Release Notes
Schroff firmware part number 63998-04657
Based on Pigeon Point Systems (PPS) firmware release 2.3.2 for ShMM-500

Introduction:

The firmware package "63998-04657.zip" contains Firmware release 2.3.2 for the **ShMM-500**. The PPS RFS image has been modified by Schroff to meet customer's requirements and to adapt the firmware to the Schroff ATCA chassis. The kernel image has not been modified and is identical to the PPS kernel image. The Schroff part number for this firmware release is 63998-04657.

Shelf manager versions
The overview below shows the different versions of Schroff Shelf Manager carrier board.

Note: This release note only applies to shelf manager carrier boards which have the Pigeon Point Systems **ShMM-500 Module** installed. Before proceeding with this firmware installation, please make sure that your shelf manager is equipped with a ShMM-500 module. The photo below shows the ShMM-300 and the ShMM-500.

Photo	Type	RC2-variable
The part number of the ACB-IV Shelf Manager is on the label at the rear side of the Shelf Manager, see photo below: **- Radial IPMB version: part number = 21594-347** **- Bused IPMB version: part number = 21594-346**	ACB-IV	rc.acb4
	ACB-IV installed in Electronic an Solutions ATCA chassis	rc.acb-es

	ACB-III	rc.acb3
The following Shelf Manager types originally shipped with ShMM-300 modules but might have been upgraded to ShMM-500 modules by the customer		
	ACB-III	rc.acb3e
	ACB-II	rc.acb2
	SMC-1	rc.smc1

Preparation:

Firmware files
Unzip the file sentry.63998-04657.zip. This file contains the following Pre-Built images:

TFTP Upgrade files:	
63998-04657.kernel	Upgrade kernel image for TFTP upgrade
63998-04657.rfs	Upgrade RFS image for TFTP upgrade
Reliable Upgrade files:	
63998-04657.shmm500.kernel	Upgrade kernel for reliable upgrade
63998-04657.shmm500.rfs	Upgrade RFS for reliable upgrade
63998-04657.u-boot.bin	Upgrade u-boot for reliable upgrade

FRU ID files
The Shelf Manager firmware images also contain FRU ID files for the Shelf, Fan Trays, PEMs, SAP and the Shelf Manager.

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

FRU ID files included in firmware version 63998-04657:

FRU ID file name	Description
11592027BFBIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-027
11592043BCBIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-043
11592086BCBIN.bin	12U 14 Slot ATCA Shelf, P/N 11592-086
11592099BBBIN.bin	575mm 16-Slot ATCA Shelf, P/N 11592-099
11592400DBBIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-400
11592401CEBIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-401
11592402DABIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-402
11592403DABIN.bin	12U 14-Slot ATCA Shelf, P/N 11592-403
11592454AEBIN.bin	575mm 16-Slot ATCA Shelf, P/N 11592-454
11592500BABIN.bin	13U 16-Slot ATCA Shelf, P/N 11592-500
11592501BABIN.bin	13U 16-Slot ATCA Shelf, P/N 11592-501
11592502DABIN.bin	13U 16-Slot ATCA Shelf, P/N 11592-502
11592503CABIN.bin	13U 16-Slot ATCA Shelf, P/N 11592-503
11596006ACBIN.bin	13U 14-Slot ATCA Shelf, P/N 11596-006
11596007AABIN.bin	3U 2 Slot ATCA Shelf, P/N 11596-007
11596010ACBIN.bin	5U 5-Slot ATCA Shelf, P/N 11596-010
11596012ABBIN.bin	5U 5-Slot ATCA Shelf P/N 11596012
11596025AABIN.bin	13U 14-Slot ATCA Shelf NBA, P/N 11596-025
11596026AABIN.bin	6U 5-Slot NBA, P/N 11596-026
11596027AABIN.bin	12U 14-Slot ATCA Shelf, P/N 11596-027
11596031AABIN.bin	12U 14-Slot ATCA Shelf, P/N 11596-031
11596050A1001AABIN.bin	575mm 16-Slot ATCA Shelf, P/N 11596-050A1001
11596060AABIN.bin	13U 14-Slot ATCA Shelf, P/N 11596-060
11596100AABIN.bin	13U 14-Slot ATCA Shelf P/N 11596-100
11596101AABIN.bin	13U 14-Slot ATCA Shelf P/N 11596-101
21593100CABIN.bin	Fan Tray for 14-Slot ATCA Shelf, P/N 21593-100
21593250AABIN.bin	ACB-III Shelf Manger, Bused IPMB, P/N 21593-250
21593251AABIN.bin	ACB-III Shelf Manger, Radial IPMB, P/N 21593-251
21593312ABBIN.bin	PEM for 16-Slot ATCA Shelf, P/N 11593-312
21593372AABIN.bin	Fan Tray for 16-Slot ATCA Shelf, P/N 21593-372
21594088ABBIN.bin	PEM for 16-Slot ATCA Shelf, P/N 11594-088
21594110ABBIN.bin	SAP for 16-Slot ATCA Shelf, P/N 11595-110
21594159CABIN.bin	SAP for 14-Slot ATCA Shelf, P/N 11595-159
21594194BABIN.bin	Fan Tray for 16-Slot ATCA Shelf, P/N 21594-194
21594340BABIN.bin	PEM for 14-Slot ATCA Shelf, P/N 11594-340
21594346ABBIN.bin	ACB-IV Shelf Manger, Bused IPMB, P/N 21594-346
21594347ABBIN.bin	ACB-IV Shelf Manger, Radial IPMB, P/N 21594-347
21594356ABBIN.bin	SAP for 16-Slot ATCA Shelf, P/N 11594-356
21594357ACBIN.bin	Fan Tray for 16-Slot ATCA Shelf, P/N 21594-356
21596033ABBIN.bin	PEM for 5-Slot ATCA Shelf, P/N 11596-033

```
21596078AABIN.bin                    DSAP for 5-Slot ATCA Shelf, P/N 11596-078
21596132AABIN.bin                    Fan Tray for 14-Slot ATCA Shelf, P/N 21596-10X
21596134AABIN.bin                    SAP for 14-Slot ATCA Shelf, P/N 11596-10X
BPL000763AABIN.bin                   ACB-II Shelf Manger, Bused IPMB, P/N BPL000763
BPL003011AABIN.bin                   SAP for 5-Slot ATCA Shelf, P/N BPL003011
SYS000764BCBIN.bin                   5U   5-Slot ATCA Shelf, P/N SYS000764
SYS000766BIBIN.bin                   5U   5-Slot ATCA Shelf, P/N SYS000766
SYS000766FTACBIN.bin                 5U   5-Slot ATCA Shelf, P/N SYS000766FT
SYS001916ABBIN.bin                   5U   5-Slot ATCA Shelf, P/N SYS001916
SYS002927ACBIN.bin                   6U   5-Slot ATCA Shelf, P/N SYS002927
SYS03214RABBIN.bin                   5U   5-Slot ATCA Shelf, P/N SYS003214
VEN12ATCA014ADBIN.bin                12U 14-Slot ATCA Shelf, P/N VEN12ATCA014
ZR5ATC6TMDPEM2NACBIN.bin             5U   6-Slot ATCA Shelf, P/N ZR5ATC6TMDPEM2N
```

Upgrading the Shelf Manager to Release 2.3.2:

There are two ways of upgrading the Shelf Manager firmware. You can use the **TFTP Upgrade Procedure** which is started from the U-Boot environment of the Shelf Manager and retrieves the files from a TFTP server on your network. You can also use the **Reliable Upgrade Procedure**. This procedure will copy the new firmware flash images from an FTP server on your network to RAM on the ShMM-500 and then copy the images to flash memory.

TFTP Upgrade Procedure

An overview of the procedure is as follows:
** Download the 63998-04657.rfs and 63998-04657.kernel images and place them on your network reachable TFTP server. The 63998-04657.rfs image includes the new 2.3.2 u-boot.bin, sentry.shmm500.kernel and sentry.shmm500.rfs images *inside* this special boot image.
** TFTP boot the upgrade kernel and rfs images on your ShMM-500. Once booted, the upgrade script will automatically update your ShMM-500 using the rupgrade_tool utility and the new 2.3.2 kernel and rfs and u-boot images stored in the upgrade RFS image. It will then reboot.
** For customers with early production F64M128 (large capacity ShMM-500+ modules) an additional step will be performed to reprogram the ADM1060 to enable the larger flash memory.

Step 1
Rename the kernel and RFS files:
➔ Rename 63998-04657.kernel to sentry.kernel
➔ Rename 63998-04657.rfs to sentry.rfs

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

Step 2
Power on your ShMM-500 based hardware and interrupt the boot-up process by pressing the space-bar on the serial port console of the ShMM-500:
```
U-Boot 1.1.4...
...
Shmm500
```

Step 3
Verify the correct name of the download images.
Make sure that the renamed files of Step 1 correspond to the required file names in u-boot.

```
Shmm500 printenv
…..
```

```
bootfile=sentry.kernel
ramdisk=sentry.rfs
.....
```

Step 4
Make sure that the network settings for your ShMM-500 are such that it can see the TFTP server on your network:
```
shmm500  printenv serverip ipaddr netmask gatewayip

serverip=192.168.0.7
ipaddr=192.168.0.2
netmask=255.255.0.0
gatewayip=192.168.0.1
```

If any of these need changing, do it as follows:
```
shmm500  setenv serverip 192.168.0.88
shmm500  saveenv

Saving Environment to EEPROM...
shmm500
```

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

```
shmm500  printenv
```

Step 5
If your ShMM-500 module has the net command defined, you can use this to boot the upgrade kernel and rfs as follows:

```
shmm500 run net
```

If it does not, you can do this:
```
setenv bootargs $(bootargs) root=/dev/ram rw console=ttyS0,115200
reliable_upgrade=y
tftp 80400000 sentry.kernel
tftp 81200000 sentry.rfs
bootm 80400000 81200000
```

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

Step 6
Upon successful upgrade, reboot to u-boot and restore the RC2 environment variable.

```
shmm500 setenv rc2 /etc/rc.acb4
shmm500 saveenv; saveenv
```

Please find the correct RC2 variable for your Shelf Manager type in the Shelf Manager overview table at the beginning of this document.

```
A common problem is to not set the rc2 env variable correctly, among others.
```

Step 7
Boot the Shelf Manager and log-in as "root". Ignore the password by pushing the Return key.
Enter the command "version"
The output shows the version of u-boot, Linux-Kernel and RFS image for both, the current FW version and the alternative FW-version in flash. At the end of the output, the version of the shelfman application is displayed.

```
Current Kernel
Image Name:    63998-04657.kernel Linux-2.4.26
Created:       Wed Dec  6 17:48:02 2006
Image Type:    MIPS Linux Kernel Image (gzip compressed)
Data Size:     861524 Bytes = 841.33 kB = 0.82 MB
Load Address: 0x80100000
Entry Point:   0x802C2040

Current RFS
Image Name:    63998-04657 RFS
Created:       Wed Dec  6 17:48:01 2006
Image Type:    MIPS Linux RAMDisk Image (gzip compressed)
Data Size:     2997135 Bytes = 2926.89 kB = 2.86 MB
Load Address: 0x00000000
Entry Point:   0x00000000

Alternate Boot
Image Name:    63998-04657.uboot.bin 1.1.4
Created:       Tue Dec  5 22:23:38 2006
Image Type:    MIPS Linux Firmware (uncompressed)
Data Size:     183228 Bytes = 178.93 kB = 0.17 MB
Load Address: 0x9FC00000
Entry Point:   0x00000000

Alternate Linux
Image Name:    63998-04657.kernel Linux-2.4.26
Created:       Tue Dec  5 22:23:38 2006
Image Type:    MIPS Linux Kernel Image (gzip compressed)
Data Size:     861524 Bytes = 841.33 kB = 0.82 MB
Load Address: 0x80100000
Entry Point:   0x802C2040

Alternate RFS
Image Name:    63998-04657 RFS
Created:       Tue Dec  5 22:23:38 2006
Image Type:    MIPS Linux RAMDisk Image (gzip compressed)
Data Size:     2996496 Bytes = 2926.27 kB = 2.86 MB
Load Address: 0x00000000
Entry Point:   0x00000000

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 2.3.2
Pigeon Point is a trademark of Pigeon Point Systems.
Copyright (c) 2002-2006 Pigeon Point Systems
Build date/time: Nov  3 2006 09:43:12
All rights reserved
```

Step 8
Downloading FRU data files

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

To download the FRU files, the "clia frudataw" command is used.
Example:

Basic command: `clia frudataw 20 1 <Chassis FRU file name>`
The "chassis FRU file name" includes the Schroff parts number of the Chassis or the FRU.
You want to update a chassis with part number 11592-400:
→ The corresponding FRU file in the /var/nvdata directory is: `11592400CDBIN.bin`
Thus, the command to enter is:
`clia frudataw 20 1 11592400CDBIN.bin`

Download of FRU data to shelf SEEPROM 1:
`# clia frudataw 20 1 <Chassis FRU file name>`

Download of FRU data to shelf SEEPROM 2:
`# clia frudataw 20 2 <Chassis FRU file name>`

Download of FRU data to Fan Tray 0:
`# clia frudataw 20 3 <Fan Tray FRU file name>`

Download of FRU data to Fan Tray 1:
`# clia frudataw 20 4 <Fan Tray FRU file name>`

Download of FRU data to Fan Tray 2:
`# clia frudataw 20 5 <Fan Tray FRU file name>`

Download of FRU data to PEM A:
`# clia frudataw 20 6 <PEM FRU file name>`

Download of FRU data to PEM B:
`# clia frudataw 20 7 <PEM FRU file name>`

Download of FRU data to the SAP:
`# clia frudataw 20 8 <SAP FRU file name>`

For ACB-IV type shelf managers (see table at the top of this document for identification) the following commands have to be entered:

Download of FRU data to the Shelf Manager in 0x10:
`# clia frudataw 10 0 <Shelf Manager FRU file name>`

Download of FRU data to the Shelf Manager in 0x12:
`# clia frudataw 12 0 <Shelf Manager FRU file name>`

Step 9
Reboot the Shelf Manager

#
reboot

Reliable Upgrade Procedure

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

STEP 1
Network settings:

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

If you need to use the front panel Ethernet connector you need to set the jumpers on the Shelf Manager to route the primary Ethernet port to the front panel. When the jumpers are on the pins towards the front panel the Ethernet is connected to the front panel connector. See the Shelf User Manual for deta5ils of the jumper setting.

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

If your Shelf Manager is on a different network than your FTP server, then you need to configure the Default Gateway. The command "clia setlanconfig 1 dft_gw_ip 192.168.0.1" will set the IP Address of the Default Gateway to "192.168.0.1". You need to substitute "192.168.0.1" in the example for the IP Address of the Default Gateway on your network.
If you use subnets on your network then you need to change the Subnet Mask from the default value of "255.255.255.0". The command "clia setlanconfig 1 subnet_mask 255.255.255.128" will set Subnet Mask of the Subnet Mask to "255.255.255.128". You need to substitute "255.255.255.128" in the example for the Subnet Mask of your network.
You can use the command "ping 192.168.0.6" to test the network connection to the FTP server. You need to substitute "192.168.0.6" in the command for the IP address of the FTP server on your network. The example below shows a successful ping test.

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

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

STEP 2
Upgrade Process:

Put the three Reliable Upgrade FLASH images (63998-04657.shmm500.kernel, 63998-04657.shmm500.rfs, 63998-04657.u-boot.bin) 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_tool -s -v --k=63998-04657.shmm500.kernel --r=63998-04657.shmm500.rfs --u=63998-04657.u-boot.bin --proto=ftp:192.168.0.7:/tmp:ftp:ftppw --hook=erase

Note: This command is on a single line.

```
# rupgrade_tool -s -v --k=63998-04657.shmm500.kernel --r=63998-
04657.shmm500.rfs --u=63998-04657.u-boot.bin --
proto=ftp:192.168.0.7:/tmp:ftp:ftppw --hook=erase
rupgrade_tool: PLB is 7
rupgrade_tool: EEPROM page saved
rupgrade_tool: persistent flash is 0
rupgrade_tool: provisional flash is 1
rupgrade_tool: copying image(s)
rupgrade_tool: copying 63998-04657.u-boot.bin from 192.168.0.7:/tmp to /tmp
usin
g 'ftp' protocol
220-FileZilla Server version 0.9.18 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (192,168,0,7,8,58)
RETR /tmp/63998-04657.u-boot.bin
150 Connection accepted
226 Transfer OK
QUIT
221 Goodbye
rupgrade_tool: copying 63998-04657.shmm500.kernel from 192.168.0.7:/tmp to
/tmp
using 'ftp' protocol
220-FileZilla Server version 0.9.18 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
```

```
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (192,168,0,7,8,59)
RETR /tmp/63998-04657.shmm500.kernel
150 Connection accepted
226 Transfer OK
QUIT
221 Goodbye
rupgrade_tool: copying 63998-04657.shmm500.rfs from 192.168.0.7:/tmp to /tmp
usi
ng 'ftp' protocol
220-FileZilla Server version 0.9.18 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
USER ftp
331 Password required for ftp
PASS *****
230 Logged on
TYPE I
200 Type set to I
PASV
227 Entering Passive Mode (192,168,0,7,8,60)
RETR /tmp/63998-04657.shmm500.rfs
150 Connection accepted
226 Transfer OK
QUIT
221 Goodbye
rupgrade_tool: invoking scripts (step4v*) [--u=63998-04657.u-boot.bin --
k=63998-
04657.shmm500.kernel --r=63998-04657.shmm500.rfs --
proto=ftp:192.168.0.7:/tmp:ft
p:ftp --hook=erase]
rupgrade_tool: copying 63998-04657.u-boot.bin from /tmp to /dev/mtdchar8
using '
cp' protocol
rupgrade_tool: copying 63998-04657.shmm500.kernel from /tmp to /dev/mtdchar7
usi
ng 'cp' protocol
rupgrade_tool: copying 63998-04657.shmm500.rfs from /tmp to /dev/mtdchar9
using
'cp' protocol
rupgrade_tool: invoking scripts (step4h*) [erase]
/etc/upgrade/step4hshm: Stopping Shelf Manager...Done
/etc/upgrade/step4hshm: Cleaning new /var partition...Done
/etc/upgrade/step4hshm: Cleaning new /etc partition...Done
/etc/upgrade/step4hshm: Leaving /var and /etc empty except for ssh keys from
/et
c/ssh...Done
/etc/upgrade/step4hshm: Upgrade completed.
rupgrade_tool: image(s) copy OK
rupgrade_tool: watchdog started
rupgrade_tool: selected provisional flash
rupgrade_tool: reboot
```

```
Restarting system.


U-Boot 1.1.4 (Oct 25 2006 - 13:57:29)

CPU: Au1550 324 MHz, id: 0x02, rev: 0x00
Board: ShMM-500
S/N: 08004147
DRAM:  128 MB
Flash: 64 MB
In:    serial
Out:   serial
Err:   serial
Net:   Au1X00 ETHERNET
Hit any key to stop autoboot:  0
## Booting image at be080000 ...
   Image Name:    63998-04657.kernel Linux-2.4.26
   Created:       2006-12-06  17:48:02 UTC
   Image Type:    MIPS Linux Kernel Image (gzip compressed)
   Data Size:     861524 Bytes = 841.3 kB
   Load Address: 80100000
   Entry Point:  802c2040
   Verifying Checksum ... OK
   Uncompressing Kernel Image ... OK
## Loading Ramdisk Image at be440000 ...
   Image Name:    63998-04657 RFS
   Created:       2006-12-06  17:48:01 UTC
   Image Type:    MIPS Linux RAMDisk Image (gzip compressed)
   Data Size:     2997135 Bytes =  2.9 MB
   Load Address: 00000000
   Entry Point:  00000000
   Verifying Checksum ... OK

Starting kernel ...

/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /dev/mtdblock0 to /var
/etc/rc: Mounted /dev/mtdblock10 to /var/upgrade
/etc/rc: Checking the reliable upgrade watchdog timer...activated
/etc/rc: Mounted ram disk to /var/log
/etc/rc: Started syslogd and klogd
/etc/rc: Mounted ram disk to /var/tmp
/etc/rc: Setting hostname sentry
/etc/rc: Strobing the reliable upgrade WDT
/etc/rc: /dev/mtdblock1 appears to be empty ... restoring from factory
/etc...
/etc/rc: Preserved ssh_host_dsa_key in /etc/ssh
/etc/rc: Preserved ssh_host_rsa_key in /etc/ssh
/etc/rc: Mounted /dev/mtdblock1 to /etc
/etc/rc: Strobing the reliable upgrade WDT
/etc/rc: Calling /etc/rc.acb4
/etc/readhwaddr: Board Hardware Address: 0x10
/etc/netconfig: /etc/hosts updated with sentry 192.168.0.22 entry
/etc/netconfig: Updating /etc/profile.sentry with IP settings
/etc/netconfig: Starting /bin/inetd...
/etc/rc.acb4: Starting up IPMBs ...
```

```
/etc/rc.acb4: Updating /etc/profile.sentry with specific settings
/etc/rc.acb4: Starting snmpd...
/etc/rc.acb4: Starting httpd...
/etc/rc.acb4: Strobing the reliable upgrade WDT
/etc/rc.acb4: Starting Shelf Manager ... for carrier type ACB
/etc/rc.acb4: Command line: /usr/bin/shelfman -sf

<*> 19:53:51.981   [219] Pigeon Point Shelf Manager ver. 2.3.2. Built on Nov
3
2006 09:43:12
<*> 19:53:51.989   [219] Limits: code=(400000:567140), end_data=10066000,
start_
stack=7fff7ce0, esp=7fff7638, eip=2ab0d2e4
<*> 19:53:51.989   [219] Stack limits: curr=1ff000, max=7fffffff
<*> 19:53:51.989   [219] Data limits: curr=7fffffff, max=7fffffff
<*> 19:53:51.993   [219] *** Lock log print buffer at 100405d0 ***
<*> 19:53:51.994   [219] *** Pthread lock log print buffer at 10044600 ***

sentry login: root
Password:
#
```
You can verify the version that you are running with the "version" command:

```
Current Kernel
Image Name:    63998-04657.kernel Linux-2.4.26
Created:       Wed Dec  6 17:48:02 2006
Image Type:    MIPS Linux Kernel Image (gzip compressed)
Data Size:     861524 Bytes = 841.33 kB = 0.82 MB
Load Address: 0x80100000
Entry Point:  0x802C2040

Current RFS
Image Name:    63998-04657 RFS
Created:       Wed Dec  6 17:48:01 2006
Image Type:    MIPS Linux RAMDisk Image (gzip compressed)
Data Size:     2997135 Bytes = 2926.89 kB = 2.86 MB
Load Address: 0x00000000
Entry Point:  0x00000000

Alternate Boot
Image Name:    63998-04657.uboot.bin 1.1.4
Created:       Tue Dec  5 22:23:38 2006
Image Type:    MIPS Linux Firmware (uncompressed)
Data Size:     183228 Bytes = 178.93 kB = 0.17 MB
Load Address: 0x9FC00000
Entry Point:  0x00000000

Alternate Linux
Image Name:    63998-04657.kernel Linux-2.4.26
Created:       Tue Dec  5 22:23:38 2006
Image Type:    MIPS Linux Kernel Image (gzip compressed)
Data Size:     861524 Bytes = 841.33 kB = 0.82 MB
Load Address: 0x80100000
Entry Point:  0x802C2040

Alternate RFS
Image Name:    63998-04657 RFS
Created:       Tue Dec  5 22:23:38 2006
```

```
Image Type:   MIPS Linux RAMDisk Image (gzip compressed)
Data Size:    2996496 Bytes = 2926.27 kB = 2.86 MB
Load Address: 0x00000000
Entry Point:  0x00000000

Pigeon Point Shelf Manager Command Line Interpreter

Pigeon Point Shelf Manager ver. 2.3.2
Pigeon Point is a trademark of Pigeon Point Systems.
Copyright (c) 2002-2006 Pigeon Point Systems
Build date/time: Nov  3 2006 09:43:12
All rights reserved#
```

STEP 3
Downloading FRU data files

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

To download the FRU files, the "clia frudataw" command is used.

Example:

Basic command: `clia frudataw 20 1 <Chassis FRU file name>`
The "chassis FRU file name" includes the Schroff parts number of the Chassis or the FRU.
You want to update a chassis with part number 11592-400:
➔ The corresponding FRU file in the /var/nvdata directory is: `11592400CDBIN.bin`
Thus, the command to enter is:
`clia frudataw 20 1 11592400CDBIN.bin`

Download of FRU data to shelf SEEPROM 1:
`# clia frudataw 20 1 <Chassis FRU file name>`

Download of FRU data to shelf SEEPROM 2:
`# clia frudataw 20 2 <Chassis FRU file name>`

Download of FRU data to Fan Tray 0:
`# clia frudataw 20 3 <Fan Tray FRU file name>`

Download of FRU data to Fan Tray 1:
`# clia frudataw 20 4 <Fan Tray FRU file name>`

Download of FRU data to Fan Tray 2:
`# clia frudataw 20 5 <Fan Tray FRU file name>`

Download of FRU data to PEM A:
`# clia frudataw 20 6 <PEM FRU file name>`

Download of FRU data to PEM B:
`# clia frudataw 20 7 <PEM FRU file name>`

Download of FRU data to the SAP:
`# clia frudataw 20 8 <SAP FRU file name>`

For ACB-IV type shelf managers (see table at the top of this document for identification) the following commands have to be entered:

Download of FRU data to the Shelf Manager in 0x10:
```
# clia frudataw 10 0 <Shelf Manager FRU file name>
```

Download of FRU data to the Shelf Manager in 0x12:
```
# clia frudataw 12 0 <Shelf Manager FRU file name>
```


<u>Step 4</u>
Reboot the Shelf Manager
```
#
# reboot
```

Firmware part number 63998-04657 configuration file

The configuration file /etc/shelfman.conf contains all PPS default configuration variables for the Shelf Manager. Variables that have been modified for Firmware version 63998-04657 are stored in the additional configuration files /etc/shelfman.conf.ACB-II, /etc/shelfman.conf.ACB-III.Eth, /etc/shelfman.conf.ACB-III.USB and /etc/shelfman.conf.ACB-IV
The content of the custom specific configuration files is listed below.

```
# cat shelfman.conf.ACB-II
# /etc/shelfman.conf.ACB-II
# Modified by MGT 31 January 2006
# Modified by MGT 21 June 2006, added NORMAL_STABLE_TIME parameter
# Modified by MGT 4 August 2006, added FRU_IN_ACB1026=0,
INITIAL_SLOW_LINK_DELAY
 = 120
# Modified by MGT 15 August 2006, modified for V2.3.0
CARRIER = ACB
#CARRIER_OPTIONS = "NEBS"
#CARRIER_OPTIONS = "CM_INT_UP=5; CM_INT_DOWN=5;"
CARRIER_OPTIONS = "IN_EX_SWITCHOFF=0; FRU_IN_ADM1026=0;"
#CARRIER_OPTIONS = "NEBS; IN_EX_SWITCHOFF=0; CM_INT_UP=30;
CM_INT_DOWN=10;"
#MAX_ATCA_FANLEVEL = 9
#MAX_ATCA_TEMP = 30
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
SWITCHOVER_ON_HANDLE_OPEN = TRUE
SWITCHOVER_TIMEOUT_ON_BROKEN_LINK = -1
#

# cat shelfman.conf.ACB-III.Eth
# /etc/shelfman.conf.ACB-III
# Modified by MGT 25 April 2006
# Modified by MGT 21 June 2006, added NORMAL_STABLE_TIME parameter
# Modified by MGT 4 August 2006, added FRU_IN_ADM1026=0,
INITIAL_SLOW_LINK_DELAY
 = 120
# Modified by MGT 15 August 2006, modified for V2.3.0
CARRIER = ACB
#CARRIER_OPTIONS = "NEBS"
#CARRIER_OPTIONS = "CM_INT_UP=5; CM_INT_DOWN=5;"
CARRIER_OPTIONS = "IN_EX_SWITCHOFF=0; FRU_IN_ADM1026=0;"
#CARRIER_OPTIONS = "NEBS; IN_EX_SWITCHOFF=0; CM_INT_UP=30;
CM_INT_DOWN=10;"
#MAX_ATCA_FANLEVEL = 9
#MAX_ATCA_TEMP = 30
COOLING_FAN_INCREASE_TIMEOUT = 60
COOLING_FAN_DECREASE_TIMEOUT = 60
```

```
FAN_LEVEL_STEP_UP = 2
FAN_LEVEL_STEP_DOWN = 1
NORMAL_STABLE_TIME = 1800
IPMB_LINK_ISOLATION_TIMEOUT = 60
INITIAL_FAN_LEVEL = 8
MIN_FAN_LEVEL = 3
SWITCHOVER_ON_HANDLE_OPEN = TRUE
SWITCHOVER_TIMEOUT_ON_BROKEN_LINK = -1
#

# cat shelfman.conf.ACB-III.USB
# /etc/shelfman.conf.ACB-III
# Modified by MGT 25 April 2006
# Modified by MGT 21 June 2006, added NORMAL_STABLE_TIME parameter
# Modified by MGT 4 August 2006, added FRU_IN_ADM1026=0,
INITIAL_SLOW_LINK_DELAY
 = 120
# Modified by MGT 15 August 2006, modified for V2.3.0
CARRIER = ACB
#CARRIER_OPTIONS = "NEBS"
#CARRIER_OPTIONS = "CM_INT_UP=5; CM_INT_DOWN=5;"
CARRIER_OPTIONS = "IN_EX_SWITCHOFF=0; FRU_IN_ADM1026=0;"
#CARRIER_OPTIONS = "NEBS; IN_EX_SWITCHOFF=0; CM_INT_UP=30;
CM_INT_DOWN=10;"
#MAX_ATCA_FANLEVEL = 9
#MAX_ATCA_TEMP = 30
COOLING_FAN_INCREASE_TIMEOUT = 60
COOLING_FAN_DECREASE_TIMEOUT = 60
FAN_LEVEL_STEP_UP = 2
FAN_LEVEL_STEP_DOWN = 1
NORMAL_STABLE_TIME = 1800
IPMB_LINK_ISOLATION_TIMEOUT = 60
INITIAL_FAN_LEVEL = 8
MIN_FAN_LEVEL = 3
REDUNDANCY_NET_ADAPTER = "usb0"
REDUNDANCY_NET_ADAPTER2 = "usb1"
RMCP_NET_ADAPTER2 = "eth1"
SWITCHOVER_ON_HANDLE_OPEN = TRUE
SWITCHOVER_TIMEOUT_ON_BROKEN_LINK = -1
#

# cat shelfman.conf.ACB-IV
# /etc/shelfman.conf.ACB-IV
# Modified by MGT 25 April 2006
# Modified by MGT 21 June 2006, added NORMAL_STABLE_TIME parameter
# Modified by MGT 4 August 2006, added FRU_IN_ADM1026=1,
INITIAL_SLOW_LINK_DELAY
 = 120
# Modified by MGT 15 August 2006, modified for V2.3.0
CARRIER = ACB
#CARRIER_OPTIONS = "NEBS"
#CARRIER_OPTIONS = "CM_INT_UP=5; CM_INT_DOWN=5;"
```

```
CARRIER_OPTIONS = "IN_EX_SWITCHOFF=0; FRU_IN_ADM1026=1;"
#CARRIER_OPTIONS = "NEBS; IN_EX_SWITCHOFF=0; CM_INT_UP=30;
CM_INT_DOWN=10;"
#MAX_ATCA_FANLEVEL = 9
#MAX_ATCA_TEMP = 30
COOLING_FAN_INCREASE_TIMEOUT = 60
COOLING_FAN_DECREASE_TIMEOUT = 60
FAN_LEVEL_STEP_UP = 2
FAN_LEVEL_STEP_DOWN = 1
NORMAL_STABLE_TIME = 1800
IPMB_LINK_ISOLATION_TIMEOUT = 60
INITIAL_FAN_LEVEL = 8
MIN_FAN_LEVEL = 3
REDUNDANCY_NET_ADAPTER = "usb0"
REDUNDANCY_NET_ADAPTER2 = "usb1"
RMCP_NET_ADAPTER2 = "eth1"
SWITCHOVER_ON_HANDLE_OPEN = TRUE
SWITCHOVER_TIMEOUT_ON_BROKEN_LINK = -1
#
```

New and changed Schroff shelf specific features for FW release 2.3.2:

1. **Login password**
   When logging-in, using the serial console interface or telnet, the firmware asks for a password. If no password is implemented, just press return to continue.

2. **Behavior of red PEM LED**
   The red PEM LED goes ON when at least one fuse in the PEM is broken or at least one external power feed is missing.

3. **SDRs of intake and exhaust air temperature sensors defined in shelf FRU data**
   The SDR records of the intake and exhaust air temperature sensors are defined in the shelf FRU data. This allows Schroff to have control over the sensor numbering and threshold settings.

4. **User SDRs for Shelf Manager and chassis sensors**
   Custom built SDR files can be used to change the default sensor settings. The custom SDRs are located in /var/nvdata/user_sdr file.

5. **Changed behavior when intake or exhaust air temperature sensors cross UNR threshold**
   With the default chassis configuration when any intake or exhaust air temperature sensor goes into the critical alert state (UNR threshold is crossed) all ATCA blades in the chassis are powered down and go to M3 state.

   A variable in the /etc/shelfman.conf file allows you to change this behavior so that the ATCA blades will not power down, even when the system is in the critical alert state. Newly inserted boards will powered up when the system exits the critical alert state. The behavior can be changed by setting the variable IN_EX-SWITCHOFF=0 and the variable MAX_EXHAUST = 0 in the carrier options field in /etc/shelfman.conf file.

   example: CARRIER_OPTIONS = "IN_EX-SWITCHOFF=0; MAX_EXHAUST=0"

6. **NEBS cooling algorithm option**
   A new NEBS cooling algorithm has been implemented which limits the fan level to a user settable value at a normal ambient temperature and does not limit the fan level when the ambient temperature is exceeded.

   The following new variables in /etc/shelfman.conf have been introduced:
   CARRIER_OPTIONS = NEBS:
   Enables or disables the NEBS cooling option
   MAX_ATCA_TEMP:
   User settable intake air temperature value. If the intake temperature is below *MAX_ATCA_TEMP* the fan speed is limited to the value set in MAX_ATCA_FANLEVEL. If the intake temperature is above *MAX_ATCA_TEMP* the fan speed is not limited. (MAX_ATCA_TEMP = 30)
   MAX_ATCA_FANLEVEL:
   User settable fan speed level (level 3 – 15)(MAX_ATCA_FANLEVEL = 10)

   The default setting has the NEBS cooling option disabled.

7. **Improved cooling algorithm**
   This firmware release introduces an improved cooling algorithm.
   A dynamic MIN_FAN_LEVEL is raised by 1 level every time the chassis goes into the MINOR cooling alert state (any temperature sensor asserts UNC). Once the air flow is increased and the chassis stays in NORMAL cooling state, the fan speed stays stable. When the chassis stays in NORMAL cooling state for the time defined in the variable NORMAL_STABLE_TIME, the dynamic MIN_FAN_LEVEL goes down by 1 to adapt to a possible thermal load reduction in the chassis. New variables in shelfman.conf.ACB-III, and shelfman.conf.ACB-IV:

COOLING_FAN_INCREASE_TIMEOUT: time interval between increasing the fan speed
COOLING_FAN_DECREASE_TIMEOUT: time interval between decreasing the fan speed
FAN_LEVEL_STEP_UP: number of fan level steps when the fan speed increases
FAN_LEVEL_STEP_DOWN: number of fan level steps when the fan speed decreases
NORMAL_COOLING STATE: Time interval when the dynamic MIN_FAN_LEVEL goes down.

See additional document for more details about the new cooing algorithm.

8. **Updated "version" script**
The script "version" has been improved. When executed, it now shows the version and creation date of u-boot, the Linux-kernel and the RFS image for both the current version and the alternate boot version in flash.

9. **FRU stored on the Shelf Manager carrier board**
FRU data can now be stored on the Shelf Manager carrier board. The Shelf Manager looks for valid data in the SEEPROM in the ADM1026 device on the Shelf Manager carrier board. If valid FRU data is found it is used. If valid FRU data is not found the Shelf Manager will use the FRU data in the /var/nvdata/shelfman-fru-information-cross-connect file.

Bug Fixes for Release 2.3.2

Several bugs have been fixed in this release of the Shelf Manager; they include:

1. Incorrect command code was used for the new ATCA ECN-02 command "Get Shelf Power Allocation".

2. During use of the new commands "FRU Inventory Device Lock Control", "FRU Inventory Device Write" to update Shelf FRU Information, the lock might stay held if the write operation was cancelled by a timeout.

3. The CLI command "activate" has been improved to retry the activation request to the target FRU after clearing the activation lock bit if the FRU is slow in making the M1->M2 transition.

4. Caching of sensor values for ADM1026-based sensors on the Shelf Manager was determined to result in sporadic losses of events from those sensors. This caching functionality has been removed.

5. The CLI command "frudata" timed out when it tried to read a very large FRU.

6. Unsolicited responses to the command "Get FRU Inventory Area" Info were handled incorrectly.

7. For threshold-based sensors, the value of hysteresis support in the SDR capabilities was incorrectly set to "Fixed" (3), instead of "Readable and Settable" (2).

8. For some boards, a duplicated event M1->M2 was logged when inserting the board; this behavior was fixed.

9. In some cases, FRU ID 1 on an external IPM controller was incorrectly considered the potential Shelf FRU source even if it did not contain the chassis area pointer.

10. A deadlock could happen when the Shelf Manager tried to update a corrupted Shelf FRU Information at FRU ID 1 on an external IPM controller.

11. A race condition existed that might cause a FRU to get stuck in state M3 if "Set FRU Activation (Activate FRU)" for this FRU returned an error in state M3.

12. After a switchover, sensors belonging to the virtual Shelf Manager could disappear from the list of sensors reported by "clia sensor"; the actual sensors were still present.

13. An incorrect completion code (INVALID COMMAND) was returned for LED-related IPMI commands when invalid parameters were passed.

14. The command "clia sel" addressed to an IPM Controller different from the Shelf Manager didn't work properly if SEL reservation was not supported on that IPM controller.

15. There was a possibility of a deadlock if the command "clia fruinfo" was issued immediately after a switchover.

16. The command "clia setfruledstate" always returned success even if the command applied to a non-existent LED.

17. The power budget for a FRU could be calculated incorrectly if the FRU was powered during the Shelf Manager startup but was deactivated soon thereafter; as a result, the FRU could not be assigned power after reactivation.

18. Accessing the backup Shelf Manager with "snmpwalk" could crash the backup Shelf Manager.

19. After a switchover, some sensors belonging to the virtual Shelf Manager could disappear from the list shown by the "clia sensor" and "clia sensordata" commands.

New and Changed Features for Release 2.3.2

The following new features are introduced in this release:

1. Product name is now Pigeon Point™ Shelf Manager
   The name of the Shelf Manager has been changed from IPM Sentry Shelf Manager to Pigeon Point Shelf Manager. Also, the title of the user reference document for the Shelf Manager has been changed to "Shelf Manager External Interface Reference". The previous title emphasized *shelf*-external interfaces, but this document is being augmented to address interfaces to the Shelf Manager from inside the shelf, also.

2. Updates to Monterey Linux

   ShMM-500 specific changes:
   - Use new Monterey Linux, Au1550 Edition, version 20060525, including the following enhancements:

- New version of U-Boot (1.1.4).
- Support for selecting console baud rate at U-Boot time, versus the prior fixed 115K baud rate supported previously. Changing the baud-rate is controlled by the u-boot baudrate variable and still defaults to 115200 baud.
- Support for profiling of user applications using the standard gprof and gcov tools
- Fix for a kernel error preventing some images from booting from Flash.
- Enhancement to the I2C driver aimed at detection of stuck-at faults on the bus signals.
- Enhancements to the JFFS2 code related to handling of Flash failures.
- Improvements to the Ethernet driver to prevent a flood of short incoming packets from adversely affecting system performance.
- Change to the IPMB timing settings aimed at masking a hardware issue of the Au1550 that can cause the ShMM-500 to sometimes handle IPMB arbitration incorrectly.
- Upgrade to busybox 1.1.3 (newest version as of May); these are new utilities with this release:
  [[allones awk clear dmesg dropbearconvert dropbearmulti fgrep hexdump httpd imls less linuxrc mesg mkimage msh netstat ntpdate od reset rx strings sysctl tcpd test time top traceroute unzip usleep wget which xargs zcat
- Switch to net-snmp 5.3.1 (newest version as of May). The main benefit of this change is the ability to support specialized agent variants. This change should not affect SNMP clients at all.
- Switch from OpenSSH to DropBear SSH. This version of SSH is better suited for embedded environments, reducing the required flash footprint significantly. The drawback is that only the SSH-2 protocol is supported. In addition, the startup scripts now check for the existence of RSA and DSS keys, and, if not present, generate them.
- Add the imls command, which identifies the u-boot, kernel and rfs images installed in Flash.
- Switch from boa httpd to busybox-1.1.3 httpd. Use inetd from busybox-1.1.3. This inetd does not have any limitation on max connections and therefore up to 16 telnet sessions are supported (more can be supported by adding more pty entries in /dev). Use telnetd from busybox-1.1.3.
- Add kernel support for iptables. This is for future iptables addition.
- Reduce the RFS image size by 17% while at the same time increasing functionality. This was accomplished by switching to the smaller dropbear SSH, removing unused libraries, cleaning up files, and moving to the latest busybox release which has greater functionality and which replaced several stand-alone applications.
- Increase INITRD_SIZE from 16384 to 24576. This provides a larger RAM root filesystem (and /tmp) for copying files and performing rupgrades.
- Clean up /lib, removing unneeded libs and symlinks. These libs remain:
- ld.so.1 libm.so.6 libnsl.so.1 libc.so.6 libnetsnmp.so.10 libnss_files.so.2
- libcrypt.so.1 libnetsnmpagent.so.10 libpthread.so.0 libdl.so.2 libnetsnmphelpers.so.10 libresolv.so.2 libftp.so.3 libnetsnmpmibs.so.10 librupgrade.so
- These libs were removed:
- libcrypto* libnsl* libnss_files* libpam* libpam_misc, libpamc* libtermcap*
- libthread_db* libutil* libz*

ShMM-300 specific changes:
- Change the implementation of the IPMB-0 controller in the DSP to prevent a detach from the bus if the clock pulse width generated by an external master is between 2 and 4 usec. Instead, the controller now merely ignores a transaction where such a short pulse

is detected. With the previous implementation, detection of a clock pulse width shorter than 4 usec would always result in a detach.

<u>ShMM-500/ShMM-300 changes:</u>
- Update web page logo, remove spaces from html files to save space.
- Rework Shelf Manager makefile and build specs to go from one monolithic spec file to functional groups of spec files. This makes it easier to maintain software packages included in the RFS images.
- Rework /etc/rc.<carrier> files to have a carrier-specific portion and a shared, common backend. This allows better organization of the carrier specific components.
- Restructured flash write operations and use of /etc and /var. Moved /etc/sentry.profile from /etc to ram disk so as to reduce unnecessary writes to flash.
- Use tcpd wrapper in inetd.conf. Also start web browser from inetd instead of from rc scripts.

3. Support for rearming of all sensors on the Shelf Manager
All sensors on the Shelf Manager now accept and handle properly the command "Re-arm Sensor Events", resending the last active event. As a consequence, the last active event is resent for each sensor when the command "Set Event Receiver" is issued during shelf initialization or in the course of normal operation.

4. Synchronization points are implemented in the redundancy protocol
The protocol of exchanging information between redundant Shelf Managers over the software redundancy interface now implements synchronization points, that allow the active Shelf Manager to get confirmation that all data sent before this point in time have been successfully delivered to the backup Shelf Manager. These synchronization points are now used, in particular, during coordinated switchovers.

5. DHCP client in the Shelf Manager
The DHCP client feature has been implemented in the Shelf Manager, so that it is able to obtain the IP address for RMCP-based communication and private IP addresses from a DHCP server. Please see the User's Guide for details.

6. Network Time Protocol (NTP) client in the Shelf Manager
The NTP client feature has been implemented in the Shelf Manager, so that it is able to obtain and set the system time from network time servers using the NTP protocol. Note that the previous releases of the Shelf Manager were already able to obtain system time from network servers but only using the "rdate" (RFC868) protocol. Please see the User's Guide for details.

7. Support for SEL truncation controlled by the System Manager
A new approach for preventing the SEL overflow has been implemented. With this approach, the System Manager is responsible for truncating the SEL to prevent its overflow. The Shelf Manager supplies an IPMI 2.0-compatible sensor that indicates the current occupancy percentage of the SEL and also generates events when the SEL occupancy exceeds a configurable high watermark. Please see the User's Guide for more details.

8. Support for a second RMCP interface
The Shelf Manager now implements support for the new (parallel) mode of using the two available external network interfaces. In parallel mode, both interfaces can be used for

RMCP-based interaction with the System Manager and RMCP sessions can coexist in parallel for both interfaces. The System Manager is responsible for distributing the communication with the Shelf Manager between the two available communication paths. Please see the User's Guide for more details.

9. CLI commands "ipmc" and "fru" show information about FRUs in state M1
By customer request, the information about FRUs in state M1 is also shown in the output of the CLI commands "ipmc" and "fru". Only the available subset of information is shown for such FRUs. Also, information is shown only about FRUs already known to the Shelf Manager that have transitioned to state M1 from some higher state. (For example, if a FRU has been just inserted and has sent no events to the Shelf Manager since its insertion, no information about this FRU is displayed.)

10. CLI command "alarm info" now shows reason for the last alarm
The newly implemented CLI command "alarm info" shows information about the reason for the last TELCO alarm raised by the Shelf Manager. There are generic reasons (e.g. setting an alarm via a PEF action) and carrier-specific reasons that are defined separately in each carrier-specific module.

11. Option "-t" added to the CLI command "sensordata"
The option "-t" has been added to the CLI command "sensordata". Issuing the command with this option shows information only about threshold-based sensors for which at least one threshold has been crossed.

12. Support in the CLI command "fruinfo" for showing OEM records as pure text
In verbose mode, the CLI command "fruinfo" now shows OEM records as pure text, if possible.

13. Explicit message now displayed by CLI on the backup Shelf Manager
On the backup Shelf Manager, all CLI commands now display a warning that the CLI has limited functionality when invoked on the backup Shelf Manager.

14. Support for the Manufacturing Date/Time field in the "patch_fru_info" utility
The utility "patch_fru_info" now supports updating the field "Manufacturing Date/Time".

15. Limit on the number of command retries, if the completion code NODE BUSY is returned
The number of retries that the Shelf Manager does if a destination IPM controller returns the completion code NODE BUSY, is now limited by the value of the configuration variable MAX_NODE_BUSY_RETRANSMISSIONS (default = 255). This is done to prevent ShelfManager from looping indefinitely in the case of a malfunctioning IPM controller.

16. Memory leak fixed in CLI
A memory leak that could happen during processing of the command "clia setfanlevel all" has been fixed. This fix was made in release 2.2.2, but that release was not widely distributed.

17. New CLI command "sendcmd"
This CLI command allows the user to send an arbitrary IPMI command to any IPMC in the shelf. The completion code and response data that result from execution of the command are displayed in hexadecimal format.

18. New default cooling management algorithm
    The default cooling management algorithm now works adaptively, seeking the minimal fan level at which the shelf works in Normal cooling mode without thermal alerts from the temperature sensors in the shelf. Having found this fan level, the Shelf Manager maintains it for an extended period of time to avoid undesirable oscillations in fan speed. However, after expiration of the NORMAL_STABLE_TIME, the algorithm allows the fan level to decrease, just in case there has been a reduction in the thermal load in the shelf. In addition, new configuration parameters have been added that control the time intervals between successive increases and decreases of the fan level, and the number of levels the fan speed is increased and decreased each time a change is made.

19. New configuration parameter INITIAL_SLOW_LINK_DELAY
    This parameter specifies the initial delay before the Shelf Manager starts testing the integrity of the physical network link between the Shelf Manager and the System Manager PPS CONFIDENTIAL Pigeon Point Shelf Manager Release 2.3.2 (the RMCP link). This is done to accommodate slow network links that need significant time to initialize after a shelf powers up.

20. PEF OEM actions can now clear TELCO alarms

21. It is possible now to define an OEM PEF action that clears TELCO alarms.

22. PICMG 3.0 R2.0 ECN-002 support

23. Numerous enhancements have been implemented in the Shelf Manager to ensure

24. compliance with the just-adopted version of the ATCA specification (which has the formal name ECN 3.0-2.0-002). These enhancements include:

- Support for the Shelf Manager Controlled Deactivation bit in the Shelf FRU Power Management Record and support for manual deactivation if this bit is set
- Support for the command "Get Shelf Manager IP Address"
- Support for the responding to "RMCP/ASF Presence Ping" on the backup Shelf Manager (only when PROPAGATE_RMCP_ADDRESS is set to TRUE; the propagated RMCP address is returned also via "Get Shelf Manager IP Address")
- Confirmed conformance: in RMCP responses, response source address = request destination address and response destination address = request source address
- Support for new FRU Information records in the Pigeon Point FRU Compiler
- Ensured conformance with the requirement that completion code for FRU-related commands with incorrect FRU device IDs is C9 (Parameter out of range) or D3 (Destination unavailable)
- Support for the Version Change Sensor notification and reaction to it in the Shelf Manager
- Support for the command "Get Address Info" for the ShMM IPM controller with hardware address based IPMB-0 address; ensured that in response to "Get Address Info" for the Shelf Manager, itself, FFh is returned as FRU device ID for RTMs
- Compliance with the following requirements: an IPM controller must be in M4 or M5 for any of its managed FRUs to leave M1. Also, when deactivating IPM controller, all managed FRUs must go to M6 and the IPM controller to M1 only, after all managed FRUs reach M1. The IPM controller must set the Locked bit on managed FRUs when deactivating them and deactivate them in the reverse order of activation.

- Support for the command "Get FRU Control Capabilities"
- In the command "Get LED Color Capabilities", implemented LED Color 0 as "Local Control not supported"
- Support for the command "Get Shelf Manager IPMB Addresses"
- Compliance with the requirement that the System Manager can use any allowed IPMB address or software ID as the requestor address in RMCP commands
- Changed the entity ID to 15h from 0Ah for PEMs; implemented recognition of the proper entity ID depending on the IPM controller PICMG version
- Support for the "FRU Inventory Device Lock Control" and "FRU Inventory Device Write" commands on Shelf Manager's FRU 254
- Support for the two optional additional channels (2 and 3) on the Update Channel Interface
- Support the possibility to reduce the IPMB timeout to T6max (250 msec)
- Support for the new format of the IPMB-0 Radial Link Mapping Record
- Support for the command "Get IPMB Link Info" for IPM controllers and for the Shelf Manager in a shelf with bused IPMB-0
- Support for the Fan Shelf Geography Record and generic algorithm for zoned cooling management
- Ensured conformance to the changes in the definition of the Get Power Level command related to early vs. steady state power (0 in the delay to stable power if in the stable state, return 0 for power level if not currently in the specified (early/stable) state).
- Support for the command "Get Shelf Power Allocation"
- Support the local control enable flag in commands "Get/Set Fan Level"
- Support for commands "Get Fan Policy" and "Set Fan Policy"
- Changed current version in "Get PICMG Properties" command response to 2.2