Battery Service (BAS)

Bluetooth® **Implementation Conformance Statement (ICS) Proforma**

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- ▪ **Prepared By:** BTI
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Contents

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	BAS v1.0	[1]	C.1
2	BAS v1.1	[2]	C.1

C.1:   Mandatory to support one and only one.

2.2 Transports

Table 1: Transport Requirements

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

C.1:   Excluded for this Service IF CORE 41/2 "LE Core Configuration" OR CORE 40/1 "Core-Controller".

C.2:   Excluded for this Service IF CORE 41/1 "BR/EDR Core Configuration" OR CORE 40/1 "Core-Controller".

C.3:   Mandatory to support at least one.

2.3 Service requirements

Table 2: Service Requirements

Item	Capability	Reference	Status
1	Battery Service	[1] 2	M
2	Battery Service, Multiple Instances	[1] 3.1.2.1	O
3	Battery Level Characteristic	[1] 3.1	M
4	Battery Level Characteristic Presentation Format Descriptor	[1] 3.1.2.1	C.1
5	No longer used	N/A	N/A
6	SDP Interoperability	[1] 5	C.2
7	Battery Level Status Characteristic	[2] 3.2	O
8	Estimated Service Date Characteristic	[2] 3.3	C.3
9	Battery Energy Status Characteristic	[2] 3.5	C.3
10	Battery Time Status Characteristic	[2] 3.6	C.3
11	Battery Information Characteristic	[2] 3.9	C.3
12	Manufacturer Name String Characteristic	[2] 3.10	O
13	Model Number String Characteristic	[2] 3.11	O
14	Serial Number String Characteristic	[2] 3.12	C.3
15	Battery Critical Status Characteristic	[2] 3.4	C.3
16	Battery Health Status Characteristic	[2] 3.7	C.3
17	Battery Health Information Characteristic	[2] 3.8	C.4
18	Battery Level	[2] 3.2.1.4	C.3

Item	Capability	Reference	Status
19	Additional Status	[2] 3.2.1.5	C.3
20	External Source Power	[2] 3.5.1.2	C.5
21	Present Voltage	[2] 3.5.1.3	C.5
22	Available Energy	[2] 3.5.1.4	C.5
23	Available Battery Capacity	[2] 3.5.1.5	C.5
24	Charge Rate	[2] 3.5.1.6	C.5
25	Available Energy at Last Charge	[2] 3.5.1.7	C.5
26	Time until Discharged on Standby	[2] 3.6.1.3	C.6
27	Time until Recharged	[2] 3.6.1.4	C.6
28	Battery Health Summary	[2] 3.7.1.2	C.4
29	Cycle Count	[2] 3.7.1.3	C.4
30	Current Temperature	[2] 3.7.1.4	C.4
31	Deep Discharge Count	[2] 3.7.1.5	C.4
32	Cycle Count Designed Lifetime	[2] 3.8.1.2	C.7
33	Min / Max Designed Operating Temperature	[2] 3.8.1.3	C.7
34	Battery Manufacture Date	[2] 3.9.1.3	C.8
35	Battery Expiration Date	[2] 3.9.1.4	C.8
36	Battery Designed Capacity	[2] 3.9.1.5	C.8
37	Battery Low Energy	[2] 3.9.1.6	C.8
38	Battery Critical Energy	[2] 3.9.1.7	C.8
39	Battery Chemistry	[2] 3.9.1.8	C.8
40	Nominal Voltage	[2] 3.9.1.9	C.8
41	Battery Aggregation Group	[2] 3.9.1.10	C.8
42	Notify or Indicate After Reconnection	[2] 3	C.9
43	Removable battery and can operate without battery	[2] 3, 3.2.1.2, 3.2.1.2.1	O
44	Wired External Power Source Supported	[2] 3.2, 3.2.1.2, 3.2.1.2.2	O
45	Wireless External Power Source Supported	[2] 3.2, 3.2.1.2, 3.2.1.2.3	O
46	Charging Supported	[2] 3.2	O

C.1:   Mandatory IF BAS 2/2 "Battery Service, Multiple Instances", otherwise Optional.

C.2:   Mandatory IF BAS 1/1 "Service supported over BR/EDR", otherwise Excluded.

C.3:   Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/7 "Battery Level Status Characteristic", otherwise Excluded.

C.4:   Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/16 "Battery Health Status Characteristic", otherwise Excluded.

C.5:   Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/9 "Battery Energy Status Characteristic", otherwise Excluded.

C.6:   Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/10 "Battery Time Status Characteristic", otherwise Excluded.

C.7: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/17 "Battery Health Information Characteristic", otherwise Excluded.

C.8: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/11 "Battery Information Characteristic", otherwise Excluded.

C.9: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 4/3 "Bondable mode" OR BAS 4/4 "Bonding procedure", otherwise Excluded.

Table 2a: Service Characteristics

Item	Capability	Reference	Status
1	Notify Battery Level characteristic	[1] 3.1	O
2	Battery Service, Multiple Instances	[2] 3.1.2.1	O
3	Notify Battery Level Status	[2] 3.2	C.1
4	Notify Estimated Service Date	[2] 3.3	C.2
5	Notify Battery Energy Status	[2] 3.5	C.3
6	Notify Battery Time Status	[2] 3.6	C.4
7	Notify Battery Health Status	[2] 3.7	C.16
8	Indicate Battery Level Status	[2] 3.2	C.5
9	Indicate Estimated Service Date	[2] 3.3	C.6
10	Indicate Battery Energy Status	[2] 3.5	C.7
11	Indicate Battery Time Status	[2] 3.6	C.8
12	Indicate Battery Information	[2] 3.9	C.9
13	Indicate Manufacturer Name String	[2] 3.10	C.10
14	Indicate Model Number String	[2] 3.11	C.11
15	Indicate Serial Number String	[2] 3.12	C.12
16	Broadcast Battery Level Status	[2] 3.2	C.5
17	Indicate Battery Critical Status	[2] 3.4	C.13
18	Indicate Battery Health Status	[2] 3.7	C.14
19	Indicate Battery Health Information	[2] 3.8	C.15

C.1: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/7 "Battery Level Status Characteristic", otherwise Excluded.

C.2: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/8 "Estimated Service Date Characteristic", otherwise Excluded.

C.3: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/9 "Battery Energy Status Characteristic", otherwise Excluded.

C.4: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/10 "Battery Time Status Characteristic", otherwise Excluded.

C.5: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/7 "Battery Level Status Characteristic" AND BAS 1/2 "Service supported over LE", otherwise Excluded.

C.6: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/8 "Estimated Service Date Characteristic", otherwise Excluded.

C.7: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/9 "Battery Energy Status Characteristic" AND BAS 2/7 "Battery Level Status Characteristic", otherwise Optional IF BAS 2/9 "Battery Energy Status Characteristic", otherwise Excluded.

C.8: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/10 "Battery Time Status Characteristic", otherwise Excluded.

C.9: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/11 "Battery Information Characteristic", otherwise Excluded.

C.10: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/12 "Manufacturer Name String Characteristic", otherwise Excluded.

C.11: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/13 "Model Number String Characteristic", otherwise Excluded.

C.12: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/14 "Serial Number String Characteristic", otherwise Excluded.

C.13: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/15 "Battery Critical Status Characteristic", otherwise Excluded.

C.14: Excluded IF BAS 0/1 "BAS v1.0", otherwise Optional IF BAS 2/16 "Battery Health Status Characteristic", otherwise Excluded.

C.15: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/17 "Battery Health Information Characteristic", otherwise Excluded.

C.16: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2/16 "Battery Health Status Characteristic", otherwise Excluded.

2.4 GATT requirements

Table 3: GATT Requirements

Item	Capability	Reference	Status	Inter-Layer Dependency
1	No longer used	N/A	N/A	N/A
2	GATT Server over BR/EDR	[1] 1.5	C.1	[3] GATT 1a/4
3	GATT Server over LE	[1] 1.5	C.2	[3] GATT 1a/3
4	Single Notification	[1] 1.4	C.4	[3] GATT 4/17
5	Read Characteristic Descriptor	[1] 1.4	M	[3] GATT 4/19
6	Write Characteristic Descriptor	[1] 1.4	C.3	[3] GATT 4/21
7	Indication	[2] 1.4	C.5	[3] GATT 4/18
8	Configured Broadcast	[2] 1.4	C.6	[3] GATT 4/24

C.1: Mandatory IF BAS 1/1 "Service supported over BR/EDR", otherwise not defined.

C.2: Mandatory IF BAS 1/2 "Service supported over LE", otherwise not defined.

C.3: Mandatory IF BAS 3/4 "Single Notification" OR BAS 3/7 "Indication" OR BAS 3/8 "Configured Broadcast", otherwise not defined.

C.4: Mandatory IF BAS 2a/1 "Notify Battery Level characteristic" OR BAS 2a/3 "Notify Battery Level Status" OR BAS 2a/4 "Notify Estimated Service Date" OR BAS 2a/5 "Notify Battery Energy Status" OR BAS 2a/6 "Notify Battery Time Status" OR BAS 2a/7 "Notify Battery Health Status", otherwise not defined.

C.5: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2a/8 "Indicate Battery Level Status" OR BAS 2a/9 "Indicate Estimated Service Date" OR BAS 2a/10 "Indicate Battery Energy Status" OR BAS 2a/11 "Indicate Battery Time Status" OR BAS 2a/12 "Indicate Battery Information" OR BAS 2a/13 "Indicate Manufacturer Name String" OR BAS 2a/14 "Indicate Model Number String" OR BAS 2a/15 "Indicate Serial Number String" OR BAS 2a/17 "Indicate Battery Critical Status" OR BAS 2a/18 "Indicate Battery Health Status" OR BAS 2a/19 "Indicate Battery Health Information", otherwise not defined.

C.6: Excluded IF BAS 0/1 "BAS v1.0", otherwise Mandatory IF BAS 2a/16 "Broadcast Battery Level Status" AND BAS 3/3 "GATT Server over LE", otherwise Optional.

2.5   GAP requirements

Table 4: GAP Requirements

Prerequisite: BAS 1/2 "Service supported over LE"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Central	[1] 1.3 [2] 1	C.1	[4] GAP 5/4
2	Peripheral	[1] 1.3 [2] 1	C.1	[4] GAP 5/3
3	Bondable mode	[1] 3.1.1, 4.1.1 [2] 3.1.1, 3.2.1, 3.5.1, 3.6.1	O	[4] GAP 24/2 OR GAP 34/2
4	Bonding procedure	[1] 3.1.1, 4.1.1 [2] 3.1.1, 3.2.1, 3.5.1, 3.6.1	O	[4] GAP 24/3 OR GAP 34/3

C.1:   Mandatory to support at least one.

2.6   SDP requirements

Table 5: SDP Requirements

Prerequisite: BAS 1/1 "Service supported over BR/EDR"

Item	Capability	Reference	Status
1	SDP record present for BAS	[1] 4	M
2–3	No longer used	N/A	N/A

3 References

[1]   Battery Service Specification, Version 1.0 or later

[2]   Battery Service Specification, Version 1.1

[3]   ICS Proforma for Generic Attribute Profile (GATT)

[4]   ICS Proforma for Generic Access Profile (GAP)

4   Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.0.r3	2011-12-13	Updated to include SDP record
1	1.01r0	2012-05-19	TSE 4672: New Table 2a. Table 2. Modify C.2
	1.0.2r00	2018-02-07	TSE 9945 (rating 1): Updated template and added Table 0.
2	1.0.2	2018-06-27	Approved by BTI. Prepared for TCRL 2018-1 publication.
	1.0.2ed2r00	2022-03-14 – 2022-04-07	TSE 18679 (rating 1): Editorials to align the document with the latest ICS template in anticipation of a future .Z release. Assigned publication number 2 to previous v1.0.2 and aligned the copyright page with v2 of the DNMD. Consistency checker editorials.
	1.0.2 edition 2	2022-04-25	Approved by BTI on 2022-04-25. Prepared for edition 2 publication.
	p3r00–r02	2022-08-10 – 2022-11-01	TSE 16904 (rating 2): Removed unused items (2/5 and related C.2). Updated status of 3/6 and text of C.3. Incorporated CR for BAS v1.1 updates from CR "BAS.ICS.1.1_CRr07". Added v1.1 to the Major Versions table, added items 7–46 and C.3–C.9 to Table 2, added items 2–19 and C.1–C.16 to Table 2a, added items 7 and 8 and C.4–C.6 to Table 3, and added new Table 4 for GAP requirements. Added SDP references. Conditioned new 1.1 ICS items in support of BAS 1.1.
3	p3	2022-12-27	Approved by BTI on 2022-11-15. BAS v1.1 adopted by the BoD on 2022-12-20. Prepared for publication.
	p4r00–r01	2023-04-05 – 2023-05-01	TSE 22588 (rating 2): Updated C.5 of Table 2a. Editorials to align the document with the latest ICS template. Deleted draft revision history comments prior to p0.
4	p4	2023-06-29	Approved by BTI on 2023-05-28. Prepared for TCRL 2023-1 publication.
	p5r00–r03	2023-08-16 – 2023-12-18	TSE 23437 (rating 2): Updated C.4 of Table 3 to account for BAS 2a/1 "Notify Battery Level characteristic". TSE 23643 (rating 2): Resolved SDP inter-layer dependencies. In Table 3, marked Item 1 as no longer used and updated the Capability and ILD values for Items 2 and 3. In Table 5, deleted the ILD column, updated the Capability value for Item 1, and marked Items 2 and 3 as no longer used. Updated the references.
5	p5	2024-07-01	Approved by BTI on 2024-04-21. Prepared for TCRL 2024-1 publication.

Publication Number	Revision Number	Date	Comments
	p6r00–r01	2024-11-08 – 2024-12-02	TSE 24823 (rating 2): Updated the capability value for Item 2/43 and the references for Items 2/43, 2/44, and 2/45.
6	p6	2025-02-18	Approved by BTI on 2024-12-23. Prepared for TCRL 2025-1 publication.
	p7r00–r01	2025-04-28 – 2025-04-30	TSE 27313 (rating 1): Updated the Status value for BAS 1/1 and BAS 1/2. In Table 1, added conditions C.1 and C.2 and renumbered C.1 as C.3.
7	p7	2025-07-08	Approved by BTI on 2025-06-15. Prepared for TCRL pkg100 publication.
	p8r00	2025-07-16	TSE 27532 (rating 1): Updated ILD in BAS 4/1 and BAS 4/2.
8	p8	2025-11-04	Approved by BTI on 2025-10-02. Prepared for TCRL pkg101 publication.
	p9r00–r01	2025-12-07 – 2025-12-29	TSE 28169 (rating 1): Updated the conditions in the transport table to make sure the layer is excluded when the design is an implementation of the Core-Controller Configuration by adding "OR CORE 40/1 "Core-Controller"" to an already excluded transport based on Core Configuration support.
9	p9	2026-02-17	Approved by BTI on 2026-01-21. Prepared for TCRL pkg102 publication.

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