Open BMC Development Series (V) Adding i2c Support


```
i2c是控制总线的一种，用于控制器与部件的通信。BMC使用i2c进行通讯控制的通常有：传感器，LED灯，PMBus命令。这里我是以控制LED灯，vdd，sensor三种场景。
```

1. Preparation of i2c

First, we need to load the i2c bus. According to the hardware design, we add the i2c configuration to the device tree as follows:

If there is an electronically erasable programmable read-only register in i2c, you can add the eeprom configuration option under the corresponding i2c as follows:

```
&i2c7 {
    // BMC FRU
    status = "okay";

    eeprom@57 {
        compatible = "atmel,24c02";
        reg = <0x57>;
        wp-gpios = <&gpio ASPEED_GPIO(C, 4) GPIO_ACTIVE_LOW>;
    };
};
```

Recompile, and you can load the I2C content in the new BMC image. You can view the currently available i2c bus locally through i2cdect -y -l.

2. Control LED lights

2.1 Sort out the LED control commands and set the LED on and off according to the corresponding control commands. For example, the command to control one of the LED lights is as follows:

bash

```
i2c-test -b 9 -s 0x10 -w -d 0x84 0x7f
```



```
-b  9 表示 使用i2c 9
-s 0x10 表示指定地址0x10位置。
-w 往0x10中只写入
-d 写入的数据
```

2.2 Conversion command

Since openbmc does not have a built-in i2c-test command, but i2c has an i2ctransfer command, after converting the above i2c-test command, we can get

bash

```
i2ctransfer -y 9 w2@0x10 0x84 0x7f
```

-y means no prompt interaction
9 means i2c9
w2 means write 2 bytes
@0x10 Write the following bytes at address 0x10

2.3 Test the LED. Enter the corresponding command to complete the LED control test. The i2ctransfer function can be called at the code level.

3. Control voltage

The voltage setting includes setting the startup voltage and setting the working voltage.

3.1 Sorting out the vdd command

To set the vboot voltage, according to the communication specification with the hardware, take reading the vboot voltage as an example, the command is:

Read Vout Mode (the return value represents the voltage adjustment accuracy: 0x21 means 5mv/step; 0x22 means 10mv/step):

```bash
i2c-test -b 5 -s 0x62 -m 1 -w -d 0x00 0x00//切换page
i2c-test -b 5 -s 0x62 -m 1 -rc 1 -d 0x20
```

3.2 Same as 2.2, command conversion

```bash
i2ctransfer -y 5 w2@0x62 0x00 0x00
i2ctransfer -y 5 w1@0x62 0x20 r1
```

After executing the command, the corresponding voltage value can be obtained.

4. Control Sensors

The sensor documentation has not yet been compiled, and this chapter will be added later.

Finally: Liking is a virtue, following is fate, collecting is affirmation, you can reward me as you like, your encouragement is part of the goodness in my world, I love you!