

ATCA Shelf Manager V1.3.1-SR1 Firmware Update Notice

Thank you for choosing a Schroff ATCA chassis and Shelf Manager. The Shelf Manager in your 5, 14, or 16 slot chassis is based on Pigeon Point Systems technology. Pigeon Point Systems periodically releases new versions of the Shelf Manager firmware that provide new features, bug fixes, and support for new hardware. The details of this firmware update are in the following list. Note: If you are using a Pigeon Point Systems BTC as a Shelf Manager for your 2 slot chassis you can apply this firmware update.

New and Changed Features for Release 1.3.1-SR1

1. Improved Shelf Manager Resilience in Unfavorable Conditions

Recent experience has shown the need to improve Shelf Manager robustness in circumstances where IPMB-0 is heavily loaded and/or error-prone. In some cases, sporadic IPMB-0 errors and heavy IPMB-0 traffic during system initialization caused incomplete initialization of the population of shelf IPM controllers, where some of them stayed in state M2. To improve this situation, the following changes to the Shelf Manager were introduced:

1. Faster recognition and correction of an IPMB-0 error. In the case of an IPMB-0 error, the low-level IPMB-0 firmware detaches from the bus; to resume bus operation, the Shelf Manager must attach to the bus again by calling `ipmb_attach()`. In version 1.3.0, reattaching was done only after processing the queue of input messages (which caused writes to fail during the intervening period). In version 1.3.1, when the Shelf Manager detects that the bus has been detached (during read or write) it immediately issues the reattach request.
2. More discriminating handling of `get_device_id` timeouts. When a `get_device_id` request times out, the Shelf Manager moves the `get_device_id` target IPM controller to M7. In version 1.3.1, the IPM controller is not moved to M7 if an event message has recently been received from this IPM controller or if the `get_device_id` timeout is related to a previous incarnation of the IPM controller from the Shelf Manager perspective. This improves the situation during shelf power-up, when many boards may flood the Shelf Manager with event messages and do not necessarily respond to `get_device_id` requests on a timely basis.

2. Support for IPM Controller Sensors on LUNs Other Than 0

The IPMI specification allows IPM controllers to use Logical Unit Numbers (LUNs) 0, 1 and 3 for SDRs, thus allowing several sensors with the same number, but on different LUNs. This feature is used rarely in some parts of the AdvancedTCA world. Prior versions of the Shelf Manager did not support such IPM controllers properly, in many cases assuming that all sensors are defined on LUN 0. This error has been fixed in version 1.3.1. In particular, the following changes were made.

1. The Command Line Interface syntax was extended to allow users to specify the LUN together with the sensor number to address sensors in all sensor-related commands: get sensor information, get sensor data, get/set sensor thresholds, etc. These changes were propagated to the WEB interface as well.
2. The Command Line Interface implementation was changed to properly expose sensors from all LUNs to users.
3. The SNMP interface implementation was modified to properly enumerate sensors on all available LUNs.

3. Support for Pseudo-radial IPMB-0

This version adds support for pseudo-radial IPMB-0 implementations, where the IPMB-0 branch leading to each slot can be individually disabled and enabled by the Shelf Manager. The support includes separate IPMB-0 Link sensors for each slot, as prescribed by the AdvancedTCA specification as amended by ECN-3.0-1.0-001, and implementation of the isolation of the faulty slots on IPMB-0 by the Shelf Manager. This support is done on a carrier-specific basis for specific pseudo-radial shelves.

4. Global “setfanlevel” Command in CLI

By customer request, an extension to the “clia setfanlevel” command has been implemented that allows setting the same fan level for all known fans in the shelf in a single operation. The syntax is “clia setfanlevel all <level>”. A similar extension has been introduced into the WEB interface.

5. OEM IPMI Commands for TELCO Alarm Control and Digital Output Control

To allow the System Manager to gain a full control over TELCO alarms, two OEM IPMI commands were introduced. These commands can be issued by the System Manager over the RMCP interface. The two commands implement the following functionality:

- set/clear specified TELCO alarms (both set and clear operation are performed atomically within the same command)
- get the number of the TELCO alarm sensor. This sensor can then be used to read the current state of TELCO alarms in any IPMI-defined way.

These commands provide an alternative for TELCO alarm control to the PEF-based mechanism.

In addition, some carriers provide digital outputs that are intended to be system-manager controllable. Standard support for such objects is not present in IPMI. To facilitate the use of digital outputs, OEM commands have been introduced in this release, which provide the following functionality:

- query properties and the count of digital outputs
- get the current state of digital outputs
- set/clear specified digital outputs (in which both set and clear operations are performed atomically within the same command).

6. Switchover Event Notification

Some users need to have explicit notification about a switchover between redundant shelf managers. In this version, a special event is generated when an instance of the Shelf Manager becomes active: Event Type = System Event (12h), Sensor-specific Offset = System Reconfigured (00h). This event is generated after the initial bootstrap and after a switchover.

Bug Fixes

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

1. Improved Shelf Manager behavior in the presence of transient errors on IPMB-0; see section 1.
2. FAN FRUs generated/owned by the Shelf Manager returned incorrect FAN levels in the Emergency Shutdown Mode. 0 was returned, while the specification requires that GetFanLevel in Emergency Shutdown should return 0xFE either in Override or in LocalControl field.
3. A potential deadlock between the CTCA descriptor lock and ipmf_command_lock in PICMG 2.x-based systems was removed.
4. On PICMG 2.x-based systems, non-BMC SDR entries were sometimes not removed from the SDR Repository when the controller was placed to M0.
5. The FRUs representing Shelf FRU EEPROMs (FRUs 1,2 at 20h) were inconsistently named "IPM Sentry 1.1"; renamed to "Shelf EEPROM 1", "Shelf EEPROM 2".
6. Very rarely, a deadlock could happen during an RMCP address change. This possibility was eliminated by waiting for RMCP thread completion during the address change without holding the RMCP lock.
7. Incorrect values were returned for SDR linearization parameters over SNMP: unsigned values were returned as signed.
8. In PICMG 2.x systems, the cooling state sometimes changed from Critical Alert to Normal if the board that caused a Critical Alert transitioned into M7. This problem was caused by not always checking the return code for the Get Sensor Reading command for temperature sensors, when the IPMC was not available and Get Sensor Reading actually timed out. The fix involves an additional check for the cooling state transition that the Get Sensor Reading operation for the relevant temperature sensor was successful.
9. The SNMP variables "present", "healthy", "reset" and "powered" from the 'basic' section always returned -1 for all slots in ATCA environment. The corresponding variables from the 'advanced' section returned correct values.
10. CLI did not correctly show the owning FRUs for sensors if the corresponding entity relationship was described via Device-Relative Entity Association Records.

Additional bug fixes for Service Release 1 include:

1. With the existing buffering scheme for incoming IPMB-0 messages, message loss was possible when IPMB-0 was heavily loaded (for example, during initial startup of a shelf with many IPM controllers). The buffering scheme was reworked to prevent message loss. Also, buffer sizes for pending and incoming IPMB requests were increased in the default configuration file `/etc/shelfman.conf`. These values should be propagated to the actual configuration files used in a shelf, especially in configurations with large numbers of FRUs.
2. The Shelf Manager did not delete all SDRs allocated for an IPM controller when that IPM controller was removed from the SDR Repository and device-relative entity association records were used on that IPM controller.
3. At the FOSL level for the ShMM-300, a problem was fixed in the IPMB-0 implementation (which executes on the DSP in the C5471). The IPMB-0 implementation was enhanced to accept write transactions at higher IPMB clock frequencies. There was a particular focus on ensuring that concurrent messages on both IPMB-A and IPMB-B can be handled.
4. There was a potential deadlock between two concurrent threads deleting entries from the SDR Repository during deactivation of a FRU.
5. For fan sensors using linear (directly proportional) method of linearization, the value FFh was incorrectly treated as 0 RPM.
6. Emulation of Base Interface Hub IPMCs (at 82h and 84h) was not working in redundant mode.

Known Problems

There is a residual problem in the CLI part of the Shelf Manager for the case when it directly reads sensor information from the IPM controller rather than using information cached in the SDR repository. (This happens when the IPM controller is in state M1.) In that case, the Shelf Manager currently issues the command `Get Device SDR Info` on all three available LUNs (0, 1 and 3), asking for the number of sensors supported on that LUN. This causes delays on IPM controllers that do not respond to commands on LUNs other than LUN 0. A more adaptive approach is planned for a future release: obtain the sensor availability mask from the response to `Get Device SDR Info` on LUN 0, and do not query the LUNs that are not in the mask.

New Hardware Support

Initial support for intelligent PEMs is included in this firmware update. The status LEDs will now be set to the correct state after the shelf manager boots. The voltage and temperature sensors and the FRU EEPROM support will be added in a subsequent firmware update.

Chassis FRU Data Update

The ATCA specification ECN001 requires changes to the chassis FRU data. New chassis FRU data and the installation procedure are available from our ATCA WWW page at: <http://www.a-tca.com/atca/software>. The V1.3.1-SR1 firmware will run correctly with the existing chassis FRU data but will not be fully compliant with the ATCA specification ECN001.

Obtaining the new firmware

A Zip file containing the firmware FLASH memory images and a firmware update instruction procedure are available from our ATCA WWW page at: <http://www.a-tca.com/atca/software>.

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ATCA Shelf Manager V1.3.1-SR1 Firmware Update Procedure

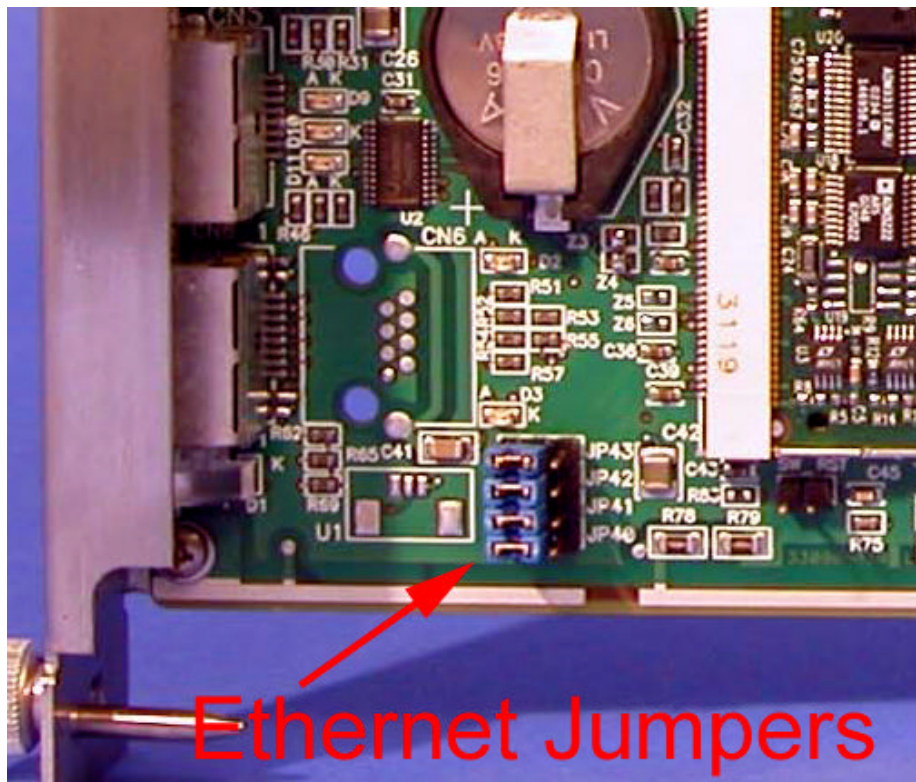
Thank you for choosing a Schroff ATCA chassis and Shelf Manager. The Shelf Manager in your 5, 14, or 16 slot chassis is based on Pigeon Point Systems technology. Pigeon Point Systems periodically releases new versions of the Shelf Manager firmware that implements new features and bug fixes. The procedure for updating the FLASH memory images in your Shelf managers are detailed below. Note: If you are using a Pigeon Point Systems BTC as a Shelf Manager for your 2 slot chassis you can apply this firmware update.

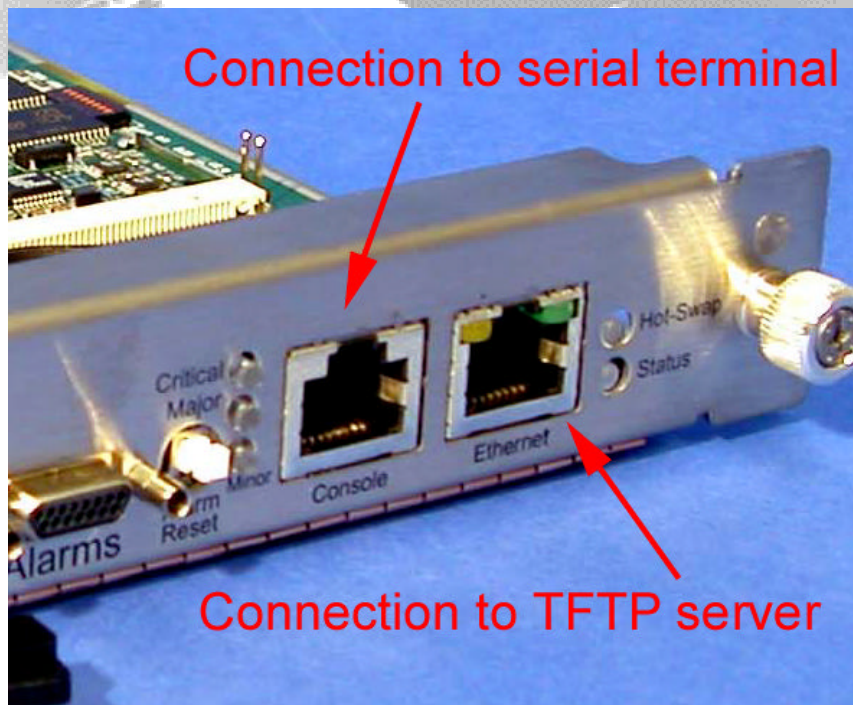
Updating your Shelf Manager to Release 1.3.1-SR1

The easiest way to update the FLASH memory firmware images in your Shelf Manager is to use ARMboot to load the images into RAM from a TFTP server and then to copy the RAM images to the FLASH memory.

Section 2.7.2 of the Monterey Linux User's Guide details the procedure for configuring a Linux server as a TFTP server. The Monterey Linux User's Guide is available from our ATCA WWW page at: <http://www.atca.com/atca/manuals>.

You need to set the jumpers on the Shelf Manager to route the primary Ethernet port to the front panel. See the ShMM-ACB-II, ShMM-ACB-III, or ShMM-ACB-FC Technical Specification for details.





You can then connect the Shelf Manager to your TFTP server through a hub or with a crossover cable.

Connect a serial console cable to from a terminal or PC running a terminal emulator (Hypercom, Minicom, etc) to the console port of the Shelf Manager. A 2-meter long console cable is available from Schroff as part number CBL000001. Details of the console cable construction are at the end of this procedure. Set the terminal or emulator to 9600, N 8, 1 (9600 baud, no parity, 8 bits per character, 1 stop bit).

The text below that is **red** are the commands you need to enter.

Step 1

Download the new 1.3.1-sr1 kernel and root filesystem (rfs) images: sentry.kernel.131-SR1, and sentry.rfs.131-SR1. These images need to be placed on a TFTP server machine that is network reachable from the ShMM module.

Step 2

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

```
ARMboot code: 10f00000 -> 10f15a8c
DRAM Configuration:
Bank #0: 10000000 16 MB
Flash: 8 MB
Hit any key to stop autoboot: 0
ShMM #
ShMM #
```

Step 3

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

```
ShMM # printenv serverip ipaddr netmask gateway
```

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

```
ShMM#
```

If any of these IP addresses need changing, do it as follows but substitute the desired IP addresses for those shown in the example commands:

```
ShMM # setenv serverip 192.168.0.88
ShMM # setenv ipaddr 192.168.0.100
ShMM # saveenv
```

```
Un-Protected 1 sectors
Erasing sector 0 ... Erasing sector at 0x 800000
ok.
Saving Environment to Flash...done.
Protected 1 sectors
```

Step 4

TFTP download into RAM the sentry.kernel.131-SR1 image:

```
ShMM # tftp 10400000 sentry.kernel.131-SR1
Link: 100MBit Full Duplex.
ARP broadcast 1
eth addr: 00:0a:e6:26:ae:6b
TFTP from server 192.168.0.7; our IP address is 192.168.0.2
Filename 'sentry.kernel.131-SR1'.
Load address: 0x10400000
Loading:
#####
#####
#####
done
Bytes transferred = 990912 (f1ec0 hex)
ShMM #
```

Record the hex number of bytes downloaded... this will be needed for step 6

Note: If the TFTP download did not work DO NOT proceed to the next step.

Step 5

Erase the flash area that contains the kernel image

```
ShMM # erase 1:9-24
Erase Flash Sectors 9-24 in Bank # 1:
Erasing sector 9 ... Erasing sector at 0x 20000
ok.
Erasing sector 10 ... Erasing sector at 0x 30000
ok.
...
...
```

Program the kernel image into flash: (note that we use the # bytes transferred from last command as third argument):

```
ShMM # cp.b 10400000 20000 f1ec0
Copy to Flash... done.
ShMM #
```

TFTP download into RAM the sentry.rfs image, erase flash, and copy image to flash

```
Bytes transferred = ..... (2a8c40 hex)
```

ok.

ShMM #

Erase the JFFS filesystems:

• • •

```
Erasing sector 70 ... Erasing sector at 0x bf0000
ok.
Done.
ShMM #
```

Step 9

Boot the new system:

```
ShMM # run bootcmd
## Booting image at 00020000 ...
  Image Name:   uClinux-2.4.17
  Image Type:   ARM Linux Kernel Image (uncompressed)
  Data Size:    990928 Bytes = 967 kB = 0 MB
  Load Address: 10008000
  Entry Point:  10008000
  Verifying Checksum ... OK
  Loading Kernel Image ... OK
## Loading Ramdisk Image at 00120000 ...
  Image Name:    sentry ROMFS Ramdisk Image
  Image Type:    ARM Linux RAMDisk Image (uncompressed)
  Data Size:     2849792 Bytes = 2783 kB = 2 MB
  Load Address: 00000000
  Entry Point:   00000000
  Verifying Checksum ... OK
  Loading Ramdisk to 00120040, end 003d7c40 ... OK
```

Starting kernel ...

```
Linux version 2.4.17-uc0 (root@collaboration) (gcc version 3.2) #1 Wed
Jan 28 15:11:17 PST 2004
Processor: ARM/VLSI ARM 7 TDMI revision 0
Architecture: TI TMS320VC5471
On node 0 totalpages: 4096
zone(0): 0 pages.
zone(1): 4096 pages.
zone(2): 0 pages.
Kernel command line: console=ttyS0,9600 root=/dev/ram0
IP1ADDR=192.168.1.3 IP1DEVICE=eth1 IPADDR=192
.168.0.2 IPDEVICE=eth0 HOSTNAME=sentry GATEWAY=192.168.0.1
RC2=/etc/rc.carrier3 FLASH_RESET=n PASSWO
RD_RESET=n LOGGING=ram START_RC2_DAEMONS=n RC_IFCONFIG=n
Calibrating delay loop... 6.80 BogoMIPS
Memory: 16MB = 16MB total
Memory: 15028KB available (877K code, 175K data, 44K init)
Dentry-cache hash table entries: 2048 (order: 2, 16384 bytes)
Inode-cache hash table entries: 1024 (order: 1, 8192 bytes)
Mount-cache hash table entries: 512 (order: 0, 4096 bytes)
Buffer-cache hash table entries: 1024 (order: 0, 4096 bytes)
Page-cache hash table entries: 4096 (order: 2, 16384 bytes)
POSIX conformance testing by UNIFIX
Linux NET4.0 for Linux 2.4
Based upon Swansea University Computer Society NET3.039
Initializing RT netlink socket
DCSS: successfully started.
Starting kswapd
JFFS2 version 2.1. (C) 2001, 2002 Red Hat, Inc., designed by Axis
Communications AB.
```

```
i2c-core.o: i2c core module
i2c-dev.o: i2c /dev entries driver module
i2c-algo-bit.o: i2c bit algorithm module
i2c-c547x_bit.o: i2c C547x (bit mode) module
i2c-dev.o: Registered 'i2c of C547x (bit mode)' as minor 0
i2c_algo_c5471_init: i2c c5471 algorithm module
i2c-c5471.o: C5471 I2C adapter module
i2c-dev.o: Registered 'C5471 I2C adapter #0' as minor 1
i2c-dev.o: Registered 'C5471 I2C adapter #1' as minor 2
pty: 256 Unix98 ptys configured
Serial driver version 5.05c (2001-07-08) with no serial options enabled
ttyS00 at 0xfffff1000 (irq = 6) is a ST16650
ttyS01 at 0xffff0800 (irq = 7) is a ST16650
C5471 SPI driver, irq 13.
Dallas Semiconductor DS1337 Real-Time Clock driver
EEPROM driver v1.0
ledman: Copyright (C) SnapGear, 2000-2002.
ARM GPIO driver. (C) 2003 Pigeon Point Systems
WDT driver for ShMM.
block: 64 slots per queue, batch=16
RAMDISK driver initialized: 16 RAM disks of 8192K size 1024 blocksize
enet: Phy @ 0x0, type 0x001378e2
eth0: C5471 ENET Version 0.1, 00:50:c2:22:53:90
SMSC LAN91C111 Driver (v2.0), (Linux Kernel 2.4 + Support for Odd Byte)
09/24/01 - by Pramod Bh
ardwaj (pramod.bhardwaj@smc.com)
eth1: SMC91C11xFD(rev:1) at 0x1000300 IRQ:12 MEMSIZE:8192b NOWAIT:0
ADDR: 00:50:c2:22:53:91
VC5471: 0x00800000 at 0x00800000
Search for id:(01 22f9) interleave(1) type(2)
Found: AMD Am29LV320B
Flash on VC547x: Found 1 x16 devices at 0x0 in 16-bit mode
number of JEDEC chips: 1
VC5471: using static partition definition
Creating 3 MTD partitions on "Flash on VC547x":
0x00000000-0x00010000 : "ARMboot environment"
0x00010000-0x00100000 : "ETC"
0x00100000-0x00400000 : "VAR"
NET4: Linux TCP/IP 1.0 for NET4.0
IP Protocols: ICMP, UDP, TCP
IP: routing cache hash table of 512 buckets, 4Kbytes
TCP: Hash tables configured (established 1024 bind 2048)
NET4: Unix domain sockets 1.0/SMP for Linux NET4.0.
RAMDISK: romfs filesystem found at block 0
RAMDISK: Loading 2783 blocks [1 disk] into ram disk... done.
VFS: Mounted root (romfs filesystem) readonly.
Freeing init memory: 44K
init started: BusyBox v0.60.5 (2004.01.28-23:10+0000) multi-call
binary
mktime: cannot convert RTC time to UNIX time
/etc/rc: Mounting filesystems...
/etc/rc: Mounted /proc
/etc/rc: Mounted /dev/pts
/etc/rc: Mounted /dev/mtdblock3 to /var
/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: /dev/mtdblock2 appears to be empty ... restoring from factory
/etc...
/etc/rc: Mounted /dev/mtdblock2 to /etc
/etc/rc: /etc/hosts updated with sentry 192.168.0.2 entry
/etc/rc: Starting inetd...
/etc/rc: Calling /etc/rc.carrier3
Booting:
        freq:100MHz
        size:14356 words
        addr:0x10c00000
/etc/rc.carrier3: Updating /etc/profile.sentry with IP settings
```

Step 10

Verify the revision level of the newly installed firmware:

```
sentry login: root
Welcome to
```



```
BusyBox v0.60.5 (2005.03.04-01:44+0000) Built-in shell (msh)
# clia version
```

IPM Sentry Shelf Manager Command Line Interpreter

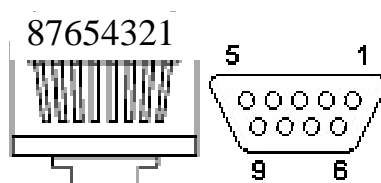
```
IPM Sentry Shelf Manager ver. 1.3.1-SR1
IPM Sentry is a trademark of Pigeon Point Systems.
Copyright (c) 2002-2005 Pigeon Point Systems
Build date/time: Mar  3 2005 17:42:12
All rights reserved
```

Step 11

Repeat steps 1-10 for the other shelf manager if one is installed.

Shelf Manager serial console port RJ45 to 9 Pin PC Serial Console Cable P/N CBL000001

RJ45 Pin	RJ45 Signal Name	PC 9 pin D-Sub	Signal Name
1	DSR	4	DTR
2	CD	N/C	CD
3	DTR	6	DSR
4	Ground	5	Ground
5	RXD0	3	TX
6	TXD0	2	RX
7	CTS	7	RTS
8	RTS	8	CTS



RJ45 and 9 pin D-Sub connectors are viewed with the cable going away from you.

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