

## Release Notes

Pentair/Schroff firmware part number 63998-08175

Based on Pigeon Point Systems (PPS) firmware release V3.2.0.1 for ShMM-500

**Release Date: August 22, 2013**

### Release History:

Release date	Pentair/Schroff FW P/N	PPS version
December 14, 2006	63998-04652	V2.3.2
April 26, 2007	63998-04660	V2.4.2
January 18, 2008	63998-04664	V2.5.1
July 28, 2008	63998-08152	V2.5.3
January 29, 2010	63998-08160	V2.6.4.4
September 14, 2010	63998-08161P4	V2.7.0.4
October 7, 2010	63998-08162	V2.7.1
July 1, 2011	63998-08165	V2.7.4
January 19, 2012	63998-08170	V2.8.1
June 6, 2012	63998-08171	V2.8.2.1
June 29, 2012	63998-08172	V2.8.3
October 22, 2013	63998-08175	V3.2.0.1

### Introduction:

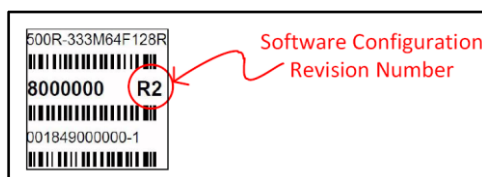
The firmware package “63998-08175.zip” contains Firmware release 3.2.0.1 for the **ShMM-500**. The PPS supplied RFS image has been modified by Pentair/Schroff to adapt the firmware to Pentair/Schroff ATCA shelves. The kernel image has not been modified and is identical to the PPS kernel image. The U-boot environment has been modified to reflect the necessary non-volatile system settings for this firmware running on Pentair/Schroff shelf managers. The Pentair/Schroff part number for this firmware release is 63998-08175.

### Important Notice:



The flash memory device on the ShMM-500 has gone to end-of-life status. ShMM-500s produced after November 1, 2012 will contain a new version of the flash memory device and must use an updated Linux kernel. The Linux kernel in version 3.2.0.1 of the shelf manager firmware has been modified so that it will work with the updated flash memory device, and will also work with any previous flash memory device.

The ShMM-500s with the updated flash memory device will be marked with “R2” after the serial number.



Prior to V2.5.3 the interaction between the shelf manager and the shelf FRUs was hard coded into the shelf manager firmware. Starting with Version V2.5.3, the Pentair/Schroff shelf manager firmware supports Pigeon Point Systems HPDL (Hardware Platform Description Language). See Pigeon Point Systems document “ShelfManagerREL\_3\_2\_0\_1\_20130905.pdf”. HPDL records are stored in the shelf manager’s FRU data and in the shelf FRU data. The HPDL records contain the structure, device population, and definitions of the shelf hardware and behavior of the Pentair/Schroff ATCA shelf. Therefore, as part of the upgrade process of the firmware, the FRU files of the shelf manager and the shelf must be upgraded at the same time. This requires a complete reboot of both shelf manager(s) **at the same time or a power cycle of the shelf.**

The correct assignment of the FRU files to the corresponding shelf part number is given in the table ‘FRU ID Files’ below. The FRU files are shipped with this release and are stored on the ShMM-500 in the /var/nvdata directory.




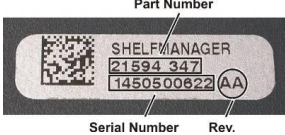


**Note:** It is possible to run the existing shelf managers and shelf in non-HPDL mode with V3.2.0.1 firmware. Because new shelf manager and shelf designs will only be supported in HPDL mode we recommend that shelf managers are run in HPDL mode. The Linux command “getenv rc2” will show how the shelf manager is configured. If the result is “rc.acb-HPDL” then the shelf manager is configured to run in HPDL mode.

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## 1 Pentair/Schroff shelf manager versions

The table below shows the Pentair/Schroff shelf manager versions, please identify your shelf manager type. You will need the corresponding RC2-variable later in the upgrade process.

Photo	Type	RC2-variable
 <p>The part number of the ACB-V shelf manager is on the label at the rear side of the shelf manager, see photo below:</p> <ul style="list-style-type: none"> <li>- Radial IPMB version: p/n = 21596-292</li> <li>- Bused IPMB version: p/n = 21596-291</li> </ul> 	ACB-V	rc.acb-HPDL
 <p><b>Note: If you have this shelf manager in your Zephyr or Ventus shelf please follow the special upgrade instructions.</b></p> <p>The part number of the ACB-IV shelf manager is on the label at the rear side of the shelf manager, see photo below:</p> <ul style="list-style-type: none"> <li>- Radial IPMB version: p/n = 21594-347</li> <li>- Bused IPMB version: p/n = 21594-346</li> </ul> 	ACB-IV	rc.acb-HPDL
 <p>The part number of the ACB-III shelf manager is on the label at the rear side of the shelf manager, see photo below:</p> <ul style="list-style-type: none"> <li>- Radial IPMB version: p/n = 21593-251</li> <li>- Bused IPMB version: p/n = 21593-250</li> </ul> 	ACB-III	rc.acb3

The following Shelf Manager types originally shipped with ShMM-300 modules but might have been upgraded to ShMM-500 modules by the customer

For upgrade instructions, please contact your Pentair/Schroff service partner.

	<p>ACB-III</p>	<p>rc.acb3e</p>
	<p>ACB-II ACB-II with ShMM-500</p>	<p>rc.acb2 rc.acb2-HPDL</p>
	<p>SMC-1</p>	<p>rc.acb-es</p>

## 2 Preparations

### Firmware files

Unzip the file 63998-08175.zip. This file contains the following Pre-Built images:

TFTP Upgrade files:

63998-08175.kernel

Upgrade kernel image for TFTP upgrade

63998-08175.rfs

Upgrade RFS image for TFTP upgrade

Reliable Upgrade files:

63998-08175.shmm500.kernel Upgrade kernel for reliable upgrade

63998-08175.shmm500.rfs

Upgrade RFS for reliable upgrade

63998-08175.u-boot

Upgrade u-boot for reliable upgrade

### Terminal Program

Connect a serial console cable to a terminal or PC running a terminal emulator (Hypercom, Minicom, HyperTerminal etc) to the serial interface of the Shelf Manager (RJ45 connector “SERIAL” or “ShMgr” on the SAP). Set the terminal or emulator to 115200, N, 8, 1 (115200 baud, no parity, 8 bits per character, 1 stop bit).

Login user is “root” with no password.

### FRU ID files

The Shelf Manager firmware images contain FRU ID files for the Shelf for most production chassis.

**Important Note:** This firmware release also contains updated shelf FRU data files. These FRU data files are stored in the /var/nvdata directory of the ShMM-500. The installation procedure of the FRU data files is described below. Please make sure to install these FRU data files after installing the new firmware image.



**Note:** The FRU ID file name is comprised if the top assembly part number without the “-“, two letters representing the major and minor revision level, and “BIN.bin” indicating that the contents are binary. Shelf and shelf manager FRU ID files that are revision HA and higher support running the shelf managers in HPDL mode. The FRU ID files for the fan tray, PEM, or SAP do not contain HPDL and may have a revision level lower than HA.

**Note:** If the FRU ID files that are already installed in your shelf or shelf manager are the same revision as those in the table below, they do not need to be upgraded. You can use the shelf manager command “clia fruinfo” to find the existing FRU ID file revision level in the “FRU Programmer File ID” field.

FRU ID files included in firmware version 63998-08175:

Chassis P/N	FRU File name	Chassis description
11596-007	11596007HBBIN.bin	2slot, push-pull-cooling, bused-IPMB, node-node, AC
11596-010	11596010HBBIN.bin	5slot, push-cooling, bused IPMB, Triple Repl. Mesh, DC
11596-012	11596012HBBIN.bin	5slot, push-cooling, bused IPMB, Triple Repl. Mesh, DC
11596-090	11596090HEBIN.bin	2slot, push-pull-cooling, bused-IPMB, Hub-Hub, DC
11596-100	11596100HBBIN.bin	14slot, pull-cooling, bused IPMB, Dual-Star, DC
11596-101	11596101HBBIN.bin	14slot, pull-cooling, rad. IPMB, Dual-Star, DC
11596-102	11596102HBBIN.bin	14slot, pull-cooling, bused IPMB, Full-Mesh, DC



11596-103	11596103HBBIN.bin	14slot, pull-cooling, rad. IPMB, Full-Mesh, DC
11596-107	11596107HBBIN.bin	2slot, push-pull-cooling, bused-IPMB, node-node, DC
11596-150	11596150HEBIN.bin	14slot, pull-cooling, bused IPMB, Dual-Star, DC
11596-151	11596151HEBIN.bin	14slot, pull-cooling, rad. IPMB, Dual-Star, DC
11596-152	11596152HDBIN.bin	14slot, pull-cooling, bused IPMB, Full-Mesh, DC
11596-153	11596153HDBIN.bin	14slot, pull-cooling, rad. IPMB, Full-Mesh, DC
11596-160	11596160HDBIN.bin	6slot, push-pull-cooling, bused IPMB, Triple Repl. Mesh, DC
11596-161	11596161HDBIN.bin	6slot, push-pull-cooling, rad. IPMB, Triple Repl. Mesh, DC
11596-300	11596300HCBIN.bin	14slot, push-cooling, bused IPMB, Dual-Star, DC
11596-301	11596301HBBIN.bin	14slot, push-cooling, rad. IPMB, Dual-Star, DC
11596-302	11596302HBBIN.bin	14slot, push-cooling, bused IPMB, Full-Mesh, DC
11596-303	11596303HBBIN.bin	14slot, push-cooling, rad. IPMB, Full-Mesh, DC
11990-060	11990060HABIN.bin	6slot, push-pull-cooling, bused IPMB, Triple Repl. Mesh, AC
11990-100	11990100HCBIN.bin	14slot, 400W, 40G, push-pull-cooling, bused IPMB, Dual-Star, DC
11990-101	11990101HCBIN.bin	14slot, 400W, 40G, push-pull-cooling, radial IPMB, Dual-Star, DC
11990-102	11990102HABIN.bin	14slot, 400W, 40G, push-pull-cooling, bused IPMB, Dual-Dual-Star, DC
11990-103	11990103HABIN.bin	14slot, 400W, 40G, push-pull-cooling, radial IPMB, Dual-Dual-Star, DC
11990-200	11990200HABIN.bin	6slot, 450W, 40G, push-pull-cooling, bused IPMB, Triple Repl. Mesh, AC/DC
11990-600	11990600HABIN.bin	14slot, 300W, 40G, pull-cooling, bused IPMB, Dual-Star, DC
11990-601	11990601HABIN.bin	14slot, 300W, 40G, pull-cooling, radial IPMB, Dual-Star, DC
11990-604	11990604HABIN.bin	14slot, 300W, 40G, pull-cooling, bused IPMB, Dual-Star, AC
11990-605	11990605HABIN.bin	14slot, 300W, 40G, pull-cooling, radial IPMB, Dual-Star, AC

### 3 Upgrading the Shelf Manager to release 3.2.0.1

There are two ways of upgrading the Shelf Manager firmware:

#### 1) TFTP Upgrade Procedure

You can use the TFTP Upgrade Procedure which is started from the U-Boot environment of the Shelf Manager and retrieves the files from a TFTP server on your network.

#### 2) Reliable Upgrade Procedure

You can also use the Reliable Upgrade Procedure. This procedure will copy the new firmware flash images from an FTP server on your network to RAM on the ShMM-500, and then copy the new firmware images to flash memory.

#### **Note:**

We strongly recommend that you use the Reliable Upgrade Procedure instead of the TFTP Upgrade Procedure because it will leave the shelf manager in operating condition if the firmware upgrade fails. The firmware upgrade procedure must be executed for **both shelf managers in a redundant system**. Please make sure that both shelf managers are updated to the same firmware revision and configuration.

#### **Below are four examples of the required steps to upgrade your shelf:**



The first two examples shown below are for Pentair/Schroff shelf with managed FRUs. The second two examples are for Pentair/Schroff shelf with IPMC based FRUs. These procedures work on the factory default shelf configuration when a shelf is shipped from Pentair/Schroff manufacturing. Before updating deployment shelf in the field we recommend to test the procedure in your laboratory and to adapt the procedure to your specific environment if necessary. For further information regarding the firmware upgrade process please see the Pigeon Point Systems user guide “ShelfManagerUG\_2\_8\_1\_20111207.pdf”

#### **Example 1:**

Shelf with one shelf manager and serial-connection or SSH-connection to the console interface:

1. Install the firmware → **Chapter 3.1**
2. Install the FRU files → **Chapter 3.3**
3. set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.4**
4. reboot the shelf manager → **Chapter 3.5**

#### **Example 2**

Shelf with two shelf managers and serial-connection or SSH-connection to the console interface of the active shelf manager in 0x10

1. Programming the firmware and the shelf manager FRU file on the shelf manager in slot 0x10:
  - a. Connect to the active shelf manager in slot 0x10 and install the firmware → **Chapter 3.1**
  - b. Do a “cli switchover” to switch back to 0x10
  - c. Install the shelf manager FRU file on 0x10 → **Chapter 3.3**
  - d. Reboot the shelf manager using the “reboot” command
2. Programming the firmware and the shelf manager FRU file on the shelf manager in slot 0x12:
  - a. Connect to the active shelf manager in slot 0x12 and install the firmware → **Chapter 3.1**
  - b. Do a “cli switchover” to switch back to 0x12
  - c. Install the shelf manager FRU file on 0x12 → **Chapter 3.3**
  - d. Reboot the shelf manager using the “reboot” command
3. Install the FRU files in the shelf and set the correct rc2 variable



- a. Connect to the shelf manager in slot 0x10 and install the FRU files for the shelf, fan trays, PEMs and SAP → **Chapter 3.3**
- b. SSH into the backup shelf manager, IP 192.168.1.3 (user=root, no password) → **Chapter 3.4**
- c. Set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.4**
- d. Terminate the ssh connection with “exit” → **Chapter 3.4**
- e. On the shelf manager in slot 0x10 set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.5**
- f. Reboot both shelf managers simultaneously → **Chapter 3.5**

**Example 3:**

Zephyr or Ventus shelf with one shelf manager and serial-connection or SSH-connection to the console interface:

1. Set the rc2 variable to /etc/rc.acb4 → **Chapter 3.4**
  2. Install the firmware → **Chapter 3.1**
  3. Install the FRU files in the shelf manager and shelf and DSAP. → **Chapter 3.3**
- Note: Do not install FRU files in the fan trays, ISAP or PEMS!**
4. set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.4**
  5. reboot the shelf manager → **Chapter 3.5**

**Example 4**

Zephyr or Ventus shelf with two shelf managers and serial-connection or SSH-connection to the console interface of the active shelf manager in 0x10

1. Programming the firmware and the shelf manager FRU file on the shelf manager in slot 0x10:
  - a. Set the rc2 variable to /etc/rc.acb4 → **Chapter 3.4**
  - b. Connect to the active shelf manager in slot 0x10 and install the firmware → **Chapter 3.1**
  - c. Do a “cli switchover” to switch back to 0x10 → **Chapter 3.3**
  - d. Install the shelf manager FRU file on 0x10 → **Chapter 3.3**
  - e. Reboot the shelf manager using the “reboot” command
2. Programming the firmware and the shelf manager FRU file on the shelf manager in slot 0x12:
  - a. Set the rc2 variable to /etc/rc.acb4 → **Chapter 3.4**
  - b. Connect to the active shelf manager in slot 0x12 and install the firmware → **Chapter 3.1**
  - c. Do a “cli switchover” to switch back to 0x12 → **Chapter 3.3**
  - d. Install the shelf manager FRU file on 0x12 → **Chapter 3.3**
  - e. Reboot the shelf manager using the “reboot” command
3. Install the FRU files in the shelf and set the correct rc2 variable
  - a. Connect to the shelf manager in slot 0x10 and install the FRU files for the shelf and DSAP  
**Note: Do not install FRU files in the fan trays, ISAP or PEMS!** → **Chapter 3.3**
  - b. SSH into the backup shelf manager, IP 192.168.1.3 (user=root, no password) → **Chapter 3.4**
  - c. Set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.4**
  - d. Terminate the ssh connection with “exit” → **Chapter 3.4**
  - e. On the shelf manager in slot 0x10 set the rc2 variable to /etc/rc.acb-HPDL → **Chapter 3.4**
  - f. Reboot both shelf managers simultaneously → **Chapter 3.5**

### 3.1 Reliable Upgrade Procedure

The Reliable Upgrade procedure will copy the new firmware flash images from an FTP server on your network to RAM on the ShMM-500 and then copy the images to flash memory.

#### **STEP 1**

Network settings:

In order to retrieve the new firmware images the Shelf Manager needs a network connection to your FTP server. If this already exists through the Base Interface hub then no further network configuration is required. If your Base Interface hubs are not connected to a network, you can use the RJ-45 connector on the front panel of the Shelf Manager to connect to the FTP server on your network.

If you need to use the front panel Ethernet connector you need to set the jumpers on the Shelf Manager to route the primary Ethernet port to the front panel. When the jumpers are on the pins towards the front panel the Ethernet is connected to the front panel connector. See the Shelf User Manual for details of the jumper setting.

You need to configure the IP Address that the Shelf Manager will use on the network to access the FTP server. The command “`cli setlanconfig 1 ip 192.168.0.2`” will set the IP Address of the **active** Shelf Manager to “192.168.0.2”. The active Shelf Manager is the one with the green LED illuminated and not blinking. You need to substitute “192.168.0.2” in the example for your desired IP Address.

If your Shelf Manager is on a different network than your FTP server, then you need to configure the Default Gateway. The command “`cli setlanconfig 1 dft_gw_ip 192.168.0.1`” will set the IP Address of the Default Gateway to “192.168.0.1”. You need to substitute “192.168.0.1” in the example for the IP Address of the Default Gateway on your network.

If you use subnets on your network then you need to change the Subnet Mask from the default value of “255.255.255.0”. The command “`cli setlanconfig 1 subnet_mask 255.255.255.128`” will set Subnet Mask of the Subnet Mask to “255.255.255.128”. You need to substitute “255.255.255.128” in the example for the Subnet Mask of your network.

You can use the command “`ping 192.168.0.6`” to test the network connection to the FTP server. You need to substitute “192.168.0.6” in the command for the IP address of the FTP server on your network. The example below shows a successful ping test.

```
# ping -c 2 192.168.0.6
PING 192.168.0.6 (192.168.0.6): 56 data bytes
64 bytes from 192.168.0.6: icmp_seq=0 ttl=64 time=1.5 ms
64 bytes from 192.168.0.6: icmp_seq=1 ttl=64 time=1.9 ms
--- 192.168.0.6 ping statistics ---
2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 1.5/1.7/1.9 ms
```

Connect a serial console cable to from a terminal or PC running a terminal emulator (Hypercom, Minicom, Hyperterminal etc) to the console port of the Shelf Manager. Set the terminal or emulator to 115200, N 8, 1 (115200 baud, no parity, 8 bits per character, 1 stop bit).

#### **STEP 2**

Upgrade Process:

Put the three Reliable Upgrade FLASH images (63998-08175.shmm500.kernel, 63998-08175.shmm500.rfs, 63998-08175.u-boot) on a FTP server that is on the same network as the Shelf Managers.

For this example the Reliable Upgrade FLASH images were put in the /tmp directory on the FTP server. A single command is executed on the **active** Shelf Manager to upgrade the FLASH images. This command will download the FLASH images using FTP, copy them into the alternate FLASH memory, configure the Shelf Manager for a provisional boot, and reboot the Shelf Manager.

If all goes well the reliable upgrade watchdog timer will be reset after Linux boots and the provisional FLASH memory will be configured as the current FLASH memory. If the upgrade fails the original FLASH memory will be configured as the current FLASH memory and the Shelf Manager will reboot.

In the example below “192.168.0.7” is the TCP/IP address of the FTP server. You will need to substitute the TCP/IP address of your FTP server. In the example “/tmp” is the directory on the FTP server that contains the new FLASH images. You will need to substitute the directory name on your FTP server that contains the FLASH images. In the example “ftp” is a valid userid on the FTP server and “ftppw” is the password for the userid. You will need to substitute both “ftp” and “ftppw” for a valid userid and password on your FTP server.

This is an example of the Reliable Upgrade command:

```
rupgrade_tool -s -v -d --k=63998-08175.shmm500.kernel --r=63998-08175.shmm500.rfs --u=63998-08175.u-boot --proto=ftp:192.168.0.7:/tmp:ftp:ftppw --hook=erase
```

**Note:** This command is on a single line.

This is an example of the Reliable Upgrade command and the response of the Shelf Manager:

```
# rupgrade_tool -s -v --k=63998-08175.shmm500.kernel --r=63998-08175.shmm500.rfs --u=63998-08175.u-boot --proto=ftp:10.183.7.176:/tmp:ftp:ftp --hook=erase
rupgrade_tool: PLB is 6
rupgrade_tool: EEPROM page saved
rupgrade_tool: persistent flash is 0
rupgrade_tool: provisional flash is 1
rupgrade_tool: copying image(s)
rupgrade_tool: copying 63998-08175.u-boot from 10.183.7.176:/tmp to /tmp using 'ftp' protocol
220-FileZilla Server version 0.9.36 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (10,183,7,176,11,0)
RETR /tmp/63998-08175.u-boot
150 Connection accepted
226 Transfer OK
QUIT
221 Goodbye
rupgrade_tool: copying 63998-08175.shmm500.kernel from 10.183.7.176:/tmp to /tmp using 'ftp' protocol
220-FileZilla Server version 0.9.36 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (10,183,7,176,11,1)
RETR /tmp/63998-08175.shmm500.kernel
150 Connection accepted
226 Transfer OK
```



```
QUIT
221 Goodbye
rupgrade_tool: copying 63998-08175.shmm500.rfs from 10.183.7.176:/tmp to /tmp using 'ftp'
protocol
220-FileZilla Server version 0.9.36 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (10,183,7,176,11,2)
RETR /tmp/63998-08175.shmm500.rfs
150 Connection accepted
226 Transfer OK
QUIT
221 Goodbye
rupgrade_tool: invoking scripts (step4v*) [--u=63998-08175.u-boot --k=63998-08175.shmm500.kernel
--r=63998-08175.shmm500.rfs --proto=ftp:10.183.7.176:/tmp:ftp:ftp --hook=erase]
rupgrade_tool: copying 63998-08175.u-boot from /tmp to /dev/mtdchar8 using 'cp' protocol
rupgrade_tool: copying 63998-08175.shmm500.kernel from /tmp to /dev/mtdchar7 using 'cp' protocol
rupgrade_tool: copying 63998-08175.shmm500.rfs from /tmp to /dev/mtdchar9 using 'cp' protocol
rupgrade_tool: invoking scripts (step4h*) [erase]
4: /etc/upgrade/step4hshm: Stopping Shelf Manager.... Done
4: /etc/upgrade/step4hshm: Cleaning new /var partition.... Done
4: /etc/upgrade/step4hshm: Cleaning new /etc partition.... Done
4: /etc/upgrade/step4hshm: Copying /etc/ssh keys..... Done
4: /etc/upgrade/step4hshm: Upgrade complete.
rupgrade_tool: image(s) copy OK
rupgrade_tool: watchdog started
rupgrade_tool: selected provisional flash
rupgrade_tool: reboot
Restarting system.
```

U-Boot 1.1.4 (Oct 22 2013 - 09:00:47)

```
CPU: Au1550 324 MHz, id: 0x02, rev: 0x00
Board: ShMM-500
S/N: 08026624
DRAM: (Samsung K4S511633F) 128 MB
Flash: 64 MB
In: serial
Out: serial
Err: serial
ADM1060: configuration version 1.5
Net: AuX00 ETHERNET
Hit any key to stop autoboot: 0
## Booting image at be080000 ...
Image Name: 63998-08175 Kernel Linux-2.4.26
Created: 2013-10-22 13:01:18 UTC
Image Type: MIPS Linux Kernel Image (gzip compressed)
Data Size: 879654 Bytes = 859 kB
Load Address: 80100000
Entry Point: 802d4040
Verifying Checksum ... OK
Uncompressing Kernel Image ... OK
## Loading Ramdisk Image at be440000 ...
Image Name: 63998-08175 RFS 3.2.0.1
Created: 2013-10-22 13:01:18 UTC
Image Type: MIPS Linux RAMDisk Image (gzip compressed)
Data Size: 3918820 Bytes = 3.7 MB
Load Address: 00000000
Entry Point: 00000000
Verifying Checksum ... OK
```

Starting kernel ...

init started: BusyBox v1.16.2 (2013-09-05 08:20:41 PDT)

## Release Note



```
/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /dev/mtdblock10 to /var/upgrade
/etc/rc: Mounted /tmp
/etc/rc: Checking the reliable upgrade watchdog timer...activated
/etc/rc: Mounted /dev/mtdblock0 to /var
/etc/rc: Strobing the reliable upgrade WDT
/etc/rc: /dev/mtdblock1 appears to be empty ... restoring from factory /etc...
/etc/rc: Preserved ssh_host_dsa_key in /etc/ssh
/etc/rc: Preserved ssh_host_rsa_key in /etc/ssh
/etc/rc: Mounted /dev/mtdblock1 to /etc
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm500
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts updated with shmm500 192.168.0.22 entry
/etc/netconfig: Updating /etc/profile.sentry with IP settings
/etc/netconfig: Starting /bin/inetd...
/etc/netconfig: Starting time synchronization script
/etc/rc.acb-HPDL: Image Name: 63998-08175 RFS 3.2.0.1
/etc/rc.acb-HPDL: Updating /etc/profile.sentry with specific settings
/etc/rc.acb-HPDL: Starting snmpd...
/etc/rc.acb-HPDL: Starting httpd...
/etc/rc.acb-HPDL: Starting Shelf Manager ... for carrier type ACB
/etc/rc.acb-HPDL: Command line: shelfman -sf
/etc/rc.acb-HPDL: Strobing the reliable upgrade WDT

<*> 01:48:33.729 [141] Pigeon Point Shelf Manager ver. 3.2.0.1. Built on Sep 5 2013 08:13:49
<*> 01:48:33.790 [141] *** Lock log print buffer at 0x10070010 ***
<*> 01:48:33.792 [141] *** Pthread lock log print buffer at 0x10074860 ***
<I> 01:48:33.802 [141] Reading configuration file: /etc/shelfman.conf
```

```
shmm500 login: root
Password:
```

### **Step 3**

Verification of the upgrade:

After bootup of the system log in as root with empty password.

```
shmm500 login: root
Password:
#
```

To verify the successful upgrade, you can verify the version that you are running with the “version” command:

```
# version
```

```
Current Boot
Image Name: 63998-08175 U-Boot 1.1.4
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Firmware (uncompressed)
Data Size: 189360 Bytes = 184.92 kB = 0.18 MB
Load Address: 0x9FC00000
Entry Point: 0x00000000

Current Kernel
Image Name: 63998-08175 Kernel Linux-2.4.26
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Kernel Image (gzip compressed)
Data Size: 879654 Bytes = 859.04 kB = 0.84 MB
Load Address: 0x80100000
Entry Point: 0x802D4040
```



Current RFS  
Image Name: 63998-08175 RFS 3.2.0.1  
Created: Tue Oct 22 13:01:18 2013  
Image Type: MIPS Linux RAMDisk Image (gzip compressed)  
Data Size: 3918820 Bytes = 3826.97 kB = 3.74 MB  
Load Address: 0x00000000  
Entry Point: 0x00000000

Alternate Kernel  
Image Name: 63998-08174 Kernel Linux-2.4.26  
Created: Fri Jun 29 17:20:06 2012  
Image Type: MIPS Linux Kernel Image (gzip compressed)  
Data Size: 879448 Bytes = 858.84 kB = 0.84 MB  
Load Address: 0x80100000  
Entry Point: 0x802D4040

Alternate RFS  
Image Name: 63998-08174 RFS 3.1.1  
Created: Fri Jun 29 17:20:06 2012  
Image Type: MIPS Linux RAMDisk Image (gzip compressed)  
Data Size: 3856029 Bytes = 3765.65 kB = 3.68 MB  
Load Address: 0x00000000  
Entry Point: 0x00000000

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.2.0.1  
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Copyright (c) 2002-2013 Pigeon Point Systems  
All rights reserved  
Build date/time: Sep 5 2013 08:13:49  
Carrier: HPDL/ACB  
Carrier subtype: 0; subversion: 0  
Cooling Management Library: libcooling\_acb.so; Version: 3.2.0.1  
Carrier Product ID: 21596291  
Chassis Product ID: 11596160

In case the new firmware version appears in the 'alternate' section, and the old version in the 'current' section, the watchdog timer has expired and reset the firmware version to the version before the upgrade. You can use the command 'rupgrade\_tool -sR' to flip the firmware version the shelf manager will boot.

For the necessary FRU-File update and additional settings, please proceed to the chapter '**Updating FRU data files**'.

## 3.2 TFTP Upgrade Procedure

An overview of the procedure is as follows:

\*\* Download the 63998-08175.rfs and 63998-08175.kernel images and place them on your network reachable TFTP server. The 63998-08175.rfs image includes the u-boot.bin, sentry.shmm500.kernel and sentry.shmm500.rfs images *inside* this special boot image.

\*\* TFTP boot the upgrade kernel and RFS images on your ShMM-500. Once booted, the upgrade script will automatically update your ShMM-500 using the `rupgrade_tool` utility and the new 3.2.0.1 kernel and RFS and u-boot images stored in the upgrade RFS image. It will then reboot.

\*\* For customers with early production F64M128 (large capacity ShMM-500+ modules) an additional step may be performed to reprogram the ADM1060 to enable the larger flash memory.

### Step 1

Rename the kernel and RFS files:

- Rename 63998-08175.kernel to sentry.kernel
- Rename 63998-08175.rfs to sentry.rfs

These images need to be placed on a TFTP server machine that is network reachable from the ShMM-500 module.

### Step 2

Power on your ShMM-500 based hardware and interrupt the boot-up process by pressing the space-bar on the serial port console of the ShMM-500:

```
U-Boot 1.1.4...
```

```
...
```

```
Shmm500
```

### Step 3

Verify the correct name of the download images.

Make sure that the renamed files of Step 1 correspond to the required file names in u-boot.

```
Shmm500 printenv
```

```
...
```

```
bootfile=sentry.kernel
```

```
ramdisk=sentry.rfs
```

```
.....
```

### Step 4

Make sure that the network settings for your ShMM-500 are such that it can see the TFTP server on your network:

```
shmm500 printenv serverip ipaddr netmask gatewayip
```

```
serverip=192.168.0.7
```

```
ipaddr=192.168.0.2
```

```
netmask=255.255.0.0
```

```
gatewayip=192.168.0.1
```

If any of these need to be changed, do it as follows:

```
shmm500 setenv serverip 192.168.0.88
```

```
shmm500 saveenv
```

```
Saving Environment to EEPROM...
```

```
shmm500
```

**IMPORTANT:** As part of the upgrade process, the ENV VAR settings will be restored to factory default. Please make sure to take note on the ENV VAR settings so they can be restored at the end of the upgrade. To display the current settings, type:

```
shmm500 printenv
```

The default settings are listed in the chapter 'Configuration Settings'.

### **Step 5**

If your ShMM-500 module has the net command defined, you can use this command to boot the upgrade kernel and RFS as follows:

```
shmm500 run net
```

If it does not, you can set the system variables step-by-step and start the upgrade process:

```
setenv bootargs $(bootargs) root=/dev/ram rw console=ttyS0,115200 <enter>
setenv reliable_upgrade=y <enter>
tftp 80400000 sentry.kernel <enter>
tftp 81200000 sentry.rfs <enter>
bootm 80400000 81200000 <enter>
```

The upgrade kernel and RFS will boot and automatically start the upgrade process.

This procedure may take several minutes.

The ShMM will reboot automatically after the upgrade is complete.

### **Step 6**

Verification of the upgrade:

After bootup of the system log in as root with empty password.

```
shmm500 login: root
Password:
#
```

To verify the successful upgrade, you can verify the version that you are running with the "version" command:

```
# version
```

```
Current Boot
Image Name: 63998-08175 U-Boot 1.1.4
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Firmware (uncompressed)
Data Size: 189360 Bytes = 184.92 kB = 0.18 MB
Load Address: 0x9FC00000
Entry Point: 0x00000000

Current Kernel
Image Name: 63998-08175 Kernel Linux-2.4.26
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Kernel Image (gzip compressed)
Data Size: 879654 Bytes = 859.04 kB = 0.84 MB
Load Address: 0x80100000
Entry Point: 0x802D4040

Current RFS
Image Name: 63998-08175 RFS 3.2.0.1
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux RAMDisk Image (gzip compressed)
Data Size: 3918820 Bytes = 3826.97 kB = 3.74 MB
```





Load Address: 0x00000000  
Entry Point: 0x00000000

#### Alternate Boot

Image Name: 63998-08174 U-Boot 1.1.4  
Created: Fri Jun 29 17:20:06 2012  
Image Type: MIPS Linux Firmware (uncompressed)  
Data Size: 189104 Bytes = 184.67 kB = 0.18 MB  
Load Address: 0x9FC00000  
Entry Point: 0x00000000

#### Alternate Kernel

Image Name: 63998-08174 Kernel Linux-2.4.26  
Created: Fri Jun 29 17:20:06 2012  
Image Type: MIPS Linux Kernel Image (gzip compressed)  
Data Size: 879448 Bytes = 858.84 kB = 0.84 MB  
Load Address: 0x80100000  
Entry Point: 0x802D4040

#### Alternate RFS

Image Name: 63998-08174 RFS 3.1.1  
Created: Fri Jun 29 17:20:06 2012  
Image Type: MIPS Linux RAMDisk Image (gzip compressed)  
Data Size: 3856029 Bytes = 3765.65 kB = 3.68 MB  
Load Address: 0x00000000  
Entry Point: 0x00000000

#### Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.2.0.1  
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Copyright (c) 2002-2013 Pigeon Point Systems  
All rights reserved  
Build date/time: Sep 5 2013 08:13:49  
Carrier: HPDL/ACB  
Carrier subtype: 0; subversion: 0  
Cooling Management Library: libcooling\_acb.so; Version: 3.2.0.1  
Carrier Product ID: 21596291  
Chassis Product ID: 11596160

In case the new firmware version appears in the 'alternate' section, and the old version in the 'current' section, the watchdog timer has expired and reset the firmware version to the version before the upgrade. You can try the command 'rupgrade\_tool -sR' to flip the firmware version the shelf manager will boot up.

For the necessary FRU-File update and additional settings, please proceed to the chapter '**Updating FRU data files**'.

### 3.3 Updating FRU data files



Do not use the CLI command “clia frudataw” to update the FRU ID files. Instead, use the script /var/nvdata/fru\_update to update FRU ID files. This script saves shelf specific data like serial numbers and manufacturing date. A complete list of saved data is listed in table below

Saved variables

Variable Name	Area	Info
Serial number	[Board Info Area]	
Serial number	[Chassis Info Area]	
Serial number	[Product Info Area]	
Mfg. Date/Time	[Board Info Area]	
Product Version	[Product Info Area]	
Asset Tag	[Product Info Area]	
IP address	OEM record [Shelf Manager IP Connection]	
Gateway	OEM record [Shelf Manager IP Connection]	
Netmask	OEM record [Shelf Manager IP Connection]	
	Internal Use Area	Complete

#### FRU ID file update:

Syntax:

sh /<path>/fru\_update <IPMC> <FRU ID> <path>/<filename>

<path>: Location of the FRU files, default: /var/nvdata

<filename>: Name of the FRU file.

Example: 11596401HABIN.bin

11596401: Shelf or FRU part number

HA: Revision of the FRU data file

BIN: Identification for a FRU data file

.bin Format of FRU data file

The table below lists valid values for <IPMC> and <FRU ID> for a 14 or 16 slot Pentair/Schroff shelf with managed FRUs. In order to get a list of supported FRU numbers and associated FRU types for your specific shelf type use the commands “clia fru”

<IPMC>	<FRU ID>	Description
10	0	Shelf Manager in slot 0x10
12	0	Shelf Manager in slot 0x12
20	1	Shelf SEEPROM 1
20	2	Shelf SEEPROM 2
20	3	Fan Tray 0
20	4	Fan Tray 1
20	5	Fan Tray 2
20	6	PEM 0
20	7	PEM 1
20	8	SAP

The table below lists valid values for <IPMC> and <FRU ID> for a 6, 14 or 16 slot Pentair/Schroff shelf with IPMC based FRUs. In order to get a list of supported FRU numbers and associated FRU types for your specific shelf type use the commands “`clia fru`”

<IPMC>	<FRU ID>	Description
10	0	Shelf Manager in slot 0x10
12	0	Shelf Manager in slot 0x12
20	1	Shelf SEEPROM 1
20	2	Shelf SEEPROM 2
20	3	SAP

Examples:

```
sh /var/nvdata/fru_update 20 1 /var/nvdata/11596101HABIN.bin
Writes Shelf FRU-data of the shelf with part number 11596-101 into FRU_data SEEPROM 1 and
restores the variables listed in Table 1.
```

```
sh /var/nvdata/fru_update 20 3 /var/nvdata/21596132ABBIN.bin
Writes Fan Tray FRU-data into the FRU_data SEEPROM of the left Fan Tray (Fan Tray 0) and
restores the variables listed in Table 1.
```

### Complete update:

The example below shows the complete update of the FRU files in the shelf and on the shelf managers in a 14 or 16 slot Pentair/Schroff ATCA shelf. In order to get a list of supported FRU numbers and associated FRU types for your specific shelf type use the command “`clia fru`”

Change to the /var/nvdata/directory  
# `cd /var/nvdata`

### Shelf FRU file update:

Download of FRU data to shelf SEEPROM 1:

```
# sh fru_update 20 1 <Shelf FRU file name>
```

Download of FRU data to shelf SEEPROM 2:

```
# sh fru_update 20 2 <Shelf FRU file name>
```

Download of FRU data to Fan Tray 0:

```
# sh fru_update 20 3 <Fan Tray FRU file name>
```

Download of FRU data to Fan Tray 1:

```
# sh fru_update 20 4 <Fan Tray FRU file name>
```

Download of FRU data to Fan Tray 2:

```
# sh fru_update 20 5 <Fan Tray FRU file name>
```

Download of FRU data to PEM A:

```
# sh fru_update 20 6 <PEM FRU file name>
```

Download of FRU data to PEM B:

```
# sh fru_update 20 7 <PEM FRU file name>
```

Download of FRU data to the SAP:

```
# sh fru_update 20 8 <SAP FRU file name>
```

### Shelf Manager FRU file update:

In a system with only one Shelf Manager, please consult the user manual of the shelf to determine the shelf manager address locations 10 and 12.

#### Download of FRU data to the Shelf Manager in 0x10:

```
# sh fru_update 10 0 <Shelf Manager FRU file name>
```

#### Download of FRU data to the Shelf Manager in 0x12:

```
# sh fru_update 12 0 <Shelf Manager FRU file name>
```

**Note:** The upgrade process of the shelf manager may take several minutes.

## 3.4 Setting the environmental variable rc2

After successful upgrade, set the RC2 environment variable and reboot the system.

```
# setenv rc2 /etc/rc.acb-HPDL
```



**Please make sure that the rc2 variable is set correctly. A common problem that causes the Shelf Manager to not work properly is to set the rc2 variable incorrectly. You must set the rc2 variable on both shelf managers to the same value, e.g. /etc/rc.acb-HPDL. You can check the setting with 'getenv rc2'. After setting the variable, reboot the shelf manager. If one of the shelf managers is set to a different variable, it will constantly reboot, signaling that it is not working properly.**

## 3.5 Restart the system

If you use redundant shelf managers you need to reboot both shelf managers at the same time.

There are several ways of doing this:

- 1) Power cycle the complete shelf.
- 2) Remove both shelf managers from their slots. Wait minimum 5 sec. Re-insert the shelf managers.
- 3) Push the reset-buttons on the front panel of both shelf managers (use a ball-pen tip or similar) **within a maximum delay of 3 sec.**
- 4) Use the script `fru_data_refresh` in `/var/nvdata`:

```
# cd /var/nvdata
# sh fru_data_refresh
```

## 4 Special tests for HPDL upgrade:

With the new HPDL scheme, some tests should be done after the upgrade to verify the correct installation of the firmware and the FRU files.

These tests should be done on both shelf managers in a redundant system.

### 1) Correct version installed and configured:

use the `version` command to check for the correct firmware version numbers under 'current boot', 'current kernel' and 'current rfs'.

All should be **63998-08175**.

The Pigeon Point Shelf manager version should be **3.2.0.1**.

The carrier setting should be **HPDL/ACB**.

```
# version
```

```
Current Boot
```

```
Image Name: 63998-08175 U-Boot 1.1.4
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Firmware (uncompressed)
Data Size: 189360 Bytes = 184.92 kB = 0.18 MB
Load Address: 0x9FC00000
Entry Point: 0x00000000
```

```
Current Kernel
```

```
Image Name: 63998-08175 Kernel Linux-2.4.26
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux Kernel Image (gzip compressed)
Data Size: 879654 Bytes = 859.04 kB = 0.84 MB
Load Address: 0x80100000
Entry Point: 0x802D4040
```

```
Current RFS
```

```
Image Name: 63998-08175 RFS 3.2.0.1
Created: Tue Oct 22 13:01:18 2013
Image Type: MIPS Linux RAMDisk Image (gzip compressed)
Data Size: 3918820 Bytes = 3826.97 kB = 3.74 MB
Load Address: 0x00000000
Entry Point: 0x00000000
```

```
[Alternate section] (not printed)
```

```
Pigeon Point Shelf Manager Command Line Interpreter
```

```
Pigeon Point Shelf Manager Command Line Interpreter
```

```
Pigeon Point Shelf Manager ver. 3.2.0.1
```

```
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```

```
Copyright (c) 2002-2013 Pigeon Point Systems
```

```
All rights reserved
```

```
Build date/time: Sep 5 2013 08:13:49
```

```
Carrier: HPDL/ACB
```

```
Carrier subtype: 0; subversion: 0
```

```
Cooling Management Library: libcooling_acb.so; Version: 3.2.0.1
```

```
Carrier Product ID: 21596291
```

```
Chassis Product ID: 11596160
```

### 2) Correct RC2 file

```
# cat /var/log/messages | grep "Calling /etc/rc.acb-HPDL"
```

```
Jan 22 17:22:13 shmm500 user.info /etc/rc: Calling /etc/rc.acb-HPDL
```

Check with the appropriate setting for your shelf manager from the table "Pentair/Schroff shelf manager versions" at the top of this document.

3) Correct HPDL data in carrier FRU

```
# cat /var/log/messages | grep "HPDL data in the FRU"
```

```
Jan 22 17:22:21 shmm500 daemon.info shelfman[248]: HPDL data in the FRU 886 bytes
```

4) Correct SDR data in carrier FRU

```
# cat /var/log/messages | grep "HPDL SDRs in the FRU"
```

```
Jan 22 17:22:21 shmm500 daemon.info shelfman[248]: HPDL SDRs in the FRU 318 bytes
```

5) Correct HPDL data in shelf FRU

```
# cat /var/log/messages | grep "HPDL Chassis data in the Shelf FRU"
```

```
Jan 22 17:24:26 shmm500 daemon.info shelfman[248]: HPDL Chassis data in the Shelf FRU  
593 bytes
```

6) Correct SDR data in shelf FRU

```
# cat /var/log/messages | grep "HPDL Chassis SDRs in the Shelf FRU"
```

```
Jan 22 17:24:26 shmm500 daemon.info shelfman[248]: HPDL Chassis SDRs in the Shelf FRU  
190 bytes
```

In case of errors or different output from the commands above, please check the following:

- The correct FRU files have been installed.
- The correct shelf manager type is set in the RC2 variable

## 5 Resetting the Shelf Manager configuration to the default values

The U-boot bootloader stores its environment variables in a SEEPROM. You can modify these variables with either the U-boot or Linux “setenv” command. If you set the environment values incorrectly you can use this procedure to set the U-boot environment variables back to their default values.

1. Reboot the shelf manager with the “reboot” command.
2. Stop the shelf manager from booting Linux by entering a character on the serial console when “Hit any key to stop autoboot” is displayed.
3. Enter the U-boot commands “eeprom write 80400000 0 1800” and “reset”.
4. Stop the shelf manager from booting Linux by entering a character on the serial console when the U-boot banner is displayed.
5. Enter the U-boot commands “save”, “save”, and “reset”.



**Note:** If you set the U-boot environment to the factory default values the rc2 variable may not be set to the correct value for your shelf manager carrier board. You must set the rc2 variable on both shelf managers to the same value, e.g. /etc/rc.acb-HPDL. (See section 1 for the correct RC2 value) You can check the setting with ‘getenv rc2’. After setting the variable, reboot the shelf manager. If one of the shelf managers is set to a different variable, it will constantly reboot, signaling that it is not configured properly.

```
U-Boot 1.1.4 (Oct 22 2013 - 09:00:47)
```

```
CPU: Au1550 324 MHz, id: 0x02, rev: 0x00
Board: ShMM-500
S/N: 08026624
DRAM: (Samsung K4S511633F) 128 MB
Flash: 64 MB
In: serial
Out: serial
Err: serial
ADM1060: configuration version 1.5
Net: AulX00 ETHERNET
Hit any key to stop autoboot: 0
shmm500 eeprom write 80400000 0 1800
```

```
EEPROM @0x50 write: addr 80400000 off 0000 count 6144 ... done
shmm500 reset
```

```
U-Boot 1.1.4 (Oct 22 2013 - 09:00:47)
```

```
CPU: Au1550 324 MHz, id: 0x02, rev: 0x00
Board: ShMM-500
S/N: 08026624
DRAM: (Samsung K4S511633F) 128 MB
Flash: 64 MB
*** Warning - bad CRC, using default environment
```

```
In: serial
Out: serial
Err: serial
ADM1060: configuration version 1.5
Net: AulX00 ETHERNET
Hit any key to stop autoboot: 0
shmm500 save
Saving Environment to EEPROM...
shmm500 save
Saving Environment to EEPROM...
shmm500 reset
```

Use the Linux “getenv” command to display the U-boot rc2 environment variable setting.

```
# getenv rc2
rc2=/etc/rc.acb-HPDL
```



The shelf manager application stores its configuration files in the /etc and /var directories. You can modify these settings by editing the configuration files. If you modify the configuration files incorrectly you can use this procedure to set the configuration files back to their default values.

1. Use the setenv command to change the U-boot environment variable "flash\_reset" to "y".
2. Reboot the shelf manager with the "reboot" command.

```
# setenv flash_reset y
# reboot
The system is going down NOW !!
Sending SIGTERM to all processes.

Please stand by while rebooting the system.

** Resetting Integrated Peripherals

U-Boot 1.1.4 (Oct 22 2013 - 09:00:47)

CPU: Au1550 324 MHz, id: 0x02, rev: 0x00
Board: ShMM-500
S/N: 08026624
DRAM: (Samsung K4S511633F) 128 MB
Flash: 64 MB
In: serial
Out: serial
Err: serial
ADM1060: configuration version 1.5
Net: AulX00 ETHERNET
Hit any key to stop autoboot: 0
## Booting image at be080000 ...
   Image Name:   63998-08175 Kernel Linux-2.4.26
   Created:     2013-10-22 13:01:18 UTC
   Image Type:  MIPS Linux Kernel Image (gzip compressed)
   Data Size:   879654 Bytes = 859 kB
   Load Address: 80100000
   Entry Point: 802d4040
   Verifying Checksum ... OK
   Uncompressing Kernel Image ... OK
## Loading Ramdisk Image at be440000 ...
   Image Name:   63998-08175 RFS 3.2.0.1
   Created:     2013-10-22 13:01:18 UTC
   Image Type:  MIPS Linux RAMDisk Image (gzip compressed)
   Data Size:   3918820 Bytes = 3.7 MB
   Load Address: 00000000
   Entry Point: 00000000
   Verifying Checksum ... OK

Starting kernel ...

init started: BusyBox v1.16.2 (2013-09-05 08:20:41 PDT)
/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /dev/mtdblock10 to /var/upgrade
/etc/rc: Mounted /tmp
/etc/rc: Checking the reliable upgrade watchdog timer...inactive
/etc/rc: Mounted /dev/mtdblock0 to /var
/etc/rc: Mounted /dev/mtdblock1 to /etc
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm500
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts has valid shmm500 192.168.0.22 entry
/etc/netconfig: Updating /etc/profile.sentry with IP settings
/etc/netconfig: Starting /bin/inetd...
/etc/netconfig: Starting time synchronization script
/etc/rc.acb-HPDL: Image Name: 63998-08175 RFS 3.2.0.1
```





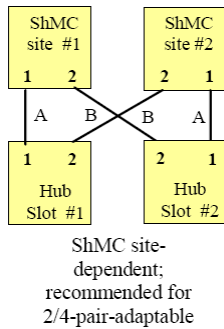
```
/etc/rc.acb-HPDL: Updating /etc/profile.sentry with specific settings
/etc/rc.acb-HPDL: Starting snmpd...
/etc/rc.acb-HPDL: Starting httpd...
/etc/rc.acb-HPDL: Starting Shelf Manager ... for carrier type ACB
/etc/rc.acb-HPDL: Command line: shelfman -sf
```

```
<*> 03:14:12.688 [118] Pigeon Point Shelf Manager ver. 3.2.0.1. Built on Sep 5 2013 08:13:49
<*> 03:14:12.699 [118] *** Lock log print buffer at 0x10070010 ***
<*> 03:14:12.701 [118] *** Pthread lock log print buffer at 0x10074860 ***
<I> 03:14:12.711 [118] Reading configuration file: /etc/shelfman.conf
```

```
shmm500 login: root
Password:
```

## 6 Configuring Ethernet Port Bonding on the Shelf Manager

In the default configuration the shelf manager will assign the RMCP IP address from the shelf FRU data to port #1 (eth0) on the active shelf manager. If the active shelf manager fails, or the Ethernet link to port #1 fails, a switchover will occur and the RMCP address will be assigned to the port #1 on what was the backup shelf manager and is now the new active shelf manager. Ethernet port #2 (eth1) is not used in the default configuration.



The shelf manager Ethernet ports in a Pentair/Schroff shelf are wired according to the ATCA site-dependent diagram at the left. If only a single switch blade is installed in slot #1, and a shelf manager switchover occurs, shelf manager #2 will not have network connectivity because its port #1 is wired to Hub slot #2 and port #2 is not used in the default configuration.

With V2.7.1 shelf manager firmware it is now possible for the shelf manager to switch from port #1 to port #2 if the Ethernet link on port #1 fails. If the shelf manager is using port #2 it will switch from port #2 to port #1 if the Ethernet link on port #2 fails.

The Ethernet bonding driver “enslaves” shelf manager ports #1 and #2, and monitors the presence of the Ethernet link. The shelf manager will move the RMCP address between port #1 and port #2 if only one port has a link. To enable Ethernet port bonding, execute the Linux command “setenv ipdevice bond0” and reboot the shelf manager. To disable Ethernet port bonding, execute the Linux command “setenv ipdevice eth0” and reboot the shelf manager. The Linux command “ifconfig bond0” will show the IP address assigned to either port #1 or port #2 when Ethernet bonding is enabled.



If Ethernet bonding is enabled on the shelf manager the Base Interface switch on both switch blades needs to have the same subnet.



The shelf manager commands “`cli setlanconfig`” and “`cli getlanconfig`” are used to configure and display the RMCP IP address for the shelf manager.

For more information on this and other possible Ethernet configurations see section 3.4 in the PPS Shelf Manager Users Guide.

## 7 Firmware part number 63998-08175 configuration files

The configuration file `/etc/shelfman.conf` contains all PPS default configuration variables for the Shelf Manager. Variables that have been modified for Firmware version 63998-08175 are stored in the additional configuration files `/etc/shelfman.conf.ACB-HPDL`  
The content of the custom specific configuration file is listed below.

```
# cat /etc/shelfman.conf.ACB-HPDL
# /etc/shelfman.conf.ACB-HPDL
# Created by MGT 4 February 2008
# Modified by MGT 3 December 2008, added static IP assignment for USB
COOLING_MANAGEMENT = acb          # Schroff cooling algorithm
#CARRIER_OPTIONS="NEBS;TACH_MASK=0x0F"  Enables NEBS cooling strategy
#
#                               Uses fan tach mask byte, default is 0xFF
#CARRIER_OPTIONS="CARRIER_FRU_LOCATION=ADM1026:0:0x2e,2080;USE_TELCO=1"
#CARRIER_OPTIONS="IN_EX_SWITCHOFF=0; FRU_IN_ADM1026=1;"
#CARRIER_OPTIONS="CARRIER_FRU_LOCATION=ADM1026:0:0x2e,2110;IN_EX_SWITCHOFF=0"
CARRIER_OPTIONS = "CARRIER_FRU_LOCATION=ADM1026:0:0x2e,2200; MAX_INTAKE=2; MAX_EXHAUST=2; USE_TELCO=1;"
COOLING_FAN_INCREASE_TIMEOUT = 60
COOLING_FAN_DECREASE_TIMEOUT = 60
FAN_LEVEL_STEP_UP = 2
FAN_LEVEL_STEP_DOWN = 1
NORMAL_STABLE_TIME = 1800
INITIAL_FAN_LEVEL = 8
MIN_FAN_LEVEL = 3
FAN_FULL_SPEED_DELAY=30
IPMB_LINK_ISOLATION_TIMEOUT = 60
REDUNDANCY_NET_ADAPTER = "usb0"
REDUNDANCY_NET_ADAPTER2 = "usb1"
REDUNDANT_IP_ADDRESS = 192.168.1.2
REDUNDANCY_NETMASK = 255.255.255.128
REDUNDANCY_ENABLED = TRUE
USE_SECOND_CHANNEL = TRUE
RMCP_NET_ADAPTER2 = "eth1"
SWITCHOVER_ON_HANDLE_OPEN = TRUE
SWITCHOVER_TIMEOUT_ON_BROKEN_LINK = -1
ALLOW_CLEARING_CRITICAL_ALARM = TRUE
#VERBOSITY = 0xF
HPDL = $HPDL
```

The u-boot configuration data 'environment variables' is stored in a system EEPROM.  
The default content is listed below:

```
# getenv
baudrate=115200
ipaddr=192.168.0.22
serverip=192.168.0.7
netmask=255.255.255.0
bootfile=sentry.kernel
ramdisk=sentry.rfs
rootpath=/rootfs
ramargs=setenv bootargs root=/dev/ram rw
net=tftpboot 80400000 $(bootfile); tftpboot 81200000 $(ramdisk); run ramargs add
misc; bootm 80400000 81200000
nfsargs=setenv bootargs root=/dev/nfs rw nfsroot=$(serverip):$(rootpath)
addip=setenv bootargs $(bootargs) ip=$(ipaddr):$(serverip):$(gatewayip):$(netmask):$(hostname):$(ipdevice)
admisc=setenv bootargs $(bootargs) $(quiet) console=$(console),$(baudrate) reliable_upgrade=$(reliable_upgrade)
```



```
nfs=tftpboot 80800000 $(bootfile); run nfsargs addip addmisc; bootm
bootcmd=run ramargs addmisc; bootm $(kernel_start) $(rfs_start)
console=ttyS0
quiet=quiet
ipdevice=eth0
ipldevice=eth1
ipladdr=192.168.1.2
gatewayip=192.168.0.1
rmcpaddr=192.168.0.2
hostname=shmm500
flash_reset=n
password_reset=n
logging=ram
timezone=UTC
rc_ifconfig=n
start_rc2_daemons=y
reliable_upgrade=y
rc2=/etc/rc.acb-HPDL
stdin=serial
stdout=serial
stderr=serial
ethaddr=00:50:c2:4a:17:e4
eth1addr=00:50:c2:4a:17:e5
serial#=08005937
kernel_start=0xbfb00000
rfs_start=0xbfc40000
ethact=Au1X00 ETHERNET
bootdelay_old=3
post_normal=
bootdelay=3
Environment size: 1201/3067 bytes
```

## 8 Revision History

### 3.2.0.1

#### New and Changed Features for This Release

1. Abnormal signal handling and diagnostic output in the utility has been improved.
2. The utility has been enhanced to allow reads and writes of up to 256 bytes. (Previously, reads and writes were limited to 16 bytes.)
3. In HPDL-based systems, a new approach to handle isolation of I2C multiplexers has been implemented. Now, isolation is supported for several multiplexer devices simultaneously using multiple ShMM GPIO lines.
4. In HPDL, an extended variant of the LOCAL\_BUSES statement has been implemented that enables mapping local bus numbers used in the HPDL source file to actual I2C bus numbers.
5. In HPDL, it is no longer necessary to specify all fan levels in the definition of a FAN\_TRAY, some levels may be omitted. Characteristics of the missing levels are now linearly approximated from the characteristics of their neighboring levels.
6. A new configuration variable TURBO\_MODE\_MIN\_MISSING\_FAN\_TRAYS, similar to the variable TURBO\_MODE\_MIN\_FAN\_FAILURES, has been added. It specifies the minimum number of missing/inactive fan trays that triggers running the remaining fan trays at their maximum speeds. If this parameter is set to 0, this feature of setting fans to their maximum speed (due to missing/inactive fan trays) is disabled, entirely.
7. The Chassis HPDL description from the active Shelf Manager is now passed to the backup Shelf Manager over the redundancy interface. This allows the Shelf Manager to avoid re-reading the Chassis HPDL description after a switchover and accelerates re-enabling of pseudo-radial links after a switchover on pseudo-radial systems.
8. A new parameter `-clear-hpdl` has been added to the CLI command `switchover`; this parameter overrides the behavior described in the previous item and causes the newly active Shelf Manager to re-read the Chassis HPDL description after the switchover.
9. The output of the CLI command `sensordata` for the state mask has been changed to avoid confusion with the sensor status flags.
10. In the output of the CLI command `alarm info`, the sensor type and sensor number have been swapped to conform better to the format of SEL entries shown by the `sel` command.
11. A new configuration variable WATCHDOG\_TIMEOUT has been introduced; it specifies the ShMM watchdog timeout interval, in seconds.
12. The performance of the CLI commands `fru` and `board` has been improved.
13. A new configuration parameter ALLOWED\_CIPHER\_SUITES has been implemented; this parameter specifies a bit mask of the IPMI 2.0 cipher suites that are allowed for use by a LAN client of the Shelf Manager. The default value is `0xFFFFFFFF` (-1 decimal), which indicates that all supported cipher suites can be used.
14. In order to prevent the “bit-bang” I2C driver from unnecessarily yielding the processor to another process, the `sysctl` variable `dev.mo-i2c.scl_high_waitcount` was added to the driver. This variable sets the time (in microseconds) that the driver waits for the I2C signal SCL to transition high before giving up the processor to another process. The default value of this variable is 5. If the variable is set to 0, the driver will check SCL once and then immediately yield the processor to another process. When operated with the default behavior, this update will prevent the driver from relinquishing the processor when the SCL signal transitions high within a few microseconds of the first check, thus preventing unnecessary interruptions in the operation of the “bit-bang” I2C interface.
15. MAC address (using the “`mac_prefix`” environment variable). This is only needed for PPS manufacturing contexts.
16. The `ipmb_traced` utility has been enhanced to support the use of HPM.2-defined mechanisms to collect IPMI messaging traces via the RMCP+ protocol.
17. The severity level of messages in the system log about the default gateway missing during network configuration has been reduced from “error” to “warning” (for the benefit of network configurations in which the default gateway is optional).
18. A new clause ENTITY in the HPDL FRU definition has been implemented; it allows explicit specification of the entity ID and instance for an HPDL-defined FRU.
19. The data consistency checking algorithm in the HPDL driver for PMBus devices now treats sequential word-sized readings that are less than 10 and differ by 1 as acceptable. (Previously, a difference between readings that was within 10% of the smaller value was considered acceptable.)
20. This release is based on an update of Monterey Linux that includes the following specific change:
  - a. The **getty** utility is now configured to ignore the CD (Carrier Detect) modem control signal on serial port 0. Monitoring of this signal is re-enabled when system shell is started if the **CARRIER** value is not set to “PPS”.

This workaround was implemented for ShMM carriers with a floating CD signal, to avoid unexpected console session terminations, especially during initial programming.

- b. The **net-snmp** build procedure was optimized to reduce binary size and to exclude MIB-related warnings in the **snmpd.log** at daemon startup.
21. The SNMP daemon now sends output to the system log instead of to a separate file and uses the **/tmp** directory for the configuration digest file. This is done to avoid unnecessary writes to the **/etc** filesystem that may reduce free space.
22. There is a new configuration parameter **ENABLE\_RTC\_TRICKLE\_CHARGER**; if this parameter is set to **TRUE**, the trickle charge feature of the RTC DS1339 device on the ShMM is enabled.
23. The Shelf Manager API has been enhanced to support changes in Chassis, Board and Product Info Area of FRU Information.
24. New ShMM diagnostics (for master-only I2C and IPMB buses) have been implemented for all supported platforms.
25. Recent events from internal Shelf Manager sensors are now not re-sent in response to the “Set Event Receiver” command (e.g. during a switchover) if the sensors are in the “Initial Update/Sensor Reading Unavailable” state.
26. Support has been added to the utility **i2ca** for scanning a master-only I2C bus, showing addresses of all devices present on the bus and for repeating operations with a new **-c** option and measuring the elapsed time.
27. ShMM inventory attributes (serial number, hardware revision, part number, and manufacturing date) have been made available in the FRU Information format; the corresponding FRU information is accessible at the Shelf Manager physical IPMB address, FRU ID 254.
28. The handling of the FRU Information for the logical Shelf Manager (IPMB 20h FRU 0) has been changed. Now this FRU information is read-only and automatically generated.
29. The handler of the “Set Fan Policy” command has been reworked to allow zero as a site number.
30. A new CLI command **variable** has been implemented to access HPDL variables.
31. The **clia** utility has been enhanced to support non-root user restrictions via a list of allowed commands from the file **/etc/clia.conf**.
32. Read-only SNMP variables representing the following FRU Information fields have been implemented: Product Asset Tag, Product FRU File ID, and Board FRU File ID. These variables are defined for ATCA boards, PEMs, fan trays, power supplies and dedicated Shelf Managers.
33. The maximum possible FRU ID for a logical Shelf Manager in an HPDL configuration has been increased from 16 to 32.
34. The performance of the firmware firewall implementation in the Shelf Manager during Shelf Manager startup has been improved.
35. The bus number for the master-only I2C multiplexer isolation feature has been made configurable.
36. Support for GPIO signals and fan control signals has been added to the HPDL ADT7490 driver.
37. A new configuration variable **ENABLE\_LOCKS\_LOGGING** has been implemented; this variable controls whether the Shelf Manager performs internal monitoring of lock operations and is **TRUE** by default. Setting this variable to **FALSE** is not recommended, but can improve performance of the Shelf Manager.
38. For better reliability, the Ethernet ARP diagnostic on the ShMM now uses the **arping** utility instead of the built-in kernel test.

### Bug Fixes

1. In the HPDL driver for the ADM1031, the configuration of fan tachometer signals (specifically, the assignment of the divisor value) was implemented incorrectly.
2. In HPDL, the function **SET()** for **VECTOR** elements did not work; it has been replaced with the **PUT()** function that has the intended functionality.
3. The PICMG-defined IPMI command “Get Fan Policy” could work incorrectly in certain operating modes.
4. Assigning a power level numbered 16 or larger to a FRU was implemented incorrectly.
5. Reading the state of a shelf LED with a hardware restriction could cause an abnormal termination of the Shelf Manager.
6. E-keying communication links for multi-slot boards worked incorrectly for boards spanning 3 or more slots.
7. The startup delay and alert startup delay parameters in the Platform Event Filter (PEF) facility did not work properly.
8. The Shelf Manager could crash when assigning power to a FRU after a switchover initiated by an SNMP request.
9. The Shelf Manager did not remove SDRs from its local cache for an IPMC in state M7 after a timer-initiated hot swap transition from M7 to M0 for that IPMC, or after a “Set FRU Extracted” request for that IPMC. This caused undesirable issues in the IntegralHPI server (the resource names were not set properly if communication with that IPMC was later recovered).

10. A DHCP client restart after a switchover could cause failure of various shelf manager network services (e.g. software redundancy interface or IntegralHPI).
11. The subnet mask could be set incorrectly on a network interface when applying network parameters received over DHCP, in the case where the Shelf FRU Information had a zero-filled secondary IP Connection record.
12. The DHCP client did not bring up network interfaces itself, assuming it was done by the Shelf Manager initialization.
13. The `clia fruinfo` command could work incorrectly with OEM link types.
14. HPDL could handle an array of LEDs incorrectly if some LEDs in the array are not defined.
15. Shelf Manager termination did not work properly in the `REDUNDANCY_ENABLED=FALSE` mode.
16. The Platform Event Trap format was not synchronized via the redundancy interface.
17. An HPDL PMBus signal definition for the extraction of a single byte from a multi-byte response of a PMBus command was handled incorrectly.
18. The implementation of the command Get Power Level in the Shelf Manager did not return the completion code "Invalid data in request" for an invalid power type in the request.
19. During initial startup, prior to the Shelf FRU Information being found, CLI commands could show IPMCs that were not actually present in the shelf to be present and in the M4 (Normal) Hot Swap state.
20. A memory leak was possible on the active Shelf Manager as a result of software termination of the backup Shelf Manager via the CLI command `terminate` and subsequent restart of the backup Shelf Manager.
21. This release is based on an update of Monterey Linux that includes the following specific changes:
  - a. `rupgrade_tool` and U-boot incorrectly referred to the flash halves based on the `ADM1060 PLBx_EN.INVOP` reading.
  - b. `rupgrade_tool` could crash if an incorrect port number was specified.
22. The Shelf Manager API has been enhanced to support changes in Chassis, Board and Product Info Areas of FRU Information.
23. The maximum possible FRU ID for a logical Shelf Manager in an HPDL configuration has been increased from 16 to 32.
24. A retry has been added to the presence check operation for logical Shelf Manager FRUs in an HPDL configuration as a workaround for a potential misreading.
25. The SNMP daemon now sends output to the system log instead of to a separate file and uses the `/tmp` directory for the configuration digest file. This is done to avoid unnecessary writes to the `/etc` filesystem that may reduce free space.
26. In case of multiple E-Keying link choices with different extensions, the `clia` utility could display the list of enabled links incorrectly.
27. The `clia sensordata -t` command displayed sensors in the Initial Update state.
28. The `clia terminate` command produced an error message if an alias Ethernet interface was configured as an RMCP-capable interface.

### **2.8.2.1**

#### **New and Changed Features for This Release**

Added the `setseltime` script that will set the SEL time in an ATCA board from the Shelf Manger's time.

### **2.8.2**

#### **New and Changed Features for This Release**

1. This release is based on an update of Monterey Linux that includes the following specific changes:
2. A bug in the JFFS2 file system driver that could cause corruption of data written to a file on a flash partition which is almost full has been fixed.
3. Counters for the number of bytes received or transmitted over IPMB are now available to user-mode programs and interactive users via the following files in the directory `/proc/sys/dev/ipmb`, in text format: **`ipmb_receive_bytes_a`**, **`ipmb_receive_bytes_b`**, **`ipmb_transmit_bytes_a`**, **`ipmb_transmit_bytes_b`**.
4. Support for using secure shell identity file in SCP mode has been added to the `rupgrade_tool` utility. The identity file name can be specified using the `--proto=scp:serverip:dir:user[:id_file[:port]]` option.
5. Processed sensor threshold values are made available via the SNMP interface.
6. A new configuration variable `DHCP_SPECIAL_CLIENT_ID_FORMAT` has been defined that specifies whether a specific customer-defined DHCP Client ID format is to be used (default is `FALSE`).

#### **Bug Fixes**

1. The utility `clia` crashed on the command line "`clia setfanlevel all`".

2. In the IPMB logging mode (with the log verbosity mask having the bitmask 40h set), pairs of packets sent/received almost at the same time could be displayed in an incorrect order.
3. In HPDL-based systems, fan tray FRUs could be unable to respond to ATCA fan tray-related commands (“Get Fan Speed Properties”, “Get Fan Level”, “Set Fan Level”) for a small amount of time after FRU creation.
4. The SNMP interface could report incorrect values of FRU Information related variables after a board replacement. (Cached values related to the old board were not erased when the board was removed.)

## **2.8.1**

### **New and Changed Features for This Release**

1. This release is based on an update of Monterey Linux that includes the following specific changes:
  - [ShMM-1500]: To support the new Flash type (Spansion S29GL-S), recent modifications in U-Boot flash timings were revised and improved.
  - [ShMM-500, ShMM-1500]: Support for retrieving an image from an FTP server using a nonstandard server port number has been added to the `rupgrade_tool` utility.
2. Support has been added for the new style of E-Keying (related to 40 Gigabit Ethernet backplane links) that is defined in the latest drafts of PICMG 3.1 R2. This revision is not yet adopted, so it is possible that there will be further changes in the hardware platform management aspects of it prior to adoption.
3. A new configuration variable `HPDL_NETWORK_ELEMENT_ID_EEPROM_OFFSET` has been added. This variable specifies an offset to the Network Element ID data structure in Shelf FRU Information EEPROMs; it is applicable only to HPDL-based systems and only if the Shelf FRU Information is configured to be retrieved from shelf level EEPROMs.
4. The Shelf Manager API (Application Programming Interface) has been enhanced to be able to retrieve information on active E-Keying links and text identifiers for FRUs.

### **Bug Fixes**

1. The HPDL Driver for generic PMBus devices could incorrectly return cached FRU data for a PSU that has been extracted and is not currently installed in the shelf.
2. The HPDL-based Shelf Manager, operating in Backup mode, attempted to access Shelf FRU Information sources to verify their presence; this check should be done only on the Active Shelf Manager.
3. CLI commands `fruinfo`, `frudata` and `frudataw` were incorrectly enabled on the backup Shelf Manager, allowing them to attempt accesses to FRU information on non-intelligent FRUs managed by the logical (active) Shelf Manager. Access rules have been fixed to allow backup Shelf Manager access only to the FRU information of the corresponding physical Shelf Manager FRU, and its subsidiary FRUs, if any, with read-only access to the cached copy of the Shelf FRU Information (IPMC 20h, FRU 254).

## **2.8.0.2**

### **New and Changed Features for This Release**

1. This release is based on an update of Monterey Linux that includes the following specific change:
  1. [ShMM-500, ShMM-1500]: The supported Common Flash Interface (CFI) Extended Query Table minor version number has been increased to 9.
2. The directory `/tmp` is now mounted at startup via the file system `tmpfs`, which allows allocating up to the half of the physical memory for temporary files. This can be useful for IntegralHPI FUMI upgrades that need to store the Shelf Manager firmware image in a temporary directory during the upgrade, and fail if there is not enough space available there.
3. Support has been added for four levels of versioning in the headers of RFS images that are used for the Shelf Manager upgrades (including FUMI-based Shelf Manager upgrades via IntegralHPI).

### **Bug Fixes**

1. Test results returned by the Diagnostic Initiator for the ShMM diagnostics could have random contents in some cases.
2. The HPDL Driver for generic PMBus devices could incorrectly set parameters (supplied via the IPMI settable sensor interface) to the device if these parameters were represented in PMBus Linear format on the device.

## **2.8.0.1**

### **Bug Fixes**

1. When the configuration variable `NO_M0_M1_EVENT_AT_STARTUP` was TRUE, there could be a missing M6->M1 event on the physical Shelf Management Controller (ShMC) after a switchover. This variable was first introduced in



release 2.8.0 and its default value is FALSE; therefore, only customers who specifically chose this behavior were affected by this bug.

2. Network interfaces could be configured incorrectly in the USE\_DHCP = TRUE configuration, if channel parameters were not initialized or had a zero IP address.

## **2.8.0**

### **New and Changed Features for This Release**

1. This release is based on an update of Monterey Linux that includes the following specific changes:
  - [ShMM-500, ShMM-1500]: Support has been added in the kernel for S29GL-S Spansion Flash devices.
  - [ShMM-500, ShMM-1500]: The kernel level implementation of ShMM runtime self-tests has been modified to prevent CPU starvation for other tasks while the tests are running.
  - [ShMM-500, ShMM-1500]: U-Boot has been modified to automatically switch over to the other Flash bank in the case of a CRC error in the kernel or RFS image in the current Flash bank.
  - [ShMM-1500]: The kernel has been modified to allow IP addresses in the range 127.x.x.x to be used for external communications. (Previously all such addresses could be used only on the loopback interface.) The ShMM-500 already allows the use of this range for external addresses.
2. When Shelf Manager is terminated via the CLI command terminate, each disabling of a network interface is accompanied by clearing of its IP address. This prevents duplication of that IP address in the network when the Shelf Manager is later restarted on the same ShMM.
3. In HPDL, support has been added for volatile devices. These are devices that can dynamically appear and disappear (or be powered on and off) while the FRU that owns them stays active. The Shelf Manager monitors the presence of devices described with the qualifier VOLATILE in the HPDL description, and configures them dynamically when they become present.
4. The Redundancy and CPLD State Sensor in the Shelf Manager now detects and reports a double ACTIVE state (when both Shelf Managers consider themselves active). This state can occur only as a result of a hardware malfunction.
5. CLI commands now report an intelligent RTM (that is, an RTM that implements a local management controller, specifically an MMC) as an "IRTM" instead of as "AMC #15".
6. CLI command sensordata now shows symbolic names for the active states of the Redundancy and CPLD State and Reboot Reason sensors.
7. A new configuration variable PET\_OEM\_WITH\_SEVERITY\_STRINGS controls whether severity strings are included in Platform Event Traps in OEM (plain text and multi-variable) formats.
8. Redundancy information exchanged between the active and backup Shelf Managers over the Software Redundancy Interface can now be sent in compressed form depending on the value of the configuration variable REDUNDANCY\_COMPRESSION\_THRESHOLD. If message size (in bytes) exceeds this value, then message is compressed. By default this variable is set to -1 which disables compression.
9. If a new configuration variable NO\_M0\_M1\_EVENT\_AT\_STARTUP is TRUE, then the event M0->M1 is not sent for a physical Shelf Manager when it is not physically reinserted but just logically restarted (the default value is set to FALSE for compatibility).
10. A PEM symbolic extension has been added to the Fru Activation/Deactivation page of the Web interface, so that a user can activate/deactivate a PEM by its site number.
11. The Linux iftest utility has been added to the Shelf Manager RFS to help with physical network link state diagnostics.
12. The RFS Image header now contains the Shelf Manager version. In addition, an HPI-enabled RFS image now contains the HPI version in its header. These versions can be seen at U-Boot startup and via the imls command. Also, these version strings are stored in the /etc/version file. (Previously, this file contained only the build date.)

### **Bug Fixes**

1. Cached SDRs in the Shelf Manager were not immediately re-read when a subsidiary FRU was removed on a remote IPM Controller (this could cause problems in IntegralHPI).
2. Only one Network Time Protocol Server IP address was propagated to the NTP client from the list of time servers received from the DHCP server; additional addresses returned by the DHCP server were not used. (The NTP client can use up to six separate addresses, which may be important in some use cases.)
3. In the Get Sensor Reading response, reserved flags were not set to 1 as the IPMI specification requires.
4. The clia utility could crash if the CARRIER environment variable was not defined.
5. Startup script /etc/rc.common was corrected to start hpiSubagent only after openhpid is started. Both these utilities are now started only if U-Boot variable openhpi is set to y.
6. DHCP client did not bring up network interface before using it.



For previous releases, please see the Pigeon Point firmware release notes.