Chuanqi Sun

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🎓 Master in EE   🏛 Southeast University   🏠 Shandong •Weifang   🏢 Realsil(subsidiary of Realtek)

Highly-motivated Master in EE with solid foundation of software development. Familiar with communication protocol design and implementation, interested in wireless protocols in general and bluetooth procotol especially, enthusiastic about computer and network technologies. Familiar with multi-threaded programming and common eventloop model and libraries. With 10 years experience in Linux, skilled in Shell and C programming, have a solid knowledge of operating system. Passionate about open source and share code on my GitHub.

🔧 Competences & Languages

Operating Systems	🐧 (Arch)Linux (10 years)
Programming Lang	C/C++, Shell, Python
Tools	SSH, Git, Make(autotools), Vi
Software libraries	Glib,DBus,Bluez,linux-kernel, libsbc, bluez-alsa
HW interfaces	USB, Uart, SDIO, PCM(I2S)
🔤 **Languages**	**English** — reading & writing (solid); listening & speaking (conversant)

🎓 Education

June 2016 September 2013	School of Integrated Circuit, **Southeast University** Master in software development
June 2013 September 2009	College of EE and Information, **SiChuan University** Bachelor in Department of Automation

💼 Work Experience

Now 2016.07	Software development for Linux Bluetooth Stack @ Realsil Semi. Corp. ❯ responsible for development and maintainance of Bluez ❯ responsible for customization of Bluez ❯ responsible for BQB qualification of Bluez

</> Working Contents

1. Implement XiaoMi mijia_ble_api based on Bluez. Implement ATT protocol and GATT procedures based on l2cap socket offered by kernel and mainloop framework offered by Bluez, including decoding and encoding of ATT PDU, implementation of attribute table.

2. Port proprietary mesh library to linux platform based on bluez.

   (a) Provide timer, queue, memory mgmt facilities used by mesh lib on linux.

   (b) Write Makefiles to organize code compilation.

   (c) Implement the mesh ATT bearer for mesh lib

3. Linux Bluetooth stack backporting. provide net/bluetooth and driver/bluetooth released on newer kernels backported for usage on older kernels.

   (a) Write Makefile for standalone kernel module bluetooth.ko and others, such as rfcomm.ko, bnep.ko, hidp.ko etc.

   (b) Fix compilation error to adapt to facilities provided by older kernel, such as incompatible socket interface, workqueue interface etc.

4. BQB Test for Bluez

   (a) Familiarize with bluetooth core protocols(hci,l2cap,rfcomm,avctp,avdtp,att) and their implementions in Bluez.

   (b) Patch Bluez for test cases that fails.

   (c) Handle similar issues faced by customers in their qualification process.

5. Implement HCI Transport Layer for SDIO interface on linux(btsdio driver development)

   (a) Analyze firmware file for controller chip, download patch code to controller using verdor-defined HCI commands/events.

   (b) Send/recieve HCI packets(command/event/acl data/sco data) to/from SDIO bus using CMD52/CMD53, integrating host stack and controller as a workable bluetooth system.

6. (MCU+rtos)Implement Mass Storage Class(usb device) on rtl8763 based on a USB1.2 PHY.

   (a) Implement required SCSI commands such as INQUIRY, TEST UNIT READY, READ CAPACITY(6), READ(6), WRITE(6), decode them, read/write flash accordingly. making rtl8763 a USB mass storage device.

7. (stm32 + freertos + rtk proprietary bluetooth stack)Implement HOGP host and usb hid device at the same time. this combination make it possible for old TVs which do not have ble chip inside to use ble RCU.

   (a) Implement HOGP client based on rtk bluetooth stack. Able to discover service/characteristisc/descriptor on the RCU, and perform various gatt procedures according to HOGP spec.

   (b) Implement USB HID Class using stm32 firmware library, making stm32 behave as HID device, transfer HOGP report to USB Host.

8. Add HIDP profile(device) support for Bluez.

   (a) Create appropriate report descriptor according to HID usage table and customer needs.

   (b) Create SDP record according to HIDP spec and register the record to SDP server in bluez.

   (c) Setup an eventloop to capture keyboard input and relay it to HID Host(Windows,Android,iOS...) when connected.

◎ Interested Areas

> Embedded Linux software development, either in userspace or kernel space.
> Wireless communication protocol analysis and implementation, such as WiFi, Zigbee, Bluetooth etc.
> System bring up, system integration, and bsp/driver development for embedded devices.
> Very eager to learn new areas with solid ability to learn various technical specifications.