



**SERENITY**

# **SERENITY IPMC Functionality**

*Release v1.1*

**SERENITY Collaboration**

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# SERENITY

This document describes the IPMC functionality of the Serenity board. This functionality is implemented by the CERN IPMC mezzanine card; the reference documentation for that module can be found [here](#).

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## IPMC OVERVIEW

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Each Serenity blade needs an IPMC module for full functionality. This module cooperates with the shelf manager in conformance to the ATCA standard and provides essential infrastructure functionality. It provides the ability to enable or disable power to the blade, including the power state changes required to allow safe hotswapping of blades. It collates the readings of onboard sensors for temperature, voltages and currents etc. Temperature sensors leaving their preferred range will then impact cooling fan speeds or, in extreme cases, activate safety features such as an emergency power shutdown. The IPMC also serves to identify the blade, and it provides protocols to upload firmware images to the service FPGA.

## POWER CONTROL

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There are two main approaches towards controlling power on a Serenity blade. Power to the two processing FPGA sites can be controlled by SMASH software running on the onboard ComExpress. However, the IPMC implements lower level functionality complying with ATCA specifications. The IPMC's payload power control covers not only the two processing FPGA sites, but also the service FPGA and the ComExpress. A reboot of the latter two can thus be achieved by powercycling the board according to the instructions below.

The sections below describe how to enable/disable payload power to the board (e.g. in order to powercycle it) through two different methods:

1. By first logging into the shelf manager, then using its command line interface
2. Using `ipmitool` to remotely issue IPMI commands over the network

The commands below have been tested on a Pigeon Point 700 series shelf manager in a Schroff 14 slot ATCA shelf.

### 2.1 Method 1: Using the shelf manager command line

You will need to connect to the shelf manager either through its serial console, or with SSH via Ethernet.

```
# disable payload power of board in physical slot 3:  
cli deactivate board 3  
  
# enable payload power of board in physical slot 3:  
cli activate board 3
```

### 2.2 Method 2: Using ipmitool over the network

This requires knowledge of the IPMB address of the blade. The mapping between physical slot address and IPMB address can be retrieved from the shelf manager command line interface using `cli shelf at`, or by `cli board`. It is in the range 0x82-0x9c.

```
# disable payload power for the board in question, e.g. 0x92, using a shelf manager at  
↳ IP address 192.168.200.45:  
ipmitool -I lan -H 192.168.200.45 -t 0x92 -b 0 -A NONE picmg policy set 0 2 0  
  
# enable payload power  
ipmitool -I lan -H 192.168.200.45 -t 0x92 -b 0 -A NONE picmg policy set 0 1 0
```

Note: -A NONE disables authentication for the request. If your shelf manager requires authentication, remove that option and provide username and password instead, using -U and -P

The ipmitool commands do not seem to be supported by all ATCA shelves. Please report any problems to [Kris-tian.Harder@stfc.ac.uk](mailto:Kris-tian.Harder@stfc.ac.uk) .

## **IPMC SENSORS**

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This is not implemented yet, please check back later.

## **BOARD IDENTIFICATION**

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This is not implemented yet, please check back later.



## **FIRMWARE UPLOAD VIA IPMC**

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This is not implemented yet, please check back later.

## STATUS OF THIS DOCUMENT

- Rev 2.0: added overview, power section and placeholders - Kristian Harder, 31th May 2019.
- Rev 1.0: First version - Alex Howard, 9th April 2019.