

Ranging Profile (RAP)

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 (Ranging Responder)

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Version	Reference	Status
1	RAP v1.0	[1]	M

Table 0a: X.Y.Z Versions (Ranging Responder)

Table number reserved but not yet in use.

Table 1: X.Y Versions (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Version	Reference	Status
1	RAP v1.0	[1]	M

Table 1a: X.Y.Z Versions (Ranging Requester)

Table number reserved but not yet in use.

2.2 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 2.6	C.1
2	Profile supported over LE	[1] 2.6	C.2, C.3

C.1: Excluded for this Profile.

C.2: Excluded for this Profile IF CORE 41/1 “BR/EDR Core Configuration”.

C.3: Mandatory for this Profile.

2.3 Roles

Table 3: Role Requirements

Item	Role	Reference	Status
1	Ranging Responder	[1] 2.1	C.1
2	Ranging Requester	[1] 2.1	C.1

C.1: Mandatory to support at least one.

2.4 Ranging Responder role

2.4.1 Service references (Ranging Responder)

Table 4: Services Included in Ranging Responder

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Service	Reference	Status	Inter-Layer Dependency
1	Ranging Service	[1] 3	M	[2] RAS

2.4.2 Ranging Service (Ranging Responder)

Table 5: Main Features of Ranging Service

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Ranging Service UUID in AD Type field of Advertising Data	[1] 3.1.1	O	N/A
2	Real-time Ranging Data characteristic	[1] 3	O	[2] RAS 2/2
3	Abort Operation	[1] 3	O	[2] RAS 3/4
4	Set Filter	[1] 3	O	[2] RAS 3/5
5	Support multiple connected RREQ simultaneously	[1] 3.2.1	O	N/A

2.4.3 GAP requirements (Ranging Responder)

Table 6: GAP Requirements (Ranging Responder)

Prerequisite: RAP 3/1 “Ranging Responder”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4	C.1	[4] GAP 5/3 OR GAP 38/3
2	Minimum 128-bit entropy key	[1] 6.2	C.2	[4] GAP 25/13
3	LE Secure Connections	[1] 6.2	C.2	[4] GAP 27b/5
4	CS Initiator Role	[1] 2.4	C.3	[4] GAP 23a/1
5	CS Reflector Role	[1] 2.4	C.3	[4] GAP 23a/2
6	Out of Band	[1] 6.3	C.4	[4] GAP 27b/9
7	Central	[1] 2.4	C.1	[4] GAP 5/4 OR GAP 38/4
8	Minimum 128-bit entropy key	[1] 6.2	C.5	[4] GAP 35/13
9	LE Secure Connections	[1] 6.2	C.5	[4] GAP 37b/5
10	CS Initiator Role	[1] 2.4	C.6	[4] GAP 33a/1

Item	Capability	Reference	Status	Inter-Layer Dependency
11	CS Reflector Role	[1] 2.4	C.6	[4] GAP 33a/2
12	Out of Band	[1] 6.3	C.7	[4] GAP 37b/9

C.1: Mandatory to support at least one.

C.2: Mandatory IF RAP 6/1 “Peripheral”, otherwise not defined.

C.3: Mandatory to support at least one IF RAP 6/1 “Peripheral”, otherwise not defined.

C.4: Optional IF RAP 6/1 “Peripheral”, otherwise not defined.

C.5: Mandatory IF RAP 6/7 “Central”, otherwise not defined.

C.6: Mandatory to support at least one IF RAP 6/7 “Central”, otherwise not defined.

C.7: Optional IF RAP 6/7 “Central”, otherwise not defined.

2.5 Ranging Requester role

2.5.1 Service references (Ranging Requester)

Table 7: Services Included in Ranging Requester Role

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Capability	Reference	Status
1	Discover Ranging Service	[1] 4.3	M

2.5.2 Ranging Service (Ranging Requester)

Table 8: Discover Ranging Service Characteristics

Prerequisite: RAP 7/1 “Discover Ranging Service”

Item	Capability	Reference	Status
1	Discover Ranging Features characteristic	[1] 4.3.2	M
2	Read Ranging Features characteristic	[1] 4.3.2	M
3	Discover Real-time Ranging Data characteristic	[1] 4.4.1	O
4	Receive Real-time Ranging Data characteristic indications	[1] 4.4.1	C.1
5	Receive Real-time Ranging Data characteristic notifications	[1] 4.4.1	C.1
6	Discover On-demand Ranging Data characteristic	[1] 4.4.2	M
7	Receive On-demand Ranging Data characteristic indications	[1] 4.4.2	M
8	Receive On-demand Ranging Data characteristic notifications	[1] 4.4.2	M
9	Discover RAS Control Point characteristic	[1] 4.5	M
10	Write RAS Control Point characteristic	[1] 4.5.1	M
11	Receive RAS Control Point characteristic indications	[1] 4.5.2	M
12	Discover Ranging Data Ready characteristic	[1] 4.4.3	M
13	Receive Ranging Data Ready characteristic indications	[1] 4.4.3	M
14	Receive Ranging Data Ready characteristic notifications	[1] 4.4.3	O
15	Read Ranging Data Ready characteristic	[1] 4.4.3.1	O
16	Discover Ranging Data Overwritten characteristic	[1] 4.4.4	M
17	Receive Ranging Data Overwritten characteristic indications	[1] 4.4.4	M

Item	Capability	Reference	Status
18	Receive Ranging Data Overwritten characteristic notifications	[1] 4.4.4	O
19	Read Ranging Data Overwritten characteristic	[1] 4.4.4	O

C.1: Mandatory IF RAP 8/3 “Discover Real-time Ranging Data characteristic”, otherwise Excluded.

Table 9: RAS Control Point Procedures

Prerequisite: RAP 8/10 “Write RAS Control Point characteristic”

Item	Capability	Reference	Status
1	Get Ranging Data	[1] 4.5.1	M
2	ACK Ranging Data	[1] 4.5.1	M
3	Retrieve Lost Ranging Data Segments	[1] 4.5.1	O
4	Abort Operation	[1] 4.5.1.2	O
5	Set Filter	[1] 4.5.1.1	O

2.5.3 GATT requirements (Ranging Requester)

Table 10: GATT Requirements (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

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] 4.6	C.1	[3] GATT 3/2
3	Discover Primary Services by Service UUID	[1] 4.6	C.1	[3] GATT 3/3
4	Discover All Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/7
5	Find Included Services	[1] 4.6	M	[3] GATT 3/4
6	Discover All Characteristics of a Service	[1] 4.6	C.2	[3] GATT 3/5
7	Discover Characteristics by UUID	[1] 4.6	C.2	[3] GATT 3/6
8	Read Characteristic Value	[1] 4.6	M	[3] GATT 3/8
9	Write without Response	[1] 4.6	M	[3] GATT 3/12
10	Single Notification	[1] 4.6	M	[3] GATT 3/17
11	Indications	[1] 4.6	M	[3] GATT 3/18
12	Read Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/19
13	Write Characteristic Descriptors	[1] 4.6	M	[3] GATT 3/21

C.1: Mandatory to support at least one.

C.2: Mandatory to support at least one.

2.5.4 GAP requirements (Ranging Requester)

Table 11: GAP Requirements (Ranging Requester)

Prerequisite: RAP 3/2 “Ranging Requester”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4	C.1	[4] GAP 5/3 OR GAP 38/3
2	Minimum 128-bit entropy key	[1] 6.1, 6.1.1	C.2	[4] GAP 25/13
3	LE Secure Connections	[1] 6.1, 6.1.3	C.2	[4] GAP 27b/5
4	CS Initiator Role	[1] 2.4	C.3	[4] GAP 23a/1
5	CS Reflector Role	[1] 2.4	C.3	[4] GAP 23a/2
6	Out of Band	[1] 6.3	C.4	[4] GAP 27b/9
7	Central	[1] 2.4	C.1	[4] GAP 5/4 OR GAP 38/4
8	Minimum 128-bit entropy key	[1] 6.1, 6.1.1	C.5	[4] GAP 35/13
9	LE Secure Connections	[1] 6.1, 6.1.3	C.5	[4] GAP 37b/5
10	CS Initiator Role	[1] 2.4	C.6	[4] GAP 33a/1
11	CS Reflector Role	[1] 2.4	C.6	[4] GAP 33a/2
12	Out of Band	[1] 6.3	C.7	[4] GAP 37b/9

C.1: Mandatory to support at least one.

C.2: Mandatory IF RAP 11/1 “Peripheral”, otherwise not defined.

C.3: Mandatory to support at least one IF RAP 11/1 “Peripheral”, otherwise not defined.

C.4: Optional IF RAP 11/1 “Peripheral”, otherwise not defined.

C.5: Mandatory IF RAP 11/7 “Central”, otherwise not defined.

C.6: Mandatory to support at least one IF RAP 11/7 “Central”, otherwise not defined.

C.7: Optional IF RAP 11/7 “Central”, otherwise not defined.

3 References

- [1] Ranging Profile Specification, Version 1.0
- [2] ICS Proforma for Ranging Service (RAS)
- [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
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1	p1	2025-07-08	Approved by BTI on 2025-06-15. Prepared for TCRL pkg100 publication.

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