



Release Notes

Pentair/Schroff firmware part number 63998-53456

Based on Pigeon Point Systems (PPS) firmware release V3.4.0.1 for ShMM-700

Release Date: July 2, 2014

Release History:

Release date	Pentair/Schroff FW P/N	PPS version
July 2, 2014	63998-53456	V3.4.0.1

Introduction:

The firmware package “63998-53456.zip” contains Firmware release V3.4.0.1 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 63998-53456.

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1 Pentair/Schroff shelf manager versions

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

Photo	Type	RC2-variable
 <p>The part number of the ACB-VI shelf manager is on the label at the rear side of the shelf manager, see photo below:</p> <ul style="list-style-type: none"> - 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 63998-53456.zip. This file contains the following Pre-Built images:

Reliable Upgrade files:

63998-53456.shmm700.kernel	Upgrade kernel
63998-53456.shmm700.rfs	Upgrade RFS
63998-53456.shmm700.u-boot	Upgrade U-boot
63998-53456.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 Manager firmware images contain FRU ID files for the Shelf for most production chassis.

Important Note: This firmware release also contains updated shelf FRU data files. These FRU data files are stored in the /var/nvdata directory of the ShMM-700. The installation procedure of the FRU data files is described below. Please make sure to install these FRU data files after installing the new firmware image.



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

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

FRU ID files included in firmware version 63998-53456:

<u>Chassis P/N</u>	<u>FRU File name</u>	<u>Chassis description</u>
11596-007	11596007HBBIN.bin	2slot, push-pull-cooling, bused-IPMB, node-node, AC
11596-010	11596010HBBIN.bin	5slot, push-cooling, bused IPMB, Triple Repl. Mesh, DC
11596-012	11596012HBBIN.bin	5slot, push-cooling, bused IPMB, Triple Repl. Mesh, DC
11596-090	11596090HEBIN.bin	2slot, push-pull-cooling, bused-IPMB, Hub-Hub, DC
11596-100	11596100HBBIN.bin	14slot, pull-cooling, bused IPMB, Dual-Star, DC
11596-101	11596101HBBIN.bin	14slot, pull-cooling, rad. IPMB, Dual-Star, DC
11596-102	11596102HBBIN.bin	14slot, pull-cooling, bused IPMB, Full-Mesh, DC
11596-103	11596103HBBIN.bin	14slot, pull-cooling, rad. IPMB, Full-Mesh, DC
11596-107	11596107HBBIN.bin	2slot, push-pull-cooling, bused-IPMB, node-node, DC



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

3 Upgrading the Shelf Manager to release V3.4.0.1

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

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

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

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

```
# ping -c 2 192.168.0.6
PING 192.168.0.6 (192.168.0.6): 56 data bytes
64 bytes from 192.168.0.6: icmp_seq=0 ttl=64 time=1.5 ms
64 bytes from 192.168.0.6: icmp_seq=1 ttl=64 time=1.9 ms
--- 192.168.0.6 ping statistics ---
```



2 packets transmitted, 2 packets received, 0% packet loss
round-trip min/avg/max = 1.5/1.7/1.9 ms

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

STEP 2

Upgrade Process:

Put the four Reliable Upgrade FLASH images (63998-53456.shmm700.kernel, 63998-53456.shmm700.rfs, 63998-53456.shmm700.u-boot, 63998-53456.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@10.179.0.145/63998-53456.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@10.179.0.145/63998-53456.shmm700. -u  
u-boot -a app -k kernel -r rfs --erase-all  
304: Executing: /sbin/backend --get-wdt-state  
304: System returned 0, exec result 0.  
<INFO> Downloading file "ftp://anonymous:password@10.179.0.145/63998-53456.shmm7  
00.u-boot"  
<INFO> Checksum verified  
<INFO> Downloading file "ftp://anonymous:password@10.179.0.145/63998-53456.shmm7  
00.kernel"  
<INFO> Checksum verified  
<INFO> Downloading file "ftp://anonymous:password@10.179.0.145/63998-53456.shmm7  
00.rfs"  
<INFO> Checksum verified  
<INFO> Downloading file "ftp://anonymous:password@10.179.0.145/63998-53456.shmm7  
00.app"  
<INFO> Checksum verified  
<INFO> Initiating partial upgrade:  
<INFO> * uboot "/tmp/_63998-53456.shmm700.u-boot"  
<INFO> * kernel "/tmp/_63998-53456.shmm700.kernel"  
<INFO> * rfs "/tmp/_63998-53456.shmm700.rfs"  
<INFO> * app "/tmp/_63998-53456.shmm700.app"
```




```
308: Executing: /etc/hook/base_script.sh --stage 10 --silent
308: System returned 0, exec result 0.
<INFO> Erasing user data on candidate bank
308: Executing: (cd /1 ; rm -rf var etc ; mkdir -p var/nvdata etc/ssh )
308: System returned 0, exec result 0.
<INFO> Copy ssh keys
308: Executing: cp -a /0/etc/ssh /1/etc
308: System returned 0, exec result 0.
308: Executing: /etc/hook/base_script.sh --stage 11 --silent
308: System returned 0, exec result 0.
308: Executing: /etc/hook/base_script.sh --stage 12 --silent
308: System returned 0, exec result 0.
308: Executing: dd if=/dev/mtd8 of=/dev/null >/dev/null 2>/dev/null
308: System returned 0, exec result 0.
<INFO> Write confirmed: 0 -> 0 [ALLOW]
<INFO> Write candidate: 1 -> 1 [ALLOW]
<INFO> Write upgrade watchdog: 0 -> 1 [ALLy
```

U-Boot 2009.08 (Jul 02 2014 - 16:02:20)

```
Freescal e 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 v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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
RUPG: reliable upgrade is in progress, skipping
Creating 1 MTD partitions on "spi0":
0x00000001c0000-0x000002000000 : "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: 11/9
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.1' to addr 0x42000000 with size 1494680 (0x0016ce98)...
Done
Loading file 'rfs.1' to addr 0x46000000 with size 2573641 (0x00274549)...
Done
## Booting kernel from Legacy Image at 42000000 ...
Image Name: 63998-53456 Linux-2.6.34.8
Created: 2014-07-02 20:05:47 UTC
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1.4 MB
Load Address: 40008000
Entry Point: 40008000
Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
Image Name: 63998-53456 RFS 3.4.0
Created: 2014-07-02 20:05:47 UTC
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573577 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 (2014-06-27 16:42:17 PDT)
/etc/rc: Current image set is 1
/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: Attaching ubi0:user...done
/etc/rc: Mounting ubi0:user...done
/etc/rc: Attaching ubi1:boot...done
/etc/rc: Mounting ubi0:boot...done
/etc/rc: Extracting application package /1/sentry.shmm700.app...done
/etc/rc: Mounted /1/var to /var
/etc/rc: Strobing the reliable upgrade WDT
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
84: Executing: /etc/hook/base_script.sh --stage 13 --silent
84: System returned 0, exec result 0.
/etc/rc: /etc appears to be empty ... restoring from factory /etc...
/etc/rc: Preserved ssh_host_dsa_key in /etc/ssh
/etc/rc: Preserved ssh_host_rsa_key in /etc/ssh
/etc/rc: Mounted /1/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]
164: Executing: /etc/hook/base_script.sh --stage 13 --silent
164: System returned 0, exec result 0.
```



```
<*> 02:14:02.530 [168] Pigeon Point Shelf Manager ver. 3.4.0.1. Built on Jun 27 2014 16:36:10
<*> 02:14:02.553 [168] *** Lock log print buffer at 0x1ccb3c ***
<*> 02:14:02.554 [168] *** Pthread lock log print buffer at 0x1d135c ***
<I> 02:14:02.569 [168] Read OTP bits 0x00018F8A, status=0
<I> 02:14:02.571 [168] Reading configuration file: /etc/shelfman.conf
```

```
shmm700 login: <INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
175: Executing: /etc/hook/base_script.sh --stage 13 --silent
175: System returned 0, exec result 0.
<INFO> Write confirmed: 0 -> 1 [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: 1

Current U-Boot:

```
Image Name: 63998-53456 ShMM700 U-Boot 9.0.8
Created: Wed Jul 2 20:05:47 2014
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: 63998-53456 Linux-2.6.34.8
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1459.59 kB = 1.43 MB
Load Address: 40008000
Entry Point: 40008000
```

Current RFS:

```
Image Name: 63998-53456 RFS 3.4.0
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573577 Bytes = 2513.26 kB = 2.45 MB
Load Address: 00000000
Entry Point: 00000000
```

Current Application:

```
Image Name: 63998-53456 APP 3.4.0
Created: Wed Jul 2 20:05:46 2014
Image Type: ARM Linux Filesystem Image (gzip compressed)
Data Size: 2432907 Bytes = 2375.89 kB = 2.32 MB
Load Address: 00000000
Entry Point: 00000000
```

Other U-Boot:

```
Image Name: 63998-53456 ShMM700 U-Boot 9.0.8
Created: Wed Jul 2 20:05:47 2014
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: 63998-53456 Linux-2.6.34.8
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1459.59 kB = 1.43 MB
Load Address: 40008000
Entry Point: 40008000
```

Release Note



```
Other RFS:
Image Name: 63998-53456 RFS 3.4.0
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573577 Bytes = 2513.26 kB = 2.45 MB
Load Address: 00000000
Entry Point: 00000000
```

```
Other Application:
Image Name: 63998-53456 APP 3.4.0
Created: Wed Jul 2 20:05:46 2014
Image Type: ARM Linux Filesystem Image (gzip compressed)
Data Size: 2432907 Bytes = 2375.89 kB = 2.32 MB
Load Address: 00000000
Entry Point: 00000000
```

```
A2F: SPICOMM protocol v1.7, M3 firmware v1.4, FPGA design v1.0.0.0
```

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

```
Pigeon Point Shelf Manager ver. 3.4.0.1
Pigeon Point and the stylized lighthouse logo are trademarks of Pigeon Point Systems.
Copyright (c) 2002-2014 Pigeon Point Systems
All rights reserved
Build date/time: Jun 27 2014 16:36:10
Carrier: HPDL/ACB
Carrier subtype: 0; subversion: 0
Cooling Management Library: libcooling_acb.so; Version: 3.4.0.1
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 image for 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 V3.4.0.1 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 v1.4 the A2F060 should be upgraded.

After the A2F060 upgrade is complete the firmware will be v1.4.

A2F: SPICOMM protocol v1.7, M3 firmware **v1.4**, FPGA design v1.0.0.0

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
260: Executing: /sbin/backend --get-wdt-state
260: System returned 0, exec result 0.
<INFO> Downloading file "file:///bin/a2f-upgrade.dat"
<INFO> Checksum verified
<WARN> frontend.c:1707: Warning: File /boot/a2f-auto-rollback.dat is not present
! Copying default one from /bin/a2f-upgrade.dat.
Erasing 256 Kibyte @ 0 -- 0 % complete.
260: 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]
274: Executing: mkdir -p /var/upgrade/boot
274: System returned 0, exec result 0.
<INFO> Resetting UBIFS cache
274: Executing: /sbin/eraseall /dev/mtd8
Erasing 256 Kibyte @ 0 -- 0 % complete.
274: System returned 0, exec result 0.
<INFO> Using file: bin/a2f-upgrade.dat
274: Executing: mv bin/a2f-upgrade.dat /var/upgrade/boot/a2f-upgrade.dat
274: System returned 0, exec result 0.
```



```
<INFO> Unmounting boot volume
<INFO> Write storage state: available -> not available [ALLOW]
<INFO> Rebooting device
274: Executing: reboot
The system is going down NOW!
shelfman: [166]: Shelfman: termination watchdog started
snmpd[171]: Received TERM or STOP signal... shutting down...
<ERR> The upgrade procedure was interrupted by the signal 15.
Sent SIGTERM to all processes
shelfman: [166]: Shelfman: Interrupted by signal 15
shelfman: [166]: Shelfman: call ipmf_terminating()
<ERR> The upgrade procedure was interrupted by the signal 15.
shelfman: [183]: ipmf_ipmb_read_loop: Exit
shelfman: [183]: ipmf_sensor_scan_thread: Exit
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call shm_time_terminate()
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call cli_terminate()
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call shelf_fru_terminate()
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: sdrrep_terminate()
shelfman: [192]: Terminating sdrrep_full_scan_thread
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call msg_terminate()
shelfman: [166]: msg_terminate: entered
shelfman: [217]: RMCP: terminating receiving thread for 10.179.0.140:623
shelfman: [166]: msg_terminate: calling shm_firewall_exit()
shelfman: [166]: msg_terminate: done
shelfman: [166]: msg_terminate: calling lan_terminate()
shelfman: [166]: msg_terminate: done
shelfman: [166]: msg_terminate: calling session_terminate()
shelfman: [166]: msg_terminate: done
shelfman: [166]: msg_terminate: calling user_terminate()
shelfman: [166]: msg_terminate: done
shelfman: [166]: msg_terminate: calling channel_param_terminate()
shelfman: [166]: msg_terminate: done
shelfman: [166]: msg_terminate: exiting
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call ipmc_terminate()
shelfman: [166]: ipmc_terminate: calling ipmc_power_terminate()
shelfman: [166]: ipmc_power_terminate called
shelfman: [166]: ipmc_terminate: done
shelfman: [166]: ipmc_terminate: calling ipmc_ekey_terminate()
shelfman: [166]: ipmc_terminate: done
shelfman: [166]: ipmc_terminate: calling cooling_terminate(), zoned cooling = 1
shelfman: [166]: Exiting from ipmc_zoned_cooling_terminate()
shelfman: [166]: ipmc_terminate: done
shelfman: [166]: ipmc_terminate: calling shm_alarm_terminate()
shelfman: [166]: ipmc_terminate: done
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call ipmf_unregister_sel()
shelfman: [166]: SEL Terminate
shelfman: [176]: Terminating SEL dedicated thread
shelfman: [166]: Shelfman: done...
shelfman: [166]: HPM.1: command handlers are unregistered
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call ipmf_terminate()
shelfman: [166]: Closing IPMB, fd=12
shelfman: [166]: Closing IPMB, fd=13
shelfman: [166]: Closing radial links: count = 1
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: call carrier_terminate(), active 1, carrier 0x18a810, terminate
0x678d0
shelfman: [166]: HPDL Chassis: Stopping SetAdaptiveThreshold thread, id=1262728288
shelfman: [166]: Shelfman: done...
shelfman: [166]: Shelfman: Terminated
```

Requesting system reboot

U-Boot 2009.08 (Jul 02 2014 - 16:02:20)



```
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 v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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 1 (confirmed)
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
Creating 1 MTD partitions on "spi0":
0x00000001c0000-0x000002000000 : "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: 11/9
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 181144 (0x0002c398).
Done
RUPG: mkimage header found, image name: A2F v1.4/1.0.0.0

Checking data CRC...
Expected CRC=fblf
Calculating actual CRC...
ActID = 5a111cf ExpID = 5a111cf
Device Rev = 1
Initializing Target Device...
Setting BSR Configurations...
Loading BSR...
FSN: 70, 78, 2c, 1b, 19, 1
Reading Security...
```



Warning: If you are programming a calibrated device, please regenerate the analog system configuration file with Libero 8.2 SPI or greater.

```
Performing Data Authentication.....
Erase...
USER_UROW = ff, ff, ff, ff, 99, 68, 2d, 9a, 29, e4, 2b, 2, c1, ff, 5a, 19
Programming UROW...
Programming FPGA Array.....
Verifying FPGA Array.....
Programming Rlock...
FPGA array is programmed and enabled.
Program System Init and Boot Clients...
Programming NVM block 0..
Success (89 seconds).
Re-initializing SPICOMM...
A2F: SPICOMM protocol v1.7, M3 firmware v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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: PWRUP
A2F: VMON flags: 00000000
Verifying access to SPI Flash... OK
Loading file 'uImage.0' to addr 0x42000000 with size 1494660 (0x0016ce84)...
Done
Loading file 'rfs.0' to addr 0x46000000 with size 2573538 (0x002744e2)...
Done
## Booting kernel from Legacy Image at 42000000 ...
Image Name: 63998-53456 Linux-2.6.34.8
Created: 2014-07-02 20:05:47 UTC
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1.4 MB
Load Address: 40008000
Entry Point: 40008000
Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
Image Name: 63998-53456 RFS 3.4.0
Created: 2014-07-02 20:05:47 UTC
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573577 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 (2014-06-27 16:42:17 PDT)
/etc/rc: Current image set is 1
/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: Attaching ubi0:user...done
/etc/rc: Mounting ubi0:user...done
/etc/rc: Attaching ubi1:boot...done
/etc/rc: Mounting ubi0:boot...done
/etc/rc: Extracting application package /1/sentry.shmm700.app...done
/etc/rc: Mounted /1/var to /var
/etc/rc: Finalizing successful A2F upgrade
A2F: SPICOMM protocol v1.7, M3 firmware v1.4, FPGA design v1.0.0.0
/etc/rc: Restoring /dev/mtdchar0 from u-boot.bak...done
/etc/rc: Mounted /1/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: <*> 18:37:28.165 [157] Pigeon Point Shelf Manager ver. 3.4.0.1
<*> 18:37:28.196 [157] *** Lock log print buffer at 0xlccb3c ***
<*> 18:37:28.197 [157] *** Pthread lock log print buffer at 0xld135c ***
<I> 18:37:28.217 [157] Read OTP bits 0x00018F8A, status=0
<I> 18:37:28.220 [157] 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 I²C controllers for the 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 “cli fruataw” 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 **63998-53456**.

The Pigeon Point Shelf manager version should be **V3.4.0.1**.

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

version

Current flash bank: 1

Current U-Boot:

Image Name: 63998-53456 ShMM700 U-Boot 9.0.8
Created: Wed Jul 2 20:05:47 2014
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: 63998-53456 Linux-2.6.34.8
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1459.59 kB = 1.43 MB
Load Address: 40008000
Entry Point: 40008000

Current RFS:

Image Name: 63998-53456 RFS 3.4.0
Created: Wed Jul 2 20:05:47 2014
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573577 Bytes = 2513.26 kB = 2.45 MB
Load Address: 00000000
Entry Point: 00000000

Current Application:

Image Name: 63998-53456 APP 3.4.0
Created: Wed Jul 2 20:05:46 2014
Image Type: ARM Linux Filesystem Image (gzip compressed)
Data Size: 2432907 Bytes = 2375.89 kB = 2.32 MB
Load Address: 00000000
Entry Point: 00000000

[Alternate section] (not printed)

A2F: SPICOMM protocol v1.7, M3 firmware v1.4, FPGA design v1.0.0.0

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.4.0.1

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Build date/time: Jun 27 2014 16:36:10

Carrier: HPDL/ACB

Carrier subtype: 0; subversion: 0

Cooling Management Library: libcooling_acb.so; Version: 3.4.0.1

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 Transition from an ACB-V to an ACB-VI in a live shelf

The ShMM-700R based ACB-VI Shelf Managers support upgrading a live shelf from ACB-V-based Shelf Managers without losing manageability of the shelf. This support minimizes the impact of upgrading shelves in the field to the ACB-VI Shelf Manager. It is important to understand the special aspects of this support:

- This conversion is only supported in one direction: Upgrading from the ACB-V to ACB-VI-based Shelf Managers.
- Support for mixed types of shelf managers is only supported for transition purposes. Stable dual redundant management requires a pair of shelf managers from the same family (both ACB-V or both ACB-VI)

This procedure must be followed to upgrade from an ACB-V Shelf Manager to an ACB-VI Shelf Manager:

	Left Shelf Manager Slot 0x10			Right Shelf Manager Slot 0x12		
	Shelf Manager type	Active / Backup	Command / Action	Shelf Manager type	Active / Backup	Command / Action
Step 1	ACB-V	Active	Start condition	ACB-V	Backup	Start condition
Step 2	ACB-V	Active	Copy (e.g. FTP) the new shelf FRU file (for the ShMM-700 based shelf) into the directory /var/bin	ACB-V	Backup	
Step 3	ACB-V	Active		ACB-VI	Backup	Remove ACB-V and install ACB-VI Status of ACB-VI after booting: Blue LED = OFF Red LED = OFF GREEN LED = Blinking cli ipmc 0x12 = M4 cli shmstatus
Step 4	ACB-V	Active	Install new Shelf FRU File: sh /var/nvdata/fru_update 20 254 <FRU File> cli fruinfo 20 254 grep FRU 20: FRU # 254, FRU Info FRU Programmer File ID = 11xxxxxSABIN.bin FRU Programmer File ID = 11xxxxxSABIN.bin	ACB-VI	Backup	
Step 5	ACB-V	Active	Do a switchover: cli switchover -clear-hpdl This ACB-V will keep rebooting without becoming a backup Shelf Manager, and can be removed at any time	ACB-VI	Backup	
Step 6	ACB-V	Backup		ACB-VI	Active	Status of ACB-VI after booting: Blue LED = OFF Red LED = OFF GREEN LED = ON cli ipmc 0x12 = M4, 0x20 = M4 cli shmstatus
Step 7	ACB-VI	Backup	Remove ACB-V and install ACB-VI. Status of ACB-VI after booting: Blue LED = OFF Red LED = OFF GREEN LED = Blinking cli ipmc 0x10 = M4 cli shmstatus	ACB-VI	Active	
Step 8	ACB-VI	Backup	Do a switchover in order so this shelf becomes manager the active again. cli switchover	ACB-VI	Active	
Step 9	ACB-VI	Active	Both shelf managers have been changed now from ACB-V to ACB-VI. Verify the successful transition with following commands: cli ipmc cli fru 20 cli shmstatus -v	ACB-VI	Backup	

6 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 (Jul 02 2014 - 16:02:20)

Freescall 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 v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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 (Jul 02 2014 - 16:02:20)

Freescall 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 v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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)
*** 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 (Jul 02 2014 - 16:02:20)

```
Freescall i.MX28 family
CPU: 297 MHz
BUS: 99 MHz
EMI: 130 MHz
GPPI: 24 MHz
I2C: ready
DRAM: 128 MB
SFGEN: S25FL512S detected, total size 64 MB
A2F: SPICOMM protocol v1.7, M3 firmware v1.4, FPGA design v1.0.0.0
A2F: A2F firmware, version 1.4
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)
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
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: 11/9
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)
RUPG: upgrade file is not present, skipping
Loading file 'uImage.0' to addr 0x42000000 with size 1494680 (0x0016ce98)...
Loaded from UBIFS cache
Loading file 'rfs.0' to addr 0x46000000 with size 2573730 (0x002745a2)...
Loaded from UBIFS cache
## Booting kernel from Legacy Image at 42000000 ...
Image Name: 63998-53555 Linux-2.6.34.8
Created: 2014-07-02 20:07:19 UTC
Image Type: ARM Linux Kernel Image (uncompressed)
Data Size: 1494616 Bytes = 1.4 MB
Load Address: 40008000
Entry Point: 40008000
Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
Image Name: 63998-53555 RFS 3.4.0 iHPI3.2.0
Created: 2014-07-02 20:07:19 UTC
Image Type: ARM Linux RAMDisk Image (gzip compressed)
Data Size: 2573666 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 (2014-06-27 17:08:06 PDT)
/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: Attaching ubi0:user...done
/etc/rc: Mounting ubi0:user...done
/etc/rc: Attaching ubi1:boot...done
/etc/rc: Mounting ubi0:boot...done
/etc/rc: Extracting application package /0/sentry.shmm700.app...done
/etc/rc: Flash erase requested via U-Boot variable
/etc/rc: erasing /0/etc
/etc/rc: erasing /0/var
/etc/rc: Mounted /0/var to /var
/etc/rc: /etc appears to be empty ... restoring from factory /etc...
/etc/rc: Mounted /0/etc to /etc
```

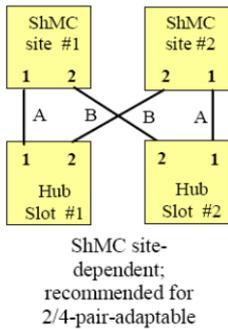


```
/etc/rc: Setting timezone to UTC
/etc/rc: Placed /var/tmp to ram disk
/etc/rc: Setting hostname shmm700
/etc/rc: Started syslogd and klogd
/etc/rc: Calling /etc/rc.acb6-HPDL
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts updated with shmm700 192.168.0.22 entry
/etc/netconfig: 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

<*> 00:10:10.189 [164] Pigeon Point Shelf Manager ver. 3.4.0.1. Built on Jun 27 2014 17:00:05
<*> 00:10:10.212 [164] *** Lock log print buffer at 0x1c4cc4 ***
<*> 00:10:10.214 [164] *** Pthread lock log print buffer at 0x1d14e4 ***
<I> 00:10:10.249 [164] Read OTP bits 0x00018F8A, status=0
<I> 00:10:10.251 [164] Reading configuration file: /etc/shelfman.conf
shmm700 login:
```

7 Configuring Ethernet Port Bonding on the Shelf Manager

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



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

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

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



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



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

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

8 Firmware part number 63998-53456 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 63998-53456 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
```



```
mtddids=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
ipldevice=usb0
ipladdr=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
ethladdr=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
Environment size: 2259/262140 bytes
```

9 Revision History

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 based 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.