Infineon Linux Bluetooth release notes

About this document

Scope and purpose

This document offers a summary of the Bluetooth® firmware release, highlighting known bug fixes and updated specification specific to the AIROC™ combo chip (CYW4373, CYW43439, CYW5557X) in the latest Linux release. It also includes information on the proprietary Bluetooth® stack (AIROC ™ Bluetooth® Stack) and related code examples.

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1 Overview

1.1 High Level Summary

This document captures New Features, Bug Fixes done for CYW4373, CYW43439, CYW5557x on Bluetooth® Linux Software Release.

This Software Release includes the following:

1. Compliant with the recent Blutooth specifications.
2. Bug fixes.
3. Bluetooth® stack update.
4. Code examples.

Note: Contact the local Infineon Technologies distribution channel (FAE or local sales representative) to get the latest hardware and software files.

1.2 Firmware Revision

Device	Bluetooth® Firmware Version
CYW4373	001.001.025.0118.0000
CYW55573/2/1	001.002.087.0254.0000
CYW43439	001.003.016.0063.0000

AIROC Bluetooth Stack v3.7.1 validated on Linux Kernel version: 5.15.61 with RPI CM4

2 Summary of changes

This section includes issues and solutions for changes that may impact various designs.

2.1 CYW4373

2.1.1 Bug Fixes

- Bluetooth® Certification:
    - Fix for mismatch in the Bluetooth® version in LL_version_IND PDU.
    - Fixed error code being different while rejecting SCO Connection request when AES-CCM encryption is enabled.
    - Failing to reject or to accept the role switch fixed.
    - Fixed failing to terminate the connection upon receiving the unexpected LL PDU packet

2.1.2 Known issues: NA

2.2 CYW43439

2.2.1 Bug Fixes:

- Bluetooth® Certification:
    - Fixed LL feature missmatch according to ICS.

2.2.2 Known issues:

- Bluetooth® Scatternet: Lower BR/EDR Throughputs observed with 7 ACL connections.
- BLE Dual Mode: Low TxRx MOS observed in WBS throughput testing
- 2nd SCO connection failing with “Connection Rejected due to Limited Resources” in BR mode.

2.3 CYW5557x

2.3.1 Bug Fixes

- Fix for LE ACL connection issues.
- Bug fixes in BLE stack specific to Bluetooth® 5.2 features
- Certified BTSTACK compliance to TCRL November 2023.

2.3.2 Known issues:NA

2.4 BT-STACK updates - v3.7.1

- Supports HCI_LE_Set_Extended_Advertising_Parameters that’s part of BT Core Spec 5.4
- New APIs added (See API documentation for details):

Summary of changes

  - *wiced_bt_gatt_server_enable_caching*: Enables GATT database hashing calculations on the server.Required to called for servers which need support for robust caching.
  - *wiced_bt_gatt_server_enable_signing*: Enables code for enabling and checking data signing on the server and client.

- Optimised the stack library code size. Relevant stack code that is used by application is included in the linked image.

  Applications which do not create GATT/ACL connections or those which do not need SMP may override the default initializations done in the stack by defining the macro DISABLE_DEFAULT_BTSTACK_INIT in the applicatin Makefile. #Set DISABLE_DEFAULT_BTSTACK_INIT=1 DEFINES+=DISABLE_DEFAULT_BTSTACK_INIT=1

  GATT Server applications which need to implement GATT Robust Caching will need to invoke wiced_bt_gatt_server_enable_caching in the BTM_ENABLED_EVT.

  GATT applications work with signed data will need to invoke wiced_bt_gatt_enable_signing in the BTM_ENABLED_EVT

- Bug fixes for A2DP Sink related to certification. (A2DP/SNK/AVP/BI-20-C, A2DP/SNK/AVP/BI-10-C failures)
- Updated document for following APIs -
  - *wiced_bt_l2cap_enable_update_ble_conn_params*
  - *wiced_bt_avdt_write_req*
  - *wiced_bt_l2cap_update_ble_conn_params*
- Fix to Correct macro names used for S=2 and S=8 coding in *wiced_bt_ble.h*

3 Bluetooth® Linux code example and supported chips

Code Example	Feature Demonstration	Supported Chips
LE Audio CIS Source	Implement the Unicast Source application using BTSTACK and LE-Audio profile library	CYW55573/CYW55572/CYW55571
LE Audio CIS Sink	Implement the Unicast Sink application using BTSTACK and LE-Audio profile library	CYW55573/CYW55572/CYW55571
LE Audio BIS Source	Demonstrates the ability of LE Audio broadcast	CYW55573/CYW55572/CYW55571
LE Audio BIS Sink	Demonstrates the ability to receive LE Audio broadcast Compatible with Google LC3 codec	CYW55573/CYW55572/CYW55571
Linux BT Find me	Demonstrates the Find Me profile which defines the behavior when a button is pressed on one device to cause an alerting signal on a peer device.	CYW55573/CYW55572/CYW55571
Linux BT hello sensor	Demonstrates GATT database and device configuration initialization, sending data to the client and processing write requests from the client	CYW55573/CYW55572/CYW55571 CYW43439,CYW4373
Linux BT WiFi onboarding	Demonstrates feature that enables devices to connect to a Wi-Fi access point without requiring a physical interface.	CYW55573/CYW55572/CYW55571 CYW43439,CYW4373
Linux BT Headset	Multiple profile CE which demonstrates the use cases and ability of audio-related functions like A2DP,AVRCP CT,HFP.	CYW55573/CYW55572/CYW55571
Linux BT SPP	Two devices can establish a wireless communication link that emulates a traditional serial port connection	CYW43439,CYW4373

3.1 Changelogs for Linux Bluetooth® Code Examples

- Introduced new LE Audio code example support for CYW5557x
- BTSTACK version updated to v3.7.1
- Added more chip support to existing code examples.

3.2 Bluetooth® Libraries

Libraries and middleware	Library details
bluetooth-linux	The bluetooth-Linux is the adaptation layer (porting layer) between the Linux BT application code example and Infineon's btstack running on the Linux based platforms. The porting layer provides Bluetooth® stack initialization and implements platform interfaces to provide OS, memory services and enables communication between the BTSTACK and the BT controller.
bt-audio-profiles	This Library has source and header files for A2DP, AVRC, HFP and SPP profiles
btsdk-gfps	This library has source and header files for Google Fast Pairing Service
btstack	BTSTACK is Cypress's Bluetooth® Host Protocol Stack implementation. The stack is optimized to work with Cypress/Infineon Bluetooth® controllers. The BTSTACK supports Bluetooth® BR/EDR and BLE core protocols.
le-audio-profiles-linux	This library provides implementation of various LE Audio Profiles, GATT Inferface utility for LE Audio Code example, Audio Module library and ISOC data handler interface.
fw	This folder has different FW files for the AIROC™ combo chip (CYW4373, CYW43439, CYW5557X)

4 Documentation

Please refer the below documents for more details:

Document Title	Scope
MBT tool	The manufacturing Bluetooth® test tool (MBT) is used to test and verify the RF performance of the Cypress Bluetooth® Classic and Bluetooth® Low Energy (BLE) devices on Linux platforms. https://github.com/Infineon/mbt/tree/main/docs
AIROC Bluetool	AIROC™ Bluetooth® Test and Debug Tool is a GUI tool for testing and debugging Infineon Bluetooth devices. AIROC™ Bluetooth® Test and Debug Tool connects to the Bluetooth devices at HCI protocol layer and currently supports HCI UART and HCI USB transport interfaces. The tool allows user to send Bluetooth HCI commands and receive Bluetooth HCI events from the Bluetooth controller of the connected devices. https://www.infineon.com/cms/en/design-support/tools/utilities/wireless-connectivity/airoc-bluetooth-test-and-debug-tool/

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Revision history

Revision	Date	Description of Change
**	2024-02-29	Initial Release

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Do you have a question about this document?

Email: erratum@infineon.com

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