

# The Flash Bios Upgrade

By Mark E. Donaldson

## INTRODUCTION AND OVERVIEW

### The FLASH BIOS

Pronounced *bye-ose*, an acronym for basic input/output system. The BIOS is built-in software that determines what a computer can do without accessing programs from a disk. On PCs, the BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. The BIOS also contains the code which enables the computer to boot and perform the boot POST (Power On Self Test) routine.

The BIOS is typically placed on a ROM chip that comes with the computer (it is often called a ROM BIOS). This ensures that the BIOS will always be available and will not be damaged by disk failures. It also makes it possible for a computer to boot itself. Because RAM is faster than ROM, though many computer manufacturers design systems so that the BIOS is copied from ROM to RAM each time the computer is booted. This is known as **shadowing**.

Many modern PCs have a *flash BIOS*, which means that the BIOS has been recorded on a flash memory chip, which can be updated if necessary. Even though there are many different BIOS versions, the PC BIOS is standardized, so all PCs are alike at this level. Additional DOS functions are usually added through software modules. This means you can upgrade to a newer version of DOS without changing the BIOS.

PC BIOS's that can handle Plug-and-Play (PnP) devices are known as PnP BIOS's, or PnP-aware BIOS's. These BIOS's are always implemented with flash memory rather than ROM.

### FLASH BIOS Terminology

It may be helpful to understand some of the terminology associated with upgradable BIOS, or non-permanently encoded BIOS. **PROM** (an acronym for programmable read-only memory) is a memory chip on which data can be written only once. Once a program has been written onto a PROM, it remains there forever. Unlike main memory, PROMs retain their contents when the computer is turned off. The **difference between a PROM and a ROM** (read-only memory) is that a PROM is manufactured as blank memory, whereas a ROM is programmed during the manufacturing process. To write data onto a PROM chip, you need a special device called a **PROM programmer or PROM burner**. The process of programming a PROM is sometimes called burning the PROM.

**An EPROM** (erasable programmable read-only memory) is a special type of PROM that can be erased by exposing it to ultraviolet light. Once it is erased, it can be reprogrammed. An EEPROM is similar to a PROM, but requires only electricity to be erased.

**EEPROM** (Acronym for electrically erasable programmable read-only memory). Pronounced double-ee-prom, an EEPROM is a special type of PROM that can be erased by exposing it to an electrical charge. Like other types of PROM, EEPROM retains its contents even when the power is turned off. Also like other types of ROM, EEPROM is not as fast as RAM.

A special type of EEPROM, referred to as *flash memory or flash EEPROM*, can be rewritten while it is in the computer rather than requiring a special device called a PROM reader.

# The Flash Bios Upgrade

By Mark E. Donaldson

## Determining If You Have A Flash BIOS

To Determine if your computer has a flash BIOS, take the cover off the computer and look inside. Peel the sticker of the BIOS chip (28 or 32-pin DIP IC with the BIOS brand sticker on it). You will see specifications similar to these listed below on the sticker:

- Am29F010: AMD 5 volt flash rom
- Am28F010, Am28F010A: AMD 12 volt flash rom
- AT28C010, AT28MC010, AT29C010, AT29LC010, AT29MC010: Atmel 5 volt flash rom
- CAT28F010V5, CAT28F010V5I: Catalyst 5 volt flash rom
- CAT28F010, CAT28F010I: Catalyst 12 volt flash rom
- 28F010: Fujitsu 12 volt flash rom or ISSI 12 volt flash rom
- HN58C1000: Hitachi 5 volt flash rom
- HN28F101, HN29C010, HN29C010B, HN58C1001, HN58V1001: Hitachi 12 volt flash rom
- A28F010, 28F001BX-B, 28F001BX-T, 28F010: Intel 12 volt flash rom
- M5M28F101FP, M5M28F101P, M5M28F101RV, M5M28F101VP: Mitsubishi 12 volt flash rom
- MX28F1000: MXIC 12 volt flash rom
- MSM28F101: OKI 12 volt flash rom
- KM29C010: Samsung 5 volt flash rom
- DQ28C010, DYM28C010, DQM28C010A: SEEQ 5 volt flash rom
- DQ47F010, DQ48F010: SEEQ 12 volt flash rom
- M28F010, M28F1001: SGS-Thomson 12 volt flash rom
- 28EE011, 29EE010: SST 5 volt flash rom
- PH29EE010: SST ROM Chip – Flashable
- TMS29F010: Texas-Instr. 5 volt flash rom
- TMS28F010: Texas-Instr. 12 volt flash rom
- W29EE011: Winbond 5 volt flash rom
- W27F010: Winbond 12 volt flash rom
- X28C010, X28C010I, XM28C010, XM28C010I: XICOR 5 volt flash rom
- 29LVxxx - 3V Flash memory (rare)
- 28Cxxx - EEPROM, similar to Flash memory
- 27Cxxx - With window. EPROM: read-only, requires programmer to write and UV to erase.

***Anything without a Window that doesn't have a 28 or 29 as the preceding numbers of the part number is most likely a standard ROM.***

## Reason To Upgrade Your BIOS

There are important and less important reasons to update your BIOS. The most important reason is Windows 95. It's possible that Windows 95 isn't configured favorably on a computer with an outdated BIOS. Also, all harddisks that are sold today are more than 528 megabyte. To support these harddisks, the BIOS must have LBA (Logical Block Addressing) support. When your BIOS doesn't support LBA and you want to use your new harddisk at full capacity you have to use software drivers (such as ***Disk Manager***) that trick the BIOS. With some of these software drivers Windows 95 will load your HD in compatibility mode which means a major overall performance loss.

To let Windows 95 fully support Plug 'n Play you also need a PnP-BIOS. This is a very important reason to update your BIOS. A third important reason to upgrade your BIOS is to solve bugs. Other reasons are new settings in your BIOS: Booting from CDROM, Boot from SCSI before IDE harddisks, etc, etc.

# The Flash Bios Upgrade

By Mark E. Donaldson

## Obtaining A Flash BIOS Upgrade

First of all, you will need your BIOS number. Check the paper label on your BIOS and obtain that. Then, I suggest you begin by looking at *Wim's BIOS Page* at <http://www.ping.be/bios/>. You might find the source there. If not, check with your motherboard manufacturer. If you have an Award BIOS, you contact them, supplying the following:

- Version +
- Part number +
- Release date the BIOS

This = the BIOS number. The part number of each Award BIOS contains information identifying the chipset it supports. This information appears at the bottom of your screen after power on, during memory count up. The **PAUSE** key should work at that point, allowing you to read the part number, the BIOS date, and the version. Unfortunately, in some cases, the manufacturer removes that information. Then your only recourse is to contact the board manufacturer.

If all else fails, there is a small, simple program that you can obtain called **CTBIOS**. Run at the DOS prompt, the **CTBIOS** program can be obtained from *Wim's BIOS Page* at <http://www.ping.be/bios/links.html>.

## The Flash BIOS Upgrade: How To

First of all, *you should not attempt to upgrade your flash BIOS if it from a different manufacturer* unless you have an EEPROM programmer handy, or you have another flash capable motherboard handy and know how to do the *hot-flash* method, or if you like living on the edge of adventure and are willing to risk killing your motherboard. Although sometimes a foreign BIOS will sometimes work, your chances are greatly reduced.

I will describe the flash upgrade process and procedure at greater length, but in general, you will need:

- a flasher
- and a data-file

The flasher *flashes* the data-file into the BIOS chip. You'll have to type, after a clean boot:

**awdf flash xxx.bin (for Award BIOSs)**

**amiflash xxx.bin (for AMI BIOSs)**

**mrflash xxx.bin (for MRBIOSs)**

The file name of Award BIOS binary files is usually derived from the BIOS serial number. Because one file name resembles another, one may inadvertently use the wrong binary file when updating the system BIOS with the Award flash utility. To help avoid this problem, Award has added a new feature to **AWDFLASH.EXE**, version 5.33 and above: a warning message that appears if the program detects a mismatch between the BIOS binary file and the system board. If a mismatch is detected, the following message appears when the user responds **YES** to the program prompt to flash the BIOS:

***The program file's part number does not match with your system***

# The Flash Bios Upgrade

By Mark E. Donaldson

This warning message appears only if the binary file name you specified in the program differs from the existing file in your system. If you receive this message, check carefully to ensure that you have the correct binary file for your system. You can bypass checking the serial number by typing the following at the DOS command line:

**Awdflash 2Axxxxxx.BIN /Py**

The /Py switch immediately flashes the new binary file to the BIOS EPROM.

## Obtaining A BIOS Flasher

You can find them on my Award utilities page at <http://www.ping.be/bios/awardflash.html>, or the AMI Flasher page at <http://www.ping.be/bios/amiflash.html>. Most flashers will ask you to save the current BIOS. Choose **Yes**, so that you can always flash back to the original version if you're having problems with the new one. Some manufacturers may use their own utilities to upgrade the BIOS (mostly non-clones). Whatever, disable the System BIOS Cacheable option in the BIOS before flashing.

## THE FLASH BIOS UPGRADE

Many motherboards manufactured today incorporate the system BIOS in a Flash memory component. Flash BIOS allows easy upgrades without the need to replace an EPROM component. The upgrade utility fits on a floppy diskette and provides the capability to save, verify, and update the system BIOS. The upgrade utility also provides the capability to install alternate languages for BIOS messages and the SETUP utility. The upgrade utility can be run from a hard drive or a network drive, but no memory managers can be installed during upgrades.

## BIOS UPGRADE INSTRUCTIONS

1. Create a Boot Floppy disk (use a DOS system to create the bootable floppy). Place an unformatted floppy diskette in the floppy drive and format the floppy using the /S option.

**Example: format a: /s**

Alternatively, place a formatted floppy in the floppy drive and use the **sys** command.

**Example: sys a:**

2. Before Upgrading to the Latest BIOS Enter **Setup** by pressing the appropriate key during boot (**[F1]** with an AMI BIOS, **[F2]** with a Phoenix BIOS, and usually **[DEL]** for an Award BIOS), and write down all of your current CMOS settings. You will need to reset these settings after you have upgraded to the latest BIOS.
3. Create the BIOS Upgrade Floppy Diskette. To do this, download the correct BIOS file via FTP. Follow the instructions (above) for creating a bootable floppy to create a bootable floppy diskette. The file you downloaded will normally be a self-extracting compressed archive that includes other files that need to be extracted. Put the file in a temporary directory.
4. Boot your computer using the bootable floppy disk. Then, from within this directory you placed the new BIOS file in, type the file name of the downloaded BIOS and hit **[Enter]**. This will cause the file to self-extract.

# The Flash Bios Upgrade

By Mark E. Donaldson

**Example: 10005CV2.EXE [ENTER]**

If the extracted files contain files named **LICENSE.TXT** and **BIOS.EXE**, read the software license covering the BIOS file, then extract the contents of the **BIOS.EXE** file to the bootable floppy you created above.

Use this DOS command: **BIOS A:**

If the extracted files do not contain the file named **BIOS.EXE**, you must extract the original file you downloaded to the bootable floppy in Drive A.

Use this DOS command: **[filename] A:**

**Example: If the BIOS filename is 10005CV2.EXE, you would type: 10005CV2 A: [ENTER]**

## 5. Upgrading the System BIOS

Place the bootable floppy containing the BIOS into Drive A: of the system that you want to upgrade and boot the system while the floppy diskette is in the drive. Press **[ENTER]** to go to the Main Menu. Select the option that reads **Update Flash Memory From a File**, then select the option that reads **Update System BIOS**. At the screen that asks you to enter the path and name of the file, press **[ENTER]**, press **[TAB]** and press **[ENTER]**. Once the BIOS has been successfully loaded, remove the floppy diskette from the drive and reboot the system.

## 6. Resetting CMOS After Upgrade.

As the system reboots, watch the BIOS identifier to make sure the new BIOS version was properly installed. During boot, press the appropriate key (**[F1]** with an AMI BIOS, **[F2]** with a Phoenix BIOS, and **[DEL]** with an Award BIOS) to enter the Setup Utility. Return the CMOS settings to the factory defaults by pressing the appropriate key (**[F5]** with an AMI BIOS, **[F9]** with a Phoenix BIOS). Go through each screen of options and return the CMOS settings to the values that you wrote down prior to upgrading the BIOS. Press **[F10]** to save the settings, then press **[ENTER]** to accept the changes. Turn the Machine OFF and reboot.

## 7. BIOS RECOVERY

**A NOTE ABOUT BIOS RECOVERY:** Not all standard motherboards products support the Flash BIOS recovery feature. If your motherboard (for example the Advanced/AS) does not have the recovery feature, ensure that you do not power down your system during a BIOS upgrade. This could corrupt the BIOS code. If your BIOS is left in an unusable and unrecoverable state, it will be necessary to contact the place of purchase. In the unlikely event that a FLASH upgrade is interrupted catastrophically, it is possible the BIOS may be left in an unusable state. Recovering from this condition requires the following steps. Be sure a power supply and speaker have been attached to the board, and a floppy drive is connected as drive A:

1. Change Flash Recovery jumper to the recovery mode position (see note above; not all products have this feature).
2. Install the bootable upgrade diskette into drive A:

# The Flash Bios Upgrade

By Mark E. Donaldson

3. Reboot the system.
4. Because of the small amount of code available in the non-erasable boot block area, no video is available to direct the procedure. The procedure can be monitored by listening to the speaker and looking at the floppy drive LED. When the system beeps and the floppy drive LED is lit, the system is copying the recovery code into the FLASH device. As soon as the drive LED goes off, the recovery is complete.
5. Turn the system off.
6. Change the Flash Recovery jumper back to the default position.
7. Leave the upgrade floppy in drive A: and turn the system on.
8. Continue with the original upgrade. Jumper locations can be found in the Technical Product Specification or on the ***jumpers page*** for each individual product.

## When Things Go Wrong And Many Times They Will

If you are flashing an Award BIOS and you get an insufficient memory error, do this:

- In the CMOS Chipset Features Setup, Disable **Video Bios Cacheable**.
- Hit **Esc, F10, Save** and exit.
- Reboot and hit **Ctrl+F5**, when you see **Windows Starting**. This temporarily prevents **Drvspace.bin** from loading-making 108K more Memory available.
- Flash the BIOS and reboot.
- Enter CMOS Chipset Features Setup, and **Enable Video Bios Cacheable**, hit **Esc, F10, Save** and reboot.

If you use the wrong Flash BIOS, there is chance that your computer won't boot anymore. There are three basic solutions:

### Solution 1: Hot-swapping

- Replace the corrupt chip by a working one. The working BIOS doesn't have to be written for your motherboard, it just has to give you a chance of booting to DOS. BIOSs for the same chipset mostly work. Chipsets that differ slightly may also work (e.g. Triton FX chipset and Triton HX chipset).
- Boot the system to DOS (with floppy or HD).
- Now replace (while the computer is powered on) the BIOS chip with the corrupt one. This works fine with most boards because most BIOSs are shadowed to RAM. Be sure that the System BIOS cacheable option in your BIOS is enabled.

# The Flash Bios Upgrade

By Mark E. Donaldson

- Flash an appropriate BIOS to the corrupt chip and reboot. Use a flasher from MRBIOS. Utilities that come with your motherboard often use specific BIOS-hooks. Because you have booted with a BIOS not written for your motherboard they usually don't work. The MR Flash utilities communicate directly with your Flash Rom and always work. In most cases they flash a non-MRBIOS to your BIOS chip without problems.

## Solution 2: For Award BIOS Motherboards

- Take your PCI video card out. The following won't work with a PCI video card, possibly because it needs the bios to load.
- Insert an old ISA video card and hook up monitor.
- Insert DOS boot floppy in drive a: and turn on Computer. The computer will boot using an Award boot bios.
- Insert the disk with flash program and the backup bios (you should always flash from a floppy).
- Flash BIOS chip with good backup BIOS.
- Re-boot, and the computer should work fine.

## Solution 3: For Intel Motherboards

- Change the Flash Recovery jumper to the recovery mode position (not all products have this feature).
- Install the bootable upgrade diskette into drive A: and reboot the system.
- Because of the small amount of code available in the non-erasable boot block area, no video is available to direct the procedure. The procedure can be monitored by listening to the speaker and looking at the floppy drive LED. When the system beeps and the floppy drive LED is lit, the system is copying the recovery code into the FLASH device. As soon as the drive LED goes off, the recovery is complete.
- Turn the system off and change the Flash Recovery jumper back to the default position.
- Leave the upgrade floppy in drive A: and turn the system on.
- Continue with the original upgrade.

## ALTERNATIVES TO FLASHING

There are several alternative to upgrading the FLASH BIOS if you choose not to risk performing the FLASH procedure. These involve using the freely available software programs TweakBIOS and CtChipz.

### **TweakBIOS**

**TweakBIOS** is a software program that manipulates the program code for you, and it is very easy to use. This shareware program lets you tune your chipset, CPU and video card probably more than any real BIOS. Using it is simple, and you don't have to worry about flashing your BIOS. You run it from the DOS prompt, and you can change the settings on the fly (see figure below):

# The Flash Bios Upgrade

By Mark E. Donaldson

TweakBIOS Registered Version 1.30 Registered to Miro Wikgren. (430HX Data file version 1.40)			
EDO	FPM	Chipset: Intel 430HX, Rev A-3	
DRAM Read Burst Timing	: x222 / x333	L2 Cache Size: 256K	
DRAM Write Burst Timing	: x222	Cache Type : PB Cache	
Fast RAS to CAS Delay	: Disabled	Caching : Up to 64 MB	
Fast DRAM R/W Leadoff	: Enabled	DRAM Bank 0: 16 MB EDO SIMMS	
DRAM Turbo Read Leadoff	: Disabled	DRAM Bank 1: Empty	
DRAM Speculative Leadoff	: Enabled	DRAM Bank 2: Empty	
Turn-around Insertion	: Disabled	DRAM Bank 3: Empty	
Turbo Read Pipelining	: Enabled	Actual Page Hit Timings	
DRAM Refresh Rate	: For 66 MHz Bus	EDO Read Burst : 5-2-2-2	
RAS Precharge/Refresh	: 4T/5T	EDO Write Burst: 5-2-2-2	
DRAMEC Reserved bits	: 00	L2 Cache Read : 3-1-1-1-1-1-1	
DRAMC Reserved bit	: 0	F2 : Save      ↑↓ : Select Item	
L2 Cache Modify Bit	: Disabled	F3 : Load      PU/PD/+/- : Modify	
Peer Concurrency	: Enabled	F10: Apply    ESC : Exit	
PCI Streaming	: Enabled		
Passive Release	: Enabled		
Chipset Global Features	: Enabled		

There is no need to reboot your machine. This program can tune probably all computers (running DOS or Windows 95) with one of the following chipsets, CPUs or video cards, regardless of your BIOS:

- Intel 430FX (Triton)
- Intel 430HX (Triton II)
- Intel 430VX (Triton III)
- Intel 430TX
- Intel 440FX (Natoma)
- Intel 450KX/GX (Orion)
- Intel 440MX
- AMD-640 (aka VIA VP-2)
- 430MX (Mobile chipset)
- 430LX/NX (Mercury/Neptune)
- 420ZX (Saturn)
- VIA Chipsets: VIA VP-1 and AMD-640 / VIA VP-2
- OPTi Viper & Vendetta
- ALi Aladdin 2UMC 880
- Cyrix CPUs: 5x86, 6x86, and 6x86MX
- Tseng Labs ET6000 based video cards

**TweakBIOS** can be obtained from its creator Miro Wikgren at <http://www.miro.pair.com/tweakbios/>. If you support the author by registering it, you will be able to save your favorite settings to a file, and load them automatically without any input from you each time you start your computer. I have a copy of this program, and have used this program, and I highly recommend it.

# The Flash Bios Upgrade

By Mark E. Donaldson

## CTCHIPZ

CTCHIPZ is a utility program that allows you to change chipset specific registers (specific system configuration settings similar and sometimes identical to BIOS Setup Chipset Settings) that affect all kinds of system operation, from memory timings to cache size to PCI settings. Unfortunately, figuring out how to use the program is not at all intuitive. It's user interface is extremely hard to use. Having to manually enter the exact register and bit that you want to change is no simple task.

To use CTCHIPZ, you first need to choose a configuration file that matches your computer's chipset type. The utility comes packaged with the following configuration files:

- Misc. with AMI BIOS (RTCAMI.CFG)
- Cyrix 6x86 Systems (CX686.CFG)
- Cyrix 5x86 Systems (CX586.CFG)
- Cyrix 486DX Systems (CX486DX.CFG)
- Eteq Micro (ETEQ.CFG)
- IBM 486DLC (IBM486.CFG)
- Intel Aries (ARIES1.CFG)
- Intel Mercury (INTELPCI.CFG)
- Intel Neptune (INTELPCI.CFG)
- Intel Saturn (SATURN.CFG)
- Intel Triton FX (INTELPCI.CFG)
- OPTi 596 (OPTI596.CFG)
- Intel Triton VX (INTELPCI.CFG)
- Intel Triton HX (INTELPCI.CFG)
- Intel Natoma (INTELPCI.CFG)
- OPTi 495 (OPTI495.CFG)
- OPTi 482B (OPTI482B.CFG)
- OPTi 391 (OPTI391.CFG)
- OPTi 493 (OPTI491.CFG)
- SiS 461 (SIS461.CFG)
- SiS 411 (SIS411.CFG)
- SiS 401 (SIS401.CFG)
- Shasta 486 (SHASTA.CFG)
- Symphony SL82C461 (SYM461.CFG)
- UMC 881 (UM881.CFG)
- UMC 481A (UMC481A.CFG)
- UMC 482A (UMC482A.CFG)
- VIA 495 (VT82C495.CFG)

Once you have chosen your configuration file, run the utility from the DOS prompt using the command:

**ctchip34 configname.cfg**

where configname.cfg is the name of the configfile. You should be looking at a screen that looks similar to the following (see figure below):

# The Flash Bios Upgrade

## By Mark E. Donaldson

```
Chipset-Konfiguration U3.4 c't: 9/96/Andreas Stiller
Konfigurationsdatei: INTELPCI
*****
"CONFIGAccess 1 implementiert"
"82438UX"
*****
CR0 skipped im Virtuellen Modus
*****
>> CR:Cont, ESC:halt, S,M:Display, I:Index, ?:Help, P,%,=:Pattern/Bin/Hex
```

If you received an error message, you are probably using a configuration file that is not compatible with your chipset. If you hit return, the screen will advance and display all of the registers that you can change.

The screen above is from a system that uses the Intel Triton VX chipset. Your screen will be decidedly different, but the basic layout should be the same.

The first time you use **CTCHIPZ**, start by defining the different parts of the screen output. The numbers in the left blue box indicate the value of a particular bit. The value is usually 0, for disable, or 1, for enable. The words in the right blue box verbosely describe the condition of the register.

The numbers in the red box indicate the bit location. Depending upon whether or not the index you currently have selected is 8 bit, 16 bit, or 32 bit, the numbers will tell you where to put the 0's or the 1's in order to enable/disable a specific register. For example, if you hit the % key, a line will pop up that will display the following:

**%00000000000000110**

Notice that there are 16 numbers, because this index is 16bit (indicated by the 16 next to the word INDEX printed in green). The 0's and 1's correspond to the 0's and 1's of the register values.

Look at the red box in the image above and find the row with the 01 printed in white. In the next column to the right, there is a red 1. In the string of numbers in the % field, that particular red 1 corresponds to the 2nd to last digit, which is in fact a 1. The % field is numbered from right to left, and the place of the digit corresponds with the white numbers in the red column.

If you wanted to change the Memory Access register to disabled, you would need to change the red 1 in that row to a 0. To do this, you simply would hit %, and the following would appear as before:

**%00000000000000110**

Then you would change the 2nd digit from the end to a 0 (since the bits in this example are numbered from right to left starting with 0), so the edited string would be:

**%00000000000000100**

# The Flash Bios Upgrade

By Mark E. Donaldson

That would change the Memory Access to disabled. If you wanted to change the **Fast Back-to-Back** register to enabled, you would need to change the 9th digit from the right in the % string from a 0 to a 1. Why the 9th? The white number in the red box on the same line as the words **Fast Back-to-Back** tells you that that register is affected by the 9th bit, or the 9th digit from the right, like this:

```
%0000001000000100
```

In that example, the **Fast Back-to-Back** register would be enabled, and the Bus Master Operations register would be enabled, all other registers in that index would be disabled.

If you can get some registers to change to different values, but not others, your system may not allow you to change the register that you are attempting to. Not all of the registers can be changed.

The above examples apply when using **CtCHIPZ** in interactive mode. If you want to be able to boot your computer and automatically have certain registers/settings enabled or disabled, it is necessary to use **CtCHIPZ** from the DOS command line. First, make certain you are familiar with the program's operation. Go to interactive mode (**ctchipz configfile.cfg**) and find the index that you want to edit. Make note of how many bits it has (indicated in green next to INDEX), and make a note of the hex address (follows the dash in green on the same line as INDEX). Then make note of the bit number on the line of the register that you want to change.

To set the 2nd bit of an 8bit Index with a hex address of 04h to 1, you would use the following command at the DOS command line (note that every bit will be set to 0 unless you specify with a 1 which bits should not be set to 0):

```
ctchipz configfile.cfg /04h:=%00000100
```

To set the 8th bit of a 16bit Index with a hex address of 06h to 1, you would use the following command at the DOS command line (note that every bit will be set to 0 unless you specify with a 1 which bits should not be set to 0):

```
ctchipz configfile.cfg /06h:=%0000000100000000
```

You could then place a similar line in your autoexec.bat for to make the change everytime you boot your system.

If this all seems a bit complicated to you, well you are not alone. It is. That's why I recommend using **TweakBIOS**. However, if you would like to play with CtCHIPZ, you may obtain it at

## MORE BIOS TRICKS

### 1. Clear BIOS Settings Back To Their Default

You can change your BIOS settings back to their original default setting using the DOS DEBUG command as follows:

- For AMI and Award BIOS:

# The Flash Bios Upgrade

By Mark E. Donaldson

C:\DEBUG (at a clear C: prompt, don't do this in DOS-box in Windows)

-O 70 17

-O 71 17

Q

- For Phoenix BIOSs:

C:\DEBUG (at a clear C: prompt, don't do this in DOS-box in Windows)

-O 70 FF

-O 71 17

Q

## 2. Edit Your Award BIOS

You can edit some of the features of your Award BIOS, such as the EPA logo and some datafile settings. First, you must download these programs:

- MODBIN v4.50.60
- CBROM v1.12C
- BMP2EPA

You can download them from <http://www.ping.be/bios/faq.html#q23>. To change BIOS datafile settings you use **MODBIN v4.50.60**:

- Type ***modbin.exe bios.bin*** (filename of the BIOS you want to edit).
- Change the settings.
- Save the BIOS file.
- Flash the edited **bios.bin** file.

## 3. BIOS Password Cracking

BIOS passwords can be cracked in several ways. Of course, you can always disconnect you CMOS battery and discharge the circuitry with a 10 Ohm resistor, but that not as much fun as the crack.

For the Award BIOS, try these passwords:

AWARD\_SW, j262, HLT, SER, SKY\_FOX, BIOSTAR, ALFAROME, or lkwpeter. Or, you may download an Award BIOS password crack program at <http://www.ping.be/bios/faq.html#q23>.

For the AMI BIOS, you may download a password cracking program, also at <http://www.ping.be/bios/faq.html#q23>.