

Personal Area Networking Profile (PAN)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

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Contents

1	General principles	4
1.1	Implementation Under Test (IUT) identification	4
1.2	Enforcement of inter-layer dependencies	4
2	ICS declarations.....	5
2.1	Versions	5
2.2	Core Configuration.....	5
2.3	Roles	5
2.4	Network Access Point Role	5
2.5	Group Ad-Hoc network Role	7
2.5.1	Group Ad-Hoc Network Application Features	7
2.6	PAN User Role.....	8
2.6.1	PAN User Application Features	8
2.7	GAP requirements	8
2.8	SDP requirements.....	9
3	References	10
4	Revision history and acknowledgments	11

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	PAN v1.0	[1]	M

2.2 Core Configuration

Table 0a: Core Configuration Requirements

Item	Core Configuration	Reference	Status
1	Profile supported over BR/EDR	[1] 2.3	C.1, C.3
2	Profile supported over LE	[1] 2.3	C.2

C.1: Excluded for this Profile IF CORE 41/2 “LE Core Configuration” OR CORE 40/1 “Core-Controller”.

C.2: Excluded for this Profile.

C.3: Mandatory for this Profile.

2.3 Roles

Table 1: Role Requirements

Item	Role	Reference	Status
1	Network Access Point	[1] 2.4	C.1
2	Group Ad-hoc Network	[1] 2.4	C.1
3	PAN User	[1] 2.4	C.1

C.1: Mandatory to support at least one.

2.4 Network Access Point Role

Network Access Point Application Features

Table 2: NAP Application Features

Prerequisite: PAN 1/1 “Network Access Point”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Bluetooth Network Encapsulation Protocol	[1] 1, 2.3	M	[2] BNEP
2	Support BNEP Forwarding	[1] 5.4	M	N/A
3	Support Layer 2-Bridging between PAN and External Network	[1] 5.4	C.1	N/A
4	Support IP Forwarding between PAN and External Network	[1] 5.4	C.1	N/A
5	Support BNEP Packet Filtering	[1] 5.1, 5.2, 5.4	O	N/A
6	Support IPv4	[1] 6.1.1	C.2	N/A

Item	Capability	Reference	Status	Inter-Layer Dependency
6a	Supports operable routable IPv4 address	[1] 6.3.1	O	N/A
6b	Support link-local address configuration for IPv4	[1] 6.3.1	C.4	N/A
7	Support ping client for IPv4	[1] 6.1.1	O	N/A
8	Support DHCP Server for IPv4	[1] 6.2.1	O	N/A
9	Support DNS Resolver for IPv4	[1] 6.2.1	O	N/A
9a	Support LLMNR Sender for IPv4	[1] 6.4	C.5	N/A
9b	Support LLMNR Responder for IPv4	[1] 6.4	O	N/A
10	Support HTTP Client for IPv4	[1] N/A	O	N/A
11	Support WAP Client for IPv4	[1] N/A	O	N/A
12	Support IPv6	[1] 6.1.2	C.3	N/A
13	Support ping client for IPv6	[1] 6.1.2	O	N/A
14	Support DNS Resolver for IPv6	[1] 6.2.2	O	N/A
14a	Support LLMNR Sender for IPv6	[1] 6.4	C.6	N/A
14b	Support LLMNR Responder for IPv6	[1] 6.4	O	N/A
15	Support HTTP Client for IPv6	[1] N/A	O	N/A
16	Support WAP Client for IPv6	[1] N/A	O	N/A
17	Supports Connectable Mode	[1] 11.4	M	N/A
18	NAP Service Record	[1] 8.1.1	M	N/A
19	Support at least three PANUs	[1] 12.2	O	N/A
20	Support at least two PANUs	[1] 12.2	O	N/A

C.1: Mandatory to support at least one.

C.2: Mandatory IF PAN 2/7 “Support ping client for IPv4” OR PAN 2/8 “Support DHCP Server for IPv4” OR PAN 2/9 “Support DNS Resolver for IPv4” OR PAN 2/9a “Support LLMNR Sender for IPv4” OR PAN 2/9b “Support LLMNR Responder for IPv4” OR PAN 2/10 “Support HTTP Client for IPv4” OR PAN 2/11 “Support WAP Client for IPv4”, otherwise Optional.

C.3: Mandatory IF PAN 2/13 “Support ping client for IPv6” OR PAN 2/14 “Support DNS Resolver for IPv6” OR PAN 2/14a “Support LLMNR Sender for IPv6” OR PAN 2/14b “Support LLMNR Responder for IPv6” OR PAN 2/15 “Support HTTP Client for IPv6” OR PAN 2/16 “Support WAP Client for IPv6”, otherwise Optional.

C.4: Mandatory IF PAN 2/6 “Support IPv4” AND NOT PAN 2/6a “Supports operable routable IPv4 address”, otherwise Optional.

C.5: Optional IF PAN 2/6 “Support IPv4”, otherwise Excluded.

C.6: Optional IF PAN 2/12 “Support IPv6”, otherwise Excluded.

2.5 Group Ad-Hoc network Role

2.5.1 Group Ad-Hoc Network Application Features

Table 3: GN Application Features

Prerequisite: PAN 1/2 “Group Ad-hoc Network”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Bluetooth Network Encapsulation Protocol	[1] 1, 2.3	M	[2] BNEP
2	Support BNEP Forwarding	[1] 5.4	M	N/A
3	Support BNEP Packet Filtering	[1] 5.1, 5.2, 5.4	O	N/A
4	Support IPv4	[1] 6.1.1	C.1	N/A
5	Support ping client for IPv4	[1] 6.1.1	O	N/A
6–7	No longer used	N/A	N/A	N/A
7a	Support LLMNR Sender for IPv4	[1] 6.4	C.3	N/A
7b	Support LLMNR Responder for IPv4	[1] 6.4	O	N/A
8	Support HTTP Client for IPv4	[1] N/A	O	N/A
9	Support WAP Client for IPv4	[1] N/A	O	N/A
10	Support IPv6	[1] 6.1.2	C.2	N/A
11	Support ping client for IPv6	[1] 6.1.2	O	N/A
12	No longer used	N/A	N/A	N/A
12a	Support LLMNR Sender for IPv6	[1] 6.4	C.4	N/A
12b	Support LLMNR Responder for IPv6	[1] 6.4	O	N/A
13	Support HTTP Client for IPv6	[1] N/A	O	N/A
14	Support WAP Client for IPv6	[1] N/A	O	N/A
15	Supports Connectable Mode	[1] 11.4	M	N/A
16	GN Service Record	[1] 8.1.1	M	N/A
17	Support at least three PANUs	[1] 12.2	O	N/A
18	Support at least two PANUs	[1] 12.2	O	N/A

C.1: Mandatory IF PAN 3/5 “Support ping client for IPv4” OR PAN 3/7a “Support LLMNR Sender for IPv4” OR PAN 3/7b “Support LLMNR Responder for IPv4” OR PAN 3/8 “Support HTTP Client for IPv4” OR PAN 3/9 “Support WAP Client for IPv4”, otherwise Optional.

C.2: Mandatory IF PAN 3/11 “Support ping client for IPv6” OR PAN 3/12a “Support LLMNR Sender for IPv6” OR PAN 3/12b “Support LLMNR Responder for IPv6” OR PAN 3/13 “Support HTTP Client for IPv6” OR PAN 3/14 “Support WAP Client for IPv6”, otherwise Optional.

C.3: Optional IF PAN 3/4 “Support IPv4”, otherwise Excluded.

C.4: Optional IF PAN 3/10 “Support IPv6”, otherwise Excluded.

2.6 PAN User Role

2.6.1 PAN User Application Features

Table 4: PANU Application Features

Prerequisite: PAN 1/3 “PAN User”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Bluetooth Network Encapsulation Protocol	[1] 1, 2.3	M	[2] BNEP
2	Support IPv4	[1] 6.1.1	C.1	N/A
3	Support ping client for IPv4	[1] 6.1.1	O	N/A
4	Support DHCP Client for IPv4	[1] 6.2.1	O	N/A
5	Support DNS Requester for IPv4	[1] 6.2.1	O	N/A
5a	Support LLMNR Sender for IPv4	[1] 6.4	C.2	N/A
5b	Support LLMNR Responder for IPv4	[1] 6.4	O	N/A
6	Support HTTP Client for IPv4	[1] N/A	O	N/A
7	Support WAP Client for IPv4	[1] N/A	O	N/A
8	Support IPv6	[1] 6.1.2	C.1	N/A
9	Support ping client for IPv6	[1] 6.1.2	O	N/A
10	Support DNS Requester for IPv6	[1] 6.2.2	O	N/A
10a	Support LLMNR Sender for IPv6	[1] 6.4	C.3	N/A
10b	Support LLMNR Responder for IPv6	[1] 6.4	O	N/A
11	Support HTTP Client for IPv6	[1] N/A	O	N/A
12	Support WAP Client for IPv6	[1] N/A	O	N/A
13	Support connections to multi-user NAPs/GNs	[1] 10.3	O	N/A
14	Supports Connectable Mode	[1] 11.4	O	N/A
15	PANU Service Record	[1] 8.1.1	O	N/A

C.1: Mandatory to support at least one.

C.2: Optional IF PAN 4/2 “Support IPv4”, otherwise Excluded.

C.3: Optional IF PAN 4/8 “Support IPv6”, otherwise Excluded.

2.7 GAP requirements

Table 5: GAP Requirements

Item	Capability	Reference	Status	Inter-Layer Dependency
1	General discoverable mode	[1] 3.2	C.1	[3] GAP 1/3

C.1: Mandatory IF PAN 1/1 “Network Access Point” OR PAN 1/2 “Group Ad-hoc Network”, otherwise Optional.

2.8 SDP requirements

Table 6: SDP Requirements

Item	Capability	Reference	Status	Inter-Layer Dependency
1	SDP record present for PAN	[1] 8.1	C.1	N/A
2	Server	[1] 8.1	C.2	[4] SDP 1b/1
3	ProtocolDescriptorList	[1] 8.1	C.2	[4] SDP 9/2
4	LanguageBaseAttributeIdList	[1] 8.1	C.2	[4] SDP 9/6
5	BluetoothProfileDescriptorList	[1] 8.1	C.2	[4] SDP 9/14
6	ServiceName	[1] 8.1	C.2	[4] SDP 9/9
7	ServiceDescription	[1] 8.1	C.2	[4] SDP 9/10

C.1: Mandatory IF PAN 1/1 “Network Access Point” OR PAN 1/2 “Group Ad-hoc Network”, otherwise Optional.

C.2: Mandatory IF PAN 6/1 “SDP record present for PAN”, otherwise not defined.

3 References

- [1] Personal Area Networking (PAN) Profile Specification, Version 1.0
- [2] ICS Proforma for Bluetooth Network Encapsulation Protocol (BNEP)
- [3] ICS Proforma for Generic Access Profile (GAP)
- [4] ICS Proforma for Service Discovery Protocol (SDP)

4 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	1.0	2003-02-14	ICS Adopted
	1.0.1r1	2005-02-11	Editorial and format changes. Change document numbering.
1	1.0.1	2005-02-18	Prepare for publication.
	1.0.2r0	2005-09-29	TSE 823: Tables 2&3 to optionally support > 1 PANU
2	1.0.2	2005-10-12	Prepare for publication.
	1.0.3r0-2	2006-11-16- 2007-01-08	TSE 1796: Table 2: Add 2 rows 6a and 6b, and footnote C4 for 6b. TSE 1894: Changes Tables 2, 3, and 4 to show LLMNR Sender and Responder support for IPv4 for IPv6 Changed adopted spec version from 1.1 to 1.0 Removed redundant reference section (MS)
3	1.0.3	2007-01-08	Prepare for publication.
	1.0.4r0	2008-02-01	TSE 2159: Table 3, 4, 5: Support for LLMNR Sender conditional
4	1.0.4	2008-04-01	Prepare for publication.
5	1.0.4a	2008-07-01	TSE 2632: Removed table number from first table introduced in v1.0.3
	1.0.5r0-1	2008-09-01 – 2008-12-01	TSE 2637; Table 2/9a, 14a: change footnotes, re-implement TSE 2632 with correct table numbering.
6	1.0.5	2008-12-01	Prepare for publication.
	1.0.6r0-1	2009-04-29 – 2009-06-04	TSE 2722: Clarification to TSE 2159 Tables 2, 3, 4 Correction to Table 4, C.2
7	1.0.6	2009-08-10	Prepare for publication.
	1.0.7r0	2011-11-10	TSE 4473: Table 1a; Add rows 3a, 3b TSE 4519: Table 2/8: modify, Table 3/6: remove
8	1.0.7	2012-03-30	Prepare for publication.
	1.0.8r01	2015-01-26	Update to current ICS template and conventions. TSE 6196: Add pre-requisites to tables.
	1.0.8r02	2015-06-01	Updated terminology from “PICS” to “ICS”
9	1.0.8	2015-07-14	Prepared for TCRL 2015-1 publication
	1.0.9r00	2015-10-05	TSE 6489: Added new item 1a/3c (BNEP Compressed Packet Transmission Destination Only); updated conditionals for items 1/3 and 1/3a.
10	1.0.9	2015-12-22	Prepared for TCRL 2015-2 publication.
	1.0.10r00	2018-04-04	TSE 10573 (rating 1): Template Conversion.
11	1.0.10	2018-07-01	Approved by BTI. Prepared for TCRL 2018-1 publication.

Publication Number	Revision Number	Date	Comments
	1.0.11r00	2018-10-03	TSE 10899 (rating 4): ICS: Revised Capability for Items 2/9, 2/14, 4/5, and 4/10. Deleted Items 3/7 and 3/12.
12	1.0.11	2018-11-21	Approved by BTI. Prepared for TCRL 2018-2 publication.
	1.0.12r00	2019-09-16	TSE 4382 (rating 2): Updated items in Tables 2, 3, and 4 to reflect that LLMNR is only an informational RFC. Updated template and copyright/legal info.
13	1.0.12	2020-01-07	Approved by BTI on 2019-11-17. Prepared for TCRL 2019-2 publication.
	p14r00-r01	2021-08-10 – 2021-12-06	TSE 17303 (rating 1): Split the BNEP ICS (Table 1a) from the PAN ICS into a separate document. Performed template-related editorials and formatting fixes. Performed consistency checker editorials. Updated copyright page to align with v2 of the DNMD.
14	p14	2022-01-25	Approved by BTI on 2021-12-19. Prepared for TCRL 2021-2 publication.
	p15r00	2023-10-19	TSE 23952 (rating 2): To address missing GAP and SDP ILDs, added the GAP and SDP ICSs to and removed the BNEP spec from the References section and updated the cross-refs throughout the doc. Removed “note” text at the beginning of the Network Access Point Role section. Updated conditional language throughout to current conventions. Added new Table 5 with new item 5/1, and new Table 6 with new items 6/1–6/7.
15	p15	2024-07-01	Approved by BTI on 2024-05-22. Prepared for TCRL 2024-1 publication.
	p16r00-r01	2025-02-27 – 2025-04-28	TSE 27012 (rating 2): Added “Versions” and “Core Configuration” sections and Tables 0 and 0a. Updated phrasing and formatting for 3/6, 3/7, and 3/12. Updated “References” section for PAN version number. Applied current ICS template. Deleted draft revision history comments prior to p0.
16	p16	2025-07-08	Approved by BTI on 2025-05-30. Prepared for TCRL pkg100 publication.
	p17r00	2025-12-05 – 2026-01-08	TSE 28346 (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.
17	p17	2026-02-17	Approved by BTI on 2026-01-22. Prepared for TCRL pkg102 publication.

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Conrad Maxwell	Conexant Systems
Mark Rison	CSR
Allan Bogeskov	Ericsson
Theo Borst	Ericsson
Per Johansson	Ericsson
Tero Kauppinen	Ericsson
Martin Kitchen	Ericsson
Jesper Krogh	Ericsson
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Mike Foley	Microsoft Corporation
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Brian Redding	Motorola Inc.
Carmen Kuhl	Nokia Corporation
Jaakko Lipasti	Nokia Corporation
James Scales	Nokia Corporation
Markus Schetelig	Nokia Corporation
Sander van Valkenburg	Nokia Corporation
Steven Kenny	Norwood Systems
Rebecca Ostergaard	Norwood Systems
Graeme Reid	Norwood Systems
Diego Melpignano	Philips Inc.
Darrell Goff	Rappore
Simon Harrison	Red-M Communications Ltd
Daniel Shaw	Red-M Communications Ltd
Pravin Bhagwat	ReefEdge, Inc.
Daryl Hlasny	Sharp Laboratories of America Inc.

Name	Company
Leonard Ott	Socket Communications Inc.
Wilhelm Hagg	Sony Corporation
Johannes Loebbert	Sony Corporation
Takashi Sasai	Sony Corporation
Mike Blackstock	Synchropoint Wireless, Inc.
Tatuya Jinmei	Toshiba Corporation
Kazuo Nogami	Toshiba Corporation
Yosuke Tajika	Toshiba Corporation
Jim Hobza	Widcomm Inc.
Ravindranath Singamneni	Widcomm Inc.