Release Notes
Pentair/Schroff firmware part number 63998-53463
Based on Pigeon Point Systems (PPS) firmware release V3.6.0 for ShMM-700

Release Date: December 17, 2015

Release History:

Release date	Pentair/Schroff FW P/N	PPS version
July 2, 2014	63998-53456	V3.4.0.1
June 11, 2015	63998-53461	V3.5.0.1
December 17, 2015	63998-53463	V3.6.0

Introduction:

The firmware package "63998-53463.zip" contains Firmware release V3.6.0 for the **ShMM-700**. The PPS supplied APP image has been modified by Pentair/Schroff to adapt the firmware to Pentair/Schroff ATCA shelves. The kernel and RFS images have not been modified and are identical to the PPS kernel and RFS images. 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 63998-53463.

CONTENT:

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
The part number of the ACB-VI shelf manager is on the label at the rear side of the shelf manager, see photo below: **- Bused IPMB version: P/N = 21990-401** **- Radial IPMB version: P/N = 21990-402**	ACB-VI	rc.acb6-HPDL

2 Preparations

Firmware files

Unzip the file 63998-53463.zip. This file contains the following Pre-Built images:

Reliable Upgrade files:
63998-53463.shmm700.kernel	Upgrade kernel
63998-53463.shmm700.rfs	Upgrade RFS
63998-53463.shmm700.u-boot	Upgrade U-boot
63998-53463.shmm700.app	Upgrade Application

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 FRU ID files for most production chassis may be download from:
http://www.schroff.de/internet/html_d/service/atca/firmware/index.html

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 SA and higher are needed for the ACB-VI shelf manager. The FRU ID files for the fan tray, PEM, or SAP may have a revision level lower than SA.

Note: If you are upgrading from an ACB-V to an ACB-VI the chassis FRU ID files must be updated. You can use the shelf manager command "clia fruinfo 20 1" to find the existing FRU ID file revision level in the "FRU Programmer File ID" field. The two letters after the chassis part number represent the major and minor revision level. The Shelf FRU ID files must be upgraded to revision SA or higher for proper operation.

ShMM-700 FPGA Firmware

When the shelf manager boots it will display the ShMM-700 FPGA firmware and fabric versions on the console.

```
A2F:    SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
```

The V3.6.0 shelf manager firmware includes and upgrade image for V1.5 FPGA firmware and V1.0.1.0 FPGA fabric. After you upgrade the shelf manager to V3.6.0 firmware you can use the procedure described in 3.2 Reliable Upgrade Procedure for the FPGA on the ShMM-500 to upgrade the ShMM-700 FPGA.

3   Upgrading the Shelf Manager to release V3.6.0

1) Reliable Upgrade Procedure
You can use the Reliable Upgrade Procedure to copy the new firmware flash images from an FTP server on your network to RAM on the ShMM-700, and then copy the new firmware images to flash memory.

Note:
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.

3.1   Reliable Upgrade Procedure for the Shelf Manager Firmware

The Reliable Upgrade procedure will copy the new firmware flash images from an FTP server on your network to RAM on the ShMM-700 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 switches are set towards the front panel the Ethernet is connected to the front panel connector. See the Shelf User Manual for details of the switch setting.

You need to configure the IP Address that the Shelf Manager will use on the network to access the FTP server. The command "clia 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 "clia 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 "clia 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 four Reliable Upgrade FLASH images (63998-53463.shmm700.kernel, 63998-53463.shmm700.rfs, 63998-53463.shmm700.u-boot, 63998-53463.shmm700.app) on an 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 --base ftp://username:password@10.179.0.145/63998-53463.shmm700. -u u-boot -a app -k kernel -r rfs --erase-all

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 --base ftp://anonymous:password@10.179.0.145/63998-53463.shmm700. -u
u-boot -a app -k kernel -r rfs --erase-all
261: Executing: /sbin/backend --get-wdt-state
261: System returned 0, exec result 0.
<INFO> Downloading file "ftp://10.179.0.145/63998-53463.shmm700.u-boot"
<INFO> Checksum verified
<INFO> Downloading file "ftp://10.179.0.145/63998-53463.shmm700.kernel"
<INFO> Checksum verified
<INFO> Downloading file "ftp://10.179.0.145/63998-53463.shmm700.rfs"
<INFO> Checksum verified
<INFO> Downloading file "ftp://10.179.0.145/63998-53463.shmm700.app"
<INFO> Checksum verified
<INFO> Initiating partial upgrade:
<INFO>  * uboot "/tmp/_63998-53463.shmm700.u-boot"
<INFO>  * kernel "/tmp/_63998-53463.shmm700.kernel"
<INFO>  * rfs "/tmp/_63998-53463.shmm700.rfs"
<INFO>  * app "/tmp/_63998-53463.shmm700.app"
<INFO>  + reset all
<INFO> Calling backend to handle partial upgrade "/sbin/backend --uboot /tmp/_63
998-53463.shmm700.u-boot --kernel /tmp/_63998-53463.shmm700.kernel --rootfs /tmp
/_63998-53463.shmm700.rfs --application /tmp/_63998-53463.shmm700.app --erase-al
```

```
l"
261: Executing: /sbin/backend --uboot /tmp/_63998-53463.shmm700.u-boot --kernel
/tmp/_63998-53463.shmm700.kernel --rootfs /tmp/_63998-53463.shmm700.rfs --applic
ation /tmp/_63998-53463.shmm700.app --erase-all
265: Executing: /etc/hook/base_script.sh --stage 1 --silent
265: System returned 0, exec result 0.
<INFO> Write storage state: not available -> available [ALLOW]
265: Executing: mkdir -p /var/upgrade/boot
265: System returned 0, exec result 0.
<INFO> Resetting UBIFS cache
265: Executing: /sbin/eraseall /dev/mtd8
Erasing 256 Kibyte @ 0 --  0 % complete.
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 2 --silent
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 3 --silent
265: System returned 0, exec result 0.
<INFO> Burning image:..
<INFO> 524288 bytes were written from file "/tmp/_63998-53463.shmm700.u-boot" to
 dev 1[0]
265: Executing: eraseall /dev/mtd4 >/dev/null 2>/dev/null
265: System returned 0, exec result 0.
265: Executing: dd if=/dev/mtd6 of=/dev/mtd4 >/dev/null 2>/dev/null
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 4 --silent
265: System returned 0, exec result 0.
<INFO> Cleaning image "/var/upgrade/boot/uImage.0"
<INFO> Burning image:.........................................................
<INFO> 1531476 bytes were written from file "/tmp/_63998-53463.shmm700.kernel" t
o dev 2[0]
265: Executing: /etc/hook/base_script.sh --stage 5 --silent
265: System returned 0, exec result 0.
<INFO> Cleaning image "/var/upgrade/boot/rfs.0"
<INFO> Burning image:.........................................................
<INFO> 2668511 bytes were written from file "/tmp/_63998-53463.shmm700.rfs" to d
ev 4[0]
265: Executing: /etc/hook/base_script.sh --stage 6 --silent
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 7 --silent
265: System returned 0, exec result 0.
<INFO> Burning image:.........................................................
<INFO> 2510613 bytes were written from file "/tmp/_63998-53463.shmm700.app" to d
ev 8[0]
265: Executing: /etc/hook/base_script.sh --stage 8 --silent
265: System returned 0, exec result 0.
265: Executing: if [ -f /var/upgrade/boot/app.1 ]; then mv -f /var/upgrade/boot/
app.1 /1/.app; mv -f /1/.app /1/sentry.shmm700.app; fi
265: System returned 0, exec result 0.
265: Executing: if [ -f /var/upgrade/boot/app.0 ]; then mv -f /var/upgrade/boot/
app.0 /0/.app; mv -f /0/.app /0/sentry.shmm700.app; fi
265: System returned 0, exec result 0.
<INFO> Write storage state: available -> not available [ALLOW]
265: Executing: /etc/hook/base_script.sh --stage 9 --silent
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 10 --silent
265: System returned 0, exec result 0.
<INFO> Erasing user data on candidate bank
265: Executing: (cd /0 ; rm -rf var etc ; mkdir -p var/nvdata etc/ssh )
265: System returned 0, exec result 0.
<INFO> Copy ssh keys
265: Executing: cp -a /1/etc/ssh /0/etc
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 11 --silent
265: System returned 0, exec result 0.
265: Executing: /etc/hook/base_script.sh --stage 12 --silent
265: System returned 0, exec result 0.
265: Executing: dd if=/dev/mtd8 of=/dev/null >/dev/null 2>/dev/null
265: System returned 0, exec result 0.
<INFO> Write confirmed: 1 -> 1 [ALLOW]
<INFO> Write candidate: 0 -

U-Boot 2009.08 (Dec 16 2015 - 15:52:59)
```

```
Freescale i.MX28 family
CPU:   297 MHz
BUS:   99 MHz
EMI:   130 MHz
GPMI:  24 MHz
I2C:   ready
DRAM:  128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
A2F:   A2F firmware, version 1.5
A2F:   Device type: A2F060M3E-FG256
A2F:   MSS clock frequency: 40 MHz
A2F:   Fabric clock frequency: 20 MHz
A2F:   Fast delay calibration: 1330 cycles per 100uS
A2F:   eNVM: 128 KB (00000000 - 00020000)
A2F:   eSRAM: 16 KB (20000000 - 20004000)
A2F:   Extram start: 20002750
A2F:   Last reset cause: RUWD
A2F:   VMON flags: 00000000
RUPG:  booting from image 0 (candidate)
In:    serial
Out:   serial
Err:   serial
Net:   FEC0: 00:18:49:02:5c:c2, FEC1: 00:18:49:02:5c:c3
FEC0, FEC1
Hit any key to stop autoboot:  0
RUPG:  reliable upgrade is in progress, skipping
Creating 1 MTD partitions on "spi0":
0x0000001c0000-0x000002000000 : "mtd=5"
UBI: attaching mtd1 to ubi0
UBI: MTD device 1 is write-protected, attach in read-only mode
UBI: physical eraseblock size:   262144 bytes (256 KiB)
UBI: logical eraseblock size:    262016 bytes
UBI: smallest flash I/O unit:    1
UBI: VID header offset:          64 (aligned 64)
UBI: data offset:                128
UBI: attached mtd1 to ubi0
UBI: MTD device name:            "mtd=5"
UBI: MTD device size:            30 MiB
UBI: number of good PEBs:        121
UBI: number of bad PEBs:         0
UBI: max. allowed volumes:       128
UBI: wear-leveling threshold:    4096
UBI: number of internal volumes: 1
UBI: number of user volumes:     1
UBI: available PEBs:             0
UBI: total number of reserved PEBs: 121
UBI: number of PEBs reserved for bad PEB handling: 0
UBI: max/mean erase counter: 7/5
UBIFS: read-only UBI device
UBIFS: mounted UBI device 0, volume 0, name "boot"
UBIFS: mounted read-only
UBIFS: file system size:   28297728 bytes (27634 KiB, 26 MiB, 108 LEBs)
UBIFS: journal size:       2096129 bytes (2047 KiB, 1 MiB, 6 LEBs)
UBIFS: media format:       w4/r0 (latest is w4/r0)
UBIFS: default compressor: LZO
UBIFS: reserved for root:  1398497 bytes (1365 KiB)
Loading file 'uImage.0' to addr 0x42000000 with size 1531476 (0x00175e54)...
Done
Loading file 'rfs.0' to addr 0x46000000 with size 2668511 (0x0028b7df)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53463 Linux-2.6.34.8
   Created:      2015-12-17  16:09:56 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1531412 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53463 RFS 3.6.0 TFTP3.2.1
```

```
   Created:        2015-12-17  16:09:56 UTC
   Image Type:     ARM Linux RAMDisk Image (gzip compressed)
   Data Size:      2668447 Bytes =  2.5 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK
OK

Starting kernel ...

init started: BusyBox v1.19.4 (2015-12-11 07:49:16 PST)
/etc/rc: Current image set is 0
/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /tmp
/etc/rc: Mounted /sys
/etc/rc: Checking the reliable upgrade watchdog timer...activated
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
/etc/rc: Mounting  jffs2:user0...done
/etc/rc: Mounting  jffs2:user1...done
/etc/rc: Attaching ubi0:boot...done
/etc/rc: Mounting  ubi0:boot...done
/etc/rc: Extracting application package /boot/app.0...done
/etc/rc: Mounted /0/var to /var
/etc/rc: Mounting jffs2:upgrade...done
/etc/rc: Strobing the reliable upgrade WDT
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
89: Executing: /etc/hook/base_script.sh --stage 13 --silent
89: System returned 0, exec result 0.
/etc/rc: /etc appears to be empty ... restoring from /etc in RFS...
/etc/rc: Preserved ssh_host_dsa_key in /etc/ssh
/etc/rc: Preserved ssh_host_rsa_key in /etc/ssh
/etc/rc: Mounted /0/etc to /etc
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm700
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb6-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts updated with shmm700 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.acb6-HPDL: Updating /etc/profile.sentry with specific settings
/etc/rc.acb6-HPDL: Starting snmpd...
/etc/rc.acb6-HPDL: Starting httpd...
/etc/rc.acb6-HPDL: Starting shelfman... for carrier type ACB
/etc/rc.acb6-HPDL: Command line: shelfman -sf
/etc/rc.acb6-HPDL: Strobing the reliable upgrade WDT
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
152: Executing: /etc/hook/base_script.sh --stage 13 --silent
152: System returned 0, exec result 0.


shmm700 login: <*> 06:17:01.741   [156] Pigeon Point Shelf Manager ver. 3.6.0. B
uilt on Dec 11 2015 07:13:29
<*> 06:17:01.754   [156] *** Lock log print buffer at 0x224114 ***
<*> 06:17:01.755   [156] *** Pthread lock log print buffer at 0x228934 ***
<I> 06:17:01.790   [156] Read OTP bits 0x00025CC2, status=0
<I> 06:17:01.791   [156] Reading configuration file: /etc/shelfman.conf
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
163: Executing: /etc/hook/base_script.sh --stage 13 --silent
163: System returned 0, exec result 0.
<INFO> Write confirmed: 1 -> 0 [ALLOW]
<INFO> Write upgrade_state: "in progress" (2) -> "confirmed" (4) [ALLOW]
<INFO> Write upgrade watchdog: 1 -> 0 [ALLOW]

shmm700 login: root
Password:
```

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

```
# version
Current flash bank: 0

Current U-Boot:
Image Name:    63998-53463 ShMM700 U-Boot 9.0.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM U-Boot Firmware (uncompressed)
Data Size:     524224 Bytes = 511.94 kB = 0.50 MB
Load Address: 00000000
Entry Point:  00000000

Current Kernel:
Image Name:    63998-53463 Linux-2.6.34.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux Kernel Image (uncompressed)
Data Size:     1531412 Bytes = 1495.52 kB = 1.46 MB
Load Address: 40008000
Entry Point:  40008000

Current RFS:
Image Name:    63998-53463 RFS 3.6.0 TFTP3.2.1
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux RAMDisk Image (gzip compressed)
Data Size:     2668447 Bytes = 2605.91 kB = 2.54 MB
Load Address: 00000000
Entry Point:  00000000

Current Application:
Image Name:    63998-53463 APP 3.6.0
Created:       Thu Dec 17 16:09:55 2015
Image Type:    ARM Linux Filesystem Image (gzip compressed)
Data Size:     2510549 Bytes = 2451.71 kB = 2.39 MB
Load Address: 00000000
Entry Point:  00000000


Other U-Boot:
Image Name:    63998-53463 ShMM700 U-Boot 9.0.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM U-Boot Firmware (uncompressed)
Data Size:     524224 Bytes = 511.94 kB = 0.50 MB
Load Address: 00000000
Entry Point:  00000000

Other Kernel:
Image Name:    63998-53463 Linux-2.6.34.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux Kernel Image (uncompressed)
Data Size:     1531412 Bytes = 1495.52 kB = 1.46 MB
Load Address: 40008000
Entry Point:  40008000

Other RFS:
Image Name:    63998-53463 RFS 3.6.0 TFTP3.2.1
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux RAMDisk Image (gzip compressed)
Data Size:     2668447 Bytes = 2605.91 kB = 2.54 MB
Load Address: 00000000
Entry Point:  00000000

Other Application:
Image Name:    63998-53463 APP 3.6.0
Created:       Thu Dec 17 16:09:55 2015
Image Type:    ARM Linux Filesystem Image (gzip compressed)
Data Size:     2510549 Bytes = 2451.71 kB = 2.39 MB
Load Address: 00000000
Entry Point:  00000000
```

```
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.6.0
Pigeon Point and the stylized lighthouse logo are trademarks of Pigeon Point Systems.
Copyright (c) 2002-2015 Pigeon Point Systems.
All rights reserved
Build date/time: Dec 11 2015 07:13:29
Carrier: HPDL/ACB
Carrier subtype: 0; subversion: 0
Cooling Management Library: libcooling_acb.so; Version: 3.6.0
Carrier Product ID: 21990401
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 --rollback`" 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   Reliable Upgrade Procedure for the FPGA on the ShMM-500

The ShMM-700 contains a Microsemi A2F060 device that includes both an FPGA fabric and an ARM Cortex-M3 processor. The upgrade imagefor A2F060 consists of an FPGA fabric image and the program code for the ARM Cortex-M3 processor combined in a single composite image. Update of the A2F060 firmware requires special precautions and is implemented as a special case of the reliable upgrade procedure. This special case is documented in detail in section 8.6. of the Pigeon Point Shelf Manager User Guide. It is expected, however, that A2F060 firmware will be relatively stable, and that most new releases of the Shelf Manager in future will not require an A2F060 firmware upgrade.

After you upgrade the shelf manager to V3.6.0 an FPGA upgrade image will be located in the /bin directory. To upgrade the A2F060 firmware, run the reliable upgrade utility in the A2F060 upgrade mode: "**`rupgrade --upgrade-a2f file://bin/a2f-upgrade.dat`**" The image file includes all programmable contents of the A2F device (including FPGA fabric and Cortex-M3 firmware). A reliable upgrade of A2F060 firmware is done separately from a reliable upgrade of any other ShMM-700 firmware components and involves resetting the ShMM. Also, if the current image set has number 1, this procedure has a side effect that U-Boot image 0 is overwritten by the current U-Boot image; if the current image set has number 0, there are no such side effects.

When the ShMM-700 boots the revision levels of the A2F060 part are displayed on the console.
```
A2F:   SPICOMM protocol v1.7, M3 firmware v1.3, FPGA design v1.0.0.0
```

If the M3 firmware is not v1.5 the A2F060 should be upgraded.

After the A2F060 upgrade is complete the firmware will be v1.4.
```
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
```

The reliable upgrade of the A2F060 firmware includes the following steps:
- The upgrade utility copies the upgrade image file onto the Flash Boot partition as **a2f-upgrade.dat**.
- If the current image set has number 1, the upgrade utility saves the contents of U-Boot image 0 to a file, and copies the U-Boot image from partition 1 to partition 0. This is done to ensure that if the upgrade process is interrupted, the ShMM-700 can still recover by booting from partition 0 (see below).
- The upgrade utility reboots the ShMM.

- When U-Boot sees the **a2f-upgrade.dat** file in the boot partition at startup, it initiates an A2F upgrade procedure via the A2F JTAG pins. This procedure is performed with Flash remapping logic turned off (so that U-Boot has direct access to the Flash and U-Boot image 0 is always the active one). Also, the built-in i.MX287 watchdog timer is enabled during the upgrade so that if the upgrade process gets stuck, the ShMM-700 still has the potential to recover.
- If the upgrade is successful, U-Boot boots Linux from the current image set. When Linux boots, it performs some basic tests, and if everything works as expected, it disables the built-in i.MX287 watchdog timer and turns on the Flash remapping logic. It then restores the contents of the first U-Boot partition (if the backup file is present) and renames the A2F upgrade file on the boot partition to **a2f-auto-rollback.dat** to complete the upgrade process.
- If an **a2f-auto-rollback.dat** file was already present, it is renamed as **a2f-manual-rollback.dat** before overwriting it with the current upgrade file. This allows a manual rollback procedure to be initiated by invoking the **rupgrade** utility running in the **--upgrade-a2f** mode with the file **a2f-manual-rollback.dat** as the parameter. The UBIFS Boot volume may need to be explicitly mounted first.
- If the upgrade process is interrupted or an error is detected, the ShMM-700 will get reset with the Flash remapping logic turned off. As a result, it will boot from partition 0, and U-Boot will detect that Flash remapping logic is turned off. In this case, it will try to revert to the previous image by repeating the above steps with the auto-rollback image file name (**a2f-auto-rollback.dat**).

Note: The A2F060 upgrade images provided by Pigeon Point Systems are encrypted with a private AES key. This key is pre-programmed in the A2F060 device on the ShMM-700R during manufacturing. As a consequence, A2F060 upgrade images that were not built by PPS cannot be installed onto the A2F060 device on the ShMM-700R. Attempting to do so will result in a failed upgrade.

```
# rupgrade --upgrade-a2f file:///bin/a2f-upgrade.dat
281: Executing: /sbin/backend --get-wdt-state
281: System returned 0, exec result 0.
<INFO> Downloading file "file:///bin/a2f-upgrade.dat"
<INFO> Checksum verified
281: Executing: /sbin/backend --upgrade-fw /bin/a2f-upgrade.dat
<INFO> Firmware upgrade was initiated with 0 image set as current
<INFO> Attaching boot volume
<INFO> Write storage state: not available -> available [ALLOW]
285: Executing: mkdir -p /var/upgrade/boot
285: System returned 0, exec result 0.
<INFO> Resetting UBIFS cache
285: Executing: /sbin/eraseall /dev/mtd8
Erasing 256 Kibyte @ 0 --  0 % complete.
285: System returned 0, exec result 0.
<INFO> Using file: /bin/a2f-upgrade.dat
285: Executing: mv /bin/a2f-upgrade.dat /var/upgrade/boot/a2f-upgrade.dat
285: System returned 0, exec result 0.
<INFO> Unmounting boot volume
<INFO> Write storage state: available -> not available [ALLOW]
<INFO> Rebooting device
285: Executing: reboot
The system is going down NOW!
Sent SIGTERM to all processes
shelfman: [156]: Shelfman: termination watchdog started

snmpd[161]: Received TERM or STOP signal...  shutting down...

<ERR>  The upgrade procedure was interrupted by the signal 15.
# <ERR>  The upgrade procedure was interrupted by the signal 15.
shelfman: [156]: Shelfman: Interrupted by signal 15

shelfman: [156]: Shelfman: call ipmf_terminating()

shelfman: [177]: ipmf_ipmb_read_loop: Exit

shelfman: [177]: ipmf_sensor_scan_thread: Exit

shelfman: [156]: Shelfman: done...
```

```
shelfman: [156]: Shelfman: call shm_time_terminate()

shelfman: [156]: Shelfman: done...

shelfman: [156]: Shelfman: call cli_terminate()

shelfman: [156]: Shelfman: done...

shelfman: [156]: Shelfman: call shelf_fru_terminate()

shelfman: [156]: Shelfman: done...

shelfman: [156]: Shelfman: sdrrep_terminate()

shelfman: [186]: Terminating sdrrep_full_scan_thread

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=0

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=0

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=1

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=2

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=3

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=4

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=5

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=7

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=16

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=17

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=18

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=19

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=20

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=21

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=22

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=-128

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=-127

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=0

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=0

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=0

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=1

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=2

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=3

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=4

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-128

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=118

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-128

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=119
```

```
shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=123

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-125

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-124

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-123

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-121

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-120

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-119

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-128

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-118

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-117

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-104

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-62

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-61

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-53

shelfman: [156]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=20, sens=-52

shelfman: [156]: Shelfman: done...

shelfman: [156]: Shelfman: call msg_terminate()

shelfman: [156]: msg_terminate: entered

shelfman: [224]: RMCP: terminating receiving thread for 10.82.149.248:623

shelfman: [156]: Msg: failed to stop LAN channel 2

shelfman: [156]: Msg: failed to stop channel 2

shelfman: [156]: msg_terminate: calling shm_firewall_exit()

Sent SIGKILL to all processes
Requesting system reboot
[  684.560000] pps_wd: reboot initiated
[  684.560000] Restarting system.


U-Boot 2009.08 (Dec 16 2015 - 15:52:59)

Freescale i.MX28 family
CPU:   297 MHz
BUS:   99 MHz
EMI:   130 MHz
GPMI:  24 MHz
I2C:   ready
DRAM:  128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
A2F:   A2F firmware, version 1.5
A2F:   Device type: A2F060M3E-FG256
A2F:   MSS clock frequency: 40 MHz
A2F:   Fabric clock frequency: 20 MHz
A2F:   Fast delay calibration: 1330 cycles per 100uS
A2F:   eNVM: 128 KB (00000000 - 00020000)
A2F:   eSRAM: 16 KB (20000000 - 20004000)
A2F:   Extram start: 20002750
A2F:   Last reset cause: SOFT
A2F:   VMON flags: 00000000
```

```
RUPG:  booting from image 0 (confirmed)
In:    serial
Out:   serial
Err:   serial
Net:   FEC0: 00:18:49:02:5c:c2, FEC1: 00:18:49:02:5c:c3
FEC0, FEC1
Hit any key to stop autoboot:  0
Creating 1 MTD partitions on "spi0":
0x0000001c0000-0x000002000000 : "mtd=5"
UBI: attaching mtd1 to ubi0
UBI: MTD device 1 is write-protected, attach in read-only mode
UBI: physical eraseblock size:   262144 bytes (256 KiB)
UBI: logical eraseblock size:    262016 bytes
UBI: smallest flash I/O unit:    1
UBI: VID header offset:          64 (aligned 64)
UBI: data offset:                128
UBI: attached mtd1 to ubi0
UBI: MTD device name:            "mtd=5"
UBI: MTD device size:            30 MiB
UBI: number of good PEBs:        121
UBI: number of bad PEBs:         0
UBI: max. allowed volumes:       128
UBI: wear-leveling threshold:    4096
UBI: number of internal volumes: 1
UBI: number of user volumes:     1
UBI: available PEBs:             0
UBI: total number of reserved PEBs: 121
UBI: number of PEBs reserved for bad PEB handling: 0
UBI: max/mean erase counter: 7/5
UBIFS: read-only UBI device
UBIFS: mounted UBI device 0, volume 0, name "boot"
UBIFS: mounted read-only
UBIFS: file system size:   28297728 bytes (27634 KiB, 26 MiB, 108 LEBs)
UBIFS: journal size:       2096129 bytes (2047 KiB, 1 MiB, 6 LEBs)
UBIFS: media format:       w4/r0 (latest is w4/r0)
UBIFS: default compressor: LZO
UBIFS: reserved for root: 1398497 bytes (1365 KiB)
Loading upgrade data from file "a2f-upgrade.dat"
Loading file 'a2f-upgrade.dat' to addr 0x42000000 with size 182913 (0x0002ca81).
..
Done
RUPG:  mkimage header found, image name: A2F v1.5/1.0.1.0
RUPG:  FPGA image version is the same, skipping
RUPG:  f/w image version is the same, skipping
Loading file 'uImage.0' to addr 0x42000000 with size 1531476 (0x00175e54)...
Done
Loading file 'rfs.0' to addr 0x46000000 with size 2668511 (0x0028b7df)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53463 Linux-2.6.34.8
   Created:      2015-12-17  16:09:56 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1531412 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53463 RFS 3.6.0 TFTP3.2.1
   Created:      2015-12-17  16:09:56 UTC
   Image Type:   ARM Linux RAMDisk Image (gzip compressed)
   Data Size:    2668447 Bytes =  2.5 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK
OK

Starting kernel ...

init started: BusyBox v1.19.4 (2015-12-11 07:49:16 PST)
/etc/rc: Current image set is 0
/etc/rc: Mounting filesystems...
```

```
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /tmp
/etc/rc: Mounted /sys
/etc/rc: Checking the reliable upgrade watchdog timer...inactive
/etc/rc: Mounting  jffs2:user0...done
/etc/rc: Mounting  jffs2:user1...done
/etc/rc: Attaching ubi0:boot...done
/etc/rc: Mounting  ubi0:boot...done
/etc/rc: Extracting application package /boot/app.0...done
/etc/rc: Mounted /0/var to /var
/etc/rc: Mounting jffs2:upgrade...done
/etc/rc: Finalizing successful A2F upgrade
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
/etc/rc: Mounted /0/etc to /etc
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm700
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb6-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts has valid shmm700 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.acb6-HPDL: Updating /etc/profile.sentry with specific settings
/etc/rc.acb6-HPDL: Starting snmpd...
/etc/rc.acb6-HPDL: Starting httpd...
/etc/rc.acb6-HPDL: Starting shelfman... for carrier type ACB
/etc/rc.acb6-HPDL: Command line: shelfman -sf


shmm700 login: <*> 06:28:26.711   [140] Pigeon Point Shelf Manager ver. 3.6.0. B
uilt on Dec 11 2015 07:13:29
<*> 06:28:26.812   [140] *** Lock log print buffer at 0x224114 ***
<*> 06:28:26.816   [140] *** Pthread lock log print buffer at 0x228934 ***
<I> 06:28:26.909   [140] Read OTP bits 0x00025CC2, status=0
<I> 06:28:26.961   [140] Reading configuration file: /etc/shelfman.conf

shmm700 login:
```

3.3 Upgrade Procedure for the Radial IPMB FPGAs on the ACB-VI

The radial IPMI version of the ACB-VI shelf manager, P/N **21990-402**, contains two Microsemi A2F060 devices that implement the I^2C controllers for the radial IPMBs. The upgrade image for A2F060 contains an FPGA fabric image and the program code for the ARM Cortex-M3 processor combined in a single composite image. It is unlikely that these FPGAs will ever need to be upgraded. Please do not upgrade the radial IPMB FPGA unless directed to do so by Schroff technical support.

The ripmb_prog tool and the radial IPMB FPGA upgrade image will be distributed separately from the shelf manager firmware.

```
# ripmb_prog radial_ipmb_fpga-1_3-1_0_1_1.dat
ripmb_prog utility version 1.0
Image file: radial_ipmb_fpga-1_3-1_0_1_1.dat
Image file version: 1.3/1.0.1.1
Determining the number of devices in the JTAG scan chain: 2
Programming device #1:
............................................................................................
............................................................................................
.......................SUCCESS
Programming device #2:
............................................................................................
............................................................................................
.......................SUCCESS
```

3.4 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.

3.5 Setting the environmental variable rc2

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

```
# setenv rc2 /etc/rc.acb6-HPDL
```

Note: 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.acb6-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.

3.6 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 **63998-53463**.
The Pigeon Point Shelf manager version should be **V3.6.0**.
The carrier setting should be **HPDL/ACB**.

```
# version
Current flash bank: 0

Current U-Boot:
Image Name:    63998-53463 ShMM700 U-Boot 9.0.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM U-Boot Firmware (uncompressed)
Data Size:     524224 Bytes = 511.94 kB = 0.50 MB
Load Address: 00000000
Entry Point:  00000000

Current Kernel:
Image Name:    63998-53463 Linux-2.6.34.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux Kernel Image (uncompressed)
Data Size:     1531412 Bytes = 1495.52 kB = 1.46 MB
Load Address: 40008000
Entry Point:  40008000

Current RFS:
Image Name:    63998-53463 RFS 3.6.0 TFTP3.2.1
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux RAMDisk Image (gzip compressed)
Data Size:     2668447 Bytes = 2605.91 kB = 2.54 MB
Load Address: 00000000
Entry Point:  00000000

Current Application:
Image Name:    63998-53463 APP 3.6.0
Created:       Thu Dec 17 16:09:55 2015
Image Type:    ARM Linux Filesystem Image (gzip compressed)
Data Size:     2510549 Bytes = 2451.71 kB = 2.39 MB
Load Address: 00000000
Entry Point:  00000000


Other U-Boot:
Image Name:    63998-53463 ShMM700 U-Boot 9.0.8
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM U-Boot Firmware (uncompressed)
Data Size:     524224 Bytes = 511.94 kB = 0.50 MB
Load Address: 00000000
Entry Point:  00000000

Other Kernel:
Image Name:    63998-53463 Linux-2.6.34.8
```

```
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux Kernel Image (uncompressed)
Data Size:     1531412 Bytes = 1495.52 kB = 1.46 MB
Load Address: 40008000
Entry Point:  40008000

Other RFS:
Image Name:    63998-53463 RFS 3.6.0 TFTP3.2.1
Created:       Thu Dec 17 16:09:56 2015
Image Type:    ARM Linux RAMDisk Image (gzip compressed)
Data Size:     2668447 Bytes = 2605.91 kB = 2.54 MB
Load Address: 00000000
Entry Point:  00000000

Other Application:
Image Name:    63998-53463 APP 3.6.0
Created:       Thu Dec 17 16:09:55 2015
Image Type:    ARM Linux Filesystem Image (gzip compressed)
Data Size:     2510549 Bytes = 2451.71 kB = 2.39 MB
Load Address: 00000000
Entry Point:  00000000

A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.6.0
Pigeon Point and the stylized lighthouse logo are trademarks of Pigeon Point Systems.
Copyright (c) 2002-2015 Pigeon Point Systems
All rights reserved
Build date/time: Dec 11 2015 07:13:29
Carrier: HPDL/ACB
Carrier subtype: 0; subversion: 0
Cooling Management Library: libcooling_acb.so; Version: 3.6.0
Carrier Product ID: 21990401
Chassis Product ID: 11596160
```

2) Correct RC2 file
```
# cat /var/log/messages | grep "Calling /etc/rc.acb6-HPDL"
Jan 22 17:22:13 shmm700 user.info /etc/rc: Calling /etc/rc.acb6-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 shmm700 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 shmm700 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 shmm700 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 shmm700 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 the 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 "sf probe 2:0", "sf erase 100000 80000", 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.acb6-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 2009.08 (Dec 16 2015 - 15:52:59)

Freescale i.MX28 family
CPU:    297 MHz
BUS:    99 MHz
EMI:    130 MHz
GPMI:   24 MHz
I2C:    ready
DRAM:   128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F:    SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
A2F:    A2F firmware, version 1.5
A2F:    Device type: A2F060M3E-FG256
A2F:    MSS clock frequency: 40 MHz
A2F:    Fabric clock frequency: 20 MHz
A2F:    Fast delay calibration: 1330 cycles per 100uS
A2F:    eNVM: 128 KB (00000000 - 00020000)
A2F:    eSRAM: 16 KB (20000000 - 20004000)
A2F:    Extram start: 20002750
A2F:    Last reset cause: RUWD
A2F:    VMON flags: 00000000
RUPG:   booting from image 1 (candidate)
In:     serial
Out:    serial
Err:    serial
Net:    FEC0: 00:18:49:01:8f:8a, FEC1: 00:18:49:01:8f:8b
FEC0, FEC1
Hit any key to stop autoboot:  0
shmm700
shmm700
shmm700 sf probe 2:0
65536 KiB S25FL512S at 2:0 is now current device
shmm700 sf erase 100000 80000
Erasing Flash... done!
shmm700 reset

resetting ...

U-Boot 2009.08 (Dec 16 2015 - 15:52:59)

Freescale i.MX28 family
CPU:    297 MHz
BUS:    99 MHz
EMI:    130 MHz
```

```
GPMI:   24 MHz
I2C:    ready
DRAM:   128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F:    SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
A2F:    A2F firmware, version 1.5
A2F:    Device type: A2F060M3E-FG256
A2F:    MSS clock frequency: 40 MHz
A2F:    Fabric clock frequency: 20 MHz
A2F:    Fast delay calibration: 1330 cycles per 100uS
A2F:    eNVM: 128 KB (00000000 - 00020000)
A2F:    eSRAM: 16 KB (20000000 - 20004000)
A2F:    Extram start: 20002750
A2F:    Last reset cause: WDT
A2F:    VMON flags: 00000000
RUPG:   booting from image 0 (confirmed)
*** Warning - bad CRC, using default environment

In:     serial
Out:    serial
Err:    serial
Net:    FEC0: 00:18:49:01:8f:8a, FEC1: 00:18:49:01:8f:8b
FEC0, FEC1
Hit any key to stop autoboot:  0
shmm700 save
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash...done
shmm700 save
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash...done
shmm700 reset
```

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

```
# getenv rc2
rc2=/etc/rc.acb6-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!
Sent SIGTERM to all processes
shelfman: [168]: Shelfman: termination watchdog started
shelfman: [168]: Shelfman: Interrupted by signal 15
shelfman: [168]: Shelfman: call ipmf_terminating()
snmpd[173]: Received TERM or STOP signal...  shutting down...
shelfman: [189]: ipmf_ipmb_read_loop: Exit

Terminated
# shelfman: [189]: ipmf_sensor_scan_thread: Exit
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call shm_time_terminate()
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call cli_terminate()
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call shelf_fru_terminate()
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: sdrrep_terminate()
shelfman: [197]: Terminating sdrrep_full_scan_thread
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call msg_terminate()
shelfman: [168]: msg_terminate: entered
shelfman: [223]: RMCP: terminating receiving thread for 10.179.0.140:623
shelfman: [168]: msg_terminate: calling shm_firewall_exit()
```

```
shelfman: [168]: msg_terminate: done
shelfman: [168]: msg_terminate: calling lan_terminate()
shelfman: [168]: msg_terminate: done
shelfman: [168]: msg_terminate: calling session_terminate()
shelfman: [168]: msg_terminate: done
shelfman: [168]: msg_terminate: calling user_terminate()
shelfman: [168]: msg_terminate: done
shelfman: [168]: msg_terminate: calling channel_param_terminate()
shelfman: [168]: msg_terminate: done
shelfman: [168]: msg_terminate: exiting
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call ipmc_terminate()
shelfman: [168]: ipmc_terminate: calling ipmc_power_terminate()
shelfman: [168]: ipmc_power_terminate called
shelfman: [168]: ipmc_terminate: done
shelfman: [168]: ipmc_terminate: calling ipmc_ekey_terminate()
shelfman: [168]: ipmc_terminate: done
shelfman: [168]: ipmc_terminate: calling cooling_terminate(), zoned cooling = 1
shelfman: [168]: Exiting from ipmc_zoned_cooling_terminate()
shelfman: [168]: ipmc_terminate: done
shelfman: [168]: ipmc_terminate: calling shm_alarm_terminate()
shelfman: [168]: ipmc_terminate: done
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call ipmf_unregister_sel()
shelfman: [168]: SEL Terminate
shelfman: [182]: Terminating SEL dedicated thread
shelfman: [168]: Shelfman: done...
shelfman: [168]: HPM.1: command handlers are unregistered
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call ipmf_terminate()
shelfman: [168]: Closing IPMB, fd=12
shelfman: [168]: Closing IPMB, fd=13
shelfman: [168]: Closing radial links: count = 1
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: call carrier_terminate(), active 1, carrier 0x18a998, terminate
0x67908
shelfman: [168]: HPDL Chassis: Stopping SetAdaptiveThreshold thread, id=1229177952
shelfman: [168]: Shelfman: done...
shelfman: [168]: Shelfman: Terminated
Requesting system reboot

U-Boot 2009.08 (Dec 16 2015 - 15:52:59)

Freescale i.MX28 family
CPU:   297 MHz
BUS:   99 MHz
EMI:   130 MHz
GPMI:  24 MHz
I2C:   ready
DRAM:  128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
A2F:   A2F firmware, version 1.5
A2F:   Device type: A2F060M3E-FG256
A2F:   MSS clock frequency: 40 MHz
A2F:   Fabric clock frequency: 20 MHz
A2F:   Fast delay calibration: 1330 cycles per 100uS
A2F:   eNVM: 128 KB (00000000 - 00020000)
A2F:   eSRAM: 16 KB (20000000 - 20004000)
A2F:   Extram start: 20002750
A2F:   Last reset cause: SOFT
A2F:   VMON flags: 00000000
RUPG:  booting from image 0 (confirmed)
In:    serial
Out:   serial
Err:   serial
Net:   FEC0: 00:18:49:02:5c:c2, FEC1: 00:18:49:02:5c:c3
FEC0, FEC1
Hit any key to stop autoboot:  0
Creating 1 MTD partitions on "spi0":
0x0000001c0000-0x000002000000 : "mtd=5"
UBI: attaching mtd1 to ubi0
```

```
UBI: MTD device 1 is write-protected, attach in read-only mode
UBI: physical eraseblock size:   262144 bytes (256 KiB)
UBI: logical eraseblock size:    262016 bytes
UBI: smallest flash I/O unit:    1
UBI: VID header offset:          64 (aligned 64)
UBI: data offset:                128
UBI: attached mtd1 to ubi0
UBI: MTD device name:            "mtd=5"
UBI: MTD device size:            30 MiB
UBI: number of good PEBs:        121
UBI: number of bad PEBs:         0
UBI: max. allowed volumes:       128
UBI: wear-leveling threshold:    4096
UBI: number of internal volumes: 1
UBI: number of user volumes:     1
UBI: available PEBs:             0
UBI: total number of reserved PEBs: 121
UBI: number of PEBs reserved for bad PEB handling: 0
UBI: max/mean erase counter: 7/5
UBIFS: read-only UBI device
UBIFS: mounted UBI device 0, volume 0, name "boot"
UBIFS: mounted read-only
UBIFS: file system size:   28297728 bytes (27634 KiB, 26 MiB, 108 LEBs)
UBIFS: journal size:       2096129 bytes (2047 KiB, 1 MiB, 6 LEBs)
UBIFS: media format:       w4/r0 (latest is w4/r0)
UBIFS: default compressor: LZO
UBIFS: reserved for root:  1398497 bytes (1365 KiB)
Loading upgrade data from file "a2f-upgrade.dat"
Loading file 'a2f-upgrade.dat' to addr 0x42000000 with size 182913 (0x0002ca81).
..
Done
RUPG:  mkimage header found, image name: A2F v1.5/1.0.1.0
RUPG:  FPGA image version is the same, skipping
RUPG:  f/w image version is the same, skipping
Loading file 'uImage.0' to addr 0x42000000 with size 1531476 (0x00175e54)...
Done
Loading file 'rfs.0' to addr 0x46000000 with size 2668511 (0x0028b7df)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53463 Linux-2.6.34.8
   Created:      2015-12-17  16:09:56 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1531412 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53463 RFS 3.6.0 TFTP3.2.1
   Created:      2015-12-17  16:09:56 UTC
   Image Type:   ARM Linux RAMDisk Image (gzip compressed)
   Data Size:    2668447 Bytes =  2.5 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK
OK

Starting kernel ...

init started: BusyBox v1.19.4 (2015-12-11 07:49:16 PST)
/etc/rc: Current image set is 0
/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /tmp
/etc/rc: Mounted /sys
/etc/rc: Checking the reliable upgrade watchdog timer...inactive
/etc/rc: Mounting  jffs2:user0...done
/etc/rc: Mounting  jffs2:user1...done
/etc/rc: Attaching ubi0:boot...done
/etc/rc: Mounting  ubi0:boot...done
/etc/rc: Extracting application package /boot/app.0...done
```

```
/etc/rc: Mounted /0/var to /var
/etc/rc: Mounting jffs2:upgrade...done
/etc/rc: Finalizing successful A2F upgrade
A2F:   SPICOMM protocol v1.7, M3 firmware v1.5, FPGA design v1.0.1.0
/etc/rc: Mounted /0/etc to /etc
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm700
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb6-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts has valid shmm700 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.acb6-HPDL: Updating /etc/profile.sentry with specific settings
/etc/rc.acb6-HPDL: Starting snmpd...
/etc/rc.acb6-HPDL: Starting httpd...
/etc/rc.acb6-HPDL: Starting shelfman... for carrier type ACB
/etc/rc.acb6-HPDL: Command line: shelfman -sf


shmm700 login: <*> 06:28:26.711   [140] Pigeon Point Shelf Manager ver. 3.6.0. Built on Dec 11
2015 07:13:29
<*> 06:28:26.812   [140] *** Lock log print buffer at 0x224114 ***
<*> 06:28:26.816   [140] *** Pthread lock log print buffer at 0x228934 ***
<I> 06:28:26.909   [140] Read OTP bits 0x00025CC2, status=0
<I> 06:28:26.961   [140] Reading configuration file: /etc/shelfman.conf

shmm700 login:
```

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.

ShMC site-dependent; recommended for 2/4-pair-adaptable
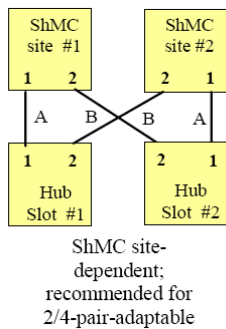
The shelf manager Ethernet ports in a Pentair/Schroff shelf are wired according to the ATCA site-dependent diagram at the left. If only a single switch blade is installed in slot #1, and a shelf manager switchover occurs, shelf manager #2 will not have network connectivity because its port #1 is wired 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 "clia setlanconfig" and "clia 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 63998-53463 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 63998-53463 are stored in the additional configuration files /etc/shelfman.conf.ACB6-HPDL
The content of the custom specific configuration file is listed below.

```
# cat /etc/shelfman.conf.ACB-VI-HPDL
# /etc/shelfman.conf.ACB-VI_HPDL
# Created by DM 02 December 2013
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=AT24LC256:0:0x57,2200; MAX_INTAKE=2; MA"
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
ISOLATE_MUX_ADDRESS = 0x70
ISOLATE_MUX_BUS = 5
ISOLATE_MUX_IGNORE_COUNT = 10
ISOLATE_MUX_ON_GPIO8 = TRUE
ENABLE_RTC_TRICKLE_CHARGER = TRUE
```

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

```
# getenv
bootargs=console=${console},${baudrate}n8
bootcmd=run mount_ubifs; a2f upgrade; run ubifs
bootdelay=3
baudrate=115200
ipaddr=192.168.0.22
serverip=192.168.0.7
netmask=255.255.255.0
bootfile=sentry.shmm700.kernel
loadaddr=0x42000000
console=ttySP0
kernel_start=0x42000000
rfs_start=0x46000000
```

```
mtdids=spi0=SPI-0
mtdparts1=512K(uboot0),512K(uboot1),256K(envvars0),256K(envvars1),256K(ubifs_ca)
bootfile=sentry.shmm700.kernel
ramdisk=sentry.shmm700.rfs
quiet=quiet
mac_override=set bootargs ${bootargs} fec_mac=${ethaddr}
rootpath=/rootfs
ipdevice=eth0
ip1device=usb0
ip1addr=192.168.1.2
gatewayip=192.168.0.1
rmcpaddr=192.168.0.2
hostname=shmm700
flash_reset=n
password_reset=n
logging=ram
timezone=UTC
rc_ifconfig=n
start_rc2_daemons=y
set_mtdparts=set mtdparts mtdparts=SPI-0:${mtdparts1}
bootargs_common=set bootargs console=${console},${baudrate}n8 mtdparts=m25p80-1e
bootargs_initrd=run bootargs_common; set bootargs ${bootargs} root=/dev/ram
bootargs_nfs=run bootargs_common; set bootargs ${bootargs} root=/dev/nfs ip=${ip
bootargs_mmc=run bootargs_common; set bootargs ${bootargs} root=/dev/mmcblk0p3 f
mount_ubifs=run set_mtdparts
load_ubifs=ubifsload ${kernel_start} uImage.${image_sel}; ubifsload ${rfs_start}
load_ubifs_alt=ubifsload ${kernel_start} uImage.${alt_image}; ubifsload ${rfs_s}
ubifs=run bootargs_initrd; run load_ubifs; bootm ${kernel_start} ${rfs_start}; g
nfs=tftp ${kernel_start} ${bootfile}; run bootargs_nfs; bootm ${kernel_start}
net=run bootargs_initrd; tftp ${kernel_start} ${bootfile} ; tftp ${rfs_start} $}
stdin=serial
stdout=serial
stderr=serial
image_sel=1
alt_image=0
serial#=6000070
ethaddr=00:18:49:01:8f:8a
eth1addr=00:18:49:01:8f:8b
a2f_upg_file=a2f-upgrade.dat
mfgdate=08172012
prodrev=AA
part#=ShMM-700R
hwrev=4A
ethact=FEC0
ver=U-Boot 2009.08 (Jul 01 2014 - 16:23:21)
rc2=/etc/rc.acb6-HPDL
```

1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:
• [ShMM-700] In the U-Boot SPI driver, a counter was added for the polling loop that monitors the RUN bit and other bits in PIO mode. If the counter expires, the polling loop is terminated and a ShMM reset is performed.
• [ShMM-700] U-Boot was changed to copy exception handlers to OCRAM (address 0) so that a register dump is produced if an exception occurs in U-Boot.
• [ShMM-700] The Linux MXS I2C driver was fixed to enable repeated start support.
• [ShMM-700] In the Linux MXS I2C driver, master mode is now set immediately after initialization/reset. It was previously set prior to the first I2C transaction, which could cause an error if another master initiated an I2C transaction before the master mode was enabled.
• [ShMM-700] An open source patch was applied to the UBIFS to fix a bug in UBIFS garbage collection.
2. The Shelf Manager on the ShMM-700 now initiates a switchover when it detects UBIFS corruption. Prior to the switchover, the system log is copied to the /boot filesystem.

8   Revision History

3.6.0

New and Changed Features for This Release

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
   - In U-Boot, the RTS signal setting on serial line was corrected to support hardware flow control properly. Also, the U-Boot configuration was modified to allow stopping on user input in the **bootdelay=0** case; i.e. even when there is no countdown before automatic boot.
   - The utility **ripmb_prog** has been updated to avoid problems with JFFS2 partitions.
2. A new DHCPv4 client has been implemented; this client fully supports the DHCPv4 protocol, including finite lease times, lease renewal, arbitrary configuration of network interfaces on the Shelf Manager and HPM.3 support. It allows assigning the IPv4 addresses to the network interfaces on the logical and both physical Shelf Managers. The configuration variable **ENABLE_NEW_DHCPV4_CLIENT** can be used to choose the new or the old DHCPv4 client; it is set to **TRUE** by default.
3. A DHCPv6 client has been implemented. This client allows dynamic assignment of IPv6 addresses to the network interfaces on the logical and both physical Shelf Managers and fully supports the DHCPv6 protocol.
4. The Shelf Manager Web interface has been completely reworked for better usability and flexibility for a customer; also, its functionality has been substantially enhanced and is now close to the full functionality of the CLI.
5. New SNMP variables have been implemented that represent IPv6-related LAN configuration parameters for the LAN channels on the logical Shelf Manager.
6. The CLI command **variable** has been enhanced to show all known variables.
7. The CLI command **hpi resource** has been enhanced to show all known HPI resources.
8. The IPMI authentication algorithm RAKP-HMAC-256 and the integrity algorithm HMAC-SHA256-128 have been implemented. The cipher suites based on these algorithms are now supported by the Shelf Manager.
9. In HPDL, support has been added for initiation of a Shelf Manager switchover in case of a problem on a master-only I2C bus that cannot be recovered by the isolation of the corresponding I2C multiplexer.
10. The Shelf Manager now tries to establish an HPM.2 session to a board on alternate LAN channels if the board exposes multiple HPM.2 capable LAN channels in the HPM.2 channel mask and an attempt to establish a session on the first LAN channel does not succeed.
11. The Shelf Manager now retains information about an IPM controller's SDRs when the IPM controller is deactivated; this allows the corresponding HPI resource to retain IPMI-based instruments when the resource is in the INACTIVE state.
12. The RMCP user database stored in a Shelf Manager flash file is now stored in encrypted form.
13. The behavior of the default cooling algorithm has been changed: - if the fan level is to be increased, and current level + increase step > maximum level, the current level is set to maximum level; previously it stayed unchanged; - if the fan level is to be decreased, and current level - decrease step < minimum level, the current level is set to minimum level; previously it stayed unchanged.
14. The CLI command **fruinfo** now supports parsing new FRU Information records from PICMG 3.7 (specifically the Address Table Extension record and the updated version of the Power Distribution record).
15. The CLI commands **fruinfo** and **ipmc** now support parsing Link Class 4 (25.78125 Gbd).
16. The IntegralHPI implementation has been changed; the details are provided in the IntegralHPI release notes.

Bug Fixes

The following bugs have been fixed in this release of the Shelf Manager:

1. The CLI command **getfanpolicy** could work incorrectly if the target FRU was specified with the IPMB address and FRU ID.
2. The output of the CLI command **amcportstate** for an on-carrier device could be incorrect.
3. The CLI command **setpefconfig** could not be used to configure an alert policy with an event-specific alert string key.
4. In Shelf Manager HPM.1 upgrades, a component comparison operation could be quite slow; its speed has been improved.

3.5.1

New and Changed Features for This Release

1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:

- The default memory range used by the U-Boot command **mtest** has been corrected.
- The i.MX287 BM_I2C_CTRL0_MULTI_MASTER bit is re-enabled at the completion of each I2C Read operation. Previously it was re-enabled prior to the start of the next I2C Write operation.
- The U-Boot command **bmtest** has been enhanced to run a more sophisticated test for the lower SDRAM region and accept test pattern input from the command line.
- The tool **hpm1** has been fixed to operate properly in a 64-bit host environment.

2. This release conforms to PICMG 3.0 R3.0 as amended by ECN 3.0-3.0-001, which adds IPv6 support to the ATCA hardware platform management architecture. Specifically, this release supports the mechanisms for the management of IPv6 addresses defined in that ECN, including Shelf Manager IPv6 Connection records in the Shelf FRU Information.
3. The SNMP daemon **snmpd** now supports IPv6-based operation without any additional configuration changes.
4. The RMCP server now uses the asynchronous variant of the **recvfrom** function (to avoid an unlikely network glitch that could cause a synchronous call to **recvfrom** to get stuck).

Bug Fixes

The following bugs have been fixed in this release of the Shelf Manager:

1. The active Shelf Manager was processing presence state changes for non-intelligent chassis FRUs (PEMs, fan trays) during its termination; this could cause incorrect detection of absence for subsidiary FRUs during a switchover.
2. If IPMB addresses 82h and 84h were assigned to redundant Shelf Managers, an active Shelf Manager with the IPMB address 84h might fail to detect physical extraction of a board with the IPMB address 86h.
3. There are IntegralHPI bug fixes in this release of the Shelf Manager; see the IntegralHPI release notes for the details.

3.5.0.1

New and Changed Features for This Release

1. This release includes an update to the ShMM-700 A2F060 image file. The Cortex-M3 firmware has been updated, to version 1.5 and the FPGA fabric has been updated to version 1.0.1.0. To upgrade the ShMM-700 A2F060 image, the reliable upgrade utility must be run in the A2F060 upgrade mode; refer to Section 8.7 in the Shelf Manager User Guide. The version 1.0.1.0 FPGA fabric design improves the robustness of the Hardware Redundancy Interface (HRI) and includes the following specific changes:
   a. The HRI block now monitors the HRI_CLOCK and HRI_DATA signals and isolates the block if either signal is stuck low for more than 400 μsec.
   b. Two MSS GPIO signals have been added for diagnostic purposes: One GPIO captures when an HRI isolation event occurs, and the second GPIO is used to clear the first GPIO.
   c. The FPGA has been built with Libero SoC 11.5 SP2.

   The version 1.5 Cortex-M3 firmware includes the following specific change:
   d. A new CLI command gpio has been added to support the two new MSS GPIOs.
2. The previously undocumented low-level exception state for bit 3 of the CPLD State/HWRI State sensor has been defined as "The Shelf Manager is Active with a Backup but Backup is unavailable for switchover".
3. A new configuration variable COOLING_NO_ALL_FRUS_POWER_DOWN_IN_CRITICAL_ALERT has been defined; it allows the user to direct the Shelf Manager not to power down the entire shelf in the case of non-FRU specific critical thermal alerts in the shelf.
4. The completion code for the command "Get Session Challenge," in the case when there are no free session slots in the Shelf Manager, has been changed from "Node busy" to "Out of space".
5. The Active Shelf Manager, after detecting a loss of health on the peer-Shelf Manager, now delays by 1-second the termination of the Software Redundancy Interface (SRI) connection. This change improves the robustness of the redundancy interfaces when the SRI is operational without a fully functioning Hardware Redundancy Interface.

Bug Fixes

The following bugs have been fixed in this release of the Shelf Manager:

1. A ShMM-700R regression introduced in the 3.5.0 release where a firmware upgrade, after a previous firmware downgrade, could fail.
2. A Shelf Manager crash could happen when an HPM.2-enabled board sent a "System reconfigure" event shortly after it had been discovered by the Shelf Manager.
3. The command format shown in the "usage" output for the **dumplog** utility was incorrect.
4. In the HPDL driver for the GE power supply device, the parameters for the sensor that measures input power were specified incorrectly.
5. The HPDL driver for the PCA9506 device incorrectly operated in the **PRESERVE_STATE** mode.

3.5.0
New and Changed Features for This Release

1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:
   a. ${TARGET_ROOT}/lib/libc-2.3.1.so ${TARGET_ROOT}/usr/lib/libc.a
   b. The Cross Development Environment (CDE) has been upgraded to include glibc v2.20, which is not affected by the CVE-2015-0235 problem described above. Refer to the PPMM-700R Cross Development Environment User Guide for installation instructions.
   c. The Dropbear SSH server has been updated to support SFTP properly. That function didn't work properly after the recent upgrade to version 0.65.
   d. U-Boot has been enhanced to adjust the Flash partition layout in the bootargs variable if the user_partition variable is set to jffs2. This was done as a part of JFFS2 partition format support.
   e. The i.MX287 DRAM register values have been optimized for operation at 130.91 MHz and industrial temperatures (-40C to 85C).
2. IPv6 support has been introduced for RMCP-based communication between the Shelf Manager and the System Manager. This support has been implemented in accordance with the IPMI 2.0 specification, revision 1.1. More than 30 new IPv6-related LAN configuration parameters have been implemented in the Shelf Manager, also with corresponding support in the CLI. IPv6 addresses can be assigned to the Shelf Manager and used by RMCP clients, and also IPv6 addresses can be used as destination addresses for PEF alerts sent by the Shelf Manager.
3. Support for monitoring RMCP login attempts with an invalid password and locking out the respective user after a certain number of failed attempts has been added to the Shelf Manager, in accordance with the IPMI 2.0 specification. The Bad Password Threshold LAN configuration parameter and the Session Audit sensor have been implemented for this purpose.
4. In HPDL, support has been added for preserving device configuration on initial startup of the Shelf Manager. A new keyword **PRESERVE_STATE** and a new signal **StateInherited** have been introduced for this purpose.
5. A new CLI command md5hash has been implemented; it shows MD5 digests of HPDL and SDR data for the current carrier and chassis.
6. A configuration variable **DHCP_REQUEST_OPTION_LIST** has been added to allow the DHCP client to request an explicit list of options.
7. In the case of unsuccessful completion by the Shelf Manager of an IPMI command with NetFN=2Ch or 2Eh, the Shelf Manager (in accordance with the latest revision (1.1) of the IPMI 2.0 specification), also fills in the Group Extension Code field or IANA field in the response, in addition to the completion code.
8. Robustness improvements have been made to the Shelf Manager redundancy interfaces, including cases where they are partially operational (e.g. SRI without HRI).
9. The severity level for some non-critical error messages has been downgraded from **error** to **warning**.
10. The option to change the 'user' partition format to JFFS2 is now supported. See details in the User Guide.
11. The IntegralHPI implementation has been changed; the details are provided in the IntegralHPI release notes.

Bug Fixes
The following bugs have been fixed in this release of the Shelf Manager:

1. In HPDL, when a carrier or chassis definition included multiple FRUs sharing the same FRU ID, the maximum FRU ID for the corresponding IPMC could be set to a number larger than needed.
2. In the CLI output of event state masks, some states for standard IPMI sensor types were not decoded and not shown in the human-readable list of states.
3. The CLI command **setfanpolicy** did not check that the target FRU is a fan tray described in the Address Table of Shelf FRU Information and worked incorrectly if applied to a non-fan tray FRU.
4. The CLI command **frudatar** did not report a failure if errors prevented generation of the correct result file.
5. IPMB status events generated by the ShMM-700 have been corrected to report the Clock Low Timeout condition. Other error conditions are still reported as Undiagnosed Communication Failures, due to hardware limitations.
6. A crash of the backup Shelf Manager was possible if active and backup Shelf Managers were started simultaneously and the configuration parameter **PROPAGATE_RMCP_ADDRESS** was set to TRUE.

3.4.2.3
New and Changed Features for This Release

1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:
   a. In the USB driver, the MAC addresses of the eth0 and eth1 devices are used to assign addresses for usb0 and usb1 to ensure that they are unique instead of randomly generated.
2. In the HPDL driver for the ADT7490 device, as a workaround for a hardware-specific issue, a delay has been added between modification of a PWM value and reading back the result.
3. In the HPDL driver for PMBus devices, support for General Electric CPL AC/DC rectifier devices was added.
4. To improve the Shelf Manager robustness in the presence of misbehaving I2C-accessed sensors, the ability to read certain signals two or three times with voting has been added. A special common signal configuration parameter double_read[=<N>] has been introduced in HPDL for this purpose. See the HPDL Reference document for more information.
5. The ability to use both FRU#1 and FRU#2 behind an external IPMC as Shelf FRU Information sources has been added. To use that facility, the IPMB address of that IPMC must be set as the value of both configuration variables SHELF_FRU_IPMB_SOURCE1 and SHELF_FRU_IPMB_SOURCE2.
6. Multiple robustness improvements were added in cases where the redundancy interfaces are partially operational (SRI without HRI, choice of Active role at initial collision).

Bug Fixes
The following bugs have been fixed in this release of the Shelf Manager:
1. Backup Shelf Manager Carrier IPMC could get stuck in M3 at startup.

3.4.2.2
New and Changed Features for This Release
1. This release is based on updates of the ShMM-500, ShMM-1500 and ShMM-700 Linux distributions that include the following specific change:
   a. The SSH server dropbear has been upgraded to the version 0.65.
2. A MIB file that supports PET notifications in the SNMPv2 format has been added to the files on the ShMM and is now available via the Web interface through the existing "Get Pigeon Point MIB Files" command.

Bug Fixes
The following bugs have been fixed in this release of the Shelf Manager:
1. In the Active-Active network configuration, the RMCP listener in the Shelf Manager could, in some cases, fail to start on one of the channels.
2. On the ShMM-700, establishment of the initial network connection over the Software Redundancy Interface could fail during a simultaneous startup of the two redundant Shelf Managers. This could cause the backup Shelf Manager to go through one additional reboot cycle before establishing itself as a fully redundant backup Shelf Manager.
3. The base Object Identifier was incorrect in the implementation of PET notifications in the SNMPv2 format.

3.4.2.1
New and Changed Features for This Release
1. In the HPDL driver for the Power-One FMPe30.48 rectifier, a workaround has been added to prevent false indications of device absence due to occasional failures on the RS485 interface.

3.4.2
New and Changed Features for This Release
1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:
   a. In the Linux MXS I2C driver, implemented bus recovery after an error condition is detected.
   b. In the bit-bang I2C driver, implemented bus recovery if SDA is detected as stuck low.
2. An HPDL driver has been added for the Power-One FMPe30.48 rectifier.
3. SNMP version 2 support has been added to the Platform Event Traps (PETs) generated by the Shelf Manager. A new configuration variable PET_SNMP_VERSION has been added to control the SNMP trap version.

Bug Fixes
The following bugs have been fixed in this release of the Shelf Manager:

1. A carrier-specific cooling algorithm was not properly restoring power to a FRU that had been previously powered down as a result of a critical temperature alert. The generic cooling algorithm and other carrier-specific cooling algorithms do not need this fix.
2. While M0->M1 events for the physical Shelf Manager were disabled by setting NO_M0_M1_EVENT_AT_STARTUP = TRUE, such events could still be generated when the Shelf Manager application was started with an open hot swap handle on the ShMM carrier.
3. A possible crash trigger in the HPDL PMBus driver related to long signal definitions has been fixed.

3.4.1

New and Changed Features for This Release

1. This release is based on updates of the noted ShMM-specific Linux distribution that includes the following specific changes:
   a. In the U-Boot SPI driver, a counter was added for the polling loop that monitors the RUN bit and other bits in PIO mode. If the counter expires, the polling loop is terminated and a ShMM reset is performed.
   b. U-Boot was changed to copy exception handlers to OCRAM (address 0) so that a register dump is produced if an exception occurs in U-Boot.
   c. The Linux MXS I2C driver was fixed to enable repeated start support.
   d. In the Linux MXS I2C driver, master mode is now set immediately after initialization/reset. It was previously set prior to the first I2C transaction, which could cause an error if another master initiated an I2C transaction before the master mode was enabled.
   e. An open source patch was applied to the UBIFS to fix a bug in UBIFS garbage collection.
2. The Shelf Manager on the ShMM-700 now initiates a switchover when it detects UBIFS corruption. Prior to the switchover, the system log is copied to the /boot filesystem.

Bug Fixes

The following bugs have been fixed in this release of the Shelf Manager:

1. In HPDL, the read and write methods in the PCA9555 driver were not protected by locking. As a result, FRU LED control signals could work incorrectly if they were located in the same register with other signals modified by HPDL periodic actions.
2. During HPM.1 component version detection, the expected RFS and APP image name pattern on ShMM-700 assumed a space character where the ShMM-500 and ShMM-1500 variants did not. Now all three platforms operate the same in this area.
3. The CLI command variable could work incorrectly with indexed HPDL variables.

3.4.0.1

New and Changed Features for This Release

1. In the IPMB trace utility, the new standard Wireshark format identifier (260) is used for delivering HPM.2 IPMI trace capture data to the Wireshark utility.
2. A new CLI command **hpi version** has been introduced; it is used to show the current IntegralHPI version. The IntegralHPI version is no longer shown in the output of the CLI command **version**.

Bug Fixes

The following bugs have been fixed in this release of the Shelf Manager:

1. Rarely, during an intensive stream of events and IPMI requests to the Shelf Manager from multiple IPMCs, incoming events could be corrupted inside the Shelf Manager and rejected; when retransmitted, these events were processed normally.
2. The allocation and initialization of HPM.2 client channels was done even on platforms that don't support HPM.2; now those operations are only performed when HPM.2 is supported.
3. In the case when M0->M1 events for the physical Shelf Manager were disabled by setting NO_M0_M1_EVENT_AT_STARTUP = TRUE, such events could still be generated when the Shelf Manager application was started with an open hot swap handle on the ShMM carrier.
4. The HPM.1 image comparison operation for the U-Boot component on the ShMM-700 could time out; it has now been optimized to improve its performance.
5. The CLI command **frudataw 20 254** could lock the CLI and lead to a watchdog reset, while writing a Shelf FRU Information file to slow EEPROM(s).

3.4.0
New and Changed Features for This Release

1. [ShMM-700] This release includes an update to the ShMM-700 A2F060 image file. Only the Cortex-M3 firmware has been updated, to version 1.4; the FPGA fabric has NOT changed and remains at version 1.0.0.0. The version 1.4 Cortex-M3 firmware includes the following specific changes, all associated with IPMB-0 support:
    *   Added a short delay (1 us) between writing to the data register and clearing the SI bit to make sure the data setup requirements are satisfied;
    *   Added a check to verify that a STOP has been generated before asserting that the IPMB is IDLE (which prevents a periodic bus check from starting before the transaction has completed);
    *   Changed the periodic bus check to restart the timer without detaching the buffer if the bus is not idle when the timer expires;
    *   Fixed arbitration loss handling to avoid generating a STOP condition before an ACK cycle is complete;
    *   Fixed 60ms timeout detection;
    *   Added invalid I2C state detection and implemented bus recovery.

    To upgrade the ShMM-700 A2F060 image, the reliable upgrade utility must be run in the A2F060 upgrade mode; refer to Section 8.6 in the *Shelf Manager User Guide.*

2. [ShMM-700] Changes have been done in the **ripmb_prog** utility:
    *   Added recognition of a version header in the FPGA image files;
    *   Added version checking and partial upgrade support;
    *   Added new command line option: **-f** (force upgrade);
    *   Added version string to the **ripmb_prog** utility itself (currently set to version 1.0).

3. [ShMM-700] Added support for reading platform-specific OTP bits.

4. [ShMM-700] Changed bonding driver configuration to active-backup mode with MII link check and gratuitous ARP support.

5. [ShMM-500, ShMM-1500, ShMM-700] Added command **ip** (**ip route/link/address**) to busybox.

6. [ShMM-700] Added support for IPv6 based SSH connections.

7. In ShMM-700 radial configurations, added support for emulation of a non-implemented bused IPMB segment over the cross link; for HPDL support of this feature, added the **NOBUS** clause in the **IPMB_TOPOLOGY** statement.

8. If an HPDL module is loaded from a flash file, the file name is now shown in the log.

9. Support for external Ethernet link physical connectivity signals has been added.

10. In the case of a Shelf Manager crash, extended crash information and the crash dump can be saved in the directory **/var/crash** in the flash file system on the ShMM (if there is enough space in it); a reboot reason has been assigned to the case of a Shelf Manager crash.

11. Redundancy facilities for propagating the following information to the backup Shelf Manager have been added:
    *   The physical address of the active Shelf Manager
    *   HPM.2 session-related information
    *   Information about the latest TELCO alarm

12. The exit code of the CLIA utility now reflects the status of the last executed CLI command (or IPMI completion code, if an IPMI command is executed by CLI).

13. Cached HPDL/SDR shelf-level data is now cleared if the CLI command **switchover –force** is issued.

14. In PEF, checks have been added not to access table entries beyond configured maximum values.

15. Delayed data propagation for RMCP/RMCP+ sessions has been changed to have a separate counter for each session.

16. Support for two new MicroTCA FRU Information records has been added in the CLI command **fruinfo**.

17. On ShMM-700, support has been added for reading platform-specific OTP bits; now the Shelf Manager does not start if the current platform is not a ShMM.

18. On ShMM-700, the reliable upgrade tool now requires root privileges.

19. An error message issued when on a read failure for a SEL record has been clarified.

Bug Fixes
The following bugs have been fixed in this release of the Shelf Manager:

1. On ShMM-700, in the case of an invalid hardware address, no attempts were made to periodically re-read it.
2. The list of known time server IP addresses was not cleared on DHCP restart.
3. Two ARP notifications with different device MACs for the same IP address were possible in Active-Active mode when two RMCP-capable network interfaces were connected to the same physical network.

4. A pending SEL erase request was not terminated when CLIA exited; this could cause the Shelf Manager CLI to become unresponsive if the command sel erase was issued for a board with a defective SEL implementation.
5. The CLI command shelfaddress allowed the user to set illegal Type/Length byte value 0xC1.
6. A Shelf Manager crash was possible in the MAX_DEFERRED_ALERTS=0 mode.
7. When an RMCP IP address was changed on the active Shelf Manager, the backup Shelf Manager did not make the corresponding change in its address in the PROPAGATE_RMCP_ADDRESS=TRUE mode.
8. In the CLI command user, an incorrect limit check was applied (the correct upper limit is 63).
    a. An IPMB-0 Link Mapping record with format type 0 and a cross-link could be parsed incorrectly.
9. The configuration parameter MIN_SHELF_FRUS worked incorrectly (always assuming value 1). The default value of this parameter has been changed to 1.
10. The HPM.1 version of the U-Boot component could be displayed incorrectly on ShMM-700.

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