

MegaRAC® Carrier IPMC Firmware Solution

Software Stack for ATCA Carrier Board IPM Controller (CIPMC)



HIGHLIGHTS

- > Carrier IPM Controller Support: Renesas H8S/2168, 2167 and 2166
- > Redundant IPMB-0
- > Bussed or Radial IPMB-L support
- > Module Operational State Management
- > Power and Cooling Management
- > Point-to-Point Fabric E-Keying
- > Module Sensor Management
- > Explicit Message Bridging
- > Support for:
 - Advanced Mezzanine Card (AMC)
 - Fan Tray
 - Power Entry Module (PEM)
- > Optional Side-band LAN, KCS Interface and SMBUS interface
- > Successfully passes ESO ATCA Tester

AMI's Carrier IPMC firmware solution is fully compliant with the AdvancedTCA and Advanced Mezzanine Card specifications from PICMG, defining an industry standard for high performance data communications.

Built on top of AMI's MegaRAC-PM IPMI 2.0 firmware (IPMI 1.5 backward compatible), the firmware provides key features such as: Hot Swap and IPMI Event Generation (to Shelf Manager) and Reception (from Modules), FRU State maintenance of IPMC and Modules, Module SDR Merging, Module E-Keying,

[Data Sheet](#)

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Module Power Management, Bused or Radial IPMB-L topology, Carrier FRU and SDR Generation and Carrier IPMC Commands. The ATCA and AMC specifications require compliance with the IPMI standard, which defines key interfaces and devices for system management.

AdvancedMC extends the ATCA specification to introduce the usage of reduced-size modules performing specialized functionality. Each board can be a simple ATCA Board with IPMC or an AMC Carrier ATCA Board, which can host up to eight hot-swappable Modules with a Carrier IPMC that manages the Modules. This increases the flexibility of the system and allows the use of inexpensive microcontrollers on modules. Each single AMC module is equipped with a Module Management Controller (MMC) with limited functionality. A Carrier Intelligent Platform Management Controller (CIPMC) on the carrier board manages the Mezzanine Modules as well as communications with the overall Shelf Manager.

The Carrier IPMC supports two IPMB channels for out-of-band management: an IPMB-0 redundant bus for communication with the ATCA shelf and a separate IPMB-L for out-of-band management of each module. The carrier must provide ways to isolate each Module

on the IPMB-L.

The Carrier IPMC performs the following functions for each module:

- * Assigns Management Power
- * Tracks and reports FRU states
- * Manages Module Payload Power
- * Supports Module Hot Swap and IPMI event messages
- * Manages cooling based on the temperature sensors of the Modules
- * Supports both AdvancedMC Carrier routing model of Point-to-Point Fabric E-Keying: centralized AdvancedMC on-Carrier device model and AdvancedMC direct connectivity model.
- * Processes or forwards the commands addressed to the Modules and sends the response.

A major benefit of AMI's Carrier-IPMC code-base is the possibility to extend or customize it. By simply editing a few macros, the firmware can easily support between one and eight modules. The IPMB buses are configurable as per hardware design. The KCS and SMBus interfaces are not mandatory within the ATCA or AMC specification. AMI can easily handle a project that requires these or other IPMI features.

AMI's MegaRAC Carrier IPMC firmware successfully passes the ESO ATCA Tester tool.



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Features

Key Features

Advanced TCA Features

FRU supported states: M0, M1, M2, M3, M4, M5, M6 and M7

Locked / Deactivation-Locked Bits

Guaranteed FRU Hot Swap Event Message Reception

2x redundant IPMB-0 bus

Bussed or Radial IPMB-L bus

Individually connect/isolate IPMB-L to each module

Manage Module Hot Swap State

AMC.0 FRU records and FRU Device Locator SDR records

Merging Module SDRs to Device SDR Repository

Module Sensors integrated into Carrier IPMC

Process/Forward commands addressed to MMC

Performs Point-to-Point Fabric E-Keying

Hot Swap sensor and IPMB sensor

Both internal and external watchdog

E-Keying (porting required)

FRU hot swap

Event Generation

General Features

Manage FRU Power and cooling

Intelligent Platform Management Bus (IPMB) interface

IPMI 1.5 and 2.0 support

Implement Device Sensor Data Record (SDR)

Implement FRU information and commands

IPMI event support

Additional ATCA Command Support

Get Address Info

Get PICMG Properties

Set FRU Activation

Set FRU Activation Policy

Get FRU Activation Policy

Get Sensor Reading

FRU Control

Get FRU LED Properties

Get LED Color Capabilities

Set FRU LED State

Get FRU LED State

Set IPMB State

Compute Power Properties

Set Power Level

Get Power Level

Get Fan Speed Properties

Set Fan Level

Get Fan Level

Set Port State / Get Port State

FRU LED Control

Blue LED

LED1, LED2, LED3 support

Other Application LEDs support

FRU LED control Commands Support

Entity Requirements

System Event Logs

FRU Info access commands

FRU Inventory Device command

FRU info available at any payload power

Primary FRU Device ID 0

Contiguous FRU numbering

Parameter and data completion codes

Carrier IPMC FRU Information

Chassis Info Area

Board Info Area

Product Info Area

Internal Use Area

MultiRecord Info Area

Board Point-to-Point Connectivity Record

Carrier Activation and Current Management Record

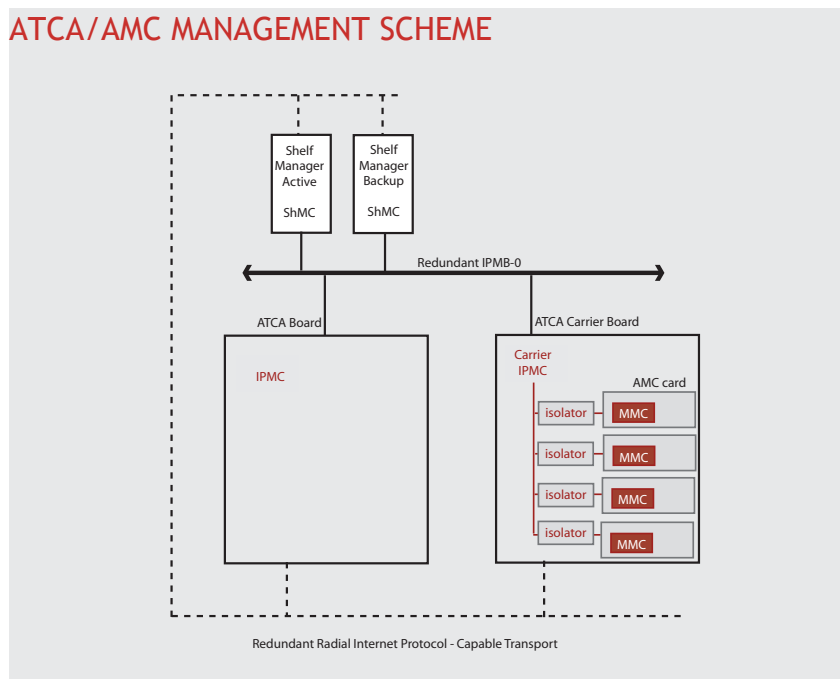
Carrier Point-to-Point Connectivity Record

AdvancedMC Point-to-Point Connectivity Record

Carrier Information Record

FRU Generation Tool - FRUGEN

ATCA/AMC MANAGEMENT SCHEME



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