

# *Restoring the CMOS on SunPCi™ III Cards*

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*By SunPCi Product Development Team*

<http://www.sun.com/desktop/products/sunpci/>

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# Introduction

As with most any other PC, the SunPCi hardware stores system configuration information (device boot sequence, etc.) in CMOS. This CMOS is consulted as part of the Power On System Test (POST) to initial devices and begin the "boot up" sequence.

Every once in a while (either through user interaction or a software/hardware failure), values in the CMOS get corrupted. If values stored in the CMOS are incorrect, the SunPCi card (or any PC) could behave erratically. Some examples of this behavior include failing to complete (or even start) POST, random memory errors, and unexplained "Blue Screens of Death".

This document will outline the steps necessary to restore the default values to the SunPCi III CMOS. Please note that the information in this paper is relevant for **only** SunPCi III cards.

## How the SunPCi III Hardware uses CMOS

On most PCs and previous generations of the SunPCi hardware, the CMOS information is maintained using a small battery mounted on the main board. The SunPCi III card no longer has this battery. As a result, the CMOS settings are loaded into the SunPCi III from the Solaris™ SunPCi environment card **every time** the hardware is reset and POST is initiated.

This CMOS loading process happens when the SunPCi III software boots an emulated C: drive. Each emulated C: drive contains its own private copy of the CMOS data. Consequently, different drives could contain different configuration information.

Unfortunately, when corrupt data is written into the SunPCi III hardware's CMOS, it is also written in to the CMOS stored on to the emulated C: drive. The good news though is that `/opt/SUNWspci3/bios/cmos3.bin` contains correct information and can be used to "recover" the CMOS state for both the SunPCi III card and the emulated disk.

## Restoring the Default CMOS State to a SunPCi III Emulated Drive

There are two steps to restore the default CMOS state - restore the CMOS state on the corrupted drive and restore the CMOS state on the SunPCi III card. It is important to note that if you boot the emulated drive containing a corrupted CMOS, you will load that corrupted CMOS back on to the SunPCi III card. This again will render your card unbootable and you will need to repeat the steps to restore the CMOS state to the SunPCi hardware. Therefore, we suggest you restore the CMOS in your emulated drive **before** restoring the CMOS on your SunPCi III card.

You can restore the default CMOS settings to an emulated drive by typing the command `sunpci -R`. This will start the SunPCi user interface and begin the POST process. However, since the SunPCi III card still contains invalid CMOS data, the card will appear hung. This is to be expected.

## Restoring the Default CMOS State on to the SunPCi III Card

Completing `sunpci -R` will restore the CMOS state to your emulated drive. To restore the CMOS on the SunPCi III card:

1. Load the default CMOS on to the SunPCi III card:
  - a. Become super-user
  - b. Shut down the Solaris machine (`uadmin 2 6`)
  - c. Press the power button on your Solaris machine to start the system boot process
2. Verify the default CMOS state is loaded on to the SunPCi III card:
  - a. Log in to the Solaris system
  - b. Boot the SunPCi III card. At this point, the SunPCi III card should normally POST and both your emulated drive and the SunPCi III card will contain valid CMOS data.

If the SunPCi III card does not boot or you see a message indicating that the MAC address has been changed to 05:04:03:02:01:00, you will need to reload the SunPCi III device driver:

1. Create a new, bootable, emulated C: drive
  - a. Options → Create a New Emulated Drive
  - b. Select "DR DOS 7.01 (bootable)"
  - c. Change drive size to 512MB
  - d. Select "C:" in "Attach New Emulated Drive as:"
  - e. Click "OK"
  - f. A "Disk Creation" dialog box is display as the emulated disk is created and formatted.
  - g. Click "OK" to reboot the SunPCi III card. Note at this point, the corrupted CMOS state is still present on the SunPCi III card. As a result, the SunPCi III hardware will not complete its POST and will appear hung. This is an expected result of using an incorrect CMOS.
2. Become root and power down the system (`uadmin 2 6`)
3. Press the power button on your Solaris machine to start the system boot process
4. Interrupt the boot process (as the system begins to boot) by pressing the "stop" and "a" keys simultaneously. The "OK" prompt should be displayed.
5. Boot the system with the command `boot -rv`
6. Log in, become super-user and type
 

```
cd /opt/SUNWspci3/drivers/solaris; ./sunpload
```
3. Verify the default CMOS state is loaded on to the SunPCi III card:
  - a. Log in to the Solaris system
  - a. Boot the SunPCi III card. The SunPCi III card should normally POST and you should see the DOS prompt (`C:\`).

If the card does not boot at this point, there probably is another problem with the SunPCi III hardware.

# Conclusion

Restoring the default CMOS settings to a PC can be a difficult and error-prone process. The SunPCi team has provided hardware and software features in the SunPCi III environment to allow easy recovery of the CMOS configuration information.