ATCA-7367

Software Drop based on WindRiver PNE3.0

GA05 Build

Release Notes

6806800L72D

May 2011

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Abbreviations

Abbreviation	Description
ATCA AdvancedTCA	Advanced Telecommunications Computing Architecture
BBS	Basic Blade Services
EMC	Electromagnetic Compatibility
FRU	Field Replaceable Unit
HPI	Hardware Platform Interface
IP	Internet Protocol
IPMC	Intelligent Platform Management Controller
IPMI	Intelligent Platform Management Interface
LED	Light Emitting Diode
OS	Operating System
PICMG	PCI Industrial Computer Manufacturers Group
RPM	Red Hat Package Manager
RTM	Rear Transition Module
ShMC	Shelf Management Controller

Summary of Changes

Part Number	Publication Date	Description
N/A	Dec,15,2009	Pilot building for DA
N/A	Dec,30,2009	DA01
N/A	Jan,15,2010	DA02
N/A	Jan,29,2009	DA03

Part Number	Publication Date	Description
N/A	March,24,2010	EA01
N/A	April,16,2010	EA02
N/A	April,23,2010	EA03
N/A	April,27,2010	Special Build for FAT based on EA03
N/A	May,18,2010	EA04
N/A	June,8,2010	GA01
6806826A02A	July,12,2010	GA01 part number appended
6806826A02B	July,14,2010	GA02
6806826A02B	July,26,2010	Add IR00132837 into known issues list.
6806826A02B	Sep,29,2010	GA03
6806800L72A	Nov,19,2010	Update part number to 6806800L72A.
6806800L72B	Nov,24,2010	Release plan for GA04.
6806800L72B	Nov,26,2010	Evaluation build of GA04.
6806800L72B	Feb,11,2011	Release plan for GA04
6806800L72C	March,14,2011	GA04 release.
6806800L72C	April,1,2011	Append the IPMC upgrade caused payload reset matrix. Append 5-tuple supporting version information. BIOS release notes updated
6806800L72D	May,16,2011	Updated BBS new features for GA05 release.

Table of Contents

List of Tables

1 Introduction

This document refers to the delivery of the GA software drop (GA05) evaluation build of the ATCA-7367 blade for the use with WindRiver PNE3.0. Please read it carefully before installing and using it.

1.1 Purpose of this Document

This document describes the release notes for ATCA-7367 General Availability 05 release.

1.2 Format of the Delivery

The ATCA-7367 is delivered with preinstalled BIOS and IPMI firmware. The kernel and root file system (as ramdisk image) and some BBS packages are available as separate files. If you need access to the latest software packages please contact your local Emerson sales representative.

2 Content of the Release

2.1 Hardware Content

These Release Notes are applicable to the following blades:

Item	Model Number	Revision
ATCA-7367 with FPGA 12 IPMI FW 2.00.010 BIOS 1.0.5	ATCA7367_0GB ATCA7367_12GB ATCA7367_24GB ATCA7367_0GB_LS ATCA7367_12GB_LS ATCA7367_C01 ATCA7367_C02	HW revision C HW revision D

2.2 Software Content

The following table describes the content of the GA05 software release. The ATCA-7367 Blade Services Package contains the following directories with the following data.

2.2.1 Documentation

This directory contains the Release Notes (this document). The ATCA-7367 Programmer's Reference can be downloaded from the Emerson Literature catalogue.

2.2.2 HPI-B

This directory contains HPI-B client packages compiled for 32- and 64 bit in WindRiver PNE3.0 environment.

2.2.3 LSP

This directory contains the description on how to build the rootfs and the kernel of the ATCA-7367 blade in a WindRiver PNE3.0 environment using the ATCA7367_custom_layer.

2.2.4 pxelinux.cfg

This directory contains the kernel command line for network boot and the pxelinux.0 loader which must be installed on the dhcp/tftp-server.

2.2.5 RFS

This software delivery is based on the WindRiver PNE 3.0 Linux Carrier Grade Operating System (Update Package 2). It utilizes a carrier grade kernel based on the kernel version 2.6.27-39.

Table 1 Software Content

Software	Package Name
Operating System Kernel (Kernel version 2.6.27.39)	kernel
Ramdisk image for netboot	ramdisk.image.gz
Root file system for hard disk installation	rootfs.tar.gz
Dump-capture kernel	kernel-kdump
Dump-capture kernel modules	modules4kdump.tar.bz2
vmlinux	Statically linked Linux kernel executable file which includes the necessary information to make kernel debugging
Kernel command line	default.bbs-atca7367
Minit Initial Ramdisk required for Disk Boot (supports using of UUID as kernel parameter in Grub BootLoader)	initrd0.img
Check sum of all files and RPMs	files.sha1sum
HPM Agent command tool	bbs-hpmagentcmd-atca7367-1.3.12-2-pne30.rpm
Firmware upgrade utility	bbs-fuf-atca7367-1.3.8-2-pne30.rpm
Board control utility to get FPGA data	bbs-boardctrl-atca7367-1.0.1-3-pne30.rpm
Persistent RAM module	bbs-pram-atca7367-0.1.0-1-pne30.rpm
SFMem Module	bbs-sfmem-atca7367-1.0.0-1-pne30.rpm
BIOS image	bbs-cpu-atca7367-1.0.5.rpm
flashrom (shard library used from fuf in order to perform an BIOS update)	bbs-flashrom-atca7367-0.1.1-1-pne30.rpm

Software	Package Name
FPGA image	bbs-fpga-atca7367-12.rpm
IPMC Firmware (Front board)	bbs-ipmc-atca7367-amc-no-poped-2.00.010.rpm bbs-ipmc-atca7367-amc-poped-2.00.010.rpm bbs-ipmc-atca7367-c01-2.00.010.rpm
IPMC Booter Firmware (Frontboard)	bbs-ipmc-amc-nopoped-boot-atca7367-2.00.010.rpm bbs-ipmc-amc-poped-boot-atca7367-2.00.010.rpm bbs-ipmc-atca7367-c01-boot-2.00.010.rpm
IPMC Firmware (ARTM)	bbs-artm-atca7360-1.51.004.rpm
IPMC Booter Firmware (ARTM)	bbs-artm-boot-atca7360-1.51.004.rpm
Telecom Clock command facility	bbs-clkagentcmd-atca7367-1.0.0-1-pne30.rpm
HPI-B Client source package	bbs-hpib-clientsrc-1.21.10-1.x86-wrspne3.0-linux.rpm bbs-hpib-clientsrc-1.21.10-1.x86_64-wrspne3.0-linux.rpm
HPI-B library package	bbs-hpib-1.21.10-1.x86-wrspne3.0-linux.rpm bbs-hpib-1.21.10-1.x86_64-wrspne3.0-linux.rpm
HPI-B developer package	bbs-hpib-devel-1.21.10-1.x86-wrspne3.0-linux.rpm bbs-hpib-devel-1.21.10-1.x86_64-wrspne3.0-linux.rpm
Link Health Check utility	bbs-lhc-atca7367-1.0.0-1-pne30.rpm

Note:

- SFMem Module and Persistent RAM will be installed only when optional device is available.
- HPI-B packages:

  This distribution provides HPI-B packages suitable for Windriver PNE3.0 for 32 and 64 Bit. The 32 Bit packages will be pre-installed with your Root File System. In case you have to exchange the packages, please unistall them using the RPM tool, for example,

rpm -e <package>. Copy the new rpm-files to the target directory and install them also using the RPM tool, for example:

rpm -Uvh <package>

As an overview, the next table summarizes the firmware versions of this release.

Table 2 Firmware/Software Version

Firmware/Software	Version
BIOS package	1.0.5
IPMI firmware package (front blade)	2.00.010
IPMI firmware package (RTM blade)	1.51.004
FPGA firmware package	12
BSP	01_04_0001

2.3 Feature Status

Table 3 Status of WindRiver PNE Features

Feature	Status	Description
Kernel 2.6.27-39 (64 Bit)	Testing successful	The kernel is configured to support the HW facilities available on the ATCA-7367 blade. This includes for example Ethernet drivers, hard disk drivers and IPMI support.
Root file system	Testing successful	The RFS provides for example libraries, applications or modules. The configuration of functionalities like SNMP, NTP, etc. is available but has not been tested.
Dump-capture kernel	Testing successful	This kernel is used for capturing the kernel core dump.
Modules for dump-capture kernel	Testing successful	These modules are used to assist dump-capture kernel to copy the dump as the configuration file specifies.
OpenIPMI	Testing successful	OpenIPMI is installed.

Feature	Status	Description
Multi-library support	Testing successful	This GA drop supports Multilib applications with 64 and 32 Bit.
Board control utility	Testing successful	The board control functionality utilizes the BIOS DMI functionality. This feature shows board information in the proc file system (/proc/boardinfo/summary)
Hpmagent package	Testing successful	Basic functionality, for example display of FRU info, device ID, FRU data, etc. is available. Handling of events for example from the OS on shutdown
Firmware upgrade utility	Testing successful	This feature allows an upgrade of the blade's BIOS, FPGA and the IPMC firmware on the front blade and the RTM.Latest images of BIOS, FPGA and IPMC can be found at /opt/bladeservices/rom/. This release contains a common IPMC FW package for front blade IPMC FW and the IPMC booter package.
ClkAgent package	Testing successful	Test with AMC-8001, F-120, ATCA-7301 in Centellis 4440 shelf.
LHC package	Preliminary Test	Package installation OK and LHC service works.
HPI-B package	Testing successful	Tested in Centellis 4440 shelf.
PRAM driver	Testing successful	Persistent RAM driver is available. However, this functionality is only enabled if the PRAM module is present on the blade.
SFMEM	Testing successful	A flash memory driver is available. However, this functionality is only enabled if the SFMEM module is present on the blade.
Onboard USB Flash Drive support package	Testing successful	The blade is equipped with a 4 GB Flash disk module which can be used like a USB device.
AMC SATA HDD, AMC SAS HDD, RTM SAS HDD, SATA Cube SSD kernel/RFS installation and booting up	Testing successful	

The following table shows the ATCA-7367 blade configurations that have been tested so far.

Table 4 Tested Configurations

Feature	Status	Description
Centellis 2000 system: Netboot of ATCA-7367 via Base/Front Interface from external TFTP server	Testing successful	The DHCP and TFTP server are located on a separate server. The booting blade receives its IP address from the DHCP server, loads the PXE boot loader, the kernel and the ramdisk image from the TFTP server. After loading, the kernel is executed and the operating system is started.
Centellis 4440 system: Netboot of ATCA-7367 via front Interface from external TFTP server	Testing successful	
Boot from 3rd party USB memory stick	Testing successful	Boot OS and Kernel from USB memory stick from SanDisk SDCZ6-4096RB installed both on front panel USB slots on ATCA-7367 and ARTM-ATCA-7360
Boot from onboard Eusb	Testing successful	
Eusb RFS installation	Testing successful	
RTM SAS HDD RFS installation	Testing successful	Tested with ARTM-ATCA-7360-S
AMC SATA/SAS HDD RFS installation	Testing successful	Tested with AMC-S320, AMC-S402,AMC-S502
Telecom clock function test	Testing successful	1. Tested in Centellis C4440 with the following test configurations. 2. Tested successful when shelf telecom clock generated from ATCA-F120 on which AMC-8001 installed as clock source. ATCA-7367 could successfully lock clock signals including CLK1,CLK2 and CLK3A,CLK3B. 3. Tested successful when shelf telecom clock generated from ATCA-7367 on which AMC-8001 installed as clock source. Other ATCA blades(ATCAC-7367, ATCA-7301, ATCA-F120) could successfully lock clock signals including CLK1,CLK2 and

Feature	Status	Description
		CLK3A,CLK3B. 4. Tested successful on ATCA-7367 for its supported on-board DPLL clock sources/modes.
PrAMC-9210 support function test	Testing successful	PrAMC-9210 could be successfully boot up in AMC bay through a net boot. The PrAMC-9210 onboard CPU and PCI-x bridge could be scanned from ATCA-7367 CPU. The PrAMC-9210 AMC GE ports works fine.

2.4 Features Corrected Incident Reports

2.4.1 BIOS:

2.4.1.1 GA05

2.4.1.1.1 New Features

- N/A

2.4.1.1.2 Corrected IRs

- N/A

2.4.1.1.3 Known Limitations

- ATCA-7367 BIOS supports booting OS from iSCSI with UEFI mode only. RedHat 5.x booting via iSCSI on ATCA-7367 is not supported since RedHat 5.x does not support UEFI booting.

2.4.1.2 GA04

2.4.1.2.1 New Features

- Intel 82599 EEPROM image file changed to support the fabric interface auto-negotiated working at 1Gb mode in cases where ATCA-7367 is installed in an Emerson Centellis 3406 whose switch blade of ATCA-F10x only supports 1Gb mode.
- Support BIOS Error Recovery and Fail Safe Functionality.

- Support RTM-ATCA-736X-DD PXE Booting.
- Support GE video AMC.
- Fix the issue that board hangs at 0x0Eh when CMOS has been cleared.
- Change the default Link Width of SouthBridge PCIe from x1 to x4.
- Add ATCA-7368-RTM support by sharing PCIe Link with Front Network.
- Resolve an issue that the blade will hang at DebugCode 0Eh after CMOS is cleared manually.
- Provide a flexible way to configure the detection policy of PCIe based AMC.
    - Detection Policy: Force/Auto.
        - A policy of “Force” will deplete the timeout value specified with the “Detection Timeout” menu item to finish the PCIe AMC devices detection process even the PCIe device successfully detected before the timeout value expires.
        - A policy of “Auto” will cease the detecting process once the PCIe AMC devices detected successfully even if the timeout value specified with the “Detection Timeout” does not expire.
    - Detection Timeout: valid value [0,255] seconds. The timeout value to make the PCIe AMC device detection A value of 0 will bypass the detection of PCIe AMC no matter which “Detection Policy” specified.

2.4.1.2.2 Corrected IRs

- IR00133257 [C01]QPI frequency option error when QPI speed set to slow.
- IR00133258 [C01]QPI frequency can't set to 6.4GTs.
- IR00133298 [C01]Administrator Password of BIOS can't be set with some special characters.
- IR00133330 [C01]FRU info doesn't match with the that got from BBS thru IPMC.

2.4.1.2.3 Known Limitations

- ATCA-7367 BIOS supports booting OS from iSCSI with UEFI mode only. RedHat 5.x booting via iSCSI on ATCA-7367 is not supported since RedHat 5.x does not support UEFI booting.

2.4.1.3 Version 1.0.4

2.4.1.3.1 New Features

- Operation: Disable front network in ATCA-7367-C01 SKU.
- Operation: Remove UEFI file system boot option.

2.4.1.3.2 Corrected IRs

- Fix IR00132693 (Redundant UEFI option in boot option Priorities).

2.4.1.4 Version 1.0.3

2.4.1.4.1 New Features

- Operation: SRAT and SLIT will not be created since only support one CPU.

2.4.1.4.2 Corrected IRs

- N/A

2.4.1.5 Version 1.0.2

2.4.1.5.1 New Features

- Change IPMI version display format to Hexadecimal.
- Set Tcontrol value to IPMI according to CPU MSR.

2.4.1.5.2 Corrected IRs

N/A

2.4.1.6 Version 1.0.1

2.4.1.6.1 New Features

- Operation : Follow 7360, change the $(BIOS_VERSION), change the BIOS binary file name.

BIOS_VERSION	CDE version	BIOS_FILE_NAME
1.0.0	TB1E1B09	A736BIOS.bin (4M)/AMIBIOS.BIN(3.5M)

2.4.2 FPGA

2.4.2.1 GA05

2.4.2.1.1 New Features

- N/A

2.4.2.1.2 Corrected IRs

- N/A

2.4.2.2 GA04

2.4.2.2.1 New Features

- Revision number changed to 12.
- Add the support for PEHP_SMB from IOH.

2.4.2.2.2 Corrected IRs

- IR00132792 IPMC get the upgraded FPGA version number from FPGA reg instead of from SPI flash, leads to fcu FPGA upgrade FAKE failure.

2.4.2.3 GA03

2.4.2.3.1 Corrected IRs

- Revision number changed to 04.
- Fix IR00132788(clock state is not stable, some times enabled and after a while, it automatically disabled and DPLL registers' flushing to zero at runtime).
- Five LPC scratch registers added upon the request by BIOS module(offset address: 0x76-0x7a).

2.4.2.4 GA02

- N/A

2.4.2.5 GA01

2.4.2.5.1 Corrected IRs

- Revision number changed to 03.

Fix the telecom clock routing problems against IR00132619.

2.4.3 IPMC

2.4.3.1 Version 2.0.00000010

Important Notes:

Because the firmware's internal data format changed from 2.0.00000009, so IPMC and payload will be **automatically** hard reset if you are making upgrade/downgrade between specific different versions of IPMC firmware. Check the following matrix for details.

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="3">IPMC version upgrade/downgrade TO</td></tr>
<tr><td><2.0.9</td><td>2.0.9</td><td>>2.0.9</td></tr>
<tr><td rowspan="3">IPMC version before upgrade/downgrade</td><td><2.0.9</td><td></td><td></td><td></td></tr>
<tr><td>2.0.9</td><td></td><td></td><td></td></tr>
<tr><td>>2.0.9</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Legends:</td></tr>
<tr><td colspan="2"></td><td colspan="3">OK, the newly upgraded IPMC firmware will not be activated until user do it by issuing the "Activate firmware"(payload will not be affected).
Note:
1. fcu utility provided by BBS will automatically activate the newly upgraded/downgraded IPMC firmware bank.
2. Use the following command to active the newly upgraded/downgraded IPMC firmware bank if you are uisng ipmitool_pps to make the upgrade/downgrade:

/opt/bladeservices/tools/ipmitool_pps -I lan -H <shelf-manger-IP-address> -t <ATCA-7367-IPMB-addr> -b 0x00 hpm activate</td></tr>
<tr><td colspan="2"></td><td colspan="3">IPMC and Payload will be automatically hard reset by IPMC because IPMC internal data format be changed from 2.0.9.</td></tr>
</table>

Firmware Version	Firmware component	Major fix/update	Feature/IR	Dependency
2.0.00000010(GA04)	IPMC firmware	BIOS boot failsafe(crisis recovery) and then switch bank	New feature	With BIOS version 1.0.5
		FPGA firmware crisis recovery in case payload can't power on(CPLD also need to be updated)	New feature	With CPLD version 5
		Change “CPU Temp” sensor reading to positive value	New feature	
		FPGA and BIOS FW check sum verify for HPM.1 upgrade	New feature	
		Temperature sensor thresholds update (Bottom Edge Temp, Top Edge Temp, IPMC Temp, CPU Temp, DDR Temp)	IR00105810	
		All payload domain sensor are disabled after payload reset	IR00133291	
		atcatester #206: Abnormal Event Message. Failed	IR00132365	
		IU Doc error: There is no redundant FPGA bank for IPMC to switch between.	IR00134135	
		Request to add hyperthreading to System Boot Options Parameter #100	IR00134100	
		IU Doc error:ATCA-7367 IU manual missing sensor information.	IR00105762	
	IPMC Boot loader	Disabled i2c buffer before waiting for watchdog reset to ensure that messages from ShMM cannot been received with interrupts disabled	IR fixed	
	IPMC FRU data	No change	n/a	n/a

2.4.3.2 Version 2.0.00000009

2.4.3.2.1 New Features

- Added "Device-relative Entity Association Record" for Power entry sensor.
- Supported to get FPGA Version with HPM command.
- Delete update channel/Ethernet EKeying of AMC for C01.

2.4.3.2.2 Corrected IRs

- Fixed IPM300 power sequence issue.
- Fixed "IPMC Temp" reading error.

2.4.3.2.3 Known Limitations

NOTE: Because the internal data format changed in firmware, so there is need for performing hard reset of payload if you upgrade the firmware from previous version.

2.4.3.3 Version 2.0.00000008

2.4.3.3.1 New Features

- Change Entry ID for "Power Entry" sensor.
- Adjust "CPU TCC Temp" reading according to TControl of CPU.
- Update the SDR info in EEPROM while upgrade IPMC firmware.
- Set SOL Channel(Base1->Channel 5, base2->Channel 6)

2.4.3.3.2 Corrected IRs

- Fix IR00132621 RTM power down when using fcu command to upgrade BIOS.

2.4.4 Kernel & Rootfs

2.4.4.1 GA05 (BSP_VERSION 01_04_0001)

2.4.4.1.1 New Features

- Set CONFIG_SLABINFO=y
- Set CONFIG_SCHEDSTATS=y

- IR00106243 New Add log collection script /opt/bladeservices/tools/log_collect.sh.

2.4.4.1.2 Corrected IRs

- IR00106237: New FCU upgrade of IPMC and FPGA requiring interaction with user
- IR00106238: New Error messages during BBS kernel bootup

2.4.4.1.3 Knows issue

- BBS provides FPGA firmware as name atca-7367-fpga-12.bin, it is a HPM.1 format image.

2.4.4.2 GA04 (BSP_VERSION 01_04_0000)

2.4.4.2.1 New Features

- Add 5 tuple support for Intel 82576 driver of igb.
- /opt/bladeservices/tools/ipmitool_pps updated.
- /opt/bladeservices/tools/linuxrc updated.
- Add /proc/BSP_VERSION_INFO support in boardctrl. With BSP version 01_04_0000.
- Stop the OS load watchdog timer in the osBootSensor.sh
- Support for Sanblaze RTM
- Reduce the time for copy /proc/vmcore when kernel crashes
- Support all options in /etc/kdump.conf
- Support HPM.1 BIOS image upgrade.
- Change CONFIG_MTD__BLOCK=y to CONFIG_MTD__BLOCK=m
- Set CONFIG_MTD_MTDRAM=m
- Add patch to PNE 3.0 provided ethtool-6, replace “ethtool –E magic” data type from S32 to U32.
- Softlink PNE 3.0 provided /usr/bin/ipmitool to PigeonPoint Systems provided version of 1.8.9-pps8(which located at /opt/bladeservices/tools/ipmitool_pps). The original ipmitool renamed as /usr/bin/ipmitool-1.8.10.
- provide HPM.1 BIOS image.

2.4.4.2.2 Corrected IRs

- IR00132856: fcu -q command shows invalid fpga version and BIOS-operation version.
- IR00132476:Fabric port does not work properly when ATCA7367 inserted into Centellis 3406 shelf.
- IR00105316:ATCA-7367: Blade stuck at M1 state after fpga upgrade.
- IR00105331:lhcd erro on BBS bring up ATCA-7367.
- IR00105244: ATCA-7367: fcu full-upgrade of bios does not switch partition after upgrade.
- IR00133464 [EA 03]there should be hpmagentd.pid in /var/run directory
- IR00133483 [EA 03]use command fcu -vf to verfiy the upgrade file ,the upgrade firmware(bios , fpga) name is wrong.
- IR00132792 IPMC get the upgraded FPGA version number from FPGA reg instead of from SPI flash, leads to fcu FPGA upgrade FAKE failure
- IR00133916 [GA03] fcu FPGA upgrade FAKE failure
- IR00105815 kdump enhancements for BBS
- IR00133551 "hpmcmd -c fruinfoget" converts shMM default IP address reversely
- IR00133590 ATCA-7367 RHEL 5.5 ledctrl -s/c/d command does not work
- IR00105808 Need to provide .hpm firmware images for BIOS and FPGA in BBS release

2.4.4.2.3 Knows issue

- BBS provides FPGA firmware as name atca-7367-fpga-12.bin, it is a HPM.1 format image.

2.4.4.3 GA03

2.4.4.3.1 New Features

- Add IPMC firmware HPM.1 package for ATCA-7367-C01 into BBS(available at /opt/bladeservices/rom/atca-7367-c01-ipmc.hpm). Note that this HPM.1 firmware file only applicable for ATCA-7367-C01. Do not use it for other ATCA-7367 variants!
- Kernel option CONFIG_PROC_KCORE=y.
- CONFIG_KEXEC=y

- CONFIG_CRASH_DUMP=y
- CONFIG_PHYSICAL_START=0x1000000
- CONFIG_RELOCATABLE=y
- CONFIG_PROC_KCORE=y
- CONFIG_PROC_VMCORE=y
- CONFIG_DEBUG_INFO=y
- parted-devel added.

2.4.4.3.2 Corrected IRs

- Fix IR00132985(hpmcmd -c selclear command does not validate).
- Fix IR00133009(the sdrinfo queried by hpmcmd and ipmitool command do not match).

2.4.4.4 GA02

2.4.4.4.1 New Features

- Update ATCA-7367 BIOS firmware fcu file to 1.0.3.
- Update ATCA-7367 FPGA firmware fcu file to rev04.
- i7core_edac patches applied for Nehalem/Westmere EDAC and related kernel configuration options modified.
- ixgbe Linux driver enhancement to add five tuple filtering functions for Intel 82599 fabric NIC. Userland script ethtuple developed to make five 5 tuple configurations.
- Make 82576,82599 NIC multi-queue IRQ affinity automatically bound to each CPU core at system startup.
- FUF enhancement to support remote update.
- Change hostname to ATCA-7367-XXX (XXX is slot number of blade).
- Kernel tuning for performance.
    - CONFIG_INTEL_IOATDMA is set for performance
    - CONFIG_DMA_ENGINE is set
    - CONFIG_NET_DMA is set
    - CONFIG_DCA is set

- CONFIG_SLAB removed from kernel configuration
- CONFIG_SLUB and CONFIG_SLUB_DEBUG is used instead of CONFIG_SLAB
- CONFIG_MTRR is used as the processor supports MTRR (please refer to Inter manual 253668.pdf section 11.11)
- CONFIG_HZ_1000 is set instead of CONFIG_HZ_250

- Make LHC daemon start up automatically for PXE net booting up.
- Optimize the output format of hpmcmd –c deviceid output.

2.4.4.4.2 Corrected IRs

- Fix IR00131958(iSCSI daemon not configured in current PNE LINUX).
- Fix IR00132755(ATCA-7367 FPGA fcu image version number is 0.0.00000).
- Fix IR00132706(RTM OOS/IS LED don't switch off/on when board starts up).

2.4.4.5 GA01

2.4.4.5.1 New Features

- Add support of HPI-B to BBS package.
- Add Link Health Check utility to BBS package.
- Add osBoot into rc3.d.
- Update ATCA-7367 BIOS fcu file to 1.0.2.
- Update ATCA-7367 IPMC firmware fcu file to 2.00.008.
- Add support of IPMC firmware fcu files for 2 different ATCA-7367 variants which have AMC bay populated/unpopulated.
- Update ATCA-7367 FPGA firmware fcu file to rev 03.
- Remove unnecessary kernel debug options from kernel configuration.
- Remove ‘/opt/motorola’ directory references from RFS stuffs.
- Add i2c-tools into BBS custom layer package.
- CONFIG_SYSFS_DEPRECATED removed from kernel configuration.

2.4.4.5.2 Corrected IRs

- Fix IR00104731(/opt/bladservices/tools/flashrfsrc installed PNE RFS in an eUSB sometimes could find the when SATA/SAS hard disk inserted)
- Fix IR00132641 and IR00132379 (The linuxrc script can not work)

2.4.4.6 EA04

2.4.4.6.1 New Features

- Clean those garbage hard-coded/linked file/directory references in ATCA7367_custom_layer.tgz/bbs/scripts and all of the env_pen30.sh script file in Linux modules.
- Make new building system script sets.
- Add ARTM-ATCA-7360 MMC firmware and MMC bootloader HPM image into fcu repository.

2.4.4.6.2 Corrected IRs

- Fix IR00132122 (service NFS can not start).

2.4.4.7 EA03

2.4.4.7.1 New Features

- Upgrade Wind River Linux kernel from 2.6.26.25 to 2.6.26.39
- Upgrade IXGBE driver for 82599 to 2.0.72.4,Upgrade IGB driver for 82576 to 2.1.9
- Opening multi-queue interrupt for BASE &&Fabric interface
- Apply Wind River Linux UP2

2.4.4.7.2 Corrected IRs

- Fix IR00132148 (caller is ixgbe_down+0x51/0x3d0 [ixgbe]: BUG: using smp_processor_id() in preemptible [00000000] code: ip/5830).
- Fix IR00132068 (In the shutdown of process, it shows the information that “Stopping portmap failed”).
- Fix IR00132392 (BBS occasionally can’t fully startup to PNE).
- Fix IR00132379 (script can't configure flash boot, But DA03 has not this issue).

- Fix IR00132356 (The "HPMSERVER" still exist in /var/run when hpm has been stopped).
- Fix IR00132354 (ATCA-7367 power off, IS LED is still light).
- Fix IR00132350 (Command of fcu -v -f /opt/bladeservices/rom/atca-7367-spi.bin fail).

2.4.4.8 EA01

2.4.4.8.1 New Features

- Add clock Agent Module for AMC telecom clock
- Add FPGA Driver for AMC telecom clock
- Upgrade Wind River Linux kernel from 2.6.26.17 to 2.6.26.25

2.4.4.8.2 New Features

- Fix IR00132057 (Wind River Linux hang sometimes when boot up ATCA7367).
- Fix IR00073282 (hpmcmd -c portget fails).
- Fix IR00069588 (snmp: send_trap: Failure in sentto: Network unavailable).

2.5 Known Limitations

2.5.1 HPI Support

The blade is designed for HPI-B. It does not include support for HPI-A. When used in HPI-A systems, its functionality may be limited.

2.5.2 Operating System & RFS & BBS

- **Kernel Configuration**
  The kernel configuration is preliminary and will be changed in the next releases without further notifications. A backward compatibility cannot be guaranteed.
- **Root File System**
  The Root File System (rfs) layout (file system type, number of partitions etc) is preliminary and will be changed in the next releases without further notifications. The configuration of services is incomplete and will be provided in one of the next releases. A backward compatibility cannot be guaranteed.

- **FCU**

  FCU's support of BIOS firmware upgrading using HPM.1 image feature is only available in BBS GA04 and later releases.

- **Ethernet drivers**
  The ATCA7367 blade uses Intel 82576 1GbE and 82599 10GbE controller are not supported in WindRiver Linux 3.0. However the latest drivers have been included in the ATCA7367_custom_layer with 82599 and 82576 5-tuple function codes added by Emerson.

- **Ethernet controller 5-Tuple utility**

  5-Tuple utility for Intel 82599EB(the fabric interface of ATCA-7367) is only available in BBS GA02 and latter releases.

  5-Tuple utility for Intel 82576(the base interface and AMC Ethernet interfaces of ATCA-7367, the front panel Ethernet interfaces of ATCA-7367's ancillary RTM blades including RTM-ATCA-7360, RTM-ATCA-7360-L, RTM-ATCA-7360-FC) is only available in BBS GA04 and latter releases.

- **Kdump system**

  Kdump uses kexec to quickly boot to a dump-capture kernel whenever a dump of the system kernel's memory needs to be taken (for example, when the system panics). The system kernel's memory image is preserved across the reboot and is accessible to the dump-capture kernel. User could configure kdump with /etc/kdump.conf and /etc/sysconfig/kdump.

  In order to support kdump, a seconde kernel "kernel-kdump" is provided with its modules "modules4kdump.tar.bz".

  The kdump utility is only available for BBS systems installed on hard disk, eUSB flash and USB sticks.

2.6 Known Issues

Table 5 Kernel and Root File System Issues

IR	Issue	Description
IR00132837	open-iscsi application iscsiadm version 2.0-868 used in GA02 BBS could not log out once logged in.	From the open-iscsi website, it is reported that, there is a mismatch between open-iscsi application(2.0-868) and kernel(2.6.27.39), it is recommended that, the open-iscsi version 2.0-870 should work with kernel(2.6.27.39). Any of open-iscsic version larger than 2.0.870 would

IR	Issue	Description
		work well. The incompatible sysfs resulted in this problem. The files of sysfs accessed by application do not have the right destination as codes implied. Walkaround: to use an open-iscsi version of 2.0-870 or later ones. 2.0-870.3 has been verified by us.
N/A	Comment option “auto_dump” in /etc/kdump.conf would output ERROR messages for loading modules.	Due to second kernel was built different from system boot up kernel, modules for system boot up kernel could not be used for second Dump-capture kernel, it would show “Invalid module format” when module is loaded.

3 Firmware Upgrading

PigeonPoint Systems has made enhancement based on ipmitool-1.8.9, that is the PigeonPoint Systems specific variant is 1.8.9-pps8(source code available in BBS release package folder of /sources/GPL/). Please use this candidate of ipmitool to upgrade IPMC/MMC firmware; the file is available here in a runtime BBS system:

```
/opt/bladeservices/tools/ipmitool_pps
```

Note that BBS has also replaced the PNE 3.0 provided ipmitool binary with a softlink to the above candidate of ipmitool_pps.

The Firmware Upgrade Command Line Utility (FCU) of BBS provides a uniform way to upgrade firmware on Emerson blades, regardless on which flash locations the firmware is stored. FUF upgrades the IPMC firmware (via HPM agent).

4 Installation

4.1 Serial Console settings

Setup your serial console as follows:

Table 6: Serial Console settings

Terminal Type	VT100
Bits per second	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

4.2 ATCA7367 - SW

The ATCA-7367 is delivered with preinstalled BIOS and IPMI firmware.

The CD delivered with some boards contains:

- Linux kernel (2.6.27.39) and root file system (as ramdisk image) based on WindRiver PNE3.0.2.

If you need access to the latest software packages please contact your local Emerson sales representative.

4.2.1 USB Boot

In order to boot the blade via USB stick, proceed as follows:

1. Prepare an USB stick with the kernel, ramdisk and an appropriate boot loader (e.g. grub)
2. Insert USB stick
3. Check that the USB support is switched on in BIOS. Verify that in BIOS the boot option priority #1 is set to USB.

4. Verify that the serial port console settings are enabled.
5. Reboot the blade

4.2.2 Network Boot

To boot the blade via network, proceed as follows:

1. Set up a DHCP and TFTP server.
   For a detailed description on how to setup the DHCP and TFTP server refer to the *Centellis 2000: Quick Start Guide*.
2. Create a /tftpboot/ATCA7367 directory on the DHCP and TFTP server.
3. Copy all files obtained from your local sales representative into the /tftpboot/ATCA7367 directory.
4. Copy the file “default.bbs-atca7367” into the directory /tftpboot/pxelinux.cfg.
5. Link the MAC address of your ATCA-7367 blade, for example 01-00-80-42-26-79-9f to the default.bbs-atca7367 file.
6. Check that the BIOS options “Launch PXE OpROM” and “Network Stack” are enabled. Verify that in BIOS the boot option priority #1 is “Network x” - depending on your configuration - is selected.
7. Reboot the blade.
   The blade boots via netboot.
8. Enter a valid user-name/password combination at the prompt.
9. You can now install e.g. your Operating system and BBS with the following scripts. The scripts can be found at /opt/bladeservices/tools

Table 7: Install scripts

Device	Tool	Description
Onboard USB Flash disk	flashrc	Installs kernel and ramdisk on the Onboard USB Flash Disk
Onboard USB Flash disk SATA Cube	flashrfsrc	Installs kernel and unpacked root-filesystem on the Onboard USB Flash Disk (1 partition)
AMC SATA/SAS and RTM-SAS disk, SSD with a size bigger than 30GB	linuxrc	Installs kernel and unpacked root-filesystem on the HDD Disk (8 Partitons)

4.2.3 Network Interface setup

Table 8: Network Interfaces

Interface	Description	Configured
front	Front Panel Interface	No
update	Update Channel Interface	No
base1	Base Interface #1	Yes, requests IP Address via DHCP
base2	Base Interface #2	Yes, requests IP Address via DHCP
fabric1	Fabric Interface #1	Yes, Static IP address:192.168.11.<slotnr*10>
fabric2	Fabric Interface #2	Yes, Static IP address:192.168.12.<slotnr*10>
amc1	AMC Interface #1	No
amc2	AMC Interface #2	No
amc3	AMC Interface #3	No
amc4	AMC Interface #4	No
rtm1	RTM Interface #1	No
rtm2	RTM Interface #2	No
rtm3	RTM Interface #3	No
rtm4	RTM Interface #4	No
rtm5	RTM Interface #5	No
rtm6	RTM Interface #6	No

4.2.4 User/Password

Table 9 User/Password Combinations

User	Password	Notes
root	root	Privileged root account

Applicable Documents

Emerson Network Power Embedded Computing Documentation

Title	Publication Number
Basic Blade Services Software for the ATCA-7367 Programmer's Reference	6806800K69
ATCA-7367 Quick Start Guide	6806800K66
ATCA-7367 Release Notes	6806800K70
ATCA-7367 Safety Notes Summary	6806800K67
ATCA-7367 Installation and Use	6806800K72
Centellis 2000 Preliminary Installation and Use	6806800G45
Centellis 2000 Quick Start Guide	6806800H25

You may download the documentation here: Literature Catalog

Third-Party Documents

Company/Source	Title
Intel www.developer.intel.com/design/servers/ipmi Platform Management FRU Information Storage Definition v1.0	IPMI Specification v1.5
PICMG www.picmg.org/specifications.stm	PICMG 3.0 Revision 1.0 Advanced TCA Base Specification
Service Availability Forum www.saforum.org	SAI-HPI-B.01.01 Service Availability Forum Hardware Platform Interface specification SAI-HPI-B.02.01 Service Availability Forum Hardware Platform Interface specification SAIM-HPI-B.01.01.01-ATCA Service Availability Forum HPIto-AdvancedTCA Mapping specification