

Microsoft Flight Simulator X Tips, Tweaks, and Config Guide



December 2008

It's been over a year since I last updated this document, and just over two since I first published this document. Many things have changed in the two years.

In October 2007, Microsoft has released the Acceleration/SP2 add-on pack, as well as the stand alone Service Pack 2, and lots of things have changed in the tweaking world.

After the release of SP2, I found myself tweaking an *awful* lot less. In fact, I no longer do any adjusting of config files. I can fully and successfully adjust any and all important settings from the in-game FSX Settings areas, and I achieve very satisfactory in-game results.

The first recommendation this document has for you is to install SP2 (or purchase Acceleration, whichever is your pleasure) and enjoy. The impact of the tweaks that follow is significantly diminished with the release of SP2, so that should be your starting point.

Most people will only need to adjust the in-game settings FSX provides. The more detailed tweaks are primarily useful to tinkerers and more advanced users. The risks involved with making some of these changes may be greater than the benefits they would provide with someone not familiar with technical tweaking. As mentioned above, since SP2's release, my tech tweaking has dwindled down to near nothingness... SP2 makes a big difference in the stability and performance of the sim.

Enjoy, and good luck!

Recent Changes:

2008-12-07 - Added strong notation that FIBER_TIME_FRACTION is for single-core CPUs only.

2008-10-21 - SP2/Acceleration, depreciated some tweaks, cleaned up dead links

2007-05-18 - SP1 and Other Updates

2006-11-13 - Removed DXT5-DXT1 conversion tweak (ineffective)

2006-10-27 - A few cfg file notes added, switched to dates for versioning.

2006-10-24 - Power line easement aesthetic tweak documented.

2006-10-23 - Retracted the FPS counter bug for now, SHIFT-Z config file entries mentioned.

2006-10-20 - Added shader hardware hack, minor cfg file additions, some document layout and organization improvements

2006-10-19 - Added Rhumbafloppy's custom `default.xml` file, minor layout items fixed

2006-10-18 - Initial release!

FSX Tips, Tricks, and Tweaks Guide

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-Important Disclaimer-

Everyone attributed as an original idea author and the author of this document take no responsibility if you royally mess up your FSX or computer installation by using the tweaks in this document. Changes to your FSX install or computer system should only be undertaken if you are aware of both the consequences and how to recover. Please, for the love of Pete, backup any and all files before you change, delete, or rename.

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This document was compiled by Greg Germanowski from various posts and threads at a variety of flight simulator community websites. If you've discovered a tweak that is not in this guide but would like it to be, please email be at spamgerm@gmail.com. Conversely, if I have included a tweak of yours that you would like removed, please also email me and I will remove it from further editions.

Introduction

Welcome to my Tips and Tweaks guide to Microsoft Flight Simulator X with SP2. This is a compilation of various ideas, tips, configuration changes, and tweaks which may (or may not!) improve your experience with FSX. Like its predecessors, FSX is very demanding of your hardware. Unfortunately, we virtual pilots are very demanding of our simulators! This creates a bit of a problem because as of this writing, no single desktop hardware platform can run FSX at its most lush settings at a reasonably acceptable degree of smoothness.

With the introduction of Service Pack 1 (SP1) in May 2007, and Acceleration/SP2 in XXX 2008, FSX has become much more manageable for many users. The list of fixes and performance improvements is lengthy, but needless to say your **FIRST** tweak for FSX should be to obtain and install SP1 and SP2, or purchase and install the Acceleration add-on pack.

(If you buy Acceleration, it contains SP1 and SP2 in it - you do not need to install either of them individually)

This document may help you tweak you FSX install on your existing hardware to try to get the best presentation possible. FSX is such a rich and capable platform, it would be a shame to purchase the simulation only to cast it aside in frustration from performance.

For the sake of any personal examples, my relevant PC specs at the time of writing were... AMD Athlon 64 x2 3800+, 2 GB of reasonably generic RAM, and an nVidia 7900GT 256 MB card.

What to Expect from Tweaking

The art of tweaking depends entirely upon your expectations for performance. Some folks are more interested in great image quality, and less interested in smoothness - others are solely focused on smoothness at the expense of visual detail... most of us fall somewhere in between - interested in trading off some visuals for some performance to achieve a happy medium.

When tweaking FSX, patience is a key. There doesn't seem to be a single magic bullet that will cure all your ills - when we jumped from FS2004 to FSX, we gained **huge** improvements to the visual systems which provide major improvements to the visual world. Unfortunately, these huge changes cost a lot when it comes to processor time. Yes, the ACES development team spent hundreds of hours on optimizing the simulation engine and visual system, but even the most expert of optimization cannot make up for sheer processing power - and that's what FSX is ready to use down the road.

Any way you slice it, the fact this document exists is a testament to those intrepid explorers who went out, experienced FSX, and found ways to help improve the experience for everyone else.

Quick Note on FSX Service Packs and Expansion Packs

Service Pack 2 was released concurrently with the Acceleration add-on pack. Because SP2 is included in the Acceleration add-on, users who have purchased Acceleration will also have all SP2 items.

FSX In-Game Settings

Understanding and properly setting the in-game system sliders is the foundation for nearly all tips and tricks for FSX performance. With that in mind, I thought it best to briefly go over some of the performance-related settings and sliders with their capabilities.

Graphics Tab

Target Frame Rate:

The target frame rate is thought of as the FPS lock. FSX does much more than just display pretty pictures on the screen - it needs to calculate your location, weather effects, system states, and a slew of other items in order to determine what to show on the screen. If you set the Target Frame Rate slider to an appropriate setting, you can give the sim the breathing room it needs for all the other calculations before it gets to rendering graphics. By locking at a reasonable rate, you also take steps to prevent wild FPS fluctuations, such as going from high detail to low detail areas when flying.

Important Notes - Does the FPS Lock cause more harm than good?

Some users have indicated that when they lock their FPS, stuttering and *lower* than expected framerates seem to creep in. When they unlock their rates, smooth flying returns along with higher rates. I experimented with this, and found there is some truth to it. Your mileage may vary, of course.

Filtering: (Bilinear, Trilinear, Anisotropic)

The filtering selection sets up what texture filtering mode will be used by your video system. Bilinear is nice, Trilinear is usually better, and Aniso proves best - One word of caution, though. Users have experienced slowdowns when selecting Aniso, so perhaps it's best to use Bi- or Tri-.

Most users are finding best performance is gained by setting this at Bi or Tri, and using your video card's drivers to "force"-adjust the Anisotropic settings.

Anti-aliasing: (On/Off)

This turns the sim-driven antialiasing mode on and off. It is often recommended to turn AA (OFF) in this location, and use your video card driver settings to turn AA on. This will give you more control over which AA mode to use, and may result in both better image quality and frame rates.

Note on Filtering and Anti-Aliasing: It is recommended that you set your video card drivers to "Application Controlled" for AA and AS, and use FSX's in-game settings to turn the features on and off. This is opposite what was ideal for FS2004, but most users are finding superior performance with in-game control over these graphic quality items rather than in-driver.

Global Texture Resolution: (Very Low / Low / Medium / High / Very High)

Your preferred setting may vary, but I tend to keep this at High or better. Very High allows for the largest possible texture sizes, stepping downward cuts back into smaller textures helping to free video memory and texture swapping resources, benefiting performance. This setting matches the custom texture resize process that some tweakers are using, but it does it without actually resizing.

Lens Flare: (On/Off)

Turns the lens flare effect on and off. This imposes a slight performance hit, and sometimes is considered a nuisance (as you usually don't get lens flare when looking out the window of a real airplane). From my experience, this poses only a small performance impact and is a pleasing effect, so it remains on.

Light Bloom: (On/Off)

Turns the blooming effect on and off. Light bloom is a new feature with FSX and displays a dynamic halo around bright lights and bright reflections. Bloom looks gorgeous, but imposes a high performance penalty - especially with mid-to-low end graphics cards. Bloom requires the graphics system to draw the screen image twice, hence the slowdown. Faster video cards may yield better results. I fly with bloom off, but I may sacrifice some AA or AS settings on the video driver settings to see if I can make it workable.

Advanced Animations: (On/Off)

I fly with this on, but haven't compared performance with it off to know if there is any difference.

Informational Text:

No performance impacts...

DX10 Preview Mode: (On/Off)

(SP2 and Vista with DX10 capable hardware only)

Turns the DX10 preview mode on and off. Most people recommend keeping this off, as it has a tendency to break add-on airplanes. DX10 preview is a sneak peek into some things that MSFS can do in the future, but it fell short of some individuals performance expectations. Microsoft included it for you to check out, however you might experience some hiccups and problems along the way.

Aircraft Tab

High Resolution 3D virtual cockpits: (On/Off)

This probably adjusts the detail level of the VC textures. I've left mine on, but haven't done a comparison with it off. I tend to fly in the 2D cockpits more, so VC hasn't garnered much attention from me. If you are an exclusive 2D pilot, you may be inclined to move this to off to potentially save some resources. If you are an exclusive 3D pilot, you will be best served turning this on.

2D Panel Transparency: (0-100%)

This allows you to see through a 2D panel. A neat feature if you fly in high console cockpits in the 2D mode. I haven't seen any performance impact with it off or at any on setting.

Aircraft Casts Shadows On Ground: (On/Off)

I always leave this on - if flying in spot view and attempting a landing, the shadow gives vital altitude information that I can't sacrifice.

Aircraft Casts Shadows on Self: (On/Off)

New for FSX, aircraft can now shadow themselves! I haven't turned this option on, so I cannot speak to it's impact.

Aircraft Landing Lights Illuminate Ground: (On/Off)

Just as the text reads - I turn this on for an air of realism. I've never tested performance with it turned off.

Scenery Tab

Level of Detail Radius: (Small/Medium/Large)

This slider adjusts how far out detailed textures extend from the airplane. Smaller values use a smaller ring, larger values use a larger ring.

Mesh Complexity: (0-100%)

This determines the amount of detail used when rendering terrain (hills and mountains). A higher figure will use the better detail available, a lower figure will "smooth out" some of the samples in order to reduce processor loads. If you fly low and slow in mountainous areas, you may wish to keep this setting high to retain the grandeur of valley flying. If you primarily fly in flat areas, reducing this setting may lower the workload the sim has to do for you. Some users do report good gains in performance by bringing this setting lower.

Mesh Resolution:

This setting restricts the maximum level of detail the terrain engine would try to display if the above Mesh Complexity setting was at 100%. Mesh resolution varies from stock to vendor supplied, so pick the detail level appropriate for your flying needs. The more detailed the mesh, the more performance impact it may have. I believe FSX ships with at best 38M mesh, and that would be a good starting setting.

If you have higher detail 3rd party mesh, be certain to adjust your resolution to match the best available resolution of your addon. (I haven't seen anything better than 10m as of 2008)

Texture Resolution:

Like the above Mesh Resolution setting, this setting controls the best possible texture resolution. You can customize the setting here - move it to 4m to provide you with FS2004-era textures (and save some processing power), or move it to 1m for FSX-supplied stock textures. The more detailed settings in the centimeter range will have no effect right now, but they will be used down the road should an addon vendor release scenery using VERY high resolution images.

Water Effects:

Shader Model 3 in effect here! Water details and reflectivity are controlled with this setting. Users are reporting they get the best performance with the OFF-High 1 setting. Moving into the 2x settings requires more video processing power, and many users report slower performance at those settings.

Scenery Complexity:

This controls the amount of scenery objects your system will display in detailed cities and around airports. The higher the slider, the more objects are displayed. This does have a bearing on performance, especially near high-detail airports. For best performance, keep this slider low, in the Normal area. Ultra-fast processors may be able to work at a higher level.

Autogen Density:

Like the Scenery Complexity setting, this slider controls the amount of Autogen scenery in the world. High settings have an EXTREME impact on performance, so it is advised that you keep Autogen turned low. This isn't all that bad, because FSX has introduced a much higher density of Autogen overall - FS2004's "High" setting is comparable to FSX's "Sparse" setting! Users have also reported that due to FSX's improved stock textures, Autogen isn't as needed to give a good illusion of flight. They turn Autogen off, and fly "barren", but they reap in the benefits of not having to draw Autogen objects.

Ground Scenery Shadows: (On/Off)

As the checkmark says, it causes ground objects to cast a shadow. This is another option I leave off, but your preference may vary. Untested performance impact.

Special Effects Detail:

How much detail is in water spray, waves, dust from a grass landing? This slider determines it. I haven't tested it's performance impact, but I run mine at Medium. Your preference may vary.

Weather Tab

Cloud Draw Distance:

Clouds have a significant performance impact on the simulator - especially detailed clouds (see below). By adjusting the distance they are drawn in, you can adjust your system's performance. I usually notch this one click above the lowest (70mi?), but some users may prefer to have this higher.

Thermal Visualization: (None/Natural/One Other)

Discussion Thread

http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=359045&mesg_id=359045

Depending on your flight location, turning off thermal visualizations may improve your performance. This would be bad if you fly gliders, however since most of us don't glide on a regular basis, this may be best to keep off. Users report a 3.0 to 0.5 FPS improvement with the settings change.

Cloud Detail (Simple/Detailed)

Simple clouds will bring you back to the old FS2002 days with 2D looking clouds.

Detailed clouds are equivalent to FS2004-style detailed clouds which have a volumetric look and feel. Moving to simple clouds will give you a *major* performance improvement, however it does impact the look of the simulator in a fairly large way.

If you are experiencing bad performance under heavy weather, you may wish to look into this setting. In later tips and tricks you may see that it's possible to change out the cloud textures which may help cloud rendering.

Cloud Coverage Density (Only available with detailed clouds)

Detailed clouds can be adjusted in density. The more dense they are, the more cloud "objects" are used when rendering the skies. Obviously, the higher the slider, the worse the performance. I usually keep this slider higher than the midpoint because I appreciate the cloudy skies. In later tips and tricks you may see that it's possible to change out the cloud textures which may help cloud rendering.

Traffic Tab

Airline Traffic Density
General Aviation Density
Airport Vehicle Density
-and-
Road Vehicles
Ships and Ferries
Leisure Boats

As you probably imagined, the traffic density sliders adjust how many objects are up in the skies, on the ground, or in the water as you fly. Each one could have a major or minor impact on your performance.

Airplane traffic still imposes a performance hit, although most users haven't commented as to whether it is a greater hit than in FS2004. (This leads me to believe it's less than or equal to the FS2004 hit).

ROAD traffic is the new problem! While adding a *significant* realism option with cars and trucks moving on the highways, all those little 3D objects in motion hit your processor like a ton of bricks. Unless you can cut back on other settings to make up for it, it is recommended that you scale back your road traffic to regain CPU cycles.

FSX Community Tips and Tricks

And now for the fun! This section goes over the various changes and settings alterations that can be made to FSX in order to further customize your simulator experience. Keep in mind that you should always *always* back up any files or settings you are changing here, in the event that something goes horribly wrong. ☺ Additionally, because this is a static document, some of these tips and tricks may have updated information not in this document - I've included the original thread or source link so that you can check for updates.

Service Pack Installation

(Last Reviewed - October 21, 2008)

Original Thread:
Numerous

Credit To:
ACES Team, AVSIM members.

The flightsim community has had great success with the SP1/SP2 and Acceleration service releases. It is strongly recommended that you install all available updates to FSX before flying. SP2 is also the benchmark release for developers - many newer addons and airplanes may be written against SP2 and require it for proper use.

Autogen Performance –Editing the Default.xml File

(Last Reviewed - October 21, 2008)

Original Thread:
Numerous

Credit To:
Many in the FS2004 days, along with Matt Fox & Richard Ludow

Back in the FS2004 days, it was found that there was a problem with the "custom" Autogen used in the simulator. All those chicken restaurants, gas stations, power substations, etc. etc. were draining resources. The fix was to remove or rename the (fs2004)\Autogen\default.xml, thus disabling this type of Autogen object. The actual bug was fixed in the 9.1 patch, but many users chose to keep this file renamed or removed because of the performance benefit it imposed.

Fast forward to today - FSX's default.xml file contains many entries, many of which are now "standard". Removing this file is not recommended anymore due to the severe impact it may have on your autogen scenery. Editing it is another story though...

Check on various flightsim websites for edited default.xml files. Some were done by Matt Fox, and AVSIM user "Rhumbafloppy" in the early days of FSX, and may still be available today.

Autogen Performance - Customizing Autogen Densities

(Last Reviewed - October 21, 2008)

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=356329&mesg_id=356329&page=2
http://blogs.technet.com/p-12c_pilot/archive/2006/10/10/Autogen-tweak-that-might-help.aspx

Credit To:

Paul (ACES)

Adding two lines to your FSX.CFG file in the [Terrain] section allows you to customize the density and balance of autogen objects. The following lines are the "default" values that populate the variables when the lines are not in the config file. Increasing the number will increase the number of objects of a type, decreasing the number will lessen the count. This config change works in conjunction with the Autogen slider - for example, if you decrease the numbers below, the max slider setting will display less than originally designed, and the sparse slider setting will display less than originally designed.

```
[Terrain]
TERRAIN_MAX_AUTOGEN_TREES_PER_CELL=4500
TERRAIN_MAX_AUTOGEN_BUILDINGS_PER_CELL=3000
```

(Max possible for either = 6000)

Keep in mind that you probably shouldn't use this tweak to lower BOTH values unless you find that the lowest slider isn't low enough. Best use of these config lines would be to shift the balance of the two Autogen object types to your liking. Some users may want Autogen trees only, so they would lower buildings to zero. Others may want mostly buildings and very few trees, so they would lower trees to say, 500. I'd recommend NOT using the settings below as a substitute for the Autogen slider - this may lead to confusion down the road if you forget that you have adjusted the config file, and can't understand why your Autogen slider is giving you so few objects... just a thought!

Various threads are indicating a sweet spot of 3000 and 1500 respectively as being worthwhile settings to try for improvements...

Texture Performance - Autogen Tree Texture Replacements

(Last Reviewed - October 21, 2008)

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=355651&mesg_id=355651&page=6
http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=392071&mesg_id=392071
<http://library.avsim.net/sendfile.php?Location=AVSIM&Proto=ftp&DLID=99487> (requires AVSIM Library Login)

Credit To:

Mike Kelly, Aimé Leclercq

Mike took the time to cut the Autogen tree bitmaps in half, thus halving the video memory needed to generate Autogen. From there, Aimé took it one step further and decided to entirely rework the textures for both EULA compliance as well as improving the stock textures. This resulted in Aimé's TreeX package. (Currently on V.2) TreeX is a great freeware utility which will automatically replace your autogen tree textures with some that are both beautiful, and efficient - and in three different texture sizes for performance tuning. TreeX is a great extension to have, and can indeed help the texture footprint of the autogen trees.

There are other, additional tree texture packs now in existence. You may wish to research and find the best option for you.

Texture Performance - Cloud Texture Replacements

(Last Reviewed - October 21, 2008)

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=355657&mesg_id=355657&page=6

Credit To:

Mike Kelly, and FS2004 experience

SP1 Impact:

This tweak will assist the system by lowering the memory footprint of cloud textures. Its impact may not be as great in the post-SP1 world, but it is still worth considering.

As above AND as it was in FS2004, Mike applied the texture reduction idea to the FSX cloud textures. FSX uses aggressively sized textures for clouds in order to bring you a vivid flying experience. Unfortunately, the textures may be a little too big for some systems. Visit the above link to find the adjusted files. Your mileage may vary, but generally this tweak will further reduce the video memory footprint used by textures, and this may assist with frame rates and/or blurries. The file in the thread may be considered a violation of the EULA, so look to the thread for information on how to do this yourself should it have been removed.

In addition, certain payware offerings now exist such as Flight Environment X which can provide you with lower-resolution cloud textures. Be certain to explore!

Texture Performance - Pops and Stutters During Panning

(Last Reviewed - October 21, 2008)

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=177&topic_id=1150&mesg_id=1150&page=#1175

Credit To:

Brian (ACES)

If you're getting stutters or "pops" during turns or when pan your view around, try adding this to your fsx.cfg file:

```
[BufferPools]
PoolSize=5000000
```

This line will go in the [BufferPools] section - if it isn't there, you may have to create it. The default pool size is 1,000,000 but sometimes (if a lot of things are drawing like autogen) that isn't enough. Increasing it to 5 or even 10 million trades off some of your video memory against having to re-allocate these things all the time.

The buffer pool is (apparently) the amount of memory used by the system to quickly re-introduce textures. You can scale this setting to your liking - perhaps halving the amount suggested by Brian (2500000) in order to balance memory needs.

Blurries – How to Balance Blurries with Framerates

SINGLE CORE MACHINES ONLY - NOT EFFECTIVE ON MULTICORE MACHINES

(Last Reviewed - December 7, 2008)

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=121&topic_id=350873&mesg_id=350873&listing_type=search

Microsoft Knowledgebase Article

<http://support.microsoft.com/?kbid=555738>

Phil Taylor and Adam Szofran Blog Entry

<http://blogs.msdn.com/ptaylor/archive/2007/05/11/tweak-of-the-week.aspx>

Credit To:

Adam (ACES)

REQUIRED READING - Read the thread AND the knowledgebase articles above. They give pertinent and worthwhile information on the topic. Take your time, as they have important concepts which need to be understood before moving onto tackle blurries.

Blurries - no single word evokes more exhausted emotion in the Flight Sim community than blurries. (Except perhaps your least favorite add on developer, but we'll leave that to another guide). Blurries are a *fact of life* in MSFS due to the way the on-screen graphics are drawn.

Simply put, blurries occur when the simulator doesn't have enough processor time to process and draw the outdoor textures, and has to spend it's time working on other aspects of the simulation like "where am I" and "where is the AI traffic", etc. etc.

Adam wrote a very good guide to blurries, why they exist, and what can be done to customize things - see the above link. Rather than detail the tweak here, I'll leave that to the above link, both at AVSIM and to the MS Knowledgebase. The fact that Microsoft has placed an article about this in the knowledgebase is evidence enough that the blurries issue is both important and known to the MS engineers, so for now, we have to deal with the MSFS architecture provided to us.

In short, you will need to add this line on your single core machine:

```
FIBER_FRAME_TIME_FRACTION=0.33
```

...to your FSX.cfg file in the [MAIN] section. The higher this fractional number goes, the more time is dedicated to the terrain/texture engine. If you go too high, you'll get FPS problems - too low, and you'll get blurry problems. In essence, it's a manual slider to help you balance how much time the ground textures get. 0.33 is the default setting.

Users in the forums are indicating that they have brought the setting down to as low as 0.10 with little ill effects, but I would imagine blurries would creep in at those settings. Your mileage, as always, may vary!

Blurries - Texture Bandwidth Tweak

(Last Reviewed - October 21, 2008)

Original Threads:
Numerous

Credit To:
A great many folks from back in the FS2004 days

Back in the FS2004 days, blurry textures were the biggest complaint from users. Flying low and fast would quickly muddy textures and cause a generally poor experience. One of the first fixes to come out was adjusting the bandwidth the sim uses for texture loading. This is accomplished with a config file line change.

In your FSX.cfg file, there will be a line :

```
TEXTURE_BANDWIDTH_MULT=30
```

If you RAISE this number, you will give more bandwidth to the textures. This may lead to less blurries, but it also may introduce microstutters and little hiccups which could upset an otherwise smooth sim experience.

I do not know what the "default" value is, but mine was set at 30. I typically bounce this number up by a factor of x3. I have yet to see any adverse effects, but at the same time I haven't seen any *observable* benefits. (I tend to make tweaks in one lump, so I'm never certain which tweak is helping the most). Some users in the FS2004 days have set this as high as 400, but users today are mentioning that high settings to this number are imposing FPS hits.

This tweak may work in conjunction to Adam's (ACES) fiber tweak above.

Aesthetics – Narrower Power Line Easements

(Last Reviewed - October 18, 2006)

Credit To:
Alex (ACES) via Email

One of the landscape items that JUMPED out at me in FSX was the power line easements. I am not sure if it is the textures that they selected for them, or the width, or what - but they seem to be far more visually jarring than they used to be.

In my own personal opinion, at least in the fall FSX season in New England, the power line easements are just a little too prominent, and I felt it was the width.

You can edit this, however! A quick email to ACES and the "problem" was solved.

You will have to edit your `terrain.cfg` file (located in the root of FSX) As always, **BACK UP YOUR ORIGINAL** before you go playing!

Search for...

```
// Misc vector types - utility  
[Texture.201]
```

And in that section, replace the value on this line...

```
StripWidthMeters=40
```

...figure with a size of your choosing. I went half, down to 20, and things look better!

You should also change the same line in this section...

```
// Misc vector types - utility  
[Texture.202]
```

...with the same figure. Both config sections should be back-to-back in the `terrain.cfg` file.

Note that there are other settings in this file and texture possibilities, but I haven't yet become bold enough to see what they do.

Hardware Performance – AGP Aperture Size

FOR AGP CARD USERS ONLY. PCI Express does not have this setting.
(Last Reviewed - October 18, 2006)

It has been reported that adjusting your AGP aperture size may be of benefit to you AGP vid card users. The de-facto standard for FS2004 was an aperture of 64 MB. Users who HAVE a 64 MB setting who have changed to 128 or 256 have noted much better texture loading speeds and sharpness. This is likely due to the increased texture size for FSX terrain, and the larger aperture size better handling the textures.

Changing your AGP Aperture size is only done in your computer's BIOS, and should only be done if you are comfortable entering the BIOS. (You could reeeeeally mess up your computer if you go hamming around in there).

Chances are, though, if you have an AGP card and you set up a 64 MB aperture, you'll know how to get back in and change it once more.

Inside the FSX.CFG File

The FSX Config file is the holy grail of editing. It contains nearly every configuration setting you would want to adjust within FSX. Editing the config file must be done with great care. You can really mess up your settings by adjusting these configurations. Due to the complexity of editing the FSX.CFG file, I am NOT going to reveal it's location in this document, although it is reasonably easy to find.

Although you should always **back up** your FSX.CFG file before editing, keep in mind that if you really screw it up, you can simply delete the file altogether, and FSX will re-create the config file during its next startup with default values. This will remove any customizations you've done, but it will get you back working again.

Text in this font represents an example FSX.cfg file. Your settings may vary depending on your individual simulation's settings. These indicated values here are for example ONLY - they do NOT represent any sort of optimal config file values.

I've broken the fsx.cfg file into it's individual sections as found on my reasonably unedited system. If browsing gets to be too much, you can use the search function to look for the line or [Section] you are interested in.

Blue Text Indicates Items that have a Settings Panel equivalent. It is recommended you change these settings from within FSX.

Red Text indicates items that do NOT have a settings panel equivalent or are new entries to the config file not found on a default installation - caution should be used.

ALWAYS BACK UP YOUR CONFIG FILE BEFORE EDITING

```
[SOUND]
AmbientUIMusicVolume=-6.000000
SOUND_FADER1=0.500000
SOUND_FADER2=0.500000
SOUND_FADER3=0.500000
SOUND_FADER4=0.500000
AmbientUIMusic=FSX01
  Your FSX Intro Music Selection
SOUND=1
SOUND_QUALITY=2
SOUND_LOD=0
UISound=1
AmbientUI=1

[Display]
ChangeTime=4.000000
TransitionTime=4.000000
ActiveWindowTitleTextColor=255,255,255
ActiveWindowTitleBackColor=0,28,140,64
NonActiveWindowTitleTextColor=255,255,255
NonActiveWindowTitleBackColor=24,33,87,64
InfoUpperRightTextColor=255,0,0
InfoUpperRightBackColor=0,0,0,0
```

InfoLowerLeftTextColor=255,255,255
 InfoLowerLeftBackgroundColor=255,0,0,128
 InfoLowerRightTextColor=255,255,255
 InfoLowerRightBackgroundColor=255,0,0,128
 InfoBrakesEnable=True
 Toggle BRAKES/DIFFERENTIAL BRAKES red display message (True/False)
 InfoParkingBrakesEnable=True
 Toggle PARKING BRAKES red display message (True/False)
 InfoPauseEnable=True
 Toggle PAUSE red display message (True/False)
 InfoSlewEnable=True
 Toggle SLEW red display message (True/False)
 InfoStallEnable=True
 Toggle STALL red display message (True/False)
 InfoOverspeedEnable=True
 Toggle OVERSPEED red display message (True/False)
 BLOOM_EFFECTS=1
 Bloom Effects Toggle (0=Off, 1=On)
 SKINNED_ANIMATIONS=1
 Advanced Animations Toggle (0=Off, 1=On)
 TEXTURE_BANDWIDTH_MULT=40
 Adjust Texture Bandwidth Range
 30 Default.
 High numbers may induce stutters, Low numbers may induce blurries. Must users have historically set this
 between 100-600.
 UPPER_FRAMERATE_LIMIT=25
 Framerate Slider (0=unlimited, 1- 99)
 WideViewAspect=False
 ForceFullscreenVSync=True
 MANUAL CONFIG FILE ENTRY AFTER SERVICE PACK 1 - NOT IN PLACE BY DEFAULT
 From ACES project leader Phil Taylor - "We have seen cases where when VSYNC is on in fullscreen causing
 major fluctuations in frame rate especially when setting the FPS rate limiter above 45. If you run into widely
 fluctuating FPS in fullscreen when aiming for above 45, try turning VSYNC off or reducing below 40."
 ForceVSync=False
 MANUAL CONFIG FILE ENTRY AFTER SERVICE PACK 1 - NOT IN PLACE BY DEFAULT
 From ACES project leader Phil Taylor - "We have seen cases where when VSYNC is on in fullscreen causing
 major fluctuations in frame rate especially when setting the FPS rate limiter above 45. If you run into widely
 fluctuating FPS in fullscreen when aiming for above 45, try turning VSYNC off or reducing below 40."

[Main]

User Objects=Airplane, Helicopter
 SimObjectPaths.0=SimObjects\Airplanes
 SimObjectPaths.1=SimObjects\Rotorcraft
 SimObjectPaths.2=SimObjects\GroundVehicles
 SimObjectPaths.3=SimObjects\Boats
 SimObjectPaths.4=SimObjects\Animals
 SimObjectPaths.5=SimObjects\Misc
 Maximized=1
 Location=124,102,1156,876,\\.\DISPLAY1
 HideMenuNormal=0
 HideMenuFullscreen=1
 FIBER_FRAME_TIME_FRACTION=0.33
 MANUAL CONFIG FILE ENTRY - NOT IN PLACE BY DEFAULT
 This entry allows you to adjust the time slices used by the scenery engine.
 See : <http://support.microsoft.com/?kbid=555738> or above tweak note for adjustment values.
 PerfBucket=5
 This is a SP1 entry that will appear once it is installed.
 PerfBucket is the FSX-set value which indexes what default level of detail (sliders) your machine will be set
 to. Slower machines will have one number, faster machines something else. This is NOT a performance
 tweak, simply an index to tell FSX what detail levels will be applied when you click the "Defaults" button.

```
[ PANELS ]
IMAGE_QUALITY=1
DEFAULT_VIEW=1
    Default Cockpit View Toggle (0=3D "VC", 1=2D Standard)
QUICKTIPS=1
    Show Cockpit Tooltips Toggle (0=Off, 1=On)
PANEL_OPACITY=100
    2D Panel Transparency Slider (1-100, 100=Fully Opaque)
PANEL_MASKING=1
PANEL_STRETCHING=1
UNITS_OF_MEASURE=0

[ Weather ]
WindshieldPrecipitationEffects=1
MinGustTime=10
MaxGustTime=500
MinGustRampSpeed=1
MaxGustRampSpeed=200
MinVarTime=5
MaxVarTime=50
MinVarRampSpeed=10
MaxVarRampSpeed=75
TurbulenceScale=1.000000
WeatherServerAddress=fs2k.zone.com
WeatherServerPort=80
WeatherGraphDataInDialog=0
AdjustForMagVarInDialog=1
DynamicWeather=2
    Dynamic Weather Change Rate Slider
    0 = No Change
    1 = Low
    2 = Medium
    3 = High
    4 = Very High
DownloadWindsAloft=0
    Winds Aloft Toggle (0=Off, 1=On)
DisableTurbulence=0
    Disable Turbulence and Thermals Toggle (0=Off, 1=On)
CLOUD_DRAW_DISTANCE=4
    Cloud Draw Distance Slider
    3 = 60 miles
    4 = 70 miles
    5 = 80 miles
    6 = 90 miles
    7 = 100 miles
    8 = 110 miles
DETAILED_CLOUDS=1
    Detailed Clouds Toggle (0=Off, 1=On)
CLOUD_COVERAGE_DENSITY=8
    Detailed Cloud Density Slider
    5 = Low
    6 = Medium
    7 = High
    8 = Maximum
THERMAL_VISUALS=1
    Thermal Visuals Dropdown
    0 = Off
    1 = Natural
    2 = Schematic

[ DISPLAY.Device.NVIDIA GeForce 7900 GT/GTO.0 ]
```

```
Mode=1280x1024x32
TriLinear=1
```

This section changes with the "Filtering" settings.
Below the listed "Mode" entry (for resolution and color), you will see another entry for the filtering mode in use.

The entry:
Filter=0 - represents no filtering
"blank" - represents Bilinear (There will be no entry)
TriLinear = 1 - represents Trilinear (As seen in the example)
Anisotropic = 1 - represents Anisotropic

```
[CONTROLS]
Controls_Default=Standard
Controls_Current=Standard
KBDAIL=64
KBDELEV=64
KBDRUD=64
```

The following TEXT INFO sections can be used to customize your SHIFT-Z text experience.

Valid entries are...

```
Latitude
Longitude
Altitude
Heading
AirSpeed
WindDirectionAndSpeed
FrameRate
AverageFrameRate
LockedFrameRate
GForce
FuelPercentage
```

It is formatted as...

Entry=Line Number, Position Number

```
[TextInfo.1]
Latitude=1,1
Longitude=1,2
Altitude=1,3
Heading=1,4
AirSpeed=1,5
WindDirectionAndSpeed=1,6
    First SHIFT-Z Info Selection
```

```
[TextInfo.2]
FrameRate=1,1
LockedFrameRate=1,2
GForce=1,3
FuelPercentage=1,4
    Second SHIFT-Z Info Selection
```

```
[TextInfo.3]
Latitude=1,1
Longitude=1,2
Altitude=1,3
Heading=1,4
AirSpeed=1,5
WindDirectionAndSpeed=1,6
FrameRate=2,1
LockedFrameRate=2,2
```

GForce=2,3
 FuelPercentage=2,4
 Third SHIFT-Z Info Selection

[SlewTextInfo.1]
 Latitude=1,1
 Longitude=1,2
 Altitude=1,3
 Heading=1,4
 AirSpeed=1,5
 First SHIFT-Z Info Selection In Slew Mode

[SlewTextInfo.2]
 FrameRate=1,1
 LockedFrameRate=1,2
 Second SHIFT-Z Info Selection In Slew Mode

[SlewTextInfo.3]
 Latitude=1,1
 Longitude=1,2
 Altitude=1,3
 Heading=1,4
 AirSpeed=1,5
 FrameRate=2,1
 LockedFrameRate=2,2
 Third SHIFT-Z Info Selection In Slew Mode

[DynamicHeadMovement]
 LonAccelOnHeadLon=-0.020000
 LonAccelOnHeadPitch=-0.010000
 RollAccelOnHeadLat=0.010000
 YawAccelOnHeadLat=-0.100000
 RollAccelOnHeadRoll=0.100000
 MaxHeadAngle=5.000000
 MaxHeadOffset=0.300000
 HeadMoveTimeConstant=1.000000

These figures will adjust the amount of inertial roll your "head" experiences when in the virtual cockpit. Although the figures above aren't detailed yet, adjusting them will change how your head moves when turning and maneuvering in the virtual cockpit.

Original Thread:

http://forums.avsim.net/dcboard.php?az=show_topic&forum=177&topic_id=1150&mesg_id=1150&page=#1253

[VirtualCopilot]
 VirtualCopilotActive=0

[GRAPHICS]
 SHADER_CACHE_PRIMED=1
 TEXTURE_MAX_LOAD=1024
 Global Texture Resolution Slider
 64 = Very Low
 128 = Low
 256 = Medium
 512 = High
 1024 = Very High

This setting restricts the max texture resolution that can be loaded. In effect, it only loads the mipmap sized listed, as the setting numbers seem to correlate with the texture sizes (1024x1024, 512x512, etc)

NUM_LIGHTS=8

AIRCRAFT_SHADOWS=1
 Aircraft Casts Shadows On Ground Toggle (0=Off, 1=On)
 AIRCRAFT_REFLECTIONS=1
 Appears to have no effect on aircraft reflections, at least with default FSX planes... (0=Off ?, 1=On ?)
 COCKPIT_HIGH_LOD=1
 High-Resolution 3D Cockpit Toggle (0=Off, 1=On)
 LANDING_LIGHTS=1
 Aircraft Landing Lights Visible From Cockpit Toggle (0=Off, 1=On)
 AC_SELF_SHADOW=0
 Aircraft Casts Shadows on Self Toggle (0=Off, 1=On)
 EFFECTS_QUALITY=0
 Special Effects Slider
 0 = Low
 1 = Medium
 2 = High
 GROUND_SHADOWS=0
 Ground Objects Cast Shadows Toggle (0=Off, 1=On)
 TEXTURE_QUALITY=3
 This may be the mipmap adjustment. I moved this to 1, and found that distant sharp edges were a little blurred. 2,3,4 all looked the same to me. This may be a setting to help users with shimmering textures.
 IMAGE_QUALITY=0
 See_Self=1
 Removes or displays your aircraft in all external views. (0=Off, no plane, 1=On, normal)
 Strangely, the airplane shadow is still rendered
 Text_Scroll=1

 Day_Threshold=32768
 Night_Threshold=4096
 MANUAL CONFIG FILE ENTRY AFTER SERVICE PACK 1 - NOT IN PLACE BY DEFAULT
 Allows the user to adjust the start/end of dusk and dawn textures. These represent the amount of 'ambient' light at the ends of the day/night blend threshold. Zero is perfect dark, 65535 is full day sun at noon in the summer. Acceptable entries are 0-65535. The values in the examples above are the default.

[USERINTERFACE]

PageID=1
 Controls which page you see when you launch. I *had* them documented, but lost the paper!
 OpenATCOnCreate=0
 SHOW_MISSION_CAPTIONS=0
 PAUSE_ON_LOST_FOCUS=0
 Pause on Task Switch Toggle (0=Off, 1=On)
 PROMPT_ON_EXIT=1
 Prompt on Exit Toggle (0=Off, 1=On)
 SITUATION=FLIGHTS\OTHER\FLTSIM
 Map_Orientation=2
 ShowAllACPaintSchemes=1
 SelectAircraftManufacturer=Maule
 SelectAircraftPublisher=All
 SelectAircraftType=All

[ATC]

ShowATCText=1
 COMM_MSG_NONE_COLOR=FFFFFFFF
 COMM_MSG_ATC_USER_COLOR=FFB6FFB6
 COMM_MSG_USER_ATC_COLOR=FFFFD21B
 COMM_MSG_ATC_AI_COLOR=FF00FF00
 COMM_MSG_AI_ATC_COLOR=FFFF7840
 AutoOpenAirTrafficWindow=1

```
UsePilotVoice=1  
PilotVoice=0
```

```
[PointOfInterestSystem]  
CycleSetting=0
```

```
[SCENERY]  
LENSFLARE=1  
    Lens Flare Toggle (On=1, Off=0)
```

```
DAWN_DUSK_SMOOTHING=1  
IMAGE_COMPLEXITY=2  
    Scenery Complexity Slider  
    0 = Very Sparse  
    1 = Sparse  
    2 = Normal  
    3 = Dense  
    4 = Very Dense  
    5 = Extremely Dense
```

```
SmallPartRejectRadius=1.0  
MANUAL CONFIG FILE ENTRY AFTER SERVICE PACK 1 - NOT IN PLACE BY DEFAULT
```

From Phil Taylor's Blog - "Basically this culls out small model parts (e.g. air conditioners on roofs of buildings, aircraft doors) if their radius would occupy less than the specified number of screen pixels.

The default is 1.0 (i.e. 1 pixel). 2, and 4 are the next 2 settings we advise. Can significantly improve performance but may cause "popping" of small objects."

```
[TrafficManager]  
AirlineDensity=0  
    Airliner Traffic Density Slider (0-100, 100=Most Dense)  
GADensity=0  
    General Aviation Density Slider (0-100, 100=Most Dense)  
FreewayDensity=0  
    Roads and Freeway Density Slider (0-100, 100=Most Dense)  
ShipsAndFerriesDensity=10  
    Ships and Ferries Density Slider (0-100, 100=Most Dense)  
LeisureBoatsDensity=15  
    Leisure Boat Density Slider (0-100, 100=Most Dense)  
IFROnly=0  
AIRPORT_SCENERY_DENSITY=1  
    Airport Vehicle Density Slider  
    0 = None  
    1 = Minimum  
    2 = Low  
    3 = Medium  
    4 = High  
    5 = Maximum
```

[TERRAIN]**LOD_RADIUS=4.500000**

Level of Detail Radius Slider

2.500000 = Small

3.500000 = Medium

4.500000 = Large

This setting was a popular FS2004 adjustment (although it was under a different name), and users there were able to bring it up to 8.0 for a more crisp sim experience. I have not tested this in FSX yet.

In FSX RTM, setting this higher than 4.50000 caused my install to lock up during flight loading, at "Building Terrain Mesh 72%". Users are indicating that this number may be upwardly flexible after SP1, but I have not tested that.

MESH_COMPLEXITY=90

Mesh Complexity Slider (1-100, 100=Fully Complex)

MESH_RESOLUTION=22

Mesh Resolution Slider

17 = 305m

18 = 152m

19 = 76m

20 = 38m

21 = 19m

22 = 10m

23 = 5m

24 = 2m

25 = 1m

TEXTURE_RESOLUTION=25

Texture Resolution Slider

22 = 10m

23 = 5m

24 = 2m

25 = 1m

26 = 60cm

27 = 30cm

28 = 15cm

29 = 7cm

AUTOGEN_DENSITY=2

Autogen Density Slider

0 = None

1 = Sparse

2 = Normal

3 = Dense

4 = Very Dense

5 = Extremely Dense

TERRAIN_MAX_AUTOGEN_TREES_PER_CELL=4500**MANUAL CONFIG FILE ENTRY - NOT IN PLACE BY DEFAULT**

Controls the relative value of autogen objects of the tree type. This was pointed out by the ACES team in order to help users configure FSX and tune autogen further. Users report this value may cause problems if at zero, and ACES informs us the max possible is 6000. The value in the example above is the default.

TERRAIN_MAX_AUTOGEN_BUILDINGS_PER_CELL=3000**MANUAL CONFIG FILE ENTRY - NOT IN PLACE BY DEFAULT**

Controls the relative value of autogen objects of the building type. This was pointed out by the ACES team in order to help users configure FSX and tune autogen further. Users report this value may cause problems if at zero, and ACES informs us the max possible is 6000. The value in the example above is the default.

By adjusting the above item as well as the associated trees item, you can tune the relative density of autogen objects. Unless you want autogen to be LESS dense when at the sparse setting, it is recommended

that you set the density slider in the simulation first, then tweak this settings to adjust the balance of object types.

```

DETAIL_TEXTURE=1
  Land Detail Texture Toggle (0=Off, 1=On)
WATER_EFFECTS=4
  Water Detail Slider
  0 = None
  1 = 1x Low
  2 = 1x Med
  3 = 1x High
  4 = 2x Low
  5 = 2x Med
  6 = 2x High
  7 = 2x Max

```

```

[AContain]
ShowLabels=1
ShowUserLabel=0
ShowLabelManufacturer=1
ShowLabelModel=1
ShowLabelTailNumber=0
ShowLabelDistance=1
ShowLabelAltitude=1
ShowLabelAirline=0
ShowLabelAirlineAndFlightNumber=0
ShowLabelFlightPlan=0
ShowLabelContainerId=0
ShowLabelAirspeed=0
ShowLabelHeading=0
LabelDelay=1000
LabelColor=FFFF0000

```

This entire section is dedicated to the settings found in the "Traffic" area - they control the labels that AI or Multiplayer aircraft may generate when in the air with you.

```

[INTERNATIONAL]
ASLAT=2
ASLON=1
MEASURE=0

```

```

[REALISM]
PFactor=0.000000
Torque=0.000000
GyroEffect=0.000000
CrashTolerance=0.000000
General=0.000000
UnlimitedFuel=True
TrueAirspeed=False
AutoCoord=False
RealMixture=False
StressDamage=False
GEffect=False
ManualLights=True
GyroDrift=False
CrashWithDyn=False
CrashDetection=False
AutoTrim=False

```

```
[SIM]
SYSCLOCK=1
```

```
[STARTUP]
DEMO=0
SHOW_OPENING_SCREEN=1
STARTUP_DEMO=
LoadWindow=1
```

```
[FACILITIES]
COUNTRY=
STATE=
CITY=
GTL_BUTTON=1628
```

```
[Misc]
Com_Rate=7
```

```
[Trusted]
D:\FSX\GAUGES\Bendx_Kig_Rdo.DLL.nroeeghhqcehecqkbnaztlwtrtwlrbhorrczw=2
```

The [Trusted] section relates to the DLLs and items surrounding gauges. Given that a gauge can theoretically be a program running in and of itself, Microsoft took the safety step of hardening the gauge system. "Trusted" gauge files will be listed in this section, and will likely grow large if you use a significant number of add on aircraft.

```
[FlightPlanMap]
LineWidth=2
SHOW_AIRPORTS=1
SHOW_VORS=1
SHOW_NDBS=1
SHOW_APPROACHES=1
SHOW_INTERSECTIONS=1
SHOW_VICTOR=0
SHOW_JET=0
SHOW_AIRSPACE=1
SHOW_FLIGHTPLAN=1
SHOW_WEATHERSTATIONS=1
SHOW_WEATHERSYSTEMS=1
SHOW_DATATAGS=1
SHOW_TERRAIN=1
show_waypoints=1
show_airways=1
show_markers=1
show_volume_boundaries=1
show_ac_twr=1
```

```
[MULTIPLAYER]
condAccoutPassword=0
```

```
[BufferPools]
PoolSize=1000000
```

MANUAL CONFIG FILE ENTRY (Section and Entry) - NOT IN PLACE BY DEFAULT
Adjusts the memory pool used by texture and system engines. ACES indicates that adjusting this value upwards may improve stutter or texture popping when switching views. Default value is shown, ACES indicates this can be changed x5 or even x10 to address the problem.

```
[JobScheduler]
AffinityMask=?
```

MANUAL CONFIG FILE ENTRY AFTER SERVICE PACK 1 (Section and Entry) - NOT IN PLACE BY DEFAULT

Allows the user to FORCE FSX to create or not create additional threads in a multi-core or multi-processor environment. This may be useful in a QUAD core environment where you wish to use only 3 cores for FSX, but leave another one free for Windows or other programs to use.

ACES recommends NOT adding this line unless you have a specific need and knowledge of what you are doing.

FSX supports up several hundred cores, but the following settings are the only ones provided from ACES at this time.

1 = Use 1 core	0001
3 = Use 2 cores	0011
7 = Use 3 cores	0111
15= Use 4 cores	1111