# Interacting with the COB IPMC via the Shelf Manager

The following assumes that you are already able to build the IPMC software and will explain how to use ipmitool to upload the new code to the IPMC from linux w/o having to use the Actel dongle from the Windows box.

ipmitool1.8.9-pps-10 has been installed in the central package repository at /reg/g/rce/packages/bin with the names ipmitool and ipmitool-pps.

- Create the software image to upload (called the firmware by PPS, hpmlfw.img) by make hpm
- From the same network as the shelf manager (currently cds), execute:

```
ipmitool-pps -I lan -H shlfmgr02 -t 0x86 -b 0 -A NONE hpm upgrade hpm1fw.img activate
```

- O -H shlfmgr02 is the hostname of the Shelf Manager
- o -t 0x86 is the IPMB address of the COB you are upgrading
- hpmlfw.img is the path to the software image file created by make hpm
- If there is a problem with the upgrade, you can try rolling back to the old software with the command:

```
o ipmitool-pps ... hpm rollback
```

The help that is packaged with ipmitool is pretty good, so there's more info to be found there.

Here's a couple that will probably be useful:

• To deactivate the payload (initiate M4->M5 transition):

```
ipmitool-pps -I lan -H shlfmgr02 -t 0x86 -b 0 -A NONE picmg policy set 0 2 0
```

• To activate the payload (initiate M1->M2 transition):

```
ipmitool-pps -I lan -H shlfmgr02 -t 0x86 -b 0 -A NONE picmg policy set 0 1 0
```

And here are a couple of commands which can be typed into the IPMC console to do fun things:

• Reset commands over console:

```
[B8 00 0D 0A 40 00 XX]

XX = 00 current mode
= 01 normal mode
= 02 standalone mode
= 03 manual standalone

So:
[B8 00 0D 0A 40 00 00]
[B8 00 0D 0A 40 00 01]
[B8 00 0D 0A 40 00 02]
[B8 00 0D 0A 40 00 03]
```

• Reset Non-volatile Parameters and Reboot (will cause INIT callbacks to execute)

```
[B8 00 41 0A 40 00]
```

· Set Handle Switch

```
[B8 00 08 0A 40 00 00 XX]

00 = Open
01 = Closed
02 = Hardware Switch

So:
[B8 00 08 0A 40 00 00 00]
[B8 00 08 0A 40 00 00 01]
[B8 00 08 0A 40 00 00 02]
```

· Reset the SDR repository

```
[B8 00 33 0A 40 00]
```

## **Synchronization Clock Interface**

These commands can be used to enable/disable the Synchronization Clock Interface buffers on the COB. This can also (more correctly) be driven via the ATCA e-Keying mechanism. These commands will override whatever e-keying has taken place.

### **Custom COB IPMI commands**

#### pre-COB5 Custom IPMI Commands

These commands can be issued using ipmitool.

```
Write to Cluster Element BSI: \langle CMD \rangle = 0x03
     The format for this command is
     Offset Length Description
           1
                  BAY Mask
            1
                  RCE Mask
            1
                  Do interrupt (Does Nothing)
            2
                   Address
            2.
                   Length to write
                   Data to write (if length < 16)
            N
                                  (if length > 16, fill with
                                     incrementing data starting with data)
     NOTE: Including Bays w/o RCEs or which are not present
            in BAY Mask will not result in an error.
               Similarly, including RCEs which are not present or are
               currently being reset will not result in an error, nor
               will RCEs currently held in reset be released from reset
                   as a result of issuing this command.
Read from Cluster Element BSI: <CMD> = 0x04
     The format for this command is
     Offset Length Description
           1
                  BAY Number
                  RCE Number
     1
           1
     2
            2
                   Address
                   Length to read (Though 2 bytes long,
                                   IPMI practically limits this to <16)
Read COB Data Board ID PROM: <CMD> = 0x05
     The format for this command is
     Offset Length Description
         1
                 BAY Number
     Returns the ID
                 MSB -> LSB 8 byte ID
RCE Reset Command: <CMD> = 0x0A
     The format for this command is
     Offset Length Description
     0 1 BAY Mask
                  RCE Mask
     This command returns
     Offset Length Description
          1
                Completion Code
                  Mask of Bays with errors
     1
            1
     NOTE: Including Bays w/o RCEs or which are not present
           in BAY Mask will not result in an error.
                   Similarly, including RCEs which are not present or are % \left( 1\right) =\left( 1\right) \left( 1\right) 
                    currently being reset will not result in an error, nor
                    will RCEs currently held in reset be released from reset
                    as a result of issuing this command.
Read from RTM EEPROM: <CMD> = 0x0B
     The format for this command is
     Offset Length Description
     0
           1
                  EEPROM Select (0=RTM Fru Info EEPROM, 1=RMB EEPROM)
            1
                   Address
                  Length to read
Write to RTM EEPROM: <CMD> = 0x0C
     The format for this command is
     Offset Length Description
     0 1 EEPROM Select (0=RTM Fru Info EEPROM, 1=RMB EEPROM)
           1
                  Address
          1
                 Length to write
```

```
N Data to write
Raw I2C Read: <CMD> = 0xF7
     The format for this command is
     Offset Length Description
     0 1 I2C Bus
           1
                 Device Address (7 bit address)
                Length to read
          1
     This command returns
     Offset Length Description
     0 1 Completion Code
                Data read
Raw I2C Write: <CMD> = 0xF8
     The format for this command is
     Offset Length Description
     0 1 I2C Bus
           1
                 Device Address (7 bit address)
          1 Length to write
N Data to write
     This command returns
     Offset Length Description
     0 1 Completion Code
I2C Test Command: <CMD> = 0xf6
     The format for this command is
     Offset Length Description
     0 1 The BAY to test I2C devices in
           1
                 The expected RCE mask
                The expected Power
          1
     This command returns
     Offset Length Description
     0 1 Completion Code
                Error Code
Get Bay Power Command: \langle CMD \rangle = 0 \times 0e
     The format for this command is
     Offset Length Description
     0 1 The BAY number
     This command returns
     Offset Length Description
     0 1 Completion Code
          2 Voltage in mV (ADIN)
     1
          2
                Current in mA
Get Bay Temperatures: <CMD> = 0x0f
     The format for this command is
     Offset Length Description
     0 1 BAY number
                RCE number (optional)
     This command returns
     Offset Length Description
     0 1 Completion Code
     1
         1 Board Temperature
          1
                Junction Temperature
Get Bay GPIO: <CMD> = 0x12
     The format for this command is
     Offset Length Description
```

0 1 BAY number

```
This command returns
     Offset Length Description
          1 Completion Code
     Which of the following is returned depends on which BAY is requested:
     For a CMB Bay (0-4)
     1
          1 RCE Detected Mask
                 RCE Reset Mask
           1
                RCE BSI Ready Mask
          1
                RCE FPGA Done Mask
          1 CMB Voltage OK Mask
     5
           1
                 CMB Power Allocation (in 1/5 Watts)
     For the CEN Bay
        1 CEN Voltage OK Mask
          1
                 SFP Present Mask
                SFP LOS Mask
     3
          1
     For the RTM Bay
     1 1 RTM Handle Closed
                 RMB Present
          1
                RMB Enable
Get Bay Raw GPIO: <CMD> = 0x13
     The format for this command is
     Offset Length Description
     0 1 BAY number
                 Register (0=Input, 1=Output, 2=Polarity, 3=Config, 4=Int Mask"
     This command returns
     Offset Length Description
     0 1 Completion Code
          N
                 Register Values for Bank N
Set Monitor Dump Period: <CMD> = 0x07
    The format for this command is
    Offset Length Description
    0 1
               Dump Index [0=BAY, 1=RCE, 2=BSI, 3=SFP, 4=FP_DISP, 5=COB_GPIO, 6=GPIO_FULL, 7=RTM, 8=CEN,
9=I2C, 255=ALL]
   1 2
                Seconds [0=Never Dump, 0xffff=Default]
Set Monitor Dump Period: \langle CMD \rangle = 0x08
    The format for this command is
    Offset Length Description
                Dump Index [0=BAY, 1=RCE, 2=BSI, 3=SFP, 4=FP_DISP, 5=COB_GPIO, 6=GPIO_FULL, 7=RTM, 8=CEN,
9=I2C, 255=ALL]
    Returns
                Seconds [0=Never Dump]
Dump Monitor Immediate: <CMD> = 0x09
    The format for this command is
    Offset Length Description
    0 1 Dump Index [0=BAY, 1=RCE, 2=BSI, 3=SFP, 4=FP_DISP, 5=COB_GPIO, 6=GPIO_FULL, 7=RTM, 8=CEN,
9=I2C, 255=ALL]
Fixup FRU Info ID: <CMD> = 0x14
     The format for this command is
     Offset Length Description
          1 FRU number
Set FRU Info Asset Tag: <CMD> = 0x15
     The format for this command is
     Offset Length Description
```

```
FRU number
            N<=32 Asset Tag (NULL terminated ASCII string
Set Standalone Slot Number: <CMD> = 0x11
    The format for this command is
    Offset Length Description
                 Slot Number
Refresh Shelf Info: <CMD> = 0x0D
    The format for this command is
    Offset Length Description
                 There are no arguments to this command
Cold Data Reset: <CMD> = 0xF9
    The format for this command is
    Offset Length Description
    N/A N/A
                There are no arguments to this command
Set Zombie RCE: <CMD> = 0xFA
    The format for this command is
    Offset Length Description
                Bay Number
         1
           1
                  RCE Number
           1
                  Zombie State [0=Not a Zombie, 1=BRAINS!]
    When an RCE is marked as a Zombie, the IPMC will not allow it
    to hold up the booting of the board. (For example, it will
    mark the switch port configuration in the DTM BSI as "Disabled"
    if the DPM is not Ready.
```

## Supported IPMI/ATCA commands

These commands can be issued using ipmitool.

#### **Short-hand commands**

The following commands are provided as scripts in the bin of our group area. <shelf> is a shelf name. <slot> is a slot number, from 1 to the number of slots in the crate. <element> is the element number, with 0xff meaning all elements and 0xfe meaning all DPMs, as above.

• ipmi\_activate
Activate a shelf's payload.

```
usage: ipmi_activate <shelf> <slot>
```

ipmi\_deactivate
 Deactivate a shelf's payload.

```
usage: ipmi_deactivate <shelf> <slot>
```

• ipmi\_id

Read COB Data Board ID PROM.

```
usage: ipmi_id <shelf> <slot> <board>
```

• ipmi\_read

Read from the Cluster Element BSI.

```
usage: ipmi_read <shelf> <slot> <element> <address> [<length>]
```

• ipmi\_write

Write the Cluster Element BSI.

```
usage: ipmi_write <shelf> <slot> <element> <address> <data> [...]
```