OpenIPMC

General Updates

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SPRACE

OpenIPMC main project

- New sensor template for “generic analog sensor”

```
85    // PIM400 temperature sensor
86    threshold_list[0] = 0;    // Lower Non Recoverable  NOT USED
87    threshold_list[1] = 0;    // Lower Critical         NOT USED
88    threshold_list[2] = 0;    // Lower Non Critical     NOT USED
89    threshold_list[3] = 41;   // Upper Non Critical     30.36°C
90    threshold_list[4] = 46;   // Upper Critical         40.16°C
91    threshold_list[5] = 0;    // Upper Non Recoverable  NOT USED
92    create_generic_analog_sensor_1( TEMPERATURE,
93                                    DEGREES_C,
94                                    196,            // y = 1.961*x - 50 = (196*x - 50*100)*0.01
95                                    -50,            //   < -------------------------'' | |  |  |
96                                    2,              //   < ---------------------------'-'  |  |
97                                    -2,             //   < -----------------------------------'--'
98                                    UPPER_NON_CRITICAL | UPPER_CRITICAL,
99                                    threshold_list,
100                                   "TEMP PIM400",
101                                   &sensor_reading_temp_pim400 );
102
```

- Handle Switch issues addressed
  - Luis Ardila reported a failure in handçe switch: IPMC freezes when handle is closed immediately after boot: FIXED
  - IPMC ignores handle closed after boot: FIXED

OpenIPMC-FW

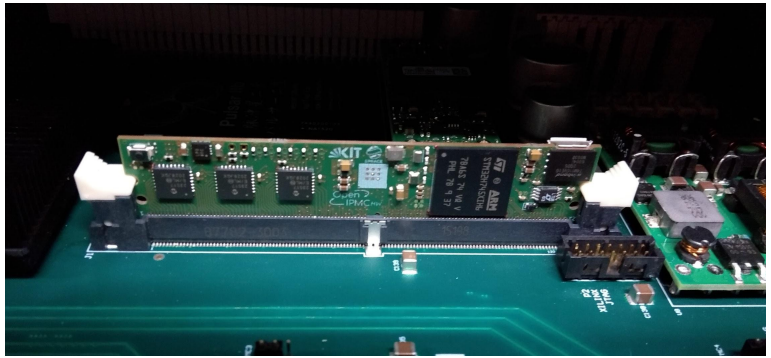
- OpenIPMC-FW
  - ETHERNET: needed a new custom driver for MDIO operations
  - Basic read/write tests on external flash (for hardware validation)
  - Bench-top mode
  - Serial over Ethernet: Ready to be ported to DIMM

- OpenIPMC-HW
  - Some eventual transactions failures in MGM_I2C bus
    - Very likely it is due to the very high STM32 internal pull-up. Need more investigation.

GPIOs DONE
Expanded GPIOs DONE
Management I2C DONE
USB TODO (DFU tested!)
Ethernet DONE (Serial over Ethernet ready for NUCLEO)
Flash Memory TODO (simple read/write tested!)

Tests on Pulsar 2b

- Sensors: PIM400
  - Temperature
  - Current
  - Voltages (dual -48V inputs)
- Ethernet:
  - DIMM directly inserted on Pulsar2b
  - Switch F125
  - BASE interface via backplane



OpenIPMC-HW on Pulsar2b

```
86: LUN: 0, Sensor # 6 ("TEMP PIM400")
    Type: Threshold (0x01), "Temperature" (0x01)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 42 (0x2a)
    Processed data: 32.320000 degrees C
    Current State Mask: 0x00

86: LUN: 0, Sensor # 7 ("CURRENT PIM400")
    Type: Threshold (0x01), "Current" (0x03)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 2 (0x02)
    Processed data: 0.188000 Amps
    Current State Mask: 0x00

86: LUN: 0, Sensor # 8 ("-48V_A PIM400")
    Type: Threshold (0x01), "Voltage" (0x02)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 148 (0x94)
    Processed data: 48.100000 Volts
    Current State Mask: 0x00

86: LUN: 0, Sensor # 9 ("-48V_B PIM400")
    Type: Threshold (0x01), "Voltage" (0x02)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 147 (0x93)
    Processed data: 47.775000 Volts
    Current State Mask: 0x00
```

Pulsar2b: PIM400 readouts

Tests on Serenity

```
cascadan@ipecluster2:~$ ping 192.168.0.10
PING 192.168.0.10 (192.168.0.10) 56(84) bytes of data.
64 bytes from 192.168.0.10: icmp_seq=1 ttl=255 time=0.155 ms
64 bytes from 192.168.0.10: icmp_seq=2 ttl=255 time=0.182 ms
^C
--- 192.168.0.10 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1018ms
rtt min/avg/max/mdev = 0.155/0.168/0.182/0.018 ms
cascadan@ipecluster2:~$ netcat -ul 192.168.0.10 55151
netcat: Cannot assign requested address
cascadan@ipecluster2:~$ netcat -ul 192.168.0.1 55151
Hello UDP message!
Hello UDP message!
Hello UDP message!
Hello UDP message!
Hello UDP message!
```

PING test

Receiving UDP messages from the DIMM

- Sensors and Ethernet
  - Tests on Serenity Z 1.0 & 1.1
  - Same as performed in P2b (PIM400 ...): works!
- Development and Debugging
  - STLink is the JTAG/SWD tool for ST MCU
  - Serenity Z 1.0 → STLink not working
    - No explanation yet)
  - Serenity Z 1.1 → STLink working!
    - We can debug OpenIPMC in-system

```
8c: LUN: 0, Sensor # 2 ("Hot Swap Carrier")
    Type: Discrete (0x6f), "Hot Swap" (0xf0)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Sensor reading: 0x00
    Current State Mask 0x0010
8c: LUN: 0, Sensor # 3 ("TEMP PIM400")
    Type: Threshold (0x01), "Temperature" (0x01)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 42 (0x2a)
    Processed data: 32.320000 degrees C
    Current State Mask: 0x00
8c: LUN: 0, Sensor # 4 ("CURRENT PIM400")
    Type: Threshold (0x01), "Current" (0x03)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 3 (0x03)
    Processed data: 0.282000 Amps
    Current State Mask: 0x00
8c: LUN: 0, Sensor # 5 ("-48V_A PIM400")
    Type: Threshold (0x01), "Voltage" (0x02)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 162 (0xa2)
    Processed data: 52.650000 Volts
    Current State Mask: 0x00
8c: LUN: 0, Sensor # 6 ("-48V_B PIM400")
    Type: Threshold (0x01), "Voltage" (0x02)
    Belongs to entity (0xa0, 0x60)
    Status: 0xc0
        All event messages enabled from this sensor
        Sensor scanning enabled
        Initial update completed
    Raw data: 162 (0xa2)
    Processed data: 52.650000 Volts
    Current State Mask: 0x00
```

SerenityZ 1.1 reporting the PIM400 sensor readings to the ShMC

SerenityZ 1.1 with OpenIPMC-HW in the crate during STLink tests