

## Introduction

# The APK 3dFx Tuning Engine 2000++ SR-4

By Alexander Peter Kowalski



Written in honor of my brother Lieutenant John P. Kowalski USMC  
(FOR USERS OF Diamond Monster I, II, Banshee, or 3dFx Voodoo III boards only!!!)

### LEGAL:

The author assumes no responsibility to any damage you may incur to your system or video systems using or misusing this program. You are using it at solely at your own risk and discretion

(Also you should follow the cooling hints below to avoid any damage.)

In the event of any damage you incur, the author (Alexander Peter Kowalski) will be held free of any responsibility whatsoever and totally blameless.

If you do not agree to these conditions, do not use this program. The program comes as is and it is up to you, the user, to risk using it and how you use it.

## Technicals

### **REQUIREMENTS:**

You must be using a video card that handles Open GL applications. I personally recommend the Diamond Monster or Monster II Series or the most currently released Banshee or Voodoo III units.

You must be using Windows95/98 or Windows NT 4.0 Service Pack #3 and a minimum of DirectX 3.0 installed!

1. Monster 3Dfx Voodoo Graphics 4MB
  2. Monster 3Dfx Voodoo<sup>2</sup> Graphics 8MB
- \*these above 2 cards are an add on to your existing video card.
3. Banshee
  4. Voodoo III by 3dFx/STB

THESE ARE THE DRIVERS AND GLQUAKE/QW SOFTWARE YOU SHOULD BE USING FOR THE BEST PERFORMANCE AND BUG FREE GAMEPLAY. INSTALL IN THE ORDER THEY APPEAR.

1. DirectX from the CD-ROM that came with your 3DFX Voodoo video card or go to your video card manufacturers driver webpage and get the latest DirectX that they recommend.
2. Latest Video Card drivers from your video card manufacturer.
3. Glide 2.43 or better Runtime End User Drivers.(or latest)  
<http://www.3dfx.com/download/sdk/index.html>

### **DIRECT X, GLIDE & VIDEO DRIVER INFO:**

Go to this website to get the latest drivers for your video card, Direct X and Glide:

<http://www.3dfx.com/download/sdk/index.html>

\*If you get an error "glide 2x.dll not found". This means you need to install Glide 2.43 Runtime drivers. Go to the above site and get the latest Video Drivers from your video manufacturers webpage and install them. The Monster 1.09, If your video card's drivers don't comewith Glide 2.43, then install the correct version of the Glide 2.43 Runtime drivers for your card from the above URL.

### **DIFFERENCES IN WINDOWS NT/WINDOWS95-98 USAGES OF THIS PROGRAM and HOW IT WORKS ON EACH PLATFORM:**

On WindowsNT 4.0, this program allows you to directly poll and poke

the Environment in RAM and has a feature you cannot use in 95/98 that is setting the environment immediately without a reboot.

In Windows95/98, it will patch your config.sys and autoexec.bat files and cold boots are recommended for settings to take effect.

## **"OUT OF ENVIRONMENT SPACE" ERROR MESSAGE**

Anything you put in your GL Quake batch file or autoexec.bat starting with the "SET " statement is a variable. There's only a finite amount of space available for these variables in DOS called Environment Space. You can make this space larger by adding this line to your C:\CONFIG.SYS file:

```
shell=c:\command.com /e:512 /p
```

(The Program automatically extends your environment to 1024k for Windows95/98 users incidentally)

Open the "config.sys" file (its on your C drive) with your notepad to add the line, after adding the line, click "file" and "save". Then restart the computer.

If you need more space in the future, increase the number from 512 to 1024

**NOTE:** The program can do this automatically for you if you check the checkbox for it in the VCache Dos Ram tab.

## Tuning Settings

### **ENVIRONMENT AND BATCH FILE VARIABLES EXPLAINED:**

**NOTE:** VOODOO 2 has much the same setting but they begin with SSTV2 instead of SST  
VOODOO 3 and Banshee start with SSTH3 instead of SST or SSTV2

VOODOO III Users on first driver set from 3dfx can only use Grxclock and Swapinterval ONLY

\* Commands are case sensitive. Use caps where indicated.

### **SCREENREFRESH RATE:**

**SET SST\_SCREENREFRESH=60/72/75/85/120**

Default: 60 Voodoo 1

**SET SSTV2\_SCREENREFRESH**

Default: 92 Voodoo 2

(Not on Voodoo III)

On a Voodoo2 based board, I do not recommend going higher than 98 here  
On a Banshee based board, I do not recommend going higher than 120 here  
On a Voodoo III based board, I do not recommend exceeding 200 here

There is a way you can run the refresh up to 120 Hz without much of a performance hit: by disabling the vertical refresh sync on the 3DFX card by adding this line to your glquake.bat file: SET FX\_GLIDE\_SWAPINTERVAL=0

**SET FX\_GLIDE\_SWAPINTERVAL=0/1** (very important setting)

Default: 0 Voodoo 1

Default: 0 Voodoo 2

(Not on Voodoo III)

With the "0" setting, the 3DFX Card will ignore the refresh rate and always redraw the screen as soon as it can. As a bonus, this setting will usually gain you 5 -12 fps, however it can cause some image tearing which some people may find unacceptable. It will be very subtle and look as though the image is folding slightly.

### **OVERCLOCK THE VOODOO CHIP:**

**SET SST\_GRXCLK=50-57**

**SET SSTV2\_GRXCLK=92-120**

On a Voodoo2 based board, I do not recommend going higher than 98 here

On a Voodoo1 based board, I do not recommend going higher than 68 here

(Not on Voodoo III)

Keep an eye out for:  
corruption artefacts - flat shaded polygons  
texture map corruption etc. (You will see little triangle shaped tears in the screen if you set the clock speed to high. This setting will almost certainly make the Voodoo Chip run hotter!)

Turn down the clock speed if this happens.

\*Get a cooling fan to increase performance and card life.

**SET FX\_GLIDE\_NO\_SPLASH=0/1**

Default: 0 on both V1, V2 boards not on V3

1-Removes the 3DFX logo on startup.

**SET SST\_FASTMEM=0/1**

Default: 0 on Voodoo 1 boards

**SET SSTV2\_FASTMEM=0/1**

Default: 0 on Voodoo 2 boards

(Not on Voodoo III)

Setting of "1" Tells the Voodoo you have EDO RAM and to access the RAM on your board faster. This may or may not have any perceptable difference.

**SET SST\_FASTPCIRD=0/1**

Default: 0 on Voodoo 1 boards

**SET SSTV2\_FASTPCIRD=0/1**

Default: 0 on Voodoo 2 boards

(Not on Voodoo III)

Setting of "1" is Fast PCI read. 1 or 2 more FPS.  
This may not have any perceptable effect.

**SET SST\_SWAP\_EN\_WAIT\_ON\_VSYNC=0/1**

Default: 0 on Voodoo 1 boards

**SET SSTV2\_SWAP\_EN\_WAIT\_ON\_VSYNC=0/1**

Default: 0 on Voodoo 2 boards

(Not on Voodoo III)

Turns off syncing to the monitors vertical refresh rate so the

screen gets refreshed before its fully written on the monitor. Dont Use Vsync "1", leave set to "0". Normally your Voodoo will wait for the electron gun to finish sweeping the screen before switching between the visible data and the in work data. Setting to "0" this means that the voodoo will not waste any time waiting, it will switch immediately.

#### **SST\_VIDEO\_24BPP=0/1**

Default: 0 on Voodoo1 boards

#### **SSTV2\_VIDEO\_24BPP=0/1**

Default: 0 on Voodoo 2 boards

(Not on Voodoo III)

"1" sets the bits per pixel to 24. Which does nothing. READ ON!!!! But, You must insert this line using "1" if you use another video resolution (not windowed) beside the default. Or if you want to adjust gamma, you must have it. Place it there anyway, in case you forget. \*not the same as "-bpp 16"

\* CAUTION: This being set to 1 is only good for non-dual Voodoo board / SLI setups and at resolutions of 512x384, if you use it on 1024x768, it will cause a yellowing-lavendar coloration at 1024x768. Resetting it to 0 will fix it if you run at 1024x768 resolutions.

!

## Performance Checking

### **PERFORMANCE CHECKING ON GLQUAKE:**

#### **HOW TO CHECK YOUR "FRAMES PER SECOND":**

Quake Version 1.06 includes a test (timedemo) to check the FPS. If you have the older version Quake 1.01. You will need to upgrade to version 1.06 with the 1.01 to 1.06 upgrade patch.

To perform the Timedemo2 test. Start GL Quake and bring down the console with tilde key ~ and type:

```
timedemo demo2
```

When the demo starts, immediately raise the console where you can see the full screen. (a lowered console affects the "FPS") As soon as the demo2 completes, bring down the console and look for the number with "FPS" beside it. This is your "frames per second". The higher the better.

#### **PERFORMANCE BOOSTERS CHECKING ON Quake II:**

In the console, reached by tapping the tilde key "~", type these commands:

```
timedemo 1 <enter>  
map demo1.dm2 <enter>
```

#### **WITHOUT SOUND (for faster FPS counts!)**

```
s_initsound 0  
snd_restart  
timedemo 1  
map demo1.dm2
```

## Cooling

### **HOW TO MAKE A FAN MOUNT FOR YOUR 3DFX CARD**

You can easily make your own fan mount to keep your 3DFX video card running cool. Go buy a CPU fan at Radio Shack (\$14). Then take a blank plate from the back of your computer like the one you removed when you installed your 3D video card. Go outside to a concrete surface and smash the plate's 90 degree bend out flat with a hammer. Then lay the fan on the plate and mark 2 mounting holes to be drilled to secure the fan to the plate. Drill the holes and mount the fan onto the plate using 2 sheet metals screws, or even better use threaded screws with nuts. Put a drop of Lock-Tite on these for more security. File or cut off any protruding screw tips that could touch any electrical components. Then attach the mount to an empty slot mounting hole over or

near the 3D video card. Make sure the (2) fan mounting screws cannot possibly touch any electrical component in your computer. Bend the mount to whatever angle you need to point the air flow on the Voodoo Chips. I can't give you specific instructions as each system is different. I also added a 3 1/4" fan in an empty fan slot in the front of my computer case behind the 1" speaker.

### **HOW TO MOUNT A HEAT SINK/FAN ON A VOODOO CHIP**

Brad Mettee has put up a web page giving step by step instructions with images to illustrate on how to mount a heat sink/fan to your Voodoo Chip. This is the preferred method of cooling for ultimate performance. Here is the URL:  
<http://www.clark.net/pub/bmettee/voodoo.shtml>

ON A VOODOO III CHIP: Go to Radio Shack, pick up their 486 CPU Heatsink & Fan combo. Unscrew the Fan from it and directly screw it into the VOODOO III PCI heatsink as it is a perfect fit!

VOODOO III AGP 3000/3500 owner will have to use bigger fans like from Pentium Pro Heatsink/Fan Combos.

(A simple fix is to run your system without a cover and place an ordinary K-Mart Room fan next to your machine blowing into a side of it displacing more air than you ever could with tiny 4" fans that hook into your...apk)



## Ram Performance

### **RAM PERFORMANCE TIPS:**

"OUT OF MEMORY" ERROR MESSAGE OR JUST TO IMPROVE PERFORMANCE:

Define your own virtual memory settings. This is a bit tedious but it really does help.

This will create one continuous PERMANENTLY DEFRAGMENTED SWAPFILE on the hard drive. Normally Win95 actively resizes your swap file, but this causes a lot of disk accesses and keeps the swap files fragmented.

Right click on "My Computer", click on "Properties", click on the "Performance" tab, then click on the "Virtual Memory" button. Click on "Let Me Specify MY Own Virtual Memory" then click "Disable virtual memory" then click "OK". The computer will reboot.

## Uninstallation

### **UNINSTALLATION TECHNIQUES:**

First, use the InstallShield uninstaller... Then...

To remove it fully if this happens, use the menu entries under Defaults in the menu, or use the .reg files that ship with the program. By clicking on them in Explorer, it reemerges ALL defaults for both Voodoo or Voodoo<sup>2</sup> boards back into the registry.

Or, you can manually purge out all the entries by following the entries inside your .reg file for The board you use. Alternately, uninstalling your driver will do this as well. For manual Removal, simply use the registry editor's ability to EDIT, FIND any entries that match The ones inside the .reg file for the board you use.

Lastly, use the Tools menu, and summon System Editor and remove any settings under the [COMMON] section in autoexec.bat which this program creates.

Then reinstall your 3dfx Glide Drivers.

## TroubleShooting

### **TROUBLESHOOTING SECTION:**

#### BACKUP/RESTORE BUTTONS

Use the Backup Button option: This ensures your original autoexec.bat file contents are preserved if ever needed! This option is also available on the menu under Tools and Popup Trayicon menu as well.

This is ONLY RECOMMENDED for Windows95/98 users, NT Users do not need to execute this... BE SURE YOUR AUTOEXEC.BAK file has no 3dfx entries in it before hand or you will see multiple entries for it. This has no detrimental effect on gaming, since the last set takes effect only! Use the Tools menu System Editor to help you!

