



## Windows XP Audio Tips & Optimizations



Modern Windows PC's are now quite powerful and offer a great deal of performance, however, most are not typically configured for optimal performance for the specific demands of digital audio. The following list of tips is offered as suggested optimizations you might try on your Windows XP system to possibly improve the performance with TonePort and GearBox software, as well as with other audio applications.

It is important to note that many of the default Windows settings do offer some advantages, conveniences, and even security improvements for the general use of your computer. It is a good idea to always back up your system and data before changing system settings. It is also wise to keep a written list of all settings you've changed and know how to reset them back in case you encounter decreased performance issues.

**PC configurations can differ – the following tips are offered as suggestions only and Line 6 cannot be held responsible for problems caused to your system by applying settings changes. Please seek the assistance of a qualified service technician if you are not familiar with these Windows operating system settings.**

### Digital audio and your computer

A few basic understandings are helpful as you start working with digital audio hardware and software on your computer. There are 3 main aspects of your computer that are important to your audio work:

**CPU usage** – This refers to the processing power that your computer uses to do lots of very complex math for such things as applying all those cool effects and amp models to your sound. Once you start running other applications along with GearBox, this starts using more CPU cycles. It is best to run only the applications and processes you need to get the most out of your computer's finite amount of CPU resources. And of course, the faster processor your computer has, the better.

**Hard disk access** – This is the "input/output" speed at which audio data can be written to your hard disk during recording, and read from your hard disk during playback. This will directly affect how many tracks you can record/playback in a Multitrack software project, for example. Recording digital audio also uses a great deal of hard disk space, so it is a good idea to have lots of free Gigabytes available.

**RAM** – Many modern applications use lots of this type of memory, so the more RAM you have, the better. If you are running a Multitrack recording application, effects plug-ins and soft-synths along with GearBox, then RAM really gets used up quickly. One of the most cost-effective upgrades you can do for your computer is to add more RAM.

With the above understandings, you can already see one common rule of thumb – more is better! But you do not necessarily need to go upgrade your PC right now. If your computer meets the recommended requirements then it is likely just fine for your TonePort and GearBox needs. To squeeze more out of your current system, take a look at the following tips and tweaks...

## Windows XP optimizations

### Switch to the Classic Start Menu mode

Within this document, instructions are provided assuming you have Windows XP set to **Classic Start Menu** mode, which remains the preference of most computer geeks everywhere. To switch to this mode, right click on the **Start button** and choose **Properties > Start Menu tab > Classic Start Menu option**. While you are here, click on the **Customize** button, and then check the box for **Expand Control Panel**. Click **OK** to close both dialogs.

### The Windows Control Panel

Many of the following settings are accessed in the Windows Control Panel, which you intelligently just chose in the previous step to display as “Expanded” as a convenient sub-menu. Click on the **Start** button and choose **Settings** to get to the expanded **Control Panel** sub-menu as needed:

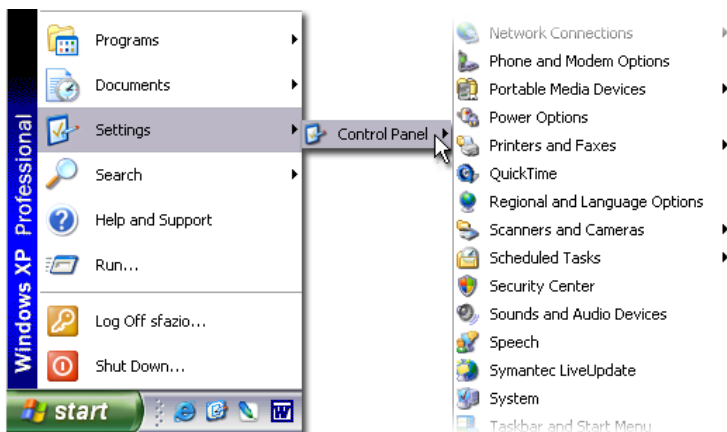


Figure 1: Accessing the Windows Control Panel

## Disable your onboard or add-in sound card

When using TonePort with the GearBox software, and when using TonePort as your sound card device for recording and playback in other audio applications, you may not need to have another sound card enabled. In some cases you may even encounter a hardware conflict with some "onboard" and/or add-in sound cards such as SoundBlaster Live! cards. The best solution is to simply disable any unnecessary, additional sound card within **Windows Device Manager**.

Go to **Control Panel > System > Hardware tab > Device Manager button**. Click the + symbol to the left of **Sound, video and game controllers** to expand it. Now right click on your onboard sound card device, SoundBlaster Live!, or other sound card device that is not in use, and choose **Disable**. Click **Yes** when it prompts you if you really want to disable the device. The device will then appear in the list with a red "X" to show it is disabled. You can come back to Device Manager any time, right click on the disabled device and choose **Enable** to enable it again.

The **Sigma-Tel** "onboard" sound card device disabled

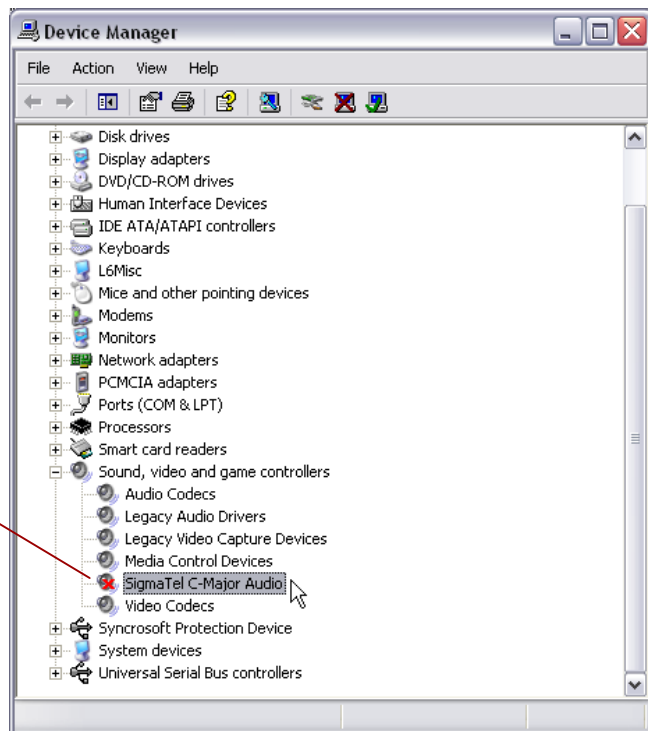


Figure 2: Windows Device Manager

Note that if you disable another sound card, Windows will often then automatically assign TonePort as the Windows "default device" for all sound playback. This means that many audio applications such as Windows Media Player and WinAmp, or games will route their sound to TonePort, which may or may not be what you want for playing CD's, DVD's or games. TonePort's audio capabilities are likely much higher quality than your on-board or add-on sound card, but it does not support some features such as MIDI playback, 5.1 surround output, or accelerated 3D audio for games. If you need these features, then it is best to set a sound card that does for the Windows default

playback device, or specifically for the applications with these requirements. You can, however, avoid Windows system sounds playing through TonePort independently of the Windows default playback device assignment – see the next section.

### Turn off Windows system sounds

These little dings and beeps can be handy alerts, but not very pleasant to hear blaring at high volume, especially if they are assigned to play through your TonePort as the default Windows playback device. To turn them off, go to **Control Panel > Sounds and Audio Devices > Sounds** tab. Choose **No Sounds** as the **Sound Scheme**. Click **OK** to exit the dialog. You can always come back here and turn the sounds back on if you really miss them.

### Turn off Visual Effects

By default, WinXP has numerous **Visual Effects** active. These do make the interface look pretty, but also utilize resources. You can toggle many of these on/off individually, or one easy tweak is just to turn all off within the **Performance Options** dialog. Go to the **Control Panel > System > Advanced tab > Settings button**, and then choose the **Visual Effects tab** in the **Performance Options dialog**. Select the **Adjust for best performance** option. Click the **OK** button to exit.

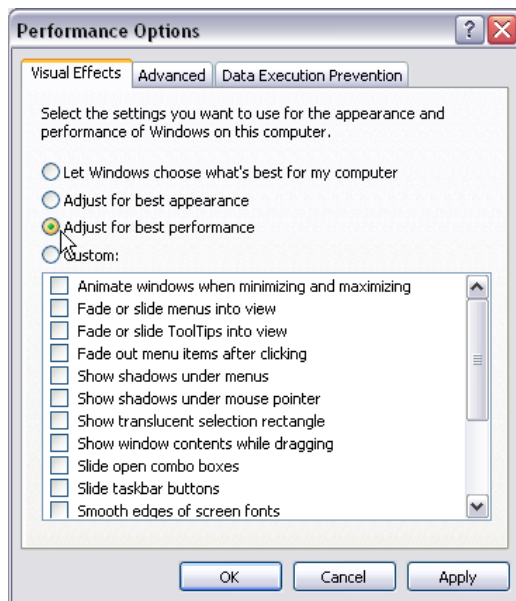


Figure 3: The Visual Effects settings

### Disable error reporting

Eliminate those annoying pop-up warnings by disabling this error reporting feature. Go to **Control Panel > System > Advanced Tab > Error Reporting** and then click the **Disable Error Reporting** button. Keep the checkbox checked for the **But notify me if critical errors occur** option.

### Disable the Remote Assistance option

Some technical support systems may ask you to keep this service active, but if this is not the case for you, then you can disable it. Go to **Control Panel > System > Remote Tab** and uncheck the option for **Allow Remote Assistance invitations to be sent from this computer**.

### Turn Automatic Updates Off

Windows updates are actually **highly recommended** by Microsoft, and indeed many are for security enhancements and offer critical fixes. But you may prefer to set the Automatic Updates feature off and check manually at the Windows Update website for your updates to avoid this service kicking in while you are tending to audio processes. Go to **Control Panel > System > Automatic Updates Tab**, and select **Turn Off Automatic Updates**.

### Processor Scheduling

Some audio applications recommend setting the Processor Scheduling setting to "Background Services" rather than the XP default of "Programs". Others claim it can be detrimental to processing, so evaluate its advantages on your system. Go to **Control Panel > System > Advanced Tab > Performance Settings > Advanced Tab**, and set the **Processor Scheduling** to **Background Services**.

### Set Virtual Memory to a fixed size

Windows uses a section of your hard drive as a "swap file" for storing and retrieving data when your RAM is filled. It can help to make this file a fixed size rather than let Windows dynamically resize it. To make this change, go to **Control Panel > System > Advanced tab > Performance Settings** button. Select the **Advanced tab** and then click the **Change button** within the Virtual Memory section. Choose the **Custom size** option and you can then type in new minimum and maximum values.

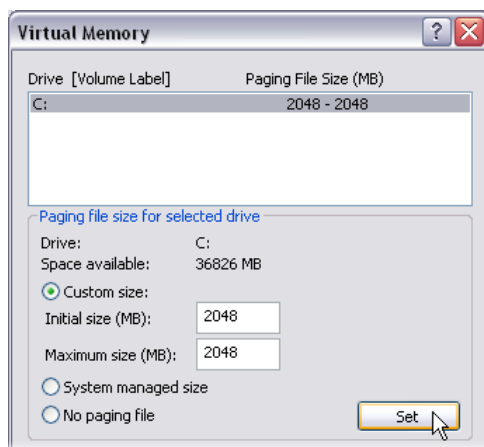


Figure 4: The Virtual Memory dialog

It is typically recommended to use a value that is 1.5 to 2 times the amount of your PC's total RAM and enter this same value in to BOTH fields so that it maintains a fixed file size. Click the **Set** button, and then OK to close the dialog. Click **OK** for the alert telling you that you will need to restart. You can manually restart your PC whenever you are then ready to do so.

### **Display Properties settings**

The following items are all accessed within the **Control Panel > Display** settings dialog:

**Turn off the Screen Saver** - You likely do not want a screen saver kicking in during the middle of your perfect take when recording. To turn this off, go **Control Panel > Display**, select the **Screen Saver** tab and choose **None** for the **Screen Saver** option.

**Turn Off Power Schemes** - There is probably no reason for your audio PC components to ever need to power down when the system is plugged in (although if you have a laptop, then this can conserve the battery). To avoid this from happening, go to **Control Panel > Power Options**, and in the **Power Schemes** tab, set each of the following items to **Never** within the **Plugged In** column; **Monitor**, **Hard Discs**, and **System Standby**.

**Turn Off Hibernation** - There is likely no need for your audio PC to ever go to "sleep" on you, and this ties up a significant amount of hard disk space. To disable this feature, go to **Control Panel > Power Options**, and in the **Hibernation tab**, uncheck the option for **Enable Hibernation**.

### **Remove Background Picture**

Having a high resolution photo or rotating slide show will use some resources – setting this to a plain, boring color will be a little less demanding, and maybe keep you focused on your music instead. To change this, go to **Control Panel > Display > Desktop Tab**, and for the background picture select "None".

### **Enable DMA mode for all hard disk drives**

Check to make sure the transfer mode for your hard disk drive(s) is set to the DMA mode, otherwise the disk access speed will be poor. Note that the Line 6 Monkey utility will check for this and warn you within the **Compatibility** tab window if any hard disk is not set to DMA mode

Go to **Control Panel > System > Hardware** tab > **Device Manager** button. Expand the entry labeled **IDE ATA/ATAPI controllers**. Right click on the **Primary IDE Channel** item and select **Properties** and go to the **Advanced Settings** tab. Check that the **Transfer Mode** options are set to **DMA if available** for all channels. Repeat this for all IDE channel items beneath **IDE ATA/ATAPI controllers**.

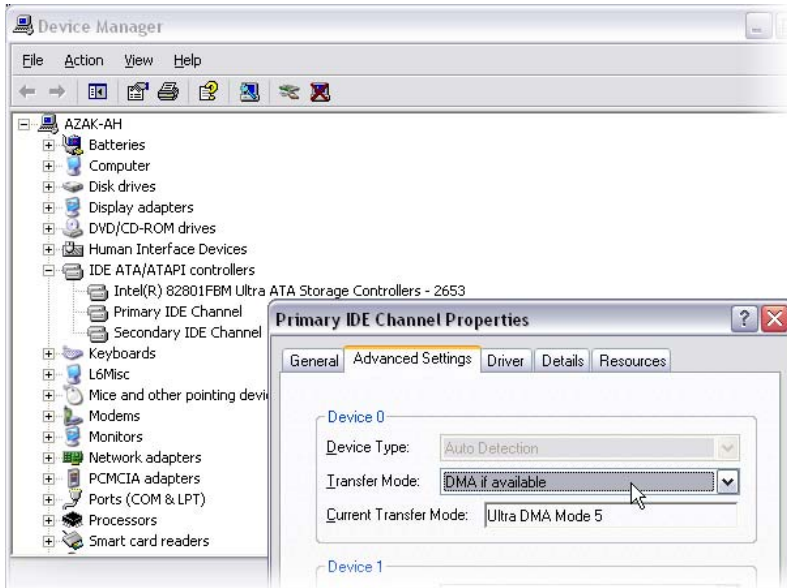


Figure 5: Checking the IDE Transfer Mode

### Exit all unnecessary applications

This follows common sense – to free up more resources you should of course avoid running other programs as much as possible when running GearBox. But many Windows programs are often set to launch automatically when you start your system and you may not even know it. One way to look for these is in the Windows Taskbar, but first you may need to change a setting to see them:

Right click on the **Start** button and select the **Taskbar** tab. Uncheck the **Hide inactive icons** checkbox.

You will now likely see several little icons on the Taskbar, at the lower right of your screen, next to your clock. Most utility applications that start with Windows will display a little icon here. You should know what it is you are accessing before shutting one of these off – usually hovering over the icon for a moment will show a tooltip informing you what utility it is. If it is one you do not need, often you can right click on the icon and choose **Exit**. The utility will again start next time you reboot your machine.

### System Configuration Utility

**It is not recommended you use this utility unless you are familiar with the Windows operating system – seek the help of a technician if needed.** To access the System Configuration Utility, go to **Start > Run** and type in **msconfig**, and then go to the **Startup** tab. All checked items here are set to start running when you boot your PC. If some of these are not necessary, you can uncheck them. Note that some of these will likely be important security utilities, such as Anti-Virus software, which you probably never want to surf the Internet without. You will need to restart your computer for changes in this dialog to take effect.

## **Internet and Network connections**

You'll likely want your PC to be able to connect to the Internet or perhaps a network, but some users find that having a connection active while using audio applications causes glitches. One thing you can try is to disconnect from the Internet/network while using your audio applications if you find that it is causing some interference. Likewise, during the times that you are not connected, you should not need to have Internet/Networking utilities running, such as Windows Firewall, Anti-Virus and Anti-Spyware, networking utilities, etc. It is not recommended that you exit these services while connected to the Internet, since they are necessary security measures.

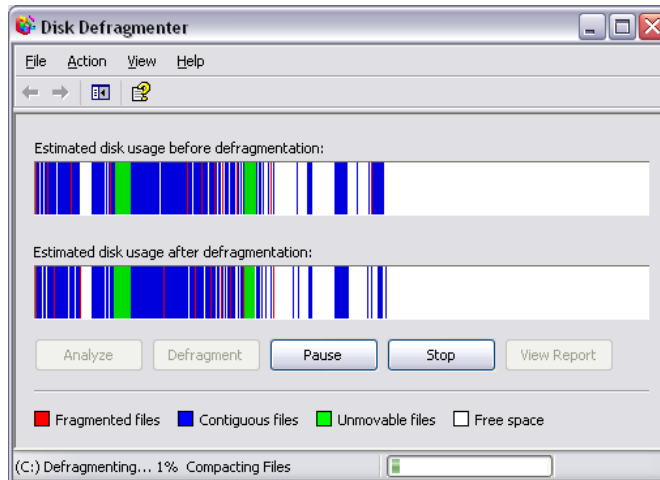
## **Maintenance & System Tools**

There are several recommended routine maintenance tasks you should perform to keep your system in top form for audio work...

**Backup your data** - Yes, you have heard it before, but it is easy to keep putting off the chore of backing up all that audio data. Invest in a DVD burner or external hard drive backup system if you can afford it. Losing audio data can be costly and extremely negative to the creative process. There are also drive imaging software applications you can buy that will allow you to back up your entire computer's contents – data, programs and all – and restore them in case of failure.

**Clean up** – You accumulate lots of little temp. files and trash over time, so it's a good thing to clean up once in a while. Go to **Start > Programs > Accessories > System Tools** and choose the **Disk Cleanup** utility for this. This can be run individually for each disk partition.

**Defragment your hard disk(s)** - An important practice to follow for audio is to regularly run a defragmenting application on all your hard drive partitions, especially your audio partition, to allow more streamlined disk access. Many 3<sup>rd</sup> party companies produce defragmenting applications, but Windows XP already includes Disk Defragmenter, which works fine. To run **Disk Defragmenter**, go to **Start > Programs > System Tools**. If you first click the **Analyze** button, it will tell you if your disk needs to be defragmented.



*Figure 6: Windows Disk Defragmenter*

**System Restore** – This can be a helpful system tool to have running, since it regularly makes backups of important Windows system files and drivers, and allows you to switch to the backed-up version in case of problems. But this service comes at some costs - the use of a significant amount of disk space, CPU usage and the disk access it needs when it kicks in. If you see no problems with it active, then leave it on. But if you need to solve audio problems and want to try turning it off, then you can access it in **Control Panel > System > System Restore Tab**. You can choose **Turn off system restore** for all partitions to completely disable it. Or, if you have more than one hard disk partition, one compromise is to keep active for only your C partition, and disable all other partitions. Click on the **OK** button and restart your computer for the setting to take effect.

**Back up your data** - OK, we're warning you again so you can't say no one told you so!

## Hardware tips

As mentioned in the first section of this document, your PC's audio performance will benefit from a fast CPU, fast hard drive access, and a sufficient amount of RAM. Here are a few more specific tips for what to consider when updating your PC.

**Hard Disks** – Hard disk drives have become very inexpensive and large in capacity, which are great things for us audio folks. Your PC's audio performance can benefit greatly by adding a second hard disc and using it strictly as your audio data drive. You should be sure to look for a drive that has a speed rating of **7200 RPM** or greater. An external FireWire or USB 2.0 hard disk drive is easy to connect, and can also be great to use for back ups as well (you are backing up your data, aren't you?).

**RAM** – RAM is a very cost-effective upgrade for your PC, especially if you plan on running several applications and plug-ins at the same time (but remember, it will not reduce these applications' needs for CPU processing). Be sure to check your PC or motherboard documentation to see what type of RAM it takes before you order the wrong type and have to face the dreaded chore of trying to return opened electronics parts.

### **Hardware conflicts**

It is best to avoid connecting unnecessary hardware devices when working with audio on your PC. Since TonePort is connected to your USB port, you especially want to avoid any devices sharing the USB bus. It can require advanced technical skills to track down device conflicts, and this is beyond the scope of this document – consult a technician for assistance if needed. But you can often avoid conflicts by simply not installing or disabling unneeded devices. For example, adding devices such as document scanners, Bluetooth adapters, printers, USB coffee warmer, etc. can all raise the chances of conflicting with your audio devices. Strive to keep your audio PC lean and mean.

**Cables** – Before spending an entire day trying to figure out why you aren't getting a signal through your setup, check your cables! Cheap cables often do not hold up well and can be a source of noise and tone loss if not well constructed. It is a good idea to invest in a few good quality cables and keep them away from cats and drummers.

Note that digital connections, such as TonePort UX2's Digital Outputs, require the use of a special 75-ohm coaxial cable to effectively transmit digital signals without loss or interference.

## **For more tips...**

Be sure to check the site of the manufacturer of your audio software for some application-specific do's and don'ts. There also are a number of web sites dedicated to offering Windows and PC tuning tips, as well as active user forums where you can argue endlessly about things like AMD vs. Intel and Mac vs. Windows, should you care to. Thankfully, there are some very helpful folks out there too, and you can learn from their wisdom and mistakes. Here are some helpful sites –

<http://www.musicxp.net/>

<http://www.tweakxp.com/>

<http://www.tomshardware.com/index.html>

<http://www.soundonsound.com/>

<http://www.computermusic.co.uk/main.asp>