

Object Transfer Service (OTS)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

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1 General principles

1.1 Implementation Under Test (IUT) identification

Using the Bluetooth SIG qualification tool, the implementer is expected to declare details about what will be implemented.

1.2 Enforcement of inter-layer dependencies

This ICS includes one or more tables with inter-layer dependencies (ILDs). ILDs are used for specification requirements that are dependent on other supporting specifications. ILDs can refer to an individual ICS item in a separate layer (Individual ILD), or it can refer to the full layer (full-layer ILD).

ILDs residing in an X2Core layer will be enforced from the Bluetooth SIG qualification tool in the following conditions, depending on where the referred ILD is residing:

| Referred ILD resides in | Individual ILD | Full-layer ILD |
|-------------------------|---|---|
| Controller layer | Core-Complete configuration, or Referred layer is supported | N/A |
| Lower HCI layer | HCI is supported | N/A |
| Upper HCI layer | Core-Host configuration, or UHCI is supported | N/A |
| Host layer | Core-Host configuration, or Core-Complete configuration, or Referred layer is supported | N/A |
| X2Core layer | Core-Host configuration, or Core-Complete configuration, or Referred layer is supported | Core-Host configuration, or Core-Complete configuration |

Table 1.1: Enforcement of an ILD within the Bluetooth SIG qualification tool

2 ICS declarations

2.1 Versions

Table 0: X.Y Versions

| Item | Version | Reference | Status |
|------|----------|-----------|--------|
| 1 | OTS v1.0 | [1] | M |

Table 1: No longer used

2.2 Transports

Table 2: Transport Requirements

| Item | Transport | Reference | Status |
|------|-------------------------------|--------------|----------|
| 1 | Service supported over LE | [1] 1.5, 1.6 | C.1, C.3 |
| 2 | Service supported over BR/EDR | [1] 1.5, 1.6 | C.2, C.3 |

C.1: Excluded for this Service IF CORE 41/1 “BR/EDR Core Configuration”.

C.2: Excluded for this Service IF CORE 41/2 “LE Core Configuration”.

C.3: Mandatory to support at least one.

2.3 Service requirements

Table 3: Global Feature Requirements

| Item | Feature | Reference | Status |
|------|---|-------------|--------|
| 1 | Multiple Simultaneous Clients (Concurrency feature) | [1] 1.12 | O |
| 2 | Storage of multiple objects | [1] 3 | O |
| 3 | Support for zero objects (Note 1) | [1] 3.3.2.8 | O |

Note 1: “Support for zero objects” means that the IUT is capable of being placed in a state in which there is no object present on the Server. This could be either the initial state or a state that is achieved by deleting all the objects that are present.

Table 4: GATT Database Requirements

| Item | Characteristic or Property | Reference | Status |
|------|--|----------------|--------|
| 1 | OTS Feature Characteristic | [1] 3.1 | M |
| 2 | Object Name Characteristic | [1] 3.2.2 | M |
| 3 | Object Name Characteristic - Write | [1] 3.2.2 | C.1 |
| 4 | Object Name Characteristic – Read Long (longer than default ATT_MTU-1 octets) | [1] 1.4, 3.2.2 | C.2 |
| 5 | Object Name Characteristic – Write Long (longer than default ATT_MTU-3 octets) | [1] 1.4, 3.2.2 | O |
| 6 | Object Type Characteristic | [1] 3.2.3 | M |
| 7 | Object Size Characteristic | [1] 3.2.4 | M |

| Item | Characteristic or Property | Reference | Status |
|------|---|--------------|--------|
| 8 | Object First-Created Characteristic | [1] 3.2.5 | O |
| 9 | Object First-Created Characteristic - Write | [1] 3.2.5 | C.3 |
| 10 | Object Last-Modified Characteristic | [1] 3.2.6 | O |
| 11 | Object Last-Modified Characteristic - Write | [1] 3.2.6 | C.4 |
| 11a | Access to a Real Time Clock (RTC) | [1] 3.2.6.1 | O |
| 12 | Object ID Characteristic | [1] 3.2.7 | C.5 |
| 13 | Object Properties Characteristic | [1] 3.2.8 | M |
| 14 | Object Properties Characteristic - Write | [1] 3.2.8 | O |
| 15 | Object Action Control Point (OACP) | [1] 3.3 | M |
| 16 | Object List Control Point (OLCP) | [1] 3.4 | C.5 |
| 17 | Object List Filter Characteristic | [1] 3.5 | C.6 |
| 18 | Object List Filter Characteristic – Read Long (longer than default ATT_MTU-1 octets) | [1] 1.4, 3.5 | C.7 |
| 19 | Object List Filter Characteristic – Write Long (longer than default ATT_MTU-3 octets) | [1] 1.4, 3.5 | O |
| 20 | Object Changed Characteristic | [1] 3.6 | O |

C.1: Mandatory IF OTS 5/1 “OACP Create Procedure”, otherwise Optional.

C.2: Mandatory IF OTS 4/5 “Object Name Characteristic – Write Long (longer than default ATT_MTU-3 octets)”, otherwise Optional.

C.3: Mandatory IF OTS 4/8 “Object First-Created Characteristic” AND OTS 5/1 “OACP Create Procedure”, otherwise Optional.

C.4: Mandatory IF OTS 4/10 “Object Last-Modified Characteristic” AND NOT OTS 4/11a “Access to a Real Time Clock (RTC)”, otherwise Excluded.

C.5: Mandatory IF OTS 3/2 “Storage of multiple objects”, otherwise Optional.

C.6: Optional IF OTS 3/2 “Storage of multiple objects”, otherwise Excluded.

C.7: Mandatory IF OTS 4/19 “Object List Filter Characteristic – Write Long (longer than default ATT_MTU-3 octets)”, otherwise Optional.

Table 5: OACP Features

Prerequisite: OTS 4/15 “Object Action Control Point (OACP)”

| Item | Feature | Reference | Status |
|------|---|-------------|--------|
| 1 | OACP Create Procedure | [1] 3.3.2.1 | O |
| 2 | OACP Delete Procedure | [1] 3.3.2.2 | O |
| 3 | OACP Calculate Checksum Procedure | [1] 3.3.2.3 | O |
| 4 | OACP Execute Procedure | [1] 3.3.2.4 | O |
| 5 | OACP Read Procedure | [1] 3.3.2.5 | O |
| 6 | OACP Write Procedure | [1] 3.3.2.6 | O |
| 7 | Appending Additional Data (increasing the object's Allocated Size) | [1] 3.3.2.6 | O |
| 8 | Truncation of Objects (decreasing the object's Current Size) | [1] 3.3.2.6 | O |
| 9 | Patching of Objects (over-writing a portion of the object's contents) | [1] 3.3.2.6 | O |

| Item | Feature | Reference | Status |
|------|----------------------|-------------|--------|
| 10 | OACP Abort Procedure | [1] 3.3.2.7 | C.1 |

C.1: Optional IF OTS 5/5 “OACP Read Procedure”, otherwise Excluded.

Table 6: OLCP Features

Prerequisite: OTS 4/16 “Object List Control Point (OLCP)”

| Item | Feature | Reference | Status |
|------|--|-------------|--------|
| 1 | OLCP First Procedure | [1] 3.4.2.1 | M |
| 2 | OLCP Last Procedure | [1] 3.4.2.2 | M |
| 3 | OLCP Previous Procedure | [1] 3.4.2.3 | M |
| 4 | OLCP Next Procedure | [1] 3.4.2.4 | M |
| 5 | OLCP Go To Procedure | [1] 3.4.2.5 | O |
| 6 | OLCP Order Procedure | [1] 3.4.2.6 | O |
| 7 | OLCP Request Number of Objects Procedure | [1] 3.4.2.7 | O |
| 8 | OLCP Clear Marking Procedure | [1] 3.4.2.8 | O |

Table 7: Directory Listing Object

Prerequisite: OTS 3/2 “Storage of multiple objects”

| Item | Capability | Reference | Status |
|------|--|-----------|--------|
| 1 | Generation of Directory Listing Object | [1] 4.1 | O |

2.4 GATT requirements

Table 8: GATT Requirements

| Item | Capability | Reference | Status | Inter-Layer Dependency |
|------|----------------------------------|-----------|--------|------------------------|
| 1 | No longer used | N/A | N/A | N/A |
| 1a | GATT Server over BR/EDR | [1] 1.4 | C.3 | [2] GATT 1a/4 |
| 1b | GATT Server over LE | [1] 1.4 | C.4 | [2] GATT 1a/3 |
| 2 | Read Long Characteristic Values | [1] 1.4 | C.1 | [2] GATT 4/10 |
| 3 | Write Characteristic Value | [1] 1.4 | M | [2] GATT 4/14 |
| 6 | Write Long Characteristic Values | [1] 1.4 | C.2 | [2] GATT 4/15 |
| 4 | Indications | [1] 1.4 | M | [2] GATT 4/18 |
| 7 | Read Characteristic Descriptors | [1] 1.4 | M | [2] GATT 4/19 |
| 8 | Write Characteristic Descriptors | [1] 1.4 | M | [2] GATT 4/21 |

C.1: Mandatory IF OTS 4/4 “Object Name Characteristic – Read Long (longer than default ATT_MTU-1 octets)” OR OTS 4/18 “Object List Filter Characteristic – Read Long (longer than default ATT_MTU-1 octets)”, otherwise not defined.

C.2: Mandatory IF OTS 4/5 “Object Name Characteristic – Write Long (longer than default ATT_MTU-3 octets)” OR OTS 4/19 “Object List Filter Characteristic – Write Long (longer than default ATT_MTU-3 octets)”, otherwise not defined.

- C.3: Mandatory IF OTS 2/2 “Service supported over BR/EDR”, otherwise not defined.
- C.4: Mandatory IF OTS 2/1 “Service supported over LE”, otherwise not defined.

3 References

- [1] Object Transfer Service, Version 1.0
- [2] ICS Proforma for Generic Attribute Profile (GATT)

4 Revision history and acknowledgments

Revision History

| Publication Number | Revision Number | Date | Comments |
|--------------------|--------------------|-------------------------|---|
| 0 | 1.0.0 | 2015-11-17 | Spec adopted by BoD. Prepared for publication. |
| | 1.0.0 edition 2r00 | 2018-11-26 | Editorial changes only. Template updated. Revision History and contributors moved to the end of the document. |
| | 1.0.0 edition 2 | 2020-01-08 | Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication. |
| | p1r00–r02 | 2022-03-23 – 2022-05-02 | TSE 18598 (rating 3): Deleted Core versions table. Added 4/11a, with a corresponding update to C.4. TSE 18723 (rating 1): Editorials to align the document with the latest ICS template in anticipation of a future .Z release. Assigned publication number 0 to previous v1.0.0 and aligned copyright page with v2 of the DNMD. Consistency checker update. |
| 1 | p1 | 2022-06-28 | Approved by BTI on 2022-05-31. Prepared for TCRL 2022-1 publication. |
| | p1ed2 r00–r03 | 2025-01-29 – 2025-02-27 | TSE 27093 (rating 1): Updated Table 1 heading and Version entry. Updated Table 2 status values and conditional C.1 and added C.2 and C.3. Added items 1a and 1b and conditionals C.3 and C.4 to Table 8. Updated References section and cross-references throughout. Updated to current ICS template. |
| | p1 edition 2 | 2025-03-14 | Approved by BTI on 2025-03-11. Prepared for edition 2 publication. |

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