default) or Quoted-Printable encoding (alphanumeric) and does not contain any null characters.

4.3   Business Card Pull

4.3.1   Pull - List

- Test Case ID(s)

  OPP/CL/BCP/BV-01-I

  OPP/SR/BCP/BV-01-I

- Test Purpose

  Client:

  To verify the accuracy of the list of surrounding devices that support Object Push provided by the client.

  Server:

  To verify that Object Exchange mode is entered and the server is discoverable and connectable.

- Reference

  [2] 3.3.2

- Initial Condition

  Client:

  - Standby mode.

  Server:

  - Standby mode.

- Test Procedure

  Server:

  Select Object Exchange mode.

  Client:

  - After setting the server into Object Exchange mode select the Business Card PullFunction on the client.

  - If possible, configure the client to look for the surrounding devices that support Object push service, otherwise look for all services.

- Expected Outcome

  Pass verdict

  Client:

  - The list of surrounding devices (server) that support Object Push (if configured) or all services is correct. The list of supported vObject, if indicated, must be correct and at a minimum the support of vCards must be included.

  - If the client is configured to display also Object Push format indication, this information must be correct corresponding to the supported Object Push formats of the server.

  Server:

  - A notification that Object Exchange mode has been entered may be given.

- Notes

  Server:

  The Object Exchange mode should be set by user action, but automatic setting will also be tolerated.

4.3.2   Pull – Non Support

- Test Case ID(s)

  OPP/CL/BCP/BV-02-I

  OPP/SR/BCP/BV-02-I

- Test Purpose

  Client:

  If Business Card Pull is not supported on the server but supported on the client device, verify that the server responds with an error message on a pull request from the client.

  Server:

  If Business Card Pull is not supported on the server but supported on the client device, verify that the server responds with an error message on a pull request from the client.

- Reference

  [2] 4.1

- Initial Condition

  All devices have to be in communication range.

  Client:

  - Business Card Pull application is activated
  - Server is selectable from a list

  Server:

  - Object Exchange mode.

- Test Procedure

  Server:

  - Perform Bluetooth PIN exchange, if requested.

  Client:

  - Select the server to pull a vCard item from.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Business Card Pull function.

- Expected Outcome

  <u>Pass verdict</u>

  Client:

  - An error message is displayed on the client side.
  - The user may be informed to select another device for Business Card Pull.

  Server:

  - The server responds with an error message on a pull request from the client.

4.3.3   PIN Check

- Test Case ID(s)

  OPP/CL/BCP/BV-03-I

  OPP/SR/BCP/BV-03-I

- Test Purpose

  To verify whether bonding is handled correctly by the client and the server.

Client:

To verify that, if requested from the user, the PIN code is handled correctly and the next state of the application is reached.

Server:

To verify that, if requested from the user, the PIN code is handled correctly and the next state of the application is reached.

- Reference

  [2] 3.3.2

- Initial Condition

  - It is required that either the Client or the Server has been configured to initiate bonding.

  - No bonding has to be performed before.

  Client:

  - Business Card Pull application is activated.

  - A server to pull the vCard item from is selectable.

  Server:

  - Object Exchange mode is set.

  - The vCard item for Business Card Pull is prepared (see Section 4.1.3).

- Test Procedure

  Client:

  - Select the server to pull the business card from and activate the Business Card Pull function.

  - If a Bluetooth PIN code is requested, enter the same PIN code as on the server.

  Server:

  - If a Bluetooth PIN code is requested, enter the same PIN code as on the client.

- Expected Outcome

  Pass verdict

  Client:

  - Bluetooth PIN exchange and subsequent bonding occurred between devices.

  - If the Bluetooth PIN code is requested from the user prior to the Business Card Pull function, the entered PIN code is treated correctly and the application progresses to the next state.

  Server:

  - If the Bluetooth PIN code is requested from the user prior to the Business Card Pull function, the entered PIN code is treated correctly and the application progresses to the next state.

- Notes

    If Bluetooth PIN exchange did not explicitly happen on the either devices, verify that Bonding has happened between the devices by whatever test means available. This condition would be applicable when both devices use default PIN codes.

4.3.4 Pull vCard - Accepted

- Test Case ID(s)

    OPP/CL/BCP/BV-04-I

    OPP/SR/BCP/BV-04-I

- Test Purpose

    Client:

    To verify that a vCard is correctly pulled from server to client.

    Server:

    To verify that a vCard is correctly pulled from server to client.

- Reference

    [2] 3.3.2

- Initial Condition

    Client:

    - The application for Business Card Pull is activated.
    - The server is selectable from a list.

    Server:

    - Object Exchange mode is set.
    - The vCard for Business Card Pull is prepared.

- Test Procedure

    Client:

    - Select the server to pull the Object from.
    - Perform Bluetooth PIN exchange, if requested.
    - Start the Business Card Pull function.

    Server:

    - Perform Bluetooth PIN exchange, if requested.
    - Accept the request to pull the vCard, if possible.

- Expected Outcome

  <u>Pass verdict</u>

  The business Card Pull operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Business Card Pull function is initiated by user action and not automatically.

  - The pulled vCard item is in the corresponding application or the object store and is pulled correctly (see Section 4.1.3).

  - The client may be notified that the Business Card Pull operation was successful.

  Server:

  - The server may be notified that the Business Card Pull operation was successful.

4.3.5   Pull vCard - Rejected

- Test Case ID(s)

  OPP/CL/BCP/BV-05-I

  OPP/SR/BCP/BV-05-I

- Test Purpose

  Client:

  To verify that, after rejecting the pull of a vCard on the server, if displayed, the reject is notified correctly on the client.

  Server:

  To verify that, if a pull of a vCard is rejected by the user, it is not sent to the client.

- Reference

  [2] 3.3.2

- Initial Condition

  Client:

  - The application for Business Card Pull is activated.

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

  - The vCard item for Business Card Pull is prepared (see Section 4.1.3).

- Test Procedure

  Client:

  - Select the server to pull the Object from.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Business Card Pull function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

  - Accept the request to pull the vCard.

- Expected Outcome

  Pass verdict

  The Business Card Pull operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Business Card Pull function is initiated by user action and not automatically.

  - The client may be notified that the pull of the vCard item was rejected on the server.

  - After rejecting the pull of the vCard on the server, the pulled vCard item cannot be found in the corresponding application or the object store.

  Server:

  - The user is asked or can set to reject the vCard item.

4.4   Business Card Exchange

4.4.1   Exchange - List

- Test Case ID(s)

  OPP/CL/BCE/BV-01-I

  OPP/SR/BCE/BV-01-I

- Test Purpose

  Client:

  To verify the accuracy of the list of surrounding devices that support Object Push provided by the client.

  Server:

  To verify that Object Exchange mode is entered and the server is discoverable and connectable.

- Reference

  [2] 3.3.2

- Initial Condition

  Client:

  - Standby mode.

  Server:

  - Standby mode.

- Test Procedure

  Server:

  Select Object Exchange mode.

  Client:

  - After setting the server into Object Exchange mode select the Business Card Exchange function on the client.
  - If possible, configure the client to look for the surrounding devices that support Object push service, otherwise look for all services.

- Expected Outcome

  Pass verdict

  Client:

  - The list of surrounding devices (server) that support Object Push (if configured) or all services is correct. The list of supported vObject, if indicated, must be correct and at a minimum the support of vCards must be included.
  - If the client is configured to display also Object Push format indication, this information must be correct corresponding to the supported Object Push formats of the server.

  Server:

  - A notification that Object Exchange mode has been entered may be given.

- Notes

  Server:

  The Object Exchange mode should be set by user action, but automatic setting will also be tolerated.

4.4.2   PIN Check

*   Test Case ID(s)

    OPP/CL/BCE/BV-03-I

    OPP/SR/BCE/BV-03-I

*   Test Purpose

    To verify whether bonding is handled correctly by the client and the server.

    Client:

    To verify that, if requested from the user, the PIN code is handled correctly and the next state of the application is reached.

    Server:

    To verify that, if requested from the user, the PIN code is handled correctly and the next state of the application is reached.

*   Reference

    [2] 3.3.3

*   Initial Condition

    -   It is required that either the Client or the Server has been configured to initiate bonding.

    Client:

    -   Business Card Exchange application is activated.
    -   The vCard item to be exchanged is prepared (see Section 4.1.3).
    -   A server to exchange business cards with is selectable.

    Server:

    -   Object Exchange mode is set.
    -   The vCard item to be exchanged is prepared (see Section 4.1.3).

*   Test Procedure

    Client:

    -   Select the server to exchange the vCard item with and activate the Business Card Exchange function.
    -   If a Bluetooth PIN code is requested, enter the same PIN code as on the server.

    Server:

    -   If a Bluetooth PIN code is requested, enter the same PIN code as on the client.

- Expected Outcome

  Pass verdict

  Client:

  - Bluetooth PIN exchange and subsequent bonding occurred between devices.
  - If the Bluetooth PIN code is requested from the user prior to the Business Card Exchange function, the entered PIN code is treated correctly and the application progresses to the next state.

  Server:

  - If the Bluetooth PIN code is requested from the user prior to the Business Card Exchange function, the entered PIN code is treated correctly and the application progresses to the next state.

- Notes

  If Bluetooth PIN exchange did not explicitly happen on the either devices, verify that Bonding has happened between the devices by whatever test means available. This condition would be applicable when both devices use default PIN codes.

4.4.3   Exchange – Accept-Accept

- Test Case ID(s)

  OPP/CL/BCE/BV-04-I

  OPP/SR/BCE/BV-04-I

- Test Purpose

  Client:

  To verify that business cards are correctly exchanged between client and server if the push and pull operations are accepted on the server.

  Server:

  To verify that business cards are correctly exchanged between client and server if the push and pull operations are accepted on the server.

- Reference

  [2] 3.3.3

- Initial Condition

  Client:

  - The application for Business Card Exchange is activated.
  - The server is selectable from a list.
  - The first business card to be exchanged is prepared (see Section 4.1.3).

Server:

- Object Exchange mode is set.

- The second business card to be exchanged is prepared (see Section 4.1.3).

- Test Procedure

  Client:

- Select the server to exchange the business cards with.

- Perform Bluetooth PIN exchange, if requested.

- Start the Business Card Exchange function.

  Server:

- Perform Bluetooth PIN exchange, if requested.

- Accept the first business card offered by the client, if possible.

- Accept the request to pull the second business card from the server, if possible.

- Expected Outcome

  Pass verdict

  The Business Card Exchange operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  The Business Card Exchange function is performed by a user action and not automatically.

- The pulled second business card is in the corresponding application or the object store and pulled correctly (see Section 4.1.3).

- The client may be notified that the Business Card Exchange operation was successful.

  Server:

- The pushed first business card is in the corresponding application or the object store and pushed correctly (see Section 4.1.3).

- The server may be notified that the Business Card Exchange operation was successful.

4.4.4   Exchange – Accept-Reject

- Test Case ID(s)

  OPP/CL/BCE/BV-05-I

  OPP/SR/BCE/BV-05-I

- Test Purpose

  Client:

  To verify that business Card Exchange is correctly handled between client and server if the push operation is accepted and the pull operation rejected on the server.

Server:

To verify that business Card Exchange is correctly handled between client and server if the push operation is accepted and the pull operation rejected on the server.

- Reference

  [2] 3.3.3

- Initial Condition

  Client:

  - The application for Business Card Exchange is activated.

  - The server is selectable from a list.

  - The first business card to be exchanged is prepared (see Section 4.1.3).

  Server:

  - Object Exchange mode is set.

  - The second business card to be exchanged is prepared (see Section 4.1.3).

- Test Procedure

  Client:

  - Select the server to exchange the business cards with.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Business Card Exchange function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

  - Accept the first business card offered by the client, if possible.

  - Reject the request to pull the second business card from the server.

- Expected Outcome

  Pass verdict

  The Business Card Exchange operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - After rejecting the Business Card Pull on the server the pulled second business card cannot be found in the corresponding application or the object store.

  - The Business Card Exchange function was initiated by user action and not automatically

  - The client may be notified that the Business Card Exchange operation was not successful.

Server:

- The user is asked or can set to accept / reject the Business Card Pull.

- The user is asked or can set to accept / reject the Business Card Push.

- The pushed first business card can be found in the corresponding application or the object store and is pushed correctly (see Section 4.1.3).

4.4.5 Exchange – Reject-Accept

- Test Case ID(s)

  OPP/CL/BCE/BV-06-I

  OPP/SR/BCE/BV-06-I

- Test Purpose

  Client:

  To verify that business Card Exchange is correctly handled between client and server if the push operation is rejected and the pull operation is accepted on the server.

  Server:

  To verify that business Card Exchange is correctly handled between client and server if the push operation is rejected and the pull operation is accepted on the server.

- Reference

  [2] 3.3.3

- Initial Condition

  Client:

  - The application for Business Card Exchange is activated.

  - The server is selectable from a list.

  - The first business card to be exchanged is prepared (see Section 4.1.3).

  Server:

  - Object Exchange mode is set.

  - The second business card to be exchanged is prepared (see Section 4.1.3).

- Test Procedure

  Client:

  - Select the server to exchange the business cards with.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Business Card Exchange function.

Server:

- Perform Bluetooth PIN exchange, if requested.

- Reject the first business card offered by the client, if possible.

- Expected Outcome

  <u>Pass verdict</u>

  The Business Card Exchange operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Business Card Exchange function was initiated by a user action and not automatically.

  - The pulled second business card may be found in the corresponding application or the object store and is pulled correctly (see Section 4.1.3).

  - The client may be notified that the Business Card Exchange operation was not successful.

  Server:

  - The pushed first business card cannot be found in the corresponding application or the object store.

  - The user is asked or can set to accept / reject the Business Card Pull.

  - The user is asked or can set to accept / reject the Business Card Push.

4.4.6   Exchange – Reject-Reject

- Test Case ID(s)

  OPP/CL/BCE/BV-07-I

  OPP/SR/BCE/BV-07-I

- Test Purpose

  Client:

  To verify that business Card Exchange is correctly handled between client and server if the push and operations are rejected on the server.

  Server:

  To verify that business Card Exchange is correctly handled between client and server if the push and operations are rejected on the server.

- Reference

  [2] 3.3.3

- Initial Condition

  Client:

  - The application for Business Card Exchange is activated.

  - The server is selectable from a list.

  - The first business card to be exchanged is prepared (see Section 4.1.3).

  Server:

  - Object Exchange mode is set.

  - The second business card to be exchanged is prepared (see Section 4.1.3).

- Test Procedure

  Client:

  - Select the server to exchange the business cards with.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Business Card Exchange function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

  - Reject the first business card offered by the client, if possible.

  - Reject the request to pull the second business card from the server, if possible.

- Expected Outcome

  Pass verdict

  The Business Card Exchange operation is processed correctly and completed corresponding to the settings and user actions.

  Client:

  - The Business Card Exchange function was initiated by a user action and not automatically.

  - The pulled second business card is not in the corresponding application or the object store.

  - The client may be notified that the Business Card Exchange operation was not successful.

  Server:

  - The user is asked or can set to accept / reject the Business Card Pull

  - The user is asked or can set to accept / reject the Business Card Push

  - The pushed first business card is not in the corresponding application or the object store.

5   Test case mapping

The Test Case Mapping Table (TCMT) maps test cases to specific capabilities in the ICS. Profiles, protocols and services may define multiple roles, and it is possible that a product may implement more than one role. The product shall be tested in all roles for which support is declared in the ICS document.

The columns for the TCMT are defined as follows:

Item: contains an y/x reference, where y corresponds to the table number and x corresponds to the feature number as defined in the ICS Proforma for Object Push Profile (OPP) [3]. If the item is defined with Protocol, Profile or Service abbreviation before y/x, the table and feature number referenced are defined in the abbreviated ICS proforma document.

Feature: recommended to be the primary feature defined in the ICS being tested or may be the test case name.

Test Case(s): the applicable test case identifiers required for Bluetooth Qualification if the corresponding y/x references defined in the Item column are supported.

For purpose and structure of the ICS/IXIT proforma and instructions for completing the ICS/IXIT proforma refer to the Bluetooth ICS and IXIT proforma document.

Item	Feature	Test Case(s)
Service Discovery		
OPP 2/1 AND OPP 2/3	SD Database query / response	OPP/CL/OPH/BV-01-I
OPP 3/1 AND OPP 3/3	SD Database query / response	OPP/SR/OPH/BV-01-I
OPP 2/1 AND OPP 2/13	SD Database query / response	OPP/CL/BCP/BV-01-I
OPP 3/1 AND OPP 3/13	SD Database query / response	OPP/SR/BCP/BV-01-I
OPP 2/1 AND OPP 2/15	SD Database query / response	OPP/CL/BCE/BV-01-I
OPP 3/1 AND OPP 3/16	SD Database query / response	OPP/SR/BCE/BV-01-I
Authentication		
OPP 2/2 AND (NOT OPP 2/2a) AND OPP 2/3	Initiation of Authentication request / Bluetooth PIN exchange	OPP/CL/OPH/BV-02-I
OPP 3/2 AND OPP 3/3	Initiation of Authentication request / Bluetooth PIN exchange	OPP/SR/OPH/BV-02-I

Item	Feature	Test Case(s)
OPP 2/2 AND (NOT OPP 2/2a) AND OPP 2/13	Initiation of Authentication request / Bluetooth PIN exchange	OPP/CL/BCP/BV-03-I
OPP 3/2 AND OPP 3/13	Initiation of Authentication request / Bluetooth PIN exchange	OPP/SR/BCP/BV-03-I
OPP 2/2 AND (NOT OPP 2/2a) AND OPP 2/15	Initiation of Authentication request / Bluetooth PIN exchange	OPP/CL/BCE/BV-03-I
OPP 3/2 AND OPP 3/16	Initiation of Authentication request / Bluetooth PIN exchange	OPP/SR/BCE/BV-03-I
Object Push		
OPP 2/4	Object Push vCard	OPP/CL/OPH/BV-03-I
OPP 3/4	Object Push vCard	OPP/SR/OPH/BV-03-I
OPP 2/5	Object Push vCal	OPP/CL/OPH/BV-07-I
OPP 3/5	Object Push vCal	OPP/SR/OPH/BV-07-I
OPP 2/6	Object Push vMsg	OPP/CL/OPH/BV-11-I
OPP 3/6	Object Push vMsg	OPP/SR/OPH/BV-11-I
OPP 2/7	Object Push vNote	OPP/CL/OPH/BV-15-I
OPP 3/7	Object Push vNote	OPP/SR/OPH/BV-15-I
OPP 2/4	Object Push vCard reject	OPP/CL/OPH/BV-05-I
OPP 3/9	Object Push vCard reject	OPP/SR/OPH/BV-05-I
OPP 2/5	Object Push vCal reject	OPP/CL/OPH/BV-09-I
OPP 3/10	Object Push vCal reject	OPP/SR/OPH/BV-09-I
OPP 2/6	Object Push vMsg reject	OPP/CL/OPH/BV-13-I
OPP 3/11	Object Push vMsg reject	OPP/SR/OPH/BV-13-I
OPP 2/7	Object Push vNote reject	OPP/CL/OPH/BV-17-I
OPP 3/12	Object Push vNote reject	OPP/SR/OPH/BV-17-I
OPP 2/5	Object Push vCal not supported	OPP/CL/OPH/BV-10-I
OPP 3/3 AND (NOT OPP 3/5)	Object Push vCal not supported	OPP/SR/OPH/BV-10-I

Item	Feature	Test Case(s)
OPP 2/6	Object Push vMsg not supported	OPP/CL/OPH/BV-14-I
OPP 3/3 AND (NOT OPP 3/6)	Object Push vMsg not supported	OPP/SR/OPH/BV-14-I
OPP 2/7	Object Push vNote not supported	OPP/CL/OPH/BV-18-I
OPP 3/3 AND (NOT OPP 3/7)	Object Push vNote not supported	OPP/SR/OPH/BV-18-I
OPP 2/8a OR OPP 2/8b	Object Push - Other content formats	OPP/CL/OPH/BV-19-I
OPP 3/8a OR OPP 3/8b	Object Push - Other content formats	OPP/SR/OPH/BV-19-I
OPP 2/8	Object Push – Other content formats – non support Client	OPP/CL/OPH/BV-20-I
OPP 3/8a	Object Push – Other content formats – non support Server	OPP/SR/OPH/BV-21-I
OPP 2/8a OR OPP 2/8b	Object Push – Other content formats	OPP/CL/OPH/BV-22-I
OPP 3/8a OR OPP 3/8b	Object Push – Other content formats	OPP/SR/OPH/BV-22-I
OPP 2/9b	Push / Receive multiple vCards using a single PUT operation	OPP/CL/OPH/BV-23-I
OPP 3/3a AND OPP 3/4	Push / Receive multiple vCards using a single PUT operation	OPP/SR/OPH/BV-23-I
OPP 2/10b	Push / Receive multiple vCals using a single PUT operation	OPP/CL/OPH/BV-24-I
OPP 3/3a AND OPP 3/5	Push / Receive multiple vCals using a single PUT operation	OPP/SR/OPH/BV-24-I
OPP 2/11b	Push / Receive multiple vMsgs using a single PUT operation	OPP/CL/OPH/BV-25-I
OPP 3/3a AND OPP 3/6	Push / Receive multiple vMsgs using a single PUT operation	OPP/SR/OPH/BV-25-I
OPP 2/12b	Push / Receive multiple vNotes using a single PUT operation	OPP/CL/OPH/BV-26-I
OPP 3/3a AND OPP 3/7	Push / Receive multiple vNotes using a single PUT operation	OPP/SR/OPH/BV-26-I

Item	Feature	Test Case(s)
OPP 4/1 AND OPP 2/4	Abort-Push Operation	OPP/CL/OPH/BV-27-I
OPP 4/1 AND OPP 3/4	Abort-Push Operation	OPP/SR/OPH/BV-27-I
OPP 1/2 AND OPP 4/3 AND OPP 3/4	Multiple vCards transferred as a single vObject	OPP/SR/OPH/BV-30-I
OPP 1/2 AND OPP 4/4 AND OPP 3/3 AND OPP 3/4	Multiple vCards transfer	OPP/SR/OPH/BV-31-I
OPP 4/5 AND OPP 3/3 AND OPP 3/4	vCards with multiple Phone Number Fields	OPP/SR/OPH/BV-32-I
OPP 1/2 AND OPP 4/6 AND OPP 3/5	Push vCal to Different Time Zone Server	OPP/SR/OPH/BV-33-I
OPP 2/3	Object Push	OPP/CL/OPH/BV-34-I
OPP 3/3	Object Push	OPP/SR/OPH/BV-34-I
OPP 2/9a	Push / Receive multiple vCards	OPP/CL/OPH/BV-04-I
OPP 3/4 AND OPP 3/3a	Push / Receive multiple vCards	OPP/SR/OPH/BV-04-I
OPP 2/10a	Push / Receive multiple vCals	OPP/CL/OPH/BV-08-I
OPP 3/5 AND OPP 3/3a	Push / Receive multiple vCals	OPP/SR/OPH/BV-08-I
OPP 2/11a	Push / Receive multiple vMsgs	OPP/CL/OPH/BV-12-I
OPP 3/6 AND OPP 3/3a	Push / Receive multiple vMsgs	OPP/SR/OPH/BV-12-I
OPP 2/12a	Push / Receive multiple vNotes	OPP/CL/OPH/BV-16-I
OPP 3/7 AND OPP 3/3a	Push / Receive multiple vNotes	OPP/SR/OPH/BV-16-I
OPP 2/4	Check for Null characters	OPP/CL/OPH/BI-01-C

Item	Feature	Test Case(s)
Business Card Pull		
OPP 2/13	Business Card Pull	OPP/CL/BCP/BV-04-I
OPP 3/13	Business Card Pull	OPP/SR/BCP/BV-04-I
OPP 2/13	Business Card Pull reject	OPP/CL/BCP/BV-05-I
OPP 3/15	Business Card Pull reject	OPP/SR/BCP/BV-05-I
OPP 2/13	Business Card Pull not supported	OPP/CL/BCP/BV-02-I
OPP 1/2 AND (NOT OPP 3/13)	Business Card Pull not supported	OPP/SR/BCP/BV-02-I
Business Card Exchange		
OPP 2/15	Business Card Exchange	OPP/CL/BCE/BV-04-I
OPP 3/16	Business Card Exchange	OPP/SR/BCE/BV-04-I
OPP 2/15	Business Card Exchange reject	OPP/CL/BCE/BV-05-I OPP/CL/BCE/BV-06-I OPP/CL/BCE/BV-07-I
OPP 3/18	Business Card Exchange reject	OPP/SR/BCE/BV-05-I OPP/SR/BCE/BV-06-I OPP/SR/BCE/BV-07-I
GOEP 2.0 or later		
OPP 2b/2 AND OPP 3/20 AND OPP 3/3	Server: OPP v1.2 or later Features backward compatibility	OPP/SR/GOEP/BC/BV-01-I
OPP 1b/2 AND OPP 2/18 AND OPP 2/3	Client: Features backward compatibility	OPP/CL/GOEP/BC/BV-02-I
OPP 2b/2 AND OPP 3/20 AND OPP 3/13	Server: GOEP v2.0 or later Backwards Compatibility	OPP/SR/GOEP/BC/BV-03-I
OPP 1b/2 AND OPP 2/18 AND OPP 2/13	Client: GOEP v2.0 or later Backwards Compatibility	OPP/CL/GOEP/BC/BV-04-I
OPP 1b/2 AND OPP 2/17 AND OPP 2/19	Client: OPP v1.2 or later, GOEP v2.0 or later, OBEX over L2CAP	OPP/CL/GOEP/CON/BV-01-C

Item	Feature	Test Case(s)
OPP 2b/2 AND OPP 3/19 AND OPP 3/21	Server: OPP v1.2 or later, GOEP v2.0 or later, OBEX over L2CAP	OPP/SR/GOEP/CON/BV-02-C OPP/SR/GOEP/SRM/BI-03-C
OPP 1b/2 AND OPP 2/20	Client: OBEX Reliable Session	OPP/CL/GOEP/RLS/BV-01-C OPP/CL/GOEP/RLS/BV-04-C OPP/CL/GOEP/RLS/BV-05-C,
OPP 1b/2 AND OPP 2/3 AND OPP 2/20	Client: OBEX Reliable Session	OPP/CL/GOEP/RLS/BV-09-C
OPP 1b/2 AND OPP 2/20 AND OPP 2/13	Client: OBEX SRM	OPP/CL/GOEP/RLS/BV-10-C
OPP 2b/2 AND OPP 3/22	Server: OBEX Reliable Session	OPP/SR/GOEP/RLS/BV-02-C OPP/SR/GOEP/RLS/BV-03-C OPP/SR/GOEP/RLS/BV-06-C OPP/SR/GOEP/RLS/BV-08-C
OPP 2b/2 AND OPP 3/3 AND OPP 3/22	Server: OBEX Reliable Session	OPP/SR/GOEP/RLS/BV-11-C
OPP 2b/2 AND OPP 3/22 AND OPP 3/13	Server: OBEX Reliable Session	OPP/SR/GOEP/RLS/BV-12-C
OPP 1b/2 AND OPP 2/3 AND OPP 2/21	Client: OBEX SRM, Object Push	OPP/CL/GOEP/SRM/BV-01-C OPP/CL/GOEP/SRM/BV-03-C
OPP 1b/2 AND OPP 2/21 AND OPP 2/13	Client: Pull business card, OBEX SRM	OPP/CL/GOEP/SRM/BV-05-C
OPP 2b/2 AND OPP 3/3 AND OPP 3/23	Server: OBEX SRM	OPP/SR/GOEP/SRM/BV-04-C OPP/SR/GOEP/SRM/BI-02-C
OPP 2b/2 AND OPP 3/23 AND OPP 3/13	Server: OBEX SRM	OPP/SR/GOEP/SRM/BV-08-C OPP/SR/GOEP/SRM/BI-05-C
OPP 1b/2 AND OPP 2/21 AND OPP 2/13	Client: Pull business card, OBEX SRM	OPP/CL/GOEP/SRM/BV-07-C

Item	Feature	Test Case(s)
OPP 1b/2 AND OPP 2/3 AND OPP 2/21 AND OPP 2/23	Client: OBEX SRM, Receive OBEX SRMP header	OPP/CL/GOEP/SRMP/BV-01-C
OPP 2b/2 AND OPP 3/3 AND OPP 3/23 AND OPP 3/24	Server: Send OBEX SRMP header	OPP/SR/GOEP/SRMP/BV-03-C
OPP 2b/2 AND OPP 3/23 AND OPP 3/25 AND OPP 3/13	Server: OBEX SRM	OPP/SR/GOEP/SRMP/BV-02-C
OPP 1b/2 AND OPP 2/21 AND OPP 2/22 AND OPP 2/13	Client: OBEX SRM, Send OBEX SRMP header	OPP/CL/GOEP/SRMP/BV-04-C
OPP 1b/2 AND OPP 2/13 AND OPP 2/21 AND OPP 2/23 AND OPP 2/22	Client: Send/Receive OBEX SRMP header	OPP/CL/GOEP/SRMP/BV-05-C
OPP 1b/2 AND OPP 2/13 AND OPP 2/21 AND OPP 2/23	Client: Receive OBEX SRMP header	OPP/CL/GOEP/SRMP/BV-06-C
OPP 1b/2 AND OPP 2/21 AND OPP 2/23 AND OPP 2/13	Client: Receive OBEX SRMP header	OPP/CL/GOEP/SRMP/BI-01-C
OPP 1b/2 AND OPP 2/3 AND OPP 2/21 AND OPP 2/20	Client: OBEX Reliable Session	OPP/CL/GOEP/SRS/BV-01-C
OPP 1b/2 AND OPP 2/21 AND OPP 2/20 AND OPP 2/13	Client: OBEX Reliable Session	OPP/CL/GOEP/SRS/BV-02-C
OPP 2b/2 AND OPP 3/3 AND OPP 3/23 AND OPP 3/22	Server: OBEX reliable session	OPP/SR/GOEP/SRS/BV-03-C

Item	Feature	Test Case(s)
OPP 2b/2 AND OPP 3/23 AND OPP 3/22 AND OPP 3/13	Server: OBEX reliable session	OPP/SR/GOEP/SRS/BV-04-C
OPP 2b/2	Server: OPP v1.2 or later	OPP/SR/GOEP/ROB/BV-01-C
OPP 2b/2 AND NOT OPP 3/22	Server: OPP v1.2 or later	OPP/SR/GOEP/ROB/BV-02-C

Table 5.1: Test case mapping

6   Annex B, supplementary interoperability tests

This section provides a supplementary set of interoperability tests. These tests are aimed at scenarios that do not have a direct specification reference. The tests are recommended by the Bluetooth SIG to be run for improved interoperability but they are not required to be executed as part of the Bluetooth Qualification program.

6.1   Object Push tests

Test group objectives are to verify scenarios during the object push function.

6.1.1   Abort-Push Operation

*   Test Case ID(s)

    OPP/CL/OPH/BV-27-I

    OPP/SR/OPH/BV-27-I

*   Test Purpose

    Client:

    To verify that a client can ABORT an OBEX push operation.

    Server:

    To verify that a server can respond to an ABORT from the client during an OBEX operation.

*   Reference and Motivation

    [2] 5.1

    Section 5.1 in [2] lists the OBEX operations which are required in Object Push Profile and lists ABORT as a mandatory command. Although other mandatory commands mentioned in this section are tested in the Test suite, ABORT has not been included and is therefore included in the Test Suite Addendum.

    Aborting an OPP push/pull operation is a very common user scenario and is therefore tested here.

*   Initial Condition

    Client:

    -   Application for Object Push is activated.

    -   The vObject item for Object Push is prepared.

    -   The server is selectable from a list.

    Server:

    -   Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vObject item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  - Initiate user action to ABORT the push operation.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  The ABORT operation is processed correctly and completed corresponding to the settings and user actions.

  Both devices are in normal operation mode after the completion of ABORT operation.

  Client:

  The client may be notified that the Object Push operation was aborted.

  Server:

  The vObject item that was being pushed is not in the corresponding application or the object store.

TP/OPH/BV-28-I [Push Two vObjects using a single PUT operation – Accepted]
NO LONGER USED.

TP/OPH/BV-29-I [Disconnect Session]
NO LONGER USED.

OPP/SR/OPH/BV-30-I [Multiple vCards transferred as a single vObject]

- Test Purpose

  Server:

  To verify that a sample vObject item containing multiple vCards sent from the client is correctly received in the inbox of the server.

- Reference and Motivation

  [2] 3.3.1

  This test is used to verify if a server can handle some implementations where multiple vCard entries are stored as a single vObject. When this object is pushed, only the first entry is handled by the server.

- Initial Condition

  Client:

  Application for Object Push is activated.

  - The vObject item Object Push is prepared (see Section 4.1.3).
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard item to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.
  - Accept the received vObject item, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  The pushed vCard item is in the corresponding application or the object store and is pushed correctly.

OPP/SR/OPH/BV-31-I [Multiple vCards transfer]

- Test Purpose

  Server:

  To verify that multiple sample vCard items are sent and correctly received in the inbox of the server.

- Reference and Motivation

  [2] 3.3.1

  This is a common scenario and this use case tests the robustness of a server device.

- Initial Condition

  Client:

  - Application for Object Push is activated.
  - The vCard items for Object Push are prepared. The client contains 15 vCard items.
  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard items to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function where each of the 15 vCard items are pushed in single PUT operations.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.
  - Accept the received vCard items, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  Server:

  The pushed vCard items are in the corresponding application or the object store and have been pushed correctly.

OPP/SR/OPH/BV-32-I [vCards with multiple Phone Number Fields]

- Test Purpose

  Server:

  To verify that a sample vCard item containing multiple phone number entries sent from the client is correctly received in the inbox of the server.

- Reference and Motivation

  [2] 3.3.1

  It is very common to have vCards containing multiple phone book entries. This test is to check for this scenario.

- Initial Condition

  Client:

  The client device contains VCards that have phone number fields. The vCard specification [4] defines the following types – preferred, work, home, voice, facsimile, message cellular, pager, bulletin board service, modem, car phone, ISDN, and video phone number.

  Client device may also use fields which are not defined by the vCard specification (e.g., office1, office 2, Default, etc.)

  - Application for Object Push is activated.

  - The vCard item for Object Push is prepared.

  - The server is selectable from a list.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCard item to.

  - Perform Bluetooth PIN exchange, if requested.

  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested on the UI.

  - Accept the received vObject item, if requested on the UI.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  The pushed vCard item is in the corresponding application or the object store and is pushed correctly.

OPP/SR/OPH/BV-33-I [Push vCal to Different Time Zone Server]

- Test Purpose

  Server:

  To verify that a sample vCal item sent from the client is correctly received in the inbox of the server. The clock of the client and server are set to different time zones.

- Reference and Motivation

  [2] 3.3.1

In scenarios where a device is moved to a different time zone, the device clock is automatically adjusted. But in some cases, the clock of the client and/or server may indicate the time of a different time zone. This test is to verify if a server can handle a vCalendar pushed in this scenario.

- Initial Condition

  Client:

  - Application for Object Push is activated.
  - The vCal item for Object Push is prepared (see Section 4.1.3).
  - The server is selectable from a list.
  - The client is set to indicate the time of a different time zone.

  Server:

  - Object Exchange mode is set.

- Test Procedure

  Client:

  - Select the server to push the vCal item to.
  - Perform Bluetooth PIN exchange, if requested.
  - Start the Object Push function.

  Server:

  - Perform Bluetooth PIN exchange, if requested.

- Expected Outcome

  Pass verdict

  The Object Push operation is processed correctly and completed corresponding to the settings and user actions.

  The pushed vCal item is in the corresponding application or the object store and pushed correctly (see Section 4.1.3).

7 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.1	2001-07-02	First version for Specification 1.1
1	1.1.1	2004-12-07	Incorporated March, 2004 Addendum: TSE 441 and TSE 456 for TCMT. Incorporate TSE 572 for TP /OPH/BV-01-I. Incorporate TSE 580 for TP/OPH/BV-05, TP.OPH/BV-09, TP/OPH/BV-13, and TP/OPH/BV-17. Incorporate TCW TCWR_OPP_05_15_JLIN_Appealed_Approved for TP/BCE/BV-06-I. Incorporate editorial changes and format changes.
	1.1.2r1	2005-08-23	TSE 813: Removed TP/BCE/BV-02-I as a result of TSE 441 TSE 825: Clarified bonding for OPH/BV-02-I, BCP/BV-03, and BCE/BV-03 TSE 562 for TP/OPH/BV-10-I, TP/OPH/BV-14-I, TP/OPH/BV-18-I, TP/BCP/BV-02-I
2	1.1.2	2005-10-07	Prepare for publication.
	1.1.3r0	2006-05-12	TSE 924. Change to section 5.1.3:
3	1.1.3	2006-06-19	Prepare for publication.
	1.1.4r0-2	2006-11	TSE 1707: Global change of "object store" to "corresponding application or object store." TSE 1765: Add TP/OPH/BV-19-I and TP/OPH/BV-20-I and two lines to TCMT Added test case TP/OP/BV-21-1 Change Tables OPP 1.2 and OPP 1.3 to Tables OPP 2 and OPP3
4	1.1.4	2007-01-08	Prepare for publication.
5	1.1.5	2007-09-04	TSE 1927 TCMT updates to OPH/BV-02-I, BCP/BV-03-I, BCE/BV-03-I TSE 1765: Correct TCMT for TP/OPH/BV-21-I and TP/OPH/BV-20-I per comment 4007
	1.1.6r0	2008-02	TSE 2417: TP/OPH/BV-02-I, TP/BCE/BV-03-I: Change initial condition.

Publication Number	Revision Number	Date	Comments
			TSE 2493: TP/OPH/BV-19-I: Notes addition
6	1.1.6	2008-04	Prepare for publication.
	1.1.7r0	2008-09-17	TSE 2448: TCMT clarification TP/BCP/BV-04-I, TP/BCP/BV-05-I, TP/BCP/BV-02-I
			TSE 2533:New test case TP/OPH/BV-22-I
			TSE 2570:New test case: TP/OPH/BV-23-I, TP/OPH/BV-24-I, TP/OPH/BV-25-I, TP/OPH/BV-26-I
7	1.1.7	2008-12-05	Input reviewer's comments (editorial)
	1.1.8r0-1	2009-04-29	TSE 2448/2777: TP/BCP/BV-02-I: TCMT correction
			TSE 2891: New test case TP/OPH/BI-01-C
8	1.1.8	2009-08-10	Prepare for publication
	1.2.0r0	2010-07-28	TCMT additions for OBEX changes
	1.2.0r1	2010-09-08	Updated Conformance section
9	1.2.0r2	2010-09-08	Made all test case names full names in TCMT
	1.2.1r0- 1.2.1r3	2010-08-09- 2011-03-17	TSE 3330: new test case TP/OPH/BV-29-I to close an OBEX session.
			TSE 3330: Addressed reviewer's comments and attempted to add feature descriptions to the TCMT for entries that had none.
			Input reviewer's comment: Change TP/OPH/BV-29-I to TP/OPH/BV-34-I
			Add test cases TP/OPH/BV-28-I to TP/OPH/BV-33-I from OPP Addendum, corrected Reference numbers to align with numbered References in Section 2.1
10	1.2.1	2011-07-21	Prepare for publication.
	1.2.2r0	2011-11-12	TSE 3867; TP/OPH/BI-01-C; update TCMT
			TSE 3868 TP/BCE/BV-05-I, TP/BCE/BV-06-I, TP/BCE/BV-07-I: update TCMT
			TSE 4381: TP/SRM/BV-01-C: Remove duplicate, incorrect entry from TCMT
	1.2.2r1	2012-02-01	Merged document with OPP Addendum 1.2.2
			TSE 3824: TP/OPH/BV-31-I, TP/OPH/BV-32-I: update TCMT
			TSE 4295: TP/OPH/BV-28-I: Remove test case body; leave TC ID

Publication Number	Revision Number	Date	Comments
	1.2.2r2	2012-02-20	TSE 4686: Merge OPP Addendum with OPP.TS and updated TMCT
11	1.2.2	2012-03-30	Prepare for publication.
	1.2.3r0	2012-05-20	TSE 1791: Updates to TCMT for TP/OPH/BV-04-I, TOP/OPH/BV-08-I, TP/OPH/BV-12-I, TP/OPH/BV-16-I
12	1.2.3	2012-07-24	Prepare for publication.
13	1.2.4	2012-09-06	TSE 4942: Delete TP/OPH/BV-29-I, fix change history.
	1.2.4r1	2012-10-22	Keep TP/OPH/BV-29-I [Disconnect Session] and state NO LONGER USED as purpose similar to what we have done with TP/OPH/BV-28-I
	1.2.5r00	2014-05-01	TSE 5481: Updated TCMT logic for TP/BCP/BV-02-I to (OPP 2/13) OR (OPP 1/2 AND NOT OPP 3/13).
14	1.2.5	2014-07-07	TCRL 2014-1 Publication
	1.2.1.0r00	2015-10-28	Updated version numbering to align with Specification version change from 1.2 to 1.2.1 for ESR09. With the specification taking a third identifying number, the TS version identifier moves to the fourth number and starts again at 0.
15	1.2.1.0	2015-12-22	Prepared for TCRL 2015-2 publication
	1.2.1.1r00	2016-09-01	Converted to new Test Case ID conventions as defined in TSTO v4.1.
	1.2.1.1r01	2016-11-14	Updated 1 Scope to align with current test case conventions. Added clarification to section 3.1 about the test strategy to use a subset of the tests in GOEP to test OPP functionality. Consequential clarifications made in section 4.1.1 about the naming conventions used to refer to GOEP tests.
16	1.2.1.1	2016-12-13	Approved by BTI. Prepared for TCRL 2016-2 publication.
	1.2.1.2r00	2017-07-21	TSE 8981: Updated to current template. Added a reference to the OPP IXIT in 2.1. Removed/Revised the outdated text in the Applications, Features, Object Formats and Roles section (use of 2 DUT assuming End Product to End Product testing). In 4.1.1 Test Case Identification Conventions, fixed copy/paste error from.

Publication Number	Revision Number	Date	Comments
			The notes section of OPP/CL/OPH/BV-19-I and OPP/SR/OPH/BV-19-I revised reference to IXIT rather than ICS.
			TCMT - Clean up of parentheses: OPP/CL/OPH/BV-02-I, OPP/CL/BCP/BV-03-I, OPP/CL/BCE/BV-03-I, OPP/SR/OPH/BV-27-I, OPP/SR/BCP/BV-02-I.
			TCMT - Revise from "NOT OPP 3/x" to "OPP 3/3 AND (NOT OPP 3/x)": OPP/SR/OPH/BV-10-I, OPP/SR/OPH/BV-14-I, OPP/SR/OPH/BV-18-I.
			TCMT - Replaced the symbol "&" with "AND" - OPP/SR/OPH/BV-23-I, OPP/SR/OPH/BV-24-I, OPP/SR/OPH/BV-25-I, OPP/SR/OPH/BV-26-I.
			TCMT - Updated a few instances of "OPP 1.2" and "GOEP v2" to "OPP v1.2 or later" and "GOEP v2.0 or later".
			Fixed typo in TCMT for "OPP/CL/GOEP/SRMP/BV-06/C" to "-C" instead of "/C".
17	1.2.1.2	2017-11-28	Approved by BTI. Prepared for TCRL 2017-2 publication.
	1.2.1.3r00	2018-04-27	TSE 10547 (rating 1): Changed test case name OPP/CL/OPH/BV-21-I to OPP/SR/OPH/BV-21-I. Added client and server test procedures. Removed Test Case Applicable from TCMT and fixed typo for item OPP 3/8a.
18	1.2.1.3	2018-07-01	Approved by BTI. Prepared for TCRL 2018-1 publication.
	p19r00–r01	2021-04-05 – 2021-05-18	TSE 15771 (rating 2): Added missing TC OPP/SR/OPH/BV-31-I to the TCMT. Template-related editorials, including assigning previous v1.2.1.3 as p18.
19	p19	2021-07-13	Approved by BTI on 2021-06-03. Prepared for TCRL 2021-1 publication.
	p19ed2r00	2021-07-26	TSE 17287 (rating 1): Corrected a typo in a TCID in the TCMT.
	p19 edition 2	2021-08-20	Approved by BTI on 2021-08-19. Prepared for edition 2 publication.

Acknowledgments

Name	Company
Ken Croft	3Com Corporation
Dietmar Weber	7 layers AG
Thomas Horvath	Agere Systems Inc.
Stefan Agnani	Ericsson Technology Licensing AB
Stephane Bouet	Nokia Mobile Phones
Riku Mettala	Nokia Mobile Phones
Thomas Müller	Nokia Mobile Phones
Martin Roter	Nokia Mobile Phones