ABSOLUTE FIDELITY NEWSLETTER

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Editor's Say

This year, 2012, is the Year of the Dragon and year 4710 in the Chinese Calendar. It also marks the 10th Anniversary of Genesis Advanced Technologies.It seems like just yesterday that we started – I guess I must still be having fun.

The relationship between stimuli and the perception is proportional to the logarithm – the Weber-Fechner Law. Human beings cannot perceive a change if it is small in relation to what it already is.

Take images – an increase in resolution of a low resolution picture is more easily perceived than the same increase to a higher resolution picture.

Hence, as we continue to improve our products, the next improvement has to be much larger than the one before. Therein lies the challenge for the next ten years!

I hope that you stay with us for the journey as we grow – the best is yet to be!

Cheers!
Gary

Building Yet Another Absolute Fidelity® Music Server

The problem with computer-based music servers is that computer technology moves so fast that before you've finished building one, it's already obsolete. In Oct 2010, we published the 5th version of the Absolute Fidelity® music server. This was the server used at RMAF 2010 and CES 2011, and also by members of the Pacific Northwest Audio Society. Unfortunately, the motherboard, processor, and memory we used to build that server are all already obsolete.

This 6th version server is based on a Toshiba Laptop for a number of reasons. First, primarily for convenience, I needed one to travel with and to demo at dealer events,

The new laptop-based Absolute Fidelity Music Server with the box from the SSD that was installed.

and packing the server, external hard-drive, screen, keyboard, mouse, three power supplies, etc. was becoming tiresome. Second, with the new async USB DACs, I was becoming less concerned with jitter and more concerned with grounding and isolation issues which I figured could be managed. Third, the new Intel Sandy Bridge processors had features that sounded ideal for what I wanted in a music server.

Objectives

To build a reference quality music server for playback of high-resolution and Redbook digital music files. With USB becoming the "standard" for attaching DACs, Firewire was no longer needed – which made hunting for a suitable laptop a LOT easier.

No consideration is given to things like Internet security, anti-virus protection, etc. Hence, the result of this build is not going to be a general purpose computer that can also be used as a music server. This is a laptop computer that is specifically built to become a music server.

Please note that Genesis is not in the business of building or consulting on music servers, and the instructions given here are for information only. You may need to get a techy friend to read the instructions, and you may need to buy him/her dinner (or a lot of beers) to get help completing this project.

Choosing the Laptop

I knew that I wanted a laptop with the new Sandy Bridge processor, but which one? This latest architecture, released in Jan 2011, attracted me for a couple of reasons – it featured 17% more CPU performance clock-for-clock than the Lynnfield processor used

in the last build, and better CPU-Turbo management.

Why Turbo? We don't need more speed – but what it does offer is a better way to manage slow-down. Why? With the Pentium dual core only Thermal Design Power at only 35W, clocking it DOWN (because music serving doesn't require much power) means that we can passively cool, and still perform because it's 17% faster.

It happened that there was a sale on a very nice Toshiba C655-S5339 with the Pentium B950 processor (35W TDP, 2.1GHz) and Windows 7 Professional that seemed to have the right features and size, and was the right price ($400). So, I bought three.

Also, since the laptop had an ordinary internal hard disk drive, I wanted to replace it with a solid state drive. I added a 240GB SSD to go (which cost almost as much as the laptop!!).

Initial Set-up

When it arrives, turn it on. You'll answer a few questions about yourself, and the laptop sets itself up with Windows 7.

The problem is that most laptops these days don't come with Windows recovery disks, so the first thing you will want to do is to create recovery disks – just in case you make a big mistake and need to restore the laptop to its 'virgin' state. As the laptop comes with a DVD-ROM writer, this is quite easily done (instructions are supplied with the laptop).

To do this, use the Windows 7 Backup utility:

1) Click the round Windows symbol 🟦 – this is the `Start` button.
2) You will see a list of commands, click `[Control Panel]` on the list on the right.
3) A new window will pop-up, this is the Windows Control Panel.

4) On the upper right, you will see [`View by: Category`]. Click the word `Category` and you will get a drop-down list. Click [`Large icons`].

5) Click [`Backup and Restore`].

6) A new menu will open and on the left click the option [`Create a system image`].

In the rest of this paper, the six steps above will be denoted as: `Start > Control Panel > View by: > Large icons > Backup and Restore > Create a system image`.

Follow the instructions to make a set of DVDs that will be an image of your hard-disk, and also a Windows Recovery Disk. You will use these discs in case you have to recover the laptop to "as new" condition. The Windows Recovery Disk will be used to migrate to the SSD later, so don't forget to create it now.

Next, you will want to update Windows. Hook it up to the Internet (preferably using an Ethernet cable) and then `Start > Control Panel > Update` You may have to do this several times to install all the important upgrades, and then install optional upgrades which may generate more important upgrades.

With this particular Toshiba Laptop, Microsoft Security Essentials and .Net Framework are not installed. So, go to the Microsoft website and download and install these two. For the .net Framework, don't just install the Client Services – install the full set-up.

After setting up Windows, you will need to go to the Internet to download the software that you will be using to turn the laptop into a music server.

Foobar – the Music Player

The software we will use for this is a freeware player called Foobar. Go to the official Foobar website at www.foobar2000.org and download

the latest version. Next, download the following official components at the [`Components`] tab:

 ➢ **Album list panel** – needed for Columns UI
 ➢ **ASIO support** – bit-transparent playback with some DACs
 ➢ **Columns UI** – a highly configurable user interface for Foobar
 ➢ **HDCD Decoder** – for decoding HDCD discs, resulting in a 20bit file
 ➢ **Masstagger** – for tagging your FLAC files with the metadata of the music such as title,composer, artist, genre, etc.
 ➢ **Quicktagger** – same as above except that it does one file at a time
 ➢ **WASAPI output support** – seems to be best for Windows 7

Other components will have to be searched for and downloaded from the respective authors websites. They can all be found easily by searching for the **filename in bold**.

 ➢ Album Art Panel – **foo_uie_albumart**. Displays album art as part of Columns UI – not necessary, but adds to the visual attraction.
 ➢ Windows 7 integration – **foo_w7shell**. Integrates Windows7 visualisation such as aero-peek, etc. We will eventually disable this, but download it anyway.
 ➢ Peakmeter Spectrum Visualisation – **foo_uie_vis_peakmeter_spectrum**. While this is CPU intensive, it is extremely useful as a gauge of the quality of the file you are playing.
 ➢ iPhone/iPad Touch Remote Support – **foo_touchremote**. This uses an Apple iPad to control Foobar. In order for this to work, also download and install Bonjour Print Services for Windows 7 from the Apple website.
 ➢ **SoX Resampler** – one of the advantages of using a music server is that you can preprocess the digital files using the power of the computer. One of the best free sample rate converters is the SoX resampler which can be run as a real-time Foobar plug-in or as a batch file to pre-convert the files. The plug-in also allows you to try different sample rates to determine which sound best with the DAC you are using.

Other Useful Software

A few other pieces of free software are easily found using search engines on the Internet.

➢ **dpc latency checker** – this is a useful tool to check that you have done a good job with the server optimization

➢ **CPUID hw monitor** – makes sure that your heat/CPU parameters are within safe limits

➢ **Defraggler** – will be used later to de-fragment and compress the hard disk

➢ **EASEUS Partition Master** – will be used later to reduce the size of the partition so that it will fit into the SSD

After you have downloaded the software, unplug the network cable, and use Security Essentials to scan the computer to make sure that you haven't inadvertently picked up a virus in the meantime.
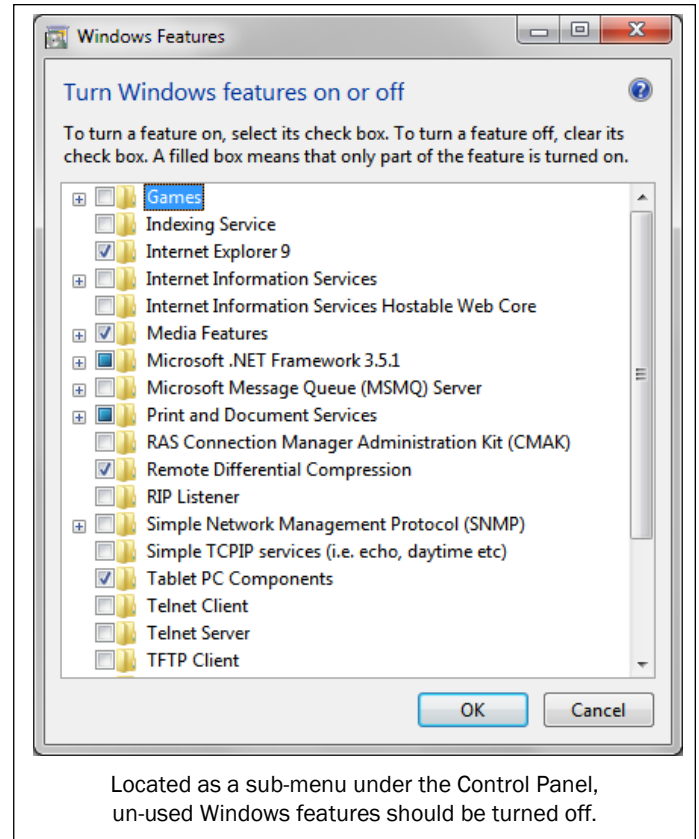
Disabling Power Saving

Once the virus scan completes, disable the power savings mode on the laptop. Usually, to extend battery life, a rather aggressive power saving scheme is implemented on laptops. However, while good for battery life, power saving is bad for music, so disable it by: `Start > Control Panel > View by: > Large icons > Power Options > High Performance`

Next, from the menu list on the left, click `[Choose what closing the lid does]` and on the menu that comes up, choose `[Do Nothing]` for `[When I close the lid]` and `[Shut Down]` for `[When I press the power button]`.

Optimizing Windows

We will set up and tune Windows 7 so that this is just a dedicated music server. All services that do not contribute to good sound will be disabled. We will also prepare Windows to be migrated to an SSD and optimize the BIOS to run cool. You will have to restart the computer several times in the process, and it may take a bit of time so leave the laptop plugged into a power source.
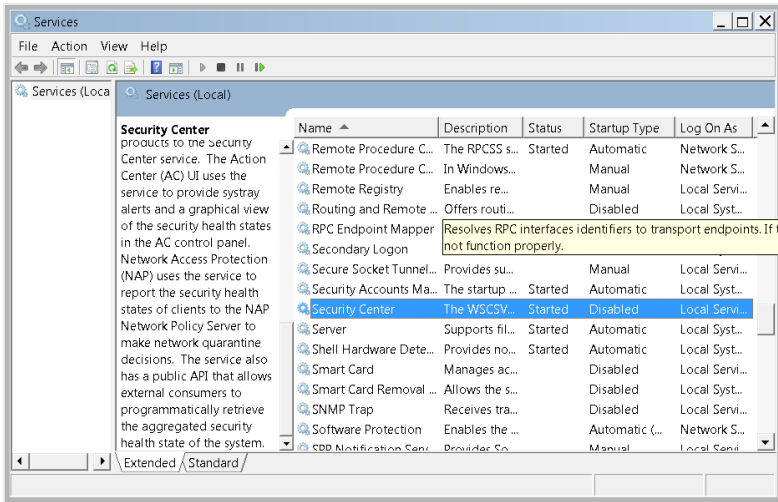

Located as a sub-menu under the Control Panel, un-used Windows features should be turned off.

Disable Redundant Features

At `Start > Control Panel > System > Advanced System Settings > Performance [Settings]` you will get to a menu with three tabs across the top.

➢ Under the `Visual Effects` tab, click the radio button for `Adjust for Best Performance`.

➢ Under the `Advanced` tab, click the `[Change…]` button under `Virtual Memory`. Another panel will pop up. Uncheck the option `Automatically manage paging file size for all drives`. Then you can click the radio button for `No paging file`.

Click the `[OK]` buttons until you get back to the control panel. Restart the computer to activate these settings.

From the `Start > Control Panel > Programs and Features > Turn Windows Features on or off` turn off the following by unchecking the following check boxes:

your computer very vulnerable to computer viruses, Trojans and other forms of attacks. Do not do this if your music server is to be permanently connected to the Internet.

- ➢ **Base Filtering Engine**
- ➢ **Event Log**
- ➢ **Microsoft Antimalware Service**
- ➢ **Microsoft Network Inspection**
- ➢ **Security Account Manager**
- ➢ **Security Center**
- ➢ **Windows Defender**
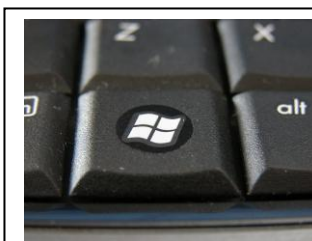- ➢ **Windows Firewall**
- ➢ **Windows Updates**

At this point, I also like to disable User Account Control. **Start > Control Panel > System > User Accounts > Change User Account Control Settings** A new window will pop-up with a slider bar. Slide it all the way down to **[Never Notify]** and confirm.

Installing a Solid State Drive

To reduce the possibility of electrical jitter that could be caused by head movement in the internal hard drive, we replace it with a solid state drive (SSD). The problem is that this can be difficult because the included drive is bigger than the SSD drive we are using to replace it, and the Windows imaging tool does not allow recovery to a smaller drive.

The first step would be to clear space and compact the size of the drive so that it will fit. As Microsoft reserves unmovable clusters, we will have to first remove these.

1) Disable Hibernation (we won't be using it anyway). Press the **[Windows]** key (lower left) on the keyboard, and while it is pressed, press the **[R]** key. The Run dialog will appear. Type in **[cmd]** and hit

- ➢ **Games**
- ➢ **Media Features**
- ➢ **Print and Document Services**
- ➢ **Remote Differential Compression**
- ➢ **Tablet PC Components**
- ➢ **Windows Gadget Platform**
- ➢ **Windows Search**
- ➢ **XPS Services**
- ➢ **XPS Viewer**

Disable System Services

These next steps could give you a lot of grief, so proceed with care!! From **Start > All Programs > Accessories >Run** a screen (next page) will pop up, type in **services.msc**, hit enter and you will get the screen above. Disable the following services by double-clicking on the service name and selecting **Disable** as the **Start-up Type** on the screen that pops up.

- ➢ **Background Intelligent Transfer**
- ➢ **BitLocker Drive Encryption**
- ➢ **Certificate Propogation**
- ➢ **Diagnostic Policy/Service/System/Host**
- ➢ **Distributed Link Tracking Client**
- ➢ **DNS Client**
- ➢ **Encrypting File System**
- ➢ **Extensible Authentication Protocol**
- ➢ **Function Discovery Provider/Resource**
- ➢ **Google Update**
- ➢ **Health Key and Certificate Management**
- ➢ **Internet Connection Sharing**
- ➢ **IP Helper**
- ➢ **Print Spooler**
- ➢ **Quality Windows Audio Video Experience**
- ➢ **Secure Socket Tunneling Protocol**
- ➢ **Themes**

Turning off these next few services will make

The Windows key is usually on the bottom left of the keyboard.

[Enter]. The DOS prompt will appear (a black screen) for you to key in [powercfg.exe -h off] and hit [Enter]. Next, type in [exit] and hit [Enter]. The DOS screen disappears.

2) Disable System Restore. Start > Control Panel > System > System Protection The System Protection menu will appear with a list of drives. Click the [C:] drive and then click [Configure…]. A new menu will appear, and click the radio button that says [Turn off system protection].

This will free up the reserved hibernation file, and release Windows reserved space for restore points. With a new computer, you probably will not need to delete the old restore points. Only if necessary (you have been using the laptop for some time already) use Disc Cleanup to delete the old restore points. Restart the computer.

Once the system restarts, compact the disc using the previously downloaded **defraggler**. Then, run **Partition Master** to reduce the size of the C: partition to at least 10% smaller than the SSD you are installing. You may have to restart the computer a couple of times.

Once this completes, make another new set of System Image DVD-ROMs. This new set will be used to install the SSD, and also will be used as a back-up to restore the laptop to this point.

Turn the laptop over, remove the hard-drive and replace it with the SSD.

Optimizing the BIOS

This is a good time to make sure that the settings in the BIOS are optimized for music playback. Turn the laptop on and when the BIOS post screen shows, Hit the [F2] key and it will take you to the BIOS Setup Utility main system configuration screen. Hit the right arrow key twice to get to [Power Management]. Then use the down arrow key to get to [Dynamic CPU Frequency Mode] and set it to [Always Low].

Next, go down to [SATA Interface Setting] and choose [Performance].

Hit the right arrow key on the keyboard to get to the [Advanced] tab. Hit the down arrow key to [System Configuration] and hit [Enter]. Confirm that [SATA Controller Mode] is [AHCI] (it should be by default). If it is not, set it to [AHCI].

Eject the DVD-ROM drive and insert the Windows Recovery Disk you made, and then Exit, Saving Changes. Once it boots up, use the set of System Image DVD-ROMs that you just made to restore the system to the newly-installed SSD.

When it completes, take out the Windows Recovery Disc and restart the computer.

The system should now reside on the SSD, and be exactly the same as before you installed the SSD.

Next, use Partition Master again to resize the C: drive to about 30GB (this should be more than enough for Windows and software), and create a new partition M: out of the remaining space for use as music storage.

Configure Foobar

In File > Preferences > Playback > Replay Gain – set Source Mode and Processing to none. Then, still in the Preferences menu, under Output > Device set Foobar to play using the WASAPI driver for your DAC.

That's it! The Absolute Fidelity Music Server. For an experienced PC user, it should take no more than an afternoon to complete – including replacing the hard-drive, set-up and tuning.

Additional Software Components

We use another four pieces of software in our server to enhance the experience:

- **ExactAudioCopy** (free) or **dBpoweramp** ($38) – for ripping CDs to the music server. The latest versions of of both include a link to the AccurateRip database – for assurance that your rips are being accurately done.
- **DVD-A Explorer** (free) or **DVD Audio Extractor** ($32.50) – for ripping DVD-A's to the music server. Unfortunately, of the 17 DVD-A's I own, only one of them turned out to be a true high-resolution recording. Nevertheless, if you have a lot of DVD-A's it is worth buying DVD Audio Extractor.
- **FLAC for Windows** – for converting existing WAV files to FLAC. We did extensive A-B comparisons between WAV and FLAC, and couldn't tell the difference. Hence, I now convert all my WAV files to FLAC – not to save disk space since hard drives are so cheap these days, but so that I can associate album art and metadata (artist, album, genre, composer, title, etc.) information to the music that I'm listening to.
- FLAC will require a windows component – **MSCOMCTL.OCX** to be loaded and registered. Use Google search for more information on where to download and how to install this.
- **Album Art Downloader** – a useful program for automatically searching for and downloading album cover artwork of the CDs in your music server. They have to be properly tagged with artist and album information before it will work.

Setting-up for Remote Control

An iPad can be used to remotely control the server. If you haven't already done it, download the foo_touchremote DACP server from wintense.com. The will be four .dll files

to install on your Foobar component directory. You will also need to make sure that you have the complete .NET Framework installed.

Next, an undocumented Windows 7 feature makes it possible to set up a virtual wifi hotspot using the internal wireless adapter of the laptop.

To do this, get to the command prompt (`[Windows] [R]` key in `'cmd'` and press `[Enter]`) and issue these two commands:

- `Netsh wlan set hostednetwork mode=allow ssid=[chosenssidname] key=[10digithex] keyusage=persistent`
- `Netsh wlan start hostednetwork`

Replace `[chosenssidname]` and `[10digithex]` with your preferred SSID and security key. You'll have to do this each time you restart the machine. However, a batch file can be written to do this automatically – buy your best techy friend a couple of beers and he may be able to do it for you.

On your iPad, you will need to go to the iTunes appstore and download the Apple Remote app. After you set up the virtual hotspot as above, configure the iPad to use the hotspot.

In Foobar, `File > Preferences > Media Library > TouchRemote DACP Server` click the button `[Add a new device]` – and a window will pop up asking for a 4-digit code. On the iPad, fire up Remote, and choose `[Add an iTunes Library]`. It will give you a 4-digit code to enter on the server, and you will be "paired".

Finally, to make Foobar look "pretty", the ColumnsUI layout I use is available here: `http://www.genesisloudspeakers.com/downloads/CUI_Layout.fcl`

Import it with `File > Preferences > Display > ColumnsUI > Main > [Import]`

That's it – the 6th generation of the Genesis Absolute Fidelity Music Server. Run on batteries for best sound quality, and have fun!

Understanding Loudspeaker Coupling/Decoupling

A question that I get asked a lot is "what do I have to do to properly stabilize a pair of loudspeakers?" Floor-standing speakers are sometimes supplied with feet and spikes already installed, or they have inserts to allow spikes to be screwed into the cabinet. How effective are spikes? With your stand-mounted monitor (bookshelf) loudspeakers, what stands do I use? What do I use to couple/decouple the speaker to the stand?
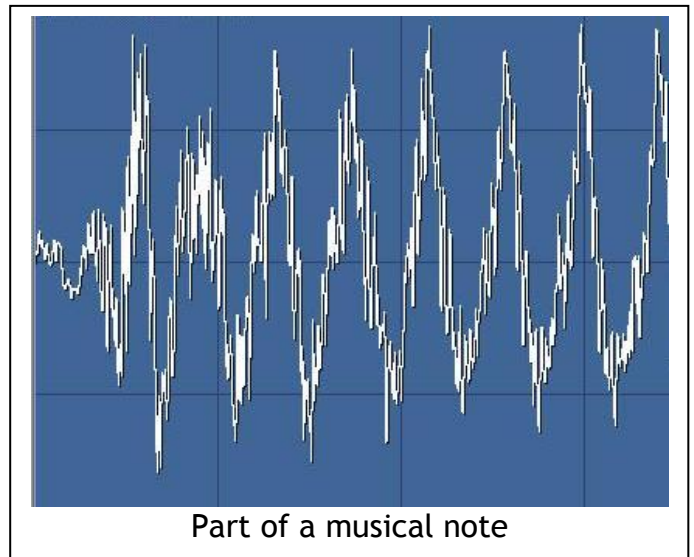
Definitions

Couple – to "make as one" as in coupling a loudspeaker to a loudspeaker stand makes the stand and the loudspeaker as one. Coupling the loudspeaker to the floor makes like the speaker is a part of the floor, and coupling the loudspeaker to the loudspeaker stand makes the stand a part of the loudspeaker – like it has suddenly grown feet.

The opposite is to de-couple – where there is absolutely no relationship. Using an anti-gravity generator to float the loudspeaker is an example of de-coupling. Even magnetic levitation has some degree of coupling. Absolute de-coupling is impossible using current technology.

So, for the real-world purposes of understanding loudspeaker coupling/ decoupling, there is no perfect coupler and there is no perfect de-coupler.

The Musical Context

We must consider that the context of our discussion to be that the loudspeaker is playing music, and not sine waves. Sine waves are
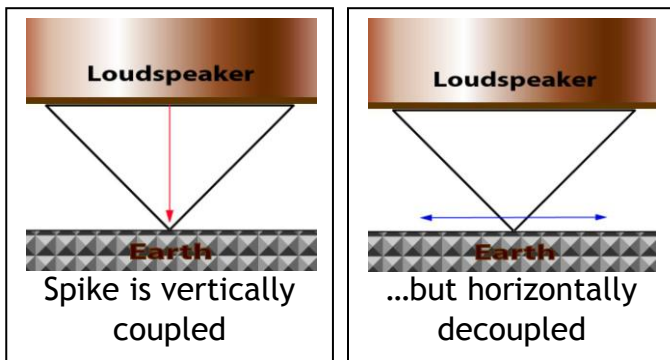

Part of a musical note

symmetric. Music is almost never symmetric. Music is transient and chaotic.

For example, common sense tells us that a plucked guitar string, a bass drum hit, a struck piano key all have a much larger initial positive-going wave than the negative wave. Looking at the waveform of a piano note, it is easy to see that there is more energy in the positive-going wave. As the note decays, it will get more and more symmetric.

Once we understand this about music, we can design proper loudspeaker coupling/ decoupling. This fact is also important to driver design, crossover design, amplifier design, power supply design, and cable design for music reproduction, but at this time we won't go there. There is net forward energy from the loudspeaker drivers, and there will be net backward energy in the loudspeaker cabinet that has to be managed.

Coupling by Spiking Loudspeakers

Spikes are couplers and will couple the loudspeaker to the earth – or are they? Most of what you read will tell you that a spike is a coupler

Spike is vertically coupled

...but horizontally decoupled

– and common sense will tell you that it is, until you examine it in much greater detail

Considering the forces vertically, the spike is a coupler. Due to the tiny contact patch, it is a low impedance path to ground for all frequencies of vibration. Considerations include the size of the contact patch at the point of the spike (how sharp is the spike), the material the spike is made of (whether the spike deforms), and the material the spike sits on (whether it dents).

If the spike deforms, and the deformation is elastic, there may be a resonant frequency at which the spike will "bounce". In general, we would consider the spike an excellent coupler in the vertical plane.

However, what happens when we look at the spike with forces in the horizontal plane? Then, whether the spike is a coupler or a de-coupler takes a whole different complexion.

If, like skates on ice, the spike is very hard, the surface on which it sits is very hard, and there will be low friction, then spike is a decoupler. Depending on the weight of the loudspeaker and the friction of the surface the spike sits on, a sufficiently large sideway force will cause the spike to slide around on the surface.
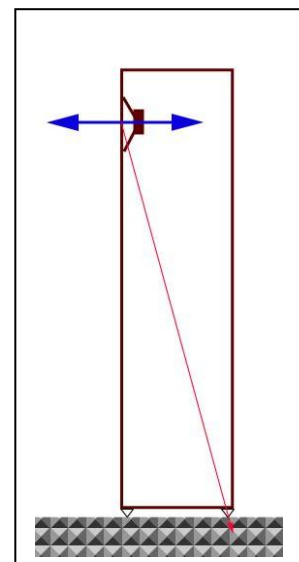
If the spike can deform the surface in any way, there will be a whole host of new things to consider. For example, if the surface is hard stone, and the spike is steel, a large enough

horizontal force could cause the spike to just scrape around on the surface, and you might get a sound like fingernails on a chalkboard (blackboard).

If the surface is wood, and the spike makes a hole and nails the loudspeaker to the wood, then the wood couples to the loudspeaker, and you might get a warm, woody sound that some audiophiles will find attractive.
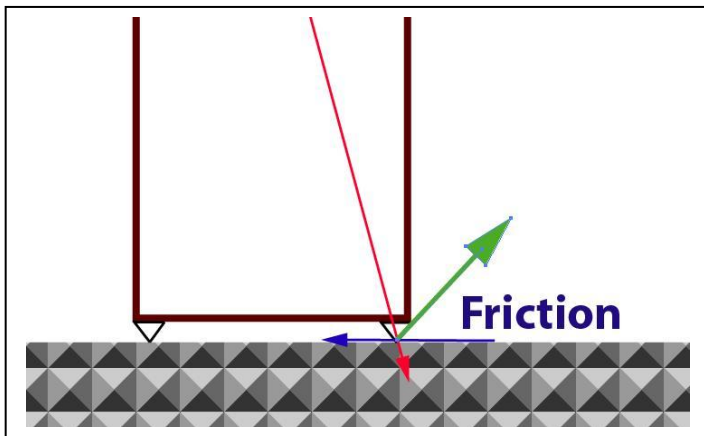
Now that we understand that the spike is a coupler in the vertical plane and could be a decoupler in the horizontal, we need to consider the forces that the spike will meet. The next consideration is simple vector mechanics that we all learned in High School.

Examining the dynamic forces generated by the movement of the driver cone (blue arrow) in a loudspeaker, there will be zero vertical forces since the cone is almost directly above the front spike, but the horizontal force will equal the force generated by the driver assuming always that the spike is tightly coupled to the speaker cabinet by screwing it in or glueing.

The rear spike, on the other hand will have both a vertical element as well as a horizontal element. (The red vector.) We mustn't forget that there are also static forces on the spikes due to the mass of the loudspeaker and gravity.

Since the point of force and the two spikes are rigidly coupled by the loudspeaker cabinet, the forces on the two spikes will also be related. Looking at the rear spike, the combination of the horizontal and vertical forces, and friction will result in a third force (green vector below).

Friction

To illustrate this third force, if you push the top of a spiked loudspeaker, and if there is sufficient static force (weight) on the spikes and if there is sufficient friction, the loudspeaker will start to tilt backwards on the rear spike. If you pull the top of speaker towards the front, the speaker will tilt forwards on the front spike. On a hard, slippery low-friction surface, pulling or pushing the top of the loudspeaker, even when it is on spikes, will cause the loudspeaker to slide.

Thus, although we mentioned earlier that there is zero vertical force on the front spike generated by the horizontal driver forces, the front spike's tightly coupled relationship to the rear spike plus friction at the rear spike creates some vertical forces. You will also find that due to the different vector forces, it is easier to pull the front of the speaker to tilt it forwards than it is to push the front of the speaker to tilt it backwards.

Hence, the spiked speaker will react asymmetrically to forces generated at the top of the speaker (usually the midrange – as the tweeter is usually too small and light to generate significant forces at the foot). With sufficient forces at a midrange/mid-woofer at the top of a tall loudspeaker, the

front spike might *chatter* on a hard surface due to the up and down forces generated.
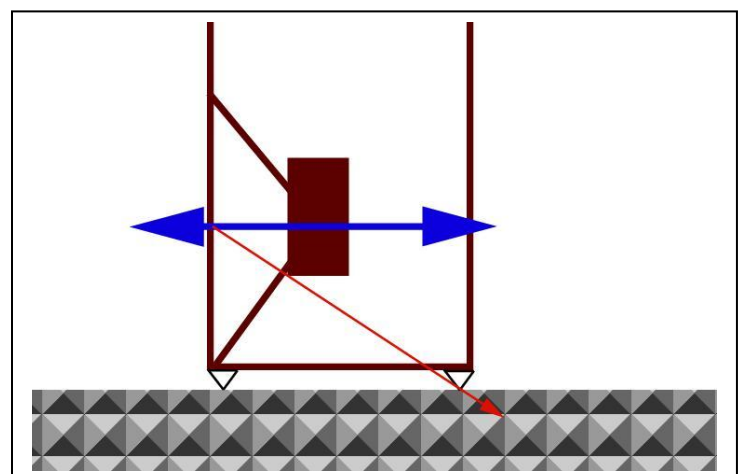
How about a woofer at the bottom of the loudspeaker cabinet?

Looking at the forces created by a woofer at the bottom of the speaker, the forces on the spikes are primarily horizontal. However, as the woofer produces very much larger forces than the midrange and it is usually mounted at the bottom, most of the vibrational forces in a loudspeaker are horizontal – the plane on which a spike is **least effective** as a coupler. This is also true of the forces on a bookshelf loudspeaker on the top of a loudspeaker stand.

A pair of spiked loudspeakers on a very low friction surface (steel spike on a diamond surface for example) might well be launched backwards with a single very loud drum kick. With sufficient friction on the other hand, the forces around the moment of the front and rear spike will generate vertical forces in the other spike – resulting in the subwoofer rocking on the spikes and hopping around the room.

Effectiveness of Spikes

When a loudspeaker is sufficiently massive, the spike is an effective coupler. The large static forces in the vertical plane are difficult to be overcome by the vibrational forces in the

horizontal plane. However, it may not be efficient enough as a coupler to sink the vibrations generated by the drivers to the earth depending on the scale of difference.

As a result, most spiked loudspeakers will sound different depending on the surface upon which they are placed. It may sound "harsh and brittle" if the spike is just barely scratching the surface of a stone or tile floor, or "warm and inviting" if the spike has nailed the loudspeaker into a wooden suspended floor that is now booming along with the loudspeaker.
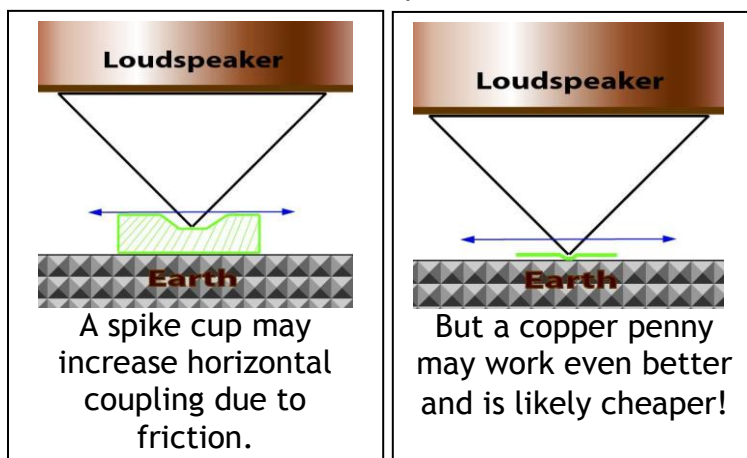
Band-Aids for Spiked Loudspeakers

Enter the "spike cup".

For many reasons, including to protect a valuable hardwood floor, and to "improve" the sound of a spiked loudspeaker, the spike cup was invented.

With stone and ceramic floors, the spike cup (usually made of a metal) solved the problem of a hard, scratchy sound caused by the spike scratching the surface of the stone, or a warm, muddy sound when the floor is made of wood. A cup is also often used to protect a hardwood floor from being marked by the sharp spike.

Remembering that there are more vibration forces in the horizontal plane due to driver

A spike cup may increase horizontal coupling due to friction.

But a copper penny may work even better and is likely cheaper!

movement in the loudspeaker, and due to the mass of the loudspeaker, there are more static forces in the vertical plane, the cup couples well vertically to the earth, and friction between the cup and the surface helps couple to dissipate horizontal vibration forces.

When the cup is made of soft metal like copper or bronze, a steel spike deforms the surface and then couples the spike better to the cup. Due to the much larger contact area between the cup and the ground, vertical coupling is not as good, but since most of the vertical forces are static, the degree of coupling is not critical.

A soft metal is also likely to have higher friction against a smooth floor like granite or marble. An excellent substitute for a spike cup is a pre-1982 US penny. We use a pre-1982 penny because they were 95% copper, whereas post-1982 pennies were zinc with a thin copper plating. For whatever reason, we find copper pennies to sound far better than zinc pennies (and most spike cups we have encountered.)

If you have pre-1964 US dimes in your pocket, they are even better than pre-1983 pennies as they are made of silver, silver being softer than copper.

Due to the weight of the loudspeaker, the spike is likely to put a dimple on one side of the coin, and push out a nipple on the other side. This serves to better couple the spike to the coin in the horizontal plane, and also better couple the coin to the floor.

Hence, coupling or spiking a loudspeaker is not straightforward.

In the next issue, we will examine decoupling using various elastic and visco-elastic materials and the innovative Genesis loudspeaker acoustic suspension system.

A Year-end Award

The Polish magazine High Fidelity conferred upon the Genesis 7.1f loudspeaker their Best Product 2011 award. While they were reviewing the speaker, we launched the new G7.2f with improved crossover, tweeter, midrange and servo-control feedback.

We are now looking forward to getting the G7.2f to the same reviewer, and hoping that the latest version will get the Best of 2012 award!!

Cheers!
Gary

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