

# Electronic Shelf Label Profile (ESLP)

## **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 Roles

**Table 1: Role Requirements**

Item	Role	Reference	Status
1	Electronic Shelf Label (ESL)	[1] 2.1	C.1
2	Access Point (AP)	[1] 2.1	C.1

C.1: Mandatory to support at least one.

### 2.2 Transports

**Table 2: Transport Requirements**

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 2.5	C.1
2	Profile supported over LE	[1] 2.5	M

C.1: Excluded for this Profile.

### 2.3 Electronic Shelf Label Role

#### 2.3.1 Versions

**Table 10: ESL, X.Y Versions**

*Prerequisite: ESLP 1/1 “Electronic Shelf Label (ESL)”*

Item	Version	Reference	Status
1	Electronic Shelf Label Profile 1.0	[1] 3	M

**Table 11: ESL, X.Y.Z Versions**

Table number reserved but not yet in use.

#### 2.3.2 Features

**Table 12: ESL, Features**

*Prerequisite: ESLP 1/1 “Electronic Shelf Label (ESL)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Synchronized State	[1] 3.1.3	M	N/A
2	OTS Transfer of Image Data	[1] 3.2	O	N/A
3	Vendor Specific Opcodes	[1] 5.2	O	N/A
4	ESL Display Information characteristic	[1] 5.2 [8] 3.5	C.1	[2] ESLS 3/5

Item	Capability	Reference	Status	Inter-Layer Dependency
5	One display	[8] 2.7.2.1	O	[2] ESLS 3/10
6	More than one display	[8] 2.7.2.1	O	[2] ESLS 3/11
7	ESL Sensor Information characteristic	[1] 5.2 [8] 3.7	C.2	[2] ESLS 3/7
8	One sensor	[8] 2.7.2.3	O	[2] ESLS 3/14
9	More than one sensor	[8] 2.7.2.3	O	[2] ESLS 3/15
10	ESL LED Information characteristic	[1] 5.2 [8] 3.8	C.3	[2] ESLS 3/8
11	One LED	[8] 2.7.2.2	O	[2] ESLS 3/12
12	More than one LED	[8] 2.7.2.2	O	[2] ESLS 3/13

C.1: (Reverse ILD) Mandatory IF ESLS 3/5 “ESL Display Information characteristic”, otherwise Excluded.

C.2: (Reverse ILD) Mandatory IF ESLS 3/7 “ESL Sensor Information characteristic”, otherwise Excluded.

C.3: (Reverse ILD) Mandatory IF ESLS 3/8 “ESL LED Information characteristic”, otherwise Excluded.

### 2.3.3 Profile and Service Dependencies

**Table 13: ESL, Profile and Service Dependencies**

*Prerequisite: ESLP 1/1 “Electronic Shelf Label (ESL)”*

Item	Service	Reference	Status	Inter-Layer Dependency
1	Electronic Shelf Label Service (ESLS)	[1] 3	M	[2] ESLS
2	Object Transfer Profile (OTP)	[1] 2.2.3	C.1	[6] OTP
3	Device Information Service (DIS)	[1] 3.3	C.2	[7] DIS

C.1: Mandatory IF ESLP 12/2 “OTS Transfer of Image Data”, otherwise not defined.

C.2: Mandatory IF ESLP 12/3 “Vendor Specific Opcodes”, otherwise Optional.

### 2.3.4 Feature Requirements in Dependent Profiles

#### 2.3.4.1 ESL Object Transfer Profile requirements

**Table 14: ESL, Object Transfer Profile Requirements**

*Prerequisite: ESLP 13/2 “Object Transfer Profile (OTP)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Object Server	[1] 3.2	M	[5] OTP 2/1

### 2.3.4.2 ESL Object Transfer Service requirements

**Table 15: ESL, Object Transfer Service Requirements**

*Prerequisite: ESLP 12/2 “OTS Transfer of Image Data”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	OACP Write Procedure	[1] 3.2	M	[5] OTS 5/6
2	Truncation of Objects (decreasing the object's Current Size)	[1] 3.2	M	[5] OTS 5/8

### 2.3.4.3 ESL Device Information Service requirements

**Table 16: ESL, Device Information Service Requirements**

*Prerequisite: ESLP 13/3 “Device Information Service (DIS)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	PnP ID	[1] 3.3	M	[7] DIS 2/11

## 2.3.5 Feature Requirements in Core Layers

### 2.3.5.1 GAP requirements

**Table 17: ESL, GAP Requirements**

*Prerequisite: ESLP 1/1 “Electronic Shelf Label (ESL)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4	M	[4] GAP 5/3 OR GAP 38/3
2	Bondable mode	[1] 8.1	M	[4] GAP 24/2
3	Unauthenticated Pairing (LE security mode 1 level 2)	[1] 8.1	C.1	[4] GAP 25/8
4	Authenticated Pairing (LE security mode 1 level 3)	[1] 8.1	C.1	[4] GAP 25/7
5	LE security mode 1 level 4	[1] 8.1	C.1	[4] GAP 25/9
6	Encrypted Data	[1] 8.3	M	[4] GAP 20a/19
7	LE Secure Connections	[1] 8.1	M	[4] GAP 27b/5

C.1: Mandatory to support at least one.

### 2.3.5.2 GATT requirements

**Table 19: ESL, GATT Requirements**

*Prerequisite: ESLP 1/1 “Electronic Shelf Label (ESL)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	GATT Server over LE	[1] 2.2	M	[3] GATT 1a/3

## 2.4 Access Point Role

### 2.4.1 Versions

**Table 30: AP, X.Y Versions**

*Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Version	Reference	Status
1	Electronic Shelf Label Profile 1.0	[1] 4	M

**Table 31: AP, X.Y.Z Versions**

Table number reserved but not yet in use.

### 2.4.2 Features

**Table 32: AP, Characteristics**

*Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Capability	Reference	Status
1	Discover ESL Address characteristic	[1] 4.2.1.1	M
2	Discover AP Sync Key Material characteristic	[1] 4.2.1.2	M
3	Discover ESL Response Key Material characteristic	[1] 4.2.1.3	M
4	Discover ESL Current Absolute Time characteristic	[1] 4.2.1.4	M
5	Discover ESL Display Information characteristic	[1] 4.2.1.5	M
6	Discover ESL Image Information characteristic	[1] 4.2.1.6	M
7	Discover ESL Sensor Information characteristic	[1] 4.2.1.7	M
8	Discover ESL LED Information characteristic	[1] 4.2.1.8	M
9	Discover ESL Control Point characteristic	[1] 4.2.1.9	M

**Table 33: AP, Control Point Commands**

*Prerequisite: ESLP 32/9 “Discover ESL Control Point characteristic”*

Item	Capability	Reference	Status
1	Ping	[1] 4.2.1.9	M
2	Unassociate from AP	[1] 4.2.1.9	M



Item	Capability	Reference	Status
3	Service Reset	[1] 4.2.1.9	M
4	Factory Reset	[1] 4.2.1.9	M
5	Read Sensor Data	[1] 4.2.1.9	M
6	Refresh Display	[1] 4.2.1.9	M
7	Update Complete	[1] 4.2.1.9	M
8	Display Image	[1] 4.2.1.9	M
9	Display Timed Image	[1] 4.2.1.9	M
10	LED Control	[1] 4.2.1.9	M
11	LED Timed Control	[1] 4.2.1.9	M
12	Vendor-Specific Tag	[1] 4.2.1.9	M

**Table 34: AP, Procedure Requirements***Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Capability	Reference	Status
1	Discover ESLs	[1] 5.1	M
2	Securing ESLs	[1] 5.2	M
3	Configure an ESL	[1] 5.2, 6.1.1	M
4	Update a Stored Image on an ESL	[1] 6.1.2	M
5	Control LED(s) in Updating State	[1] 6.1.3	M
6	Transition to Synchronized State	[1] 6.1.5	M
7	Check ESL is Still in Synchronized State	[1] 6.2.4	M
8	Control LED in Synchronized State	[1] 6.2.1	M
9	Transition to Unassociated State	[1] 6.1.4	M
10	Control Displayed Image in Synchronized State	[1] 6.2.2	M
11	Read Sensor Data in Synchronized State	[1] 6.2.3	M
12	Move from Synchronized to Updating State	[1] 6.2.5	M

### 2.4.3 Profile and Service Dependencies

**Table 35: AP, Profile and Service Dependencies***Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Service	Reference	Status	Inter-Layer Dependency
1	Object Transfer Profile (OTP)	[1] 4.4	M	[6] OTP

## 2.4.4 Feature Requirements in Dependent Profiles

### 2.4.4.1 AP Object Transfer Profile requirements

**Table 36: AP, Object Transfer Profile Requirements**

*Prerequisite: ESLP 35/1 “Object Transfer Profile (OTP)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Object Client	[1] 4.4	M	[5] OTP 2/2
2	Write Object – Write Object Contents	[1] 4.4	M	[5] OTP 8/21
3	Truncate Object Contents	[1] 4.4	O	[5] OTP 8/31

## 2.4.5 Feature Requirements in Core Layers

### 2.4.5.1 GAP requirements

**Table 37: AP, GAP Requirements**

*Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Central	[1] 2.4	M	[4] GAP 5/4 OR GAP 38/4
2	Bondable mode	[1] 8.1	M	[4] GAP 34/2
3	Unauthenticated Pairing (LE security mode 1 level 2)	[1] 8.1	C.1	[4] GAP 35/8
4	Authenticated Pairing (LE security mode 1 level 3)	[1] 8.1	C.1	[4] GAP 35/7
5	LE security mode 1 level 4	[1] 8.1	C.1	[4] GAP 35/9
6	Encrypted Advertising Data Procedure	[1] 8.2	M	[4] GAP 35/14
7	LE Secure Connections	[1] 8.1	M	[4] GAP 37b/5

C.1: Mandatory to support at least one.

### 2.4.5.2 GATT requirements

**Table 38: AP, GATT Requirements**

*Prerequisite: ESLP 1/2 “Access Point (AP)”*

Item	Capability	Reference	Status	Inter-Layer Dependency
1	GATT Client over LE	[1] 2.2	M	[3] GATT 1a/1
2	Discover All Primary Services	[1] 4.3	C.1	[3] GATT 3/2
3	Discover Primary Services by Service UUID	[1] 4.3	C.1	[3] GATT 3/3
4	Discover All Characteristics of a Service	[1] 4.3	C.2	[3] GATT 3/5
5	Discover Characteristics by UUID	[1] 4.3	C.2	[3] GATT 3/6



Item	Capability	Reference	Status	Inter-Layer Dependency
6	Discover All Characteristic Descriptors	[1] 4.3	M	[3] GATT 3/7
7	Read Characteristic Descriptors	[1] 4.3	M	[3] GATT 3/19
8	Write Characteristic Descriptors	[1] 4.3	M	[3] GATT 3/21
9	Read Characteristic Value	[1] 4.3	M	[3] GATT 3/8
10	Read Long Characteristic Values	[1] 4.3	M	[3] GATT 3/10
11	Write Characteristic Value	[1] 4.3	M	[3] GATT 3/14
12	Write without Response	[1] 4.3	O	[3] GATT 3/12
13	Single Notification	[1] 4.3	M	[3] GATT 3/17

C.1: Mandatory to support at least one.

C.2: Mandatory to support at least one.

## 3 References

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- [1] Electronic Shelf Label Profile Specification, Version 1.0
- [2] ICS Proforma for Electronic Shelf Label Service (ESLS)
- [3] ICS Proforma for Generic Attribute Profile (GATT)
- [4] ICS Proforma for Generic Access Profile (GAP)
- [5] ICS Proforma for Object Transfer Service (OTS)
- [6] ICS Proforma for Object Transfer Profile (OTP)
- [7] ICS Proforma for Device Information Service (DIS)
- [8] Electronic Shelf Label Service Specification, Version 1.0

## 4 Revision history and acknowledgments

### Revision History

Publication Number	Revision Number	Date	Comments
0	p0	2023-04-04	Approved by BTI on 2023-03-15. ESLP v1.0 adopted by the BoD on 2023-03-28. Prepared for initial publication.
	p1r00–r01	2023-08-15 – 2023-12-12	TSE 22892 (rating 1): Added “ESL” to the relevant characteristic names in Table 32 (AP, Characteristics). Editorials to align with the latest ICS template.
1	p1	2024-07-01	Approved by BTI on 2024-04-21. Prepared for TCRL 2024-1 publication.
	p2r00–r05	2024-10-03 – 2024-12-11	TSE 25550 (rating 2): Updated Table 12 to add Items 4–12, conditionals C.1–C.3, and an Inter-Layer Dependency column.
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