Release Notes
nVent/Schroff firmware part number 63998-53472
Based on Pigeon Point Systems (PPS) firmware release V3.7.1.2 for ShMM-700

Release Date: December 12, 2018

Release History:

Release date	nVent/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	63998-53472	V3.6.0
July 20, 2016	63998-53464	V3.6.1
December 12, 2017	63998-53465	V3.7.0
December 14, 2017	63998-53466	V3.7.0.1
March 5, 2018	63998-53467	V3.7.0.2
May 7, 2018	63998-53468	V3.7.0.3
May 30, 2018	63998-53469	V3.7.1
July 12, 2018	63998-53470	V3.7.1
November 1, 2018	63998-53471	V3.7.1.1
December 12, 2018	63998-53472	V3.7.1.2

Introduction:

The firmware package “63998-53472.zip” contains Firmware release V3.7.1.2 for the **ShMM-700**. The PPS supplied APP image has been modified by nVent/Schroff to adapt the firmware to nVent/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 nVent/Schroff shelf managers. The nVent/Schroff part number for this firmware release is 63998-53472.

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1 nVent/Schroff shelf manager versions

The table below shows the nVent/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 63998-53472.zip. This file contains the following Pre-Built images:

Reliable Upgrade files:	
63998-53472.shmm700.kernel	Upgrade kernel
63998-53472.shmm700.rfs	Upgrade RFS
63998-53472.shmm700.u-boot	Upgrade U-boot
63998-53472.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 v1.8, FPGA design v1.1.0.0
```

The V3.7.1.2 shelf manager firmware includes an upgrade image for V1.8 FPGA firmware and V1.1.0.0 FPGA fabric. After you upgrade the shelf manager to V3.7.1.2 firmware you can use the procedure described in 3.2 Reliable Upgrade Procedure for the FPGA on the ShMM-700 to upgrade the ShMM-700 FPGA.

3 Upgrading the Shelf Manager to release V3.7.1.2

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 192.168.0.1” to test the network connection to the FTP server. You need to substitute “192.168.0.1” in the command for the IP address of the FTP server on your network. The example below shows a successful ping test.

```
# ping -c 2 192.168.0.1
PING 192.168.0.1 (192.168.0.1): 56 data bytes
64 bytes from 192.168.0.1: icmp_seq=0 ttl=64 time=1.5 ms
64 bytes from 192.168.0.1: icmp_seq=1 ttl=64 time=1.9 ms
--- 192.168.0.1 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 (63998-53472.shmm700.kernel, 63998-53472.shmm700.rfs, 63998-53472.shmm700.u-boot, 63998-53472.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 “192.168.0.1” 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@192.168.0.1/63998-53472.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 tftp://192.168.0.1/63998-53472.shmm700. -u u-boot -a app -k
kernel -r rfs --erase-all
251: Executing: /sbin/backend --get-wdt-state
251: System returned 0, exec result 0.
<INFO> Downloading file "tftp://192.168.0.1/63998-53472.shmm700.u-boot"
<INFO> Checksum verified
<INFO> Downloading file "tftp://192.168.0.1/63998-53472.shmm700.kernel"
```

```
<INFO> Checksum verified
<INFO> Downloading file "tftp://192.168.0.1/63998-53472.shmm700.rfs"
<INFO> Checksum verified
<INFO> Downloading file "tftp://192.168.0.1/63998-53472.shmm700.app"
<INFO> Checksum verified
<INFO> Initiating partial upgrade:
<INFO>  * uboot "/tmp/_63998-53472.shmm700.u-boot"
<INFO>  * kernel "/tmp/_63998-53472.shmm700.kernel"
<INFO>  * rfs "/tmp/_63998-53472.shmm700.rfs"
<INFO>  * app "/tmp/_63998-53472.shmm700.app"
<INFO>  + reset all
<INFO> Calling backend to handle partial upgrade "/sbin/backend --uboot
/tmp/_63998-53472.shmm700.u-boot --kernel /tmp/_63998-53472.shmm700.kernel --
rootfs /tmp/_63998-53472.shmm700.rfs --application /tmp/_63998-
53472.shmm700.app --erase-all"
251: Executing: /sbin/backend --uboot /tmp/_63998-53472.shmm700.u-boot --
kernel/tmp/_63998-53472.shmm700.kernel --rootfs /tmp/_63998-53472.shmm700.rfs
--application /tmp/_63998-53472.shmm700.app --erase-all
253: Executing: /etc/hook/base_script.sh --stage 1 --silent
253: System returned 0, exec result 0.
<INFO> Write storage state: not available -> available [ALLOW]
253: Executing: mkdir -p /var/upgrade/boot
253: System returned 0, exec result 0.
<INFO> Resetting UBIFS cache
253: Executing: /sbin/eraseall /dev/mtd8
Erasing 256 Kibyte @ 0 --  0 % complete.
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 2 --silent
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 3 --silent
253: System returned 0, exec result 0.
<INFO> Burning image:..
<INFO> 524288 bytes were written from file "/tmp/_63998-53472.shmm700.u-boot"
to dev 1[1]
<INFO> U-Boot checksum test after writing image: succeeded
253: Executing: eraseall /dev/mtd6 >/dev/null 2>/dev/null
253: System returned 0, exec result 0.
253: Executing: dd if=/dev/mtd4 of=/dev/mtd6 >/dev/null 2>/dev/null
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 4 --silent
253: System returned 0, exec result 0.
<INFO> Cleaning image "/var/upgrade/boot/uImage.1"
<INFO> Burning
image:.....
<INFO> 1550060 bytes were written from file "/tmp/_63998-
53472.shmm700.kernel" to dev 2[1]
<INFO> Kernel checksum test after writing image: succeeded
253: Executing: /etc/hook/base_script.sh --stage 5 --silent
253: System returned 0, exec result 0.
<INFO> Cleaning image "/var/upgrade/boot/rfs.1"
<INFO> Burning
image:.....
<INFO> 3102200 bytes were written from file "/tmp/_63998-53472.shmm700.rfs"
to dev 4[1]
<INFO> RFS checksum test after writing image: succeeded
253: Executing: /etc/hook/base_script.sh --stage 6 --silent
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 7 --silent
```

```
253: System returned 0, exec result 0.
<INFO> Burning
image:.....................................................
<INFO> 2536677 bytes were written from file "/tmp/_63998-53472.shmm700.app"
to dev 8[1]
<INFO> APP checksum test after writing image: succeeded
253: Executing: /etc/hook/base_script.sh --stage 8 --silent
253: System returned 0, exec result 0.
253: 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
253: System returned 0, exec result 0.
253: 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
253: System returned 0, exec result 0.
<INFO> Write storage state: available -> not available [ALLOW]
253: Executing: /etc/hook/base_script.sh --stage 9 --silent
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 10 --silent
253: System returned 0, exec result 0.
<INFO> Erasing user data on candidate bank
253: Executing: (cd /1 ; rm -rf var etc ; mkdir -p var/nvdata etc/ssh )
253: System returned 0, exec result 0.
<INFO> Copy ssh keys
253: Executing: cp -a /0/etc/ssh /1/etc
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 11 --silent
253: System returned 0, exec result 0.
253: Executing: /etc/hook/base_script.sh --stage 12 --silent
253: System returned 0, exec result 0.
253: Executing: dd if=/dev/mtd8 of=/dev/null >/dev/null 2>/dev/null
253: System returned 0, exec result 0.
<INFO> Write confirmed: 0 -> 0 [ALLOW]
<INFO> Write candidate: 1 -> 1 [¦

U-Boot 2009.08 (Dec 12 2018 - 10:26:17)

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 v1.8, FPGA design v1.1.0.0
A2F:   A2F firmware, version 1.8
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: 00:18:49:02:5c:c4, FEC1: 00:18:49:02:5c:c5
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: 60/54
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 1550060 (0x0017a6ec)...
Done
Loading file 'rfs.1' to addr 0x46000000 with size 3102200 (0x002f55f8)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53472 Linux-2.6.34.8
   Created:      2018-12-12  19:50:22 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1549996 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53472 RFS  TFTP3.2.1
   Created:      2018-12-12  19:50:23 UTC
   Image Type:   ARM Linux RAMDisk Image (gzip compressed)
   Data Size:    3102136 Bytes =  3 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK
```

```
OK

Starting kernel ...

init started: BusyBox v1.28.1 (2018-10-31 14:33:12 CDT)
/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: Mounting  jffs2:user0...done
/etc/rc: Mounting  jffs2:user1...done
/etc/rc: Attaching ubi0:boot...done
/etc/rc: Mounting  ubi0:boot...done
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
/etc/rc: Extracting application package /boot/app.1...done
/etc/rc: Mounted /1/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 /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]
151: Executing: /etc/hook/base_script.sh --stage 13 --silent
151: System returned 0, exec result 0.


shmm700 login: <*> 00:39:49.778   [154] Pigeon Point Shelf Manager ver.
3.7.1.2.
 Built on Oct 31 2018 14:27:54
<*> 00:39:51.033   [154] *** Lock log print buffer at 0x22c158 ***
<*> 00:39:51.033   [154] *** Pthread lock log print buffer at 0x230978 ***
<I> 00:39:51.084   [154] Read OTP bits 0x00025CC4, status=0
<I> 00:39:51.086   [154] Reading configuration file: /etc/shelfman.conf
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
```

```
160: Executing: /etc/hook/base_script.sh --stage 13 --silent
160: 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: 0

Current U-Boot:
Image Name:   63998-53472 ShMM700 U-Boot 9.0.8
Created:      Wed Dec 12 19:50:24 2018
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:   63998-53472 Linux-2.6.34.8
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Kernel Image (uncompressed)
Data Size:    1549996 Bytes = 1513.67 kB = 1.48 MB
Load Address: 40008000
Entry Point:  40008000

Current RFS:
Image Name:   63998-53472 RFS  TFTP3.2.1
Created:      Wed Dec 12 19:50:23 2018
Image Type:   ARM Linux RAMDisk Image (gzip compressed)
Data Size:    3102136 Bytes = 3029.43 kB = 2.96 MB
Load Address: 00000000
Entry Point:  00000000

Current Application:
Image Name:   63998-53472 APP
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Filesystem Image (gzip compressed)
Data Size:    2536613 Bytes = 2477.16 kB = 2.42 MB
Load Address: 00000000
Entry Point:  00000000


Other U-Boot:
Image Name:   63998-53472 ShMM700 U-Boot 9.0.8
Created:      Wed Dec 12 19:50:24 2018
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:   63998-53472 Linux-2.6.34.8
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Kernel Image (uncompressed)
Data Size:    1549996 Bytes = 1513.67 kB = 1.48 MB
Load Address: 40008000
Entry Point:  40008000

Other RFS:
Image Name:   63998-53472 RFS  TFTP3.2.1
Created:      Wed Dec 12 19:50:23 2018
Image Type:   ARM Linux RAMDisk Image (gzip compressed)
Data Size:    3102136 Bytes = 3029.43 kB = 2.96 MB
```

```
Load Address: 00000000
Entry Point:  00000000

Other Application:
Image Name:   63998-53472 APP
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Filesystem Image (gzip compressed)
Data Size:    2536613 Bytes = 2477.16 kB = 2.42 MB
Load Address: 00000000
Entry Point:  00000000

A2F:   SPICOMM protocol v1.7, M3 firmware v1.8, FPGA design v1.1.0.0

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.7.1.2
All nVent brands and logos are the property of nVent or
 its affiliated companies worldwide.
Copyright (c) 2002-2018, nVent
All rights reserved
Build date/time: Oct 31 2018 14:27:54
Carrier: HPDL/ACB
Carrier subtype: 0; subversion: 0
Cooling Management Library: libcooling_acb.so; Version: 3.7.1.2
Carrier Product ID: 21990401
```

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-700

The ShMM-700 contains a Microsemi A2F060 or A2F200 device that includes both an FPGA fabric and an ARM Cortex-M3 processor. The upgrade image for A2F 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 A2F 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 A2F firmware will be relatively stable, and that most new releases of the Shelf Manager in future will not require an A2F firmware upgrade.

After you upgrade the shelf manager to V3.7.0 an FPGA upgrade image will be located in the /bin directory. To upgrade the A2F firmware, run the reliable upgrade utility in the A2F 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 A2F 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 A2F part are displayed on the console.

```
A2F:   SPICOMM protocol v1.7, M3 firmware v1.6, FPGA design v1.1.0.0
```

If the M3 firmware is not v1.8 the A2F should be upgraded.

After the A2F upgrade is complete the firmware will be v1.8.

```
A2F:   SPICOMM protocol v1.7, M3 firmware v1.8, FPGA design v1.1.0.0
```

The reliable upgrade of the A2F 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 A2F upgrade images provided by Pigeon Point Systems are encrypted with a private AES key. This key is pre-programmed in the A2F device on the ShMM-700R during manufacturing. As a consequence, A2F upgrade images that were not built by PPS cannot be installed onto the A2F device on the ShMM-700R. Attempting to do so will result in a failed upgrade.

```
# rupgrade --upgrade-a2f file:///bin/a2f-upgrade.dat
305: Executing: /sbin/backend --get-wdt-state
305: System returned 0, exec result 0.
<INFO> Downloading file "file:///bin/a2f-upgrade.dat"
<INFO> Checksum verified
305: Executing: /sbin/backend --upgrade-fw /bin/a2f-upgrade.dat
<INFO> Firmware upgrade was initiated with 1 image set as current
309: Executing: dd if=/dev/mtd0 of=/var/upgrade/uboot.bak
1024+0 records in
1024+0 records out
524288 bytes (512.0KB) copied, 7.144531 seconds, 71.7KB/s
309: System returned 0, exec result 0.
<INFO> Preparing flash drive for new u-boot image
309: Executing: eraseall /dev/mtd0
Erasing 256 Kibyte @ 40000 -- 50 % complete.
309: System returned 0, exec result 0.
<INFO> Replacing uboot in image set 0 with uboot from image set 1
```

```
309: Executing: dd if=/dev/mtd2 of=/dev/mtd0
1024+0 records in
1024+0 records out
524288 bytes (512.0KB) copied, 2.486062 seconds, 205.9KB/s
309: System returned 0, exec result 0.
<INFO> Attaching boot volume
<INFO> Write storage state: not available -> available [ALLOW]
309: Executing: mkdir -p /var/upgrade/boot
309: System returned 0, exec result 0.
<INFO> Resetting UBIFS cache
309: Executing: /sbin/eraseall /dev/mtd8
Erasing 256 Kibyte @ 0 --  0 % complete.
309: System returned 0, exec result 0.
<INFO> Using file: /bin/a2f-upgrade.dat
309: Executing: mv /bin/a2f-upgrade.dat /var/upgrade/boot/a2f-upgrade.dat
309: System returned 0, exec result 0.
<INFO> Unmounting boot volume
<INFO> Write storage state: available -> not available [ALLOW]
<INFO> Rebooting device
309: Executing: reboot
The system is going down NOW!
shelfman: [130]: Shelfman: termination watchdog started

snmpd[138]: 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.
Sent SIGTERM to all processes
shelfman: [130]: Shelfman: Interrupted by signal 15
shelfman: [130]: Shelfman: call ipmf_terminating()
shelfman: [147]: ipmf_ipmb_read_loop: Exit
shelfman: [147]: ipmf_sensor_scan_thread: Exit
shelfman: [130]: ipmf_terminating: terminated command 20->9A, netfn=6, cmd=1, se
shelfman: [130]: Get Device ID timed out for SA 0x9A (state M0)
shelfman: [130]: Placing controller (SA 0x9A) into M0, use_count=3
shelfman: [130]: ipmf_terminating: terminated command 20->9A, netfn=6, cmd=1, sf
shelfman: [130]: Controller 9A has been removed, device timeout ignored
shelfman: [130]: Shelfman: done...
shelfman: [130]: Shelfman: call shm_time_terminate()
shelfman: [130]: Shelfman: done...
shelfman: [130]: Shelfman: call cli_terminate()
shelfman: [130]: Shelfman: done...
shelfman: [130]: Shelfman: call shelf_fru_terminate()
shelfman: [130]: Shelfman: done...
shelfman: [130]: Shelfman: sdrrep_terminate()
shelfman: [154]: Terminating sdrrep_full_scan_thread
shelfman: [130]: Delete SDR in sdrrep_full_ipmc_del_sdrs: SA=10, sens=0

Sent SIGKILL to all processesn sdrrep_full_ipmc_del_sdrs: SA=5C, sens=16
Requesting system reboot
[ 4235.930000] pps_wd: reboot initiated
[ 4235.930000] Restarting system.

U-Boot 2009.08 (Dec 12 2018 - 10:26:17)

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 v1.6, FPGA design v1.1.0.0
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 1 (confirmed)
In:    serial
Out:   serial
Err:   serial
Net:   FEC0: 00:18:49:02:5c:c4, FEC1: 00:18:49:02:5c:c5
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: 29/25
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 500944 (0x0007a4d0).
Done
RUPG:  mkimage header found, image name: A2F v1.8/1.1.0.0

IDCODE: 15a111cf
RUPG:  device type: A2F060

Checking data CRC...
Expected CRC=1852
Calculating actual CRC...
ActID = 5a111cf ExpID = 5a111cf
Device Rev = 1
Initializing Target Device...
Setting BSR Configurations...
Loading BSR...
FSN: 30, a4, 2c, 1b, 19, 1
Reading Security...
Warning: If you are programming a calibrated device, please regenerate the anal.
Performing Data Authentication..........
Erase...
USER_UROW = ff, ff, ff, ff, 99, 68, 2d, 9a, 29, e4, 2b, 2, c1, ff, 5b, d0
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 v1.8, FPGA design v1.1.0.0
A2F:   A2F firmware, version 1.8
```

```
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.1' to addr 0x42000000 with size 1531600 (0x00175ed0)...
Done
Loading file 'rfs.1' to addr 0x46000000 with size 3067958 (0x002ed036)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53472 Linux-2.6.34.8
   Created:      2018-12-12  19:50:22 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1549996 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53472 RFS  TFTP3.2.1
   Created:      2018-12-12  19:50:23 UTC
   Image Type:   ARM Linux RAMDisk Image (gzip compressed)
   Data Size:    3102136 Bytes =  3 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OKOK

Starting kernel ...

init started: BusyBox v1.28.1 (2018-08-28 12:40:30 CDT)
/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: 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.1...done
/etc/rc: Mounted /1/var to /var
/etc/rc: Mounting jffs2:upgrade...done
/etc/rc: Finalizing successful A2F upgrade
A2F:   SPICOMM protocol v1.7, M3 firmware v1.8, FPGA design v1.1.0.0
/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

<*> 00:45:27.161   [154] Pigeon Point Shelf Manager ver. 3.7.1.2. Built on Oct 31 2018 14:27:54
<*> 00:45:27.237   [154] *** Lock log print buffer at 0x22c158 ***
<*> 00:45:27.238   [154] *** Pthread lock log print buffer at 0x230978 ***
```

```
<I> 00:45:28.589   [154] Read OTP bits 0x00025CC4, status=0
<I> 00:45:28.591   [154] Reading configuration file: /etc/shelfman.conf
shmm700 login: root
Password:
```

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 nVent/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 nVent/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 nVent/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 **63998-53472**.
The Pigeon Point Shelf manager version should be **V3.7.1.2**.
The carrier setting should be **HPDL/ACB**.

```
# version
Current flash bank: 0

Current U-Boot:
Image Name:   63998-53472 ShMM700 U-Boot 9.0.8
Created:      Wed Dec 12 19:50:24 2018
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:   63998-53472 Linux-2.6.34.8
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Kernel Image (uncompressed)
Data Size:    1549996 Bytes = 1513.67 kB = 1.48 MB
Load Address: 40008000
Entry Point:  40008000

Current RFS:
Image Name:   63998-53472 RFS  TFTP3.2.1
Created:      Wed Dec 12 19:50:23 2018
Image Type:   ARM Linux RAMDisk Image (gzip compressed)
Data Size:    3102136 Bytes = 3029.43 kB = 2.96 MB
Load Address: 00000000
Entry Point:  00000000

Current Application:
Image Name:   63998-53472 APP
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Filesystem Image (gzip compressed)
Data Size:    2536613 Bytes = 2477.16 kB = 2.42 MB
Load Address: 00000000
Entry Point:  00000000


Other U-Boot:
Image Name:   63998-53472 ShMM700 U-Boot 9.0.8
Created:      Wed Dec 12 19:50:24 2018
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:   63998-53472 Linux-2.6.34.8
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Kernel Image (uncompressed)
Data Size:    1549996 Bytes = 1513.67 kB = 1.48 MB
Load Address: 40008000
Entry Point:  40008000
```

```
Other RFS:
Image Name:   63998-53472 RFS  TFTP3.2.1
Created:      Wed Dec 12 19:50:23 2018
Image Type:   ARM Linux RAMDisk Image (gzip compressed)
Data Size:    3102136 Bytes = 3029.43 kB = 2.96 MB
Load Address: 00000000
Entry Point:  00000000

Other Application:
Image Name:   63998-53472 APP
Created:      Wed Dec 12 19:50:22 2018
Image Type:   ARM Linux Filesystem Image (gzip compressed)
Data Size:    2536613 Bytes = 2477.16 kB = 2.42 MB
Load Address: 00000000
Entry Point:  00000000

A2F:   SPICOMM protocol v1.7, M3 firmware v1.8, FPGA design v1.1.0.0

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 3.7.1.2
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Carrier: HPDL/ACB
Carrier subtype: 0; subversion: 0
Cooling Management Library: libcooling_acb.so; Version: 3.7.1.2
Carrier Product ID: 21990401
```

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 “nVent/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 12 2018 - 10:26:17)

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 v1.8, FPGA design v1.1.0.0
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: 00:18:49:02:5c:c4, FEC1: 00:18:49:02:5c:c5
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 12 2018 - 10:26:17)

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 v1.8, FPGA design v1.1.0.0
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)
*** 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 12 2018 - 10:26:17)

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 v1.8, FPGA design v1.1.0.0
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: 00:18:49:02:5c:c4, FEC1: 00:18:49:02:5c:c5
```

```
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: 29/25
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 1531600 (0x00175ed0)...
Done
Loading file 'rfs.1' to addr 0x46000000 with size 3067958 (0x002ed036)...
Done
## Booting kernel from Legacy Image at 42000000 ...
   Image Name:   63998-53472 Linux-2.6.34.8
   Created:      2018-12-12  19:50:22 UTC
   Image Type:   ARM Linux Kernel Image (uncompressed)
   Data Size:    1549996 Bytes =  1.5 MB
   Load Address: 40008000
   Entry Point:  40008000
   Verifying Checksum ... OK
## Loading init Ramdisk from Legacy Image at 46000000 ...
   Image Name:   63998-53472 RFS  TFTP3.2.1
   Created:      2018-12-12  19:50:23 UTC
   Image Type:   ARM Linux RAMDisk Image (gzip compressed)
   Data Size:    3102136 Bytes =  3 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK
   Loading Kernel Image ... OK
OK

Starting kernel ...

init started: BusyBox v1.28.1 (2018-08-28 12:40:30 CDT)
/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: Mounting  jffs2:user0...done
/etc/rc: Mounting  jffs2:user1...done
/etc/rc: Attaching ubi0:boot...done
/etc/rc: Mounting  ubi0:boot...done
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
```

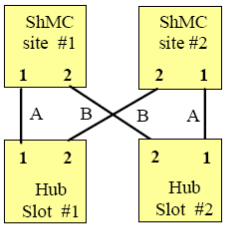
```
/etc/rc: Extracting application package /boot/app.1...done
/etc/rc: Mounted /1/var to /var
/etc/rc: Mounting jffs2:upgrade...done
/etc/rc: Strobing the reliable upgrade WDT
<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
90: Executing: /etc/hook/base_script.sh --stage 13 --silent
90: System returned 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 /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]
153: Executing: /etc/hook/base_script.sh --stage 13 --silent
153: System returned 0, exec result 0.

<*> 00:45:27.161   [154] Pigeon Point Shelf Manager ver. 3.7.1.2. Built on Oct 31 2018 14:27:54
<*> 00:45:27.237   [154] *** Lock log print buffer at 0x22c158 ***
<*> 00:45:27.238   [154] *** Pthread lock log print buffer at 0x230978 ***
<I> 00:45:28.589   [154] Read OTP bits 0x00025CC4, status=0
<I> 00:45:28.591   [154] Reading configuration file: /etc/shelfman.conf

<INFO> Write upgrade watchdog: 1 -> 2 [ALLOW]
164: Executing: /etc/hook/base_script.sh --stage 13 --silent
164: 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:
```

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 nVent/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 63998-53472 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 63998-53472 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.acb6-HPDL
# /etc/shelfman.conf.acb6-HPDL
# Created by DM 02 December 2013
# Changed FRU size from 2200 to 2400 by MGT on 15 July 2016
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=AT24LC256:0:0x57,2400; 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}
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=ttySP0,115200n8
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
password_reset=n
logging=ram
timezone=UTC
rc_ifconfig=n
set_mtdparts=set mtdparts mtdparts=SPI-0:${mtdparts1}
bootargs_common=set bootargs console=${console} mtdparts=m25p80-1:${mtdparts1} e
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} $}
ethact=FEC0
user_partition=jffs2
flash_reset=n
stdin=serial
stdout=serial
stderr=serial
image_sel=0
alt_image=1
serial#=6000483
ethaddr=00:18:49:02:5c:c4
eth1addr=00:18:49:02:5c:c5
a2f_upg_file=a2f-upgrade.dat
mfgdate=08092013
prodrev=AA
part#=ShMM-700R
hwrev=4A
ver=U-Boot 2009.08 (Dec 12 2018 - 10:26:17)
start_rc2_daemons=y
rc2=/etc/rc.acb6-HPDL
Environment size: 2262/262140 bytes
```

8 Revision History

3.7.1.2 (63998-53472)

Bug Fixes

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

1. E-Keying could work incorrectly after receiving a version change event from an IPMC (e.g. during its firmware upgrade) if HPM.2 client sessions were enabled.

3.7.1.1 (63998-53471)

Bug Fixes

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

1. In rare cases, the DHCP client could assign a wrong (duplicate) IP address to a physical interface in systems with two active physical interfaces.

3.7.1 (63998-53470)

Bug Fixes

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

1. The Schroff default U-Boot environment variables were not compiled into U-Boot. If the U-Boot environment variables were corrupted and the default variables recovered using the procedure described in Resetting the Shelf Manager configuration to the default values, the shelf manager would not boot correctly.

3.7.1 (63998-53469)

New and Changed Features since V3.7.0.3

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
   - The USB kernel driver has been modified to perform a kernel restart when the fatal Host Controller error is detected.
   - The *rupgrade* utility has been updated to avoid logging errors on system reboot.

3.7.0.3

New and Changed Features since V3.7.0.2

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
   - The *busybox* utility has been updated to version 1.28.1 to include the latest security fixes.
   - The *libc* system library has been patched with fixes for the security issue CVE-2018-6485.
   - Support for Micron MT25QL512ABB flash device has been added into U-Boot and Kernel. Although software support for the Micron MT25QL512ABB has been added, the ShMM-700R module will continue to use the Cypress (formerly Spansion) S25FL512S flash device. Thus, no hardware changes to the ShMM-700R are planned at this time. Support for the Micron flash device was added as a preventive measure against a future shortage of NOR flash devices.
2. The driver for the NVIDIA SMbus Post-Box interface has been implemented in HPDL.

3.7.0.2

New and Changed Features since V3.7.0.1

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
    - The curl library has been updated to version 7.57.0 to include the latest security fixes.
    - The libc system library has been patched with fixes for the following security issues: CVE-2017-1000366, CVE-2017-12133.
    - The libc system library has been patched with fixes for the following security issues: CVE-2010-3192, CVE-2017-15671, CVE-2017-16997.

Bug Fixes

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

1. Unrecognized commands contained inside IPMI Send Message requests received on the RMCP interface (including OEM commands) are no longer being rejected.
2. The CLI command *getipmbstate* could incorrectly interpret the second parameter as a FRU number.
3. Event notifications forwarded to RMCP destinations could be dropped from the outgoing queue in the Shelf Manager and not delivered to the recipient in the case of the queue overflow.

3.7.0.1

New and Changed Features since V3.7.0

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
    - The *curl* library has been updated to version 7.51.0 to include the latest security fixes.
    - The Linux kernel now exposes its configuration as the /proc/config.gz file.
    - The debug mode has been enabled in the USB driver of Linux kernel to facilitate investigations of issues with the Shelf Manager software redundancy interface.
2. This release includes an update to the ShMM-700 SmartFusion image file. The Cortex-M3 firmware has been updated, to version 1.8. This image file includes a SmartFusion A2F060 image concatenated with a SmartFusion A2F200 image and will support ShMM-700R modules that include the A2F060 or A2F200 device. To upgrade the ShMM-700 A2F060 or A2F200 device, the reliable upgrade utility must be run in the A2F upgrade mode; refer to Section 8.7 in the Shelf Manager User Guide.

    The version 1.8 Cortex-M3 firmware includes the following specific change:
        1. A2F200: Cortex-M3 firmware resets the CoreI2C block if it enters an unsupported I2C state, for example Slave Read, which can occur in the presence of significant IPMB-0 errors.
3. The rupgrade utility has been modified to reject A2F200 programming attempt at pre-3.7.0 releases.

Bug Fixes

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

2. Privilege levels for several rarely used IPMI commands did not match the IPMI specification.
3. The Get Session Challenge command handler has been corrected to use the null-username-not-enabled completion code properly.

3.7.0

New and Changed Features since V3.6.0

1. This release is based on updates of the noted ShMM-specific Linux distribution(s) that includes the following specific changes:
    - The i.MX I2C driver in Linux kernel has been fixed to prevent a crash that could happen during simultaneous access to devices on different I2C buses.

- Shell history management in busybox has been enhanced. Now the HISTFILE and HISTFILESIZE environment variables allow specifying a history file location and size. The history size in memory is now 128 commands. Also, reverse-search via ^R is now possible.
- Support for the log_remote2 U-Boot variable has been added to the startup script to allow concurrently logging to 2 remote hosts.
- The random number generation in linux kernel has been improved by using IRQs as a source of entropy.
- Net-SNMP server has been changed to use stronger random number generator for encryption.
- Privacy/encryption support was added to Net-SNMP server.
- In busybox syslogd, 2Mb restriction of the system log capacity specified by the -s option was removed, so that it's possible to maintain bigger logs.
- Support for the ARP monitoring mode in the bonding driver has been added.
- The busybox utility has been updated to version 1.25.1 to include the latest security fixes.
- The dropbear utility has been updated to version 2016.74 to include the latest security fixes.
- CVE-2016-5195 (aka Dirty COW) in the Linux kernel has been fixed.
- The curl library has been updated to version 7.51.0 to include the latest security fixes.
- The USB kernel driver has been modified to avoid a rare “HC” error that triggered an unexpected restart of the backup ShMM after switchover, due to an inability to communicate via the USB-based redundancy interface.
- The pathname of the localtime file has been corrected in the libc.so binary to align time zone selection with Shelf Manager documentation.
- The ntpd applet has been added into busybox ; it replaces the ntpdate utility on the ShMM due to security considerations.
- The zlib system library has been upgraded to v1.2.11 due to security considerations.
- The Linux kernel has been patched with a fix for CVE-2015-3288.
- The libc system library has been patched with fixes for the following security issues: CVE-2016-1234, CVE-2016-3075, CVE-2016-3706, CVE-2016-4429, CVE- 2016-5417, CVE-2016-6323, CVE-2014-9761, CVE-2015-8776, CVE-2015-8777, CVE-2015-8778, CVE-2015-8779.
- The dropbear utility has been upgraded to version 2017.75 to include the latest security fixes.
- The --copy-home mode has been implemented in the rupgrade utility to preserve the entire /etc/home directory during the upgrade procedure.
- The radial mode in the ipmb_traced utility has been enhanced, with the -r option it is now possible to limit the number of device nodes that are opened.
- The USB kernel driver has been modified to avoid a rare "HC died" error by using safe writes to HC registers.
- The u-boot and kernel SPICOMM drivers have been modified to support SmartFusion A2F200 devices.
- U-boot has been updated to support using a combined A2F060/A2F200 SmartFusion image file with the rupgrade utility.
- The rupgrade utility has been updated to support a combined SmartFusion A2F060/A2F200 image.
- The ripmb_prog utility has been updated (v1.2) to support a combined SmartFusion A2F060

2. A new attribute, “BUFFERED” for sensors, has been implemented in HPDL. This attribute enables buffering physical sensor readings for a period of time and choosing the median value across the buffer as the next sensor reading. If enabled at the HPDL level, such buffering can reduce the risk of erroneous threshold-crossing events caused by transient spikes in a series of readings for a sensor.
3. In the HPDL ADT7490 driver, 10-bit voltage signal support was added. Also, “bypass” option support was added for voltage signals.
4. The IPMB_POLL_TIMEOUT configuration variable, which controls the frequency of recovery attempts in the case of an IPMB failure, has been introduced, with the default value for ShMM-700 set to 500ms.

5. The PREFER_CHASSIS_HPDL_SDRS_FROM_FILE configuration variable has been introduced to allow changing the preferred source of the chassis HPDL configuration from the Shelf FRU Information to a file on the ShMM.
6. The CLI command dhcp status now works on the backup shelf manager.
7. FRU activation/deactivation requests coming from the CLI and SNMP interfaces are now logged.
8. In the SNMP interface, the sensor-reading variable has been made writable to support settable sensors. Also, IPv6-related variables were rearranged and some of them were made writable.
9. The CLI command fruinfo now recognizes PICMG 3.1 R3.0 link types.
10. A new option --clone and support for image checksum verification after programming has been added to the rupgrade utility.
11. Support for the “Current bank” sensor has been added.
12. A Shelf FRU Info redundancy sensor has been implemented that indicates the redundancy state of the Shelf FRU Information storage locations after the Shelf Manager starts and after the CLI command shelf info_refresh.
13. In HPDL, there is a new possibility to specify a pair of output expressions for setting each state for a discrete settable sensor.
14. A Carrier FRU Information offset in the EEPROM description string is now supported; it is the value of the sub-option CARRIER_FRU_LOCATION in the configuration parameter CARRIER_OPTIONS.
15. There are changes in IntegralHPI; see the IntegralHPI Release Notes for the details.
16. The example Shelf Manager configuration file /etc/shelfman.conf has been extended with descriptions of recently added configuration parameters, with their default values.
17. The name and type of the sensor “Current Bank” have been changed (the new name is “ShM Bank1 active” and the new type is “System Firmware Progress”).
18. The new sensor “ShM Mem Rec” has been implemented; it indicates whether the most recent reboot was caused by the upgrade watchdog timer during a failed Shelf Manager firmware upgrade attempt, with an automatic rollback to the Shelf Manager firmware version that was running before the upgrade attempt.
19. The rupgrade utility has been enhanced with an early validity check for the presence of the designated local file if the file:// syntax is used.
20. The clia shelf info_check command has been implemented to allow validation of Shelf FRU Information storage(s) without making content changes.
21. This release includes an update to the ShMM-700 SmartFusion image file. The Cortex-M3 firmware has been updated, to version 1.6 and the FPGA fabric has been updated to version 1.1.0.0. This image file includes a SmartFusion A2F060 image concatenated with a SmartFusion A2F200 image and will support ShMM-700R modules that include the A2F060 or A2F200 device. To upgrade the ShMM-700 A2F060 or A2F200 device, the reliable upgrade utility must be run in the A2F upgrade mode; refer to Section 8.7 in the Shelf Manager User Guide. The reliable upgrade utility, when run in the A2F upgrade mode, will query the SmartFusion device and program the appropriate SmartFusion image from the v1.6-1.1.0.0 image file.

    The version 1.6 Cortex-M3 firmware includes the following specific changes:
    A2F200: Update the configuration to use the CoreI2C blocks in the fabric.
    A2F060/A2F200: Modify the SPICOMM driver to support the A2F200 SPI controller.

    The version 1.1.0.0 FPGA fabric includes the following specific changes:
    A2F200: Implement the IPMB-0 interface with two CoreI2C blocks in the fabric.
    A2F060/A2F200: Update IP cores to the latest versions and rebuild with Libero SoC v11.8.
22. A workaround has been implemented to reduce the number of Set Event Receiver requests sent to IPMCs during startup.
23. In the FMPe3048 HPDL driver, checksum control has been added for RSP_MOD_INFO. In the case of a checksum failure, an appropriate message is added to the log and refreshing of sensor values is delayed until the next request cycle.

24. A number of validation checks for incoming data have been added into the FMPe3048 HPDL driver: now checksum, the leading byte, the PEM ID and the effective length of the response are validated.
25. The FMPe3048 serial number is now composed of two EEPROM fields instead of one.
26. In the readhwaddr utility, support for override and checksum bits has been added.
27. In SNMP interface, all sensor-processed-*-threshold variables have been made writable
28. A new configuration variable USE_IPMB_A_ONLY has been introduced to support systems with only one Intelligent Platform Management Bus.
29. Support for the IPMI command Get SEL Time UTC Offset has been added.
30. A new configuration variable PET_PORT has been introduced to allow sending SNMP Traps to a non-standard port number. Also, the snmptc utility has been modified to wait for incoming traps from a non-standard port number.
31. A new configuration variable BOARD_LAN_PARAMETERS_ASSIGN_FROM_SHM has been introduced to send LAN configuration to boards based on RMCP IP address of the shelf manager.

Bug Fixes

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

1. The CLI command frudata <ipmc> <fru> 0 could crash in the case of a non-existent FRU.
2. The CLI command frudata could return incorrect data while retrieving the last block of FRU Information.
3. The checksum of Shelf FRU Information synchronized over the redundancy interface was not verified and incorrect data was not rejected by the backup unit.
4. In HPM.3, handling of error code 128 for the LAN configuration parameter “DHCP Options” was incorrect.
5. In the DHCP client, initialization failure could happen if the network interface was not activated by the startup script.
6. In PEF, incorrect data could be sent due to an overflow of the queue of deferred alerts.
7. It was not possible to set a value greater than 64 for the PEF configuration parameter MAX_EVENTS_FILTERS via CLI (though internally the valid range is 1...128); this issue in CLI has been fixed.
8. In zoned cooling operation, early events coming from FRUs not yet present in the SDR Repository (i.e. when the corresponding SDR was not yet available) were treated incorrectly.
9. During LAN channel configuration, a channel could remain uninitialized due to an “address already in use” error.
10. In rare cases, the Shelf Manager could initiate an unexpected switchover due to an error occurring on the redundancy interface.
11. A redundant event indicating transition of the backup Shelf Manager to state M0 was issued during a switchover.
12. Platform Event Traps in ASCII Text format could contain an invalid timestamp.
13. The Shelf Manager did not propagate ‘Local Control’ LED state for FRUs at 20h to the backup unit; as a consequence, after a switchover, the LED state could be incorrect.
14. The new DHCPv4 client could reset the Client ID format to HPM.3 after a DHCP restart caused by the CLI command.
15. Writing 16-bit signals did not work, for instance, with the I2C_GEN_REG_DEV device writing WIO_xx signals.
16. The Shelf Manager could not work as an HPM.3-compliant DHCP proxy server for boards in the case where configuration variables HPM3_ENABLE and DHCP_SPECIAL_CLIENT_ID_FORMAT were both set to TRUE.
17. The IPMI command Set SEL Time could time out.
18. The CLI command dhcp status could show incorrect information in the following case with the new DHCPv4 client: Active-Active usage model of the two network interfaces and configuration parameter SWAPPED_CROSS_CONNECTS set to TRUE.
19. The default value for the configuration parameter VERIFY_SHELF_FRU_CHECKSUM was incorrectly set to FALSE (must be TRUE).

20. The clia frudata command could return an incorrect completion code on a read/write operation beyond FRU Information area boundary.
21. The Shelf Manager could crash when there were multiple Fan Geography records in the Shelf FRU Information.
22. The Shelf Manager could return a response with extra padding bytes to the “Get HPM.x Capabilities” request.
23. In shelves with HPM.2-capable boards, reassignment of the RMCP-capable IP address on the Shelf Manager (e.g. originated by the DHCP client) could lead to inaccessibility of the RMCP service on it.
24. An unnecessary transition to the Hot Swap state M7 and back could be logged for all boards during a switchover.
25. An absent AMC module could be reported as present after extraction and reinsertion of its carrier board, if the AMC module had been removed from the carrier board while the carrier had been outside the shelf.
26. Shelf manager could crash during FRU extraction/insertion if the FRU had a separate HPDL ription in its FRU information with sensors at a non-zero LUN.
27. In the I2C/RS485 rectifier library (which is a part of the FMPe3048 HPDL driver), the FIFO buffer was not cleaned up in the case of an error reported from the rectifier.
28. In shelf manager, support for recognizing and ignoring ASF PONG messages has been added to avoid "unrecognized ASF message" warnings in the HPM.2 context.
29. Some AMC related CLI commands, could incorrectly report the error "not an intelligent FRU" for an “intelligent” AMC.
30. PICMG3.0 REQ 3.333 to check privilege level for the embedded request of IPMI Send Message requests to IPMB channel is now implemented properly.
31. Information about RMCP session notification state could be synchronized incorrectly over the redundancy interface.

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