

RANDOM

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May 2008

COMMUNICATIONS WITH A PURPOSE

THOUGHTS

Podcasting for Everyone (Part 2)

Last month, I presented the first half of a program that I originally delivered at a meeting of the Columbus Computer Society. The topic was podcasting. This is a great way to get a message out, but only if your message is something that people want to hear. This is part 2.

Keeping the Sound On Track

Loud may be good, but only if it's clear. When a signal is too loud, *clipping* results, which most people describe as *distortion*. It's important to know that I'm not an audio engineer and I'm not familiar with the technical considerations behind what happens. I can tell you that digital recording is totally unforgiving in a way that analog recording seemed not to be. In analog days, signals that consistently peaked above 0dB (100% modulation) could sound all right. This might be because equipment was adjusted in such a way that left some headroom above what was nominally 0dB, or it might have been a function of analog recording.

Digital recordings that peak above 0dB will sound distorted because they clip. The clipping occurs because information is lost. A 16-bit signal can range from all bits off (silence) to all bits on (the loudest sound that can be recorded without distortion). No numbers higher than "16 bits on" exist in this world and if the signal is just one bit louder, it will clip.

The largest (loudest) signal represented by 16 ones (or 4 Fs in Hex) is defined as 0dBFS (zero dB full scale) or FSD (full scale digital). The signal is measured in dB relative to FSD. The unit of measure is dBFS and, except for when there is a full-scale signal (0dBFS), the value is always negative.

Tracing the Audio Path

Audio begins as an analog signal at the microphone and it converted to digital by the sound card's analog-to-digital converter. One important difference between analog recording and digital recording is the lack of noise (tape hiss, for example). Because

of tape hiss and other "floor" noise, analog recordings are generally made at the highest possible level. This isn't necessary with digital recording.

A quiet digital recording can be boosted several dB and then normalized to create a robust output signal that doesn't clip. In this case, it's always better to record at a level that's too low and boost the signal during subsequent processing than to set the input levels so high that clipping results. Once clipping has occurred, the signal cannot be fully repaired.

In plain English: Record so that the loudest parts of the signal are no louder than -6dB and then increase the signal as needed.

Edit the Podcast

Before you start recording, turn off anything that makes noise. Close the door. Let people know that you'll be recording and that they should come in only if the house has caught fire. While you're recording, if the dog starts barking, a fire truck races by, you suffer a sneezing fit, the phone rings, or the cat jumps up on the desk and starts meowing or rubbing his face on the microphone, stop recording. You'll edit the program to eliminate the interruption. Your goal is to sound as much like a commercial broadcast signal as possible.

That's why I recommended using a decent microphone. It's also why you'll edit the recording to eliminate noise and other problems.

When you create the MP3 file, you'll be offered some setting choices:

- Mono or stereo: Unless you need stereo, choose mono to keep the file size smaller.
- Bit rate: From 8 Kbps at 11 KHz (small file) to 128 Kbps at 44 KHz (large file). Larger files sound better, but they take more space on the server and require longer to download. Currently I'm using mono, 34Kbps bit rate, 22,020 Hz sampling, and 16 bits depth.
- Several bit rates are specified for the MP3 standard: 32, 40, 48, 56, 64, 80, 96, 112, 128, 144, 160, 192, 224, 256 and 320 Kbps. Standard sampling frequencies



are 32, 44.1 and 48 kHz, but others are possible. The 44.1 kHz sampling rate is common because it's what's used for CD audio; for TechByte Worldwide, I use 22.020 kHz. The bit depth most commonly used is 16.

Distributing a Podcast is Easy

Making a podcast available requires uploading 2 files: The MP3 that contains the audio and an XML-format file with an RSS extension that contains a description of the podcast “channel” and each podcast program or “item”. The XML file must be edited in a plain text editor (Notepad, if you have nothing else) and the XML standard is extremely strict.

Last Updated	Artist	Album	Track #	Title	Length
3/22/2008 11:09:44 AM	BBC World Service	Science in Action		SciA: 01 May 08	26:57
3/1/2008 6:37:18 PM	Chicago Public Radio	This American Life		#318: With Great Power	26:57
5/1/2008 6:37:17 PM	BBC World Service	Science in Action		SciA: 24 Apr 08	26:58
5/1/2008 6:36:28 PM	2008	TechByte Worldwide (f...		TechByte Worldwide 2008.04.27_Fr...	19:31
5/1/2008 6:36:02 PM	BBC World Service	Instant Guide		IG: The Instant Guide to Fernando Lu...	8:54
4/23/2008 3:34:23 PM	BBC World Service	Instant Guide		IG: The Instant Guide to Maimon.	8:50
4/19/2008 3:21:14 PM	BBC World Service	Science in Action		SciA: 17 Apr 08	26:59
4/19/2008 3:20:42 PM	2008	TechByte Worldwide (f...		TechByte Worldwide 2008.04.20_Sa...	28:46
4/16/2008 4:27:36 PM	Chicago Public Radio	This American Life		#258: Leaving the Fold	59:45
4/16/2008 4:26:29 PM	BBC World Service	Instant Guide		IG: The Instant Guide to China's Huma...	8:31
4/12/2008 2:02:39 PM	BBC World Service	Science in Action		SciA: 10 Apr 08	26:58
4/7/2008 7:03:14 PM	Chicago Public Radio	This American Life		#166: Nobody's Family is Going to Cha...	61:29

Fortunately, Apple's iTunes store has all the information you need to write a good file. And Apple will act as your agent to advertise and make available your podcast. You'll still have to obtain server space and upload the files, but this need not cost more than \$5 to \$10 per month.

The RSS file consists of 3 parts: Header information, channel information, and item (show) information. The file should be in Unix/Linux format.

Before you consider the program to be ready, be certain that you visit a site that validates your RSS file. If the RSS file isn't valid, people won't be able to hear your podcast because Apple will ignore it.

Once the files are in place, listeners can use iTunes or an application such as Winamp (shown above) to download and enjoy your podcast. Easy. β

Microsoft and the Tipping Point

Some things are inevitable. PCs. CDs. DVDs. Open source. Microsoft is OK with the first three of those items, but not so OK with the last one. Microsoft came out of nowhere to knock IBM out of the controlling position it held. Open source will do that to Microsoft.

[Rick: "Maybe not today. Maybe not tomorrow, but soon and for the rest of your life." (Casablanca)]

Microsoft can use delaying tactics, but it has already lost the war. So, to answer my own question: Yes, Microsoft is on the wrong side of the tipping point.

Remember the late 1980s? That's when CDs were invented. You could add a CD player to a personal computer. It was slow. It was expensive. You didn't have very many titles to select from, but the future was clear. CDs would be used to deliver data to computers. Within

a few years, CD players in computers cost \$20 instead of \$500. Software publishers realized that they could ship their applications on \$5 CDs (which eventually dropped in cost to 35 cents) instead of on 15 floppies that each cost \$1.

Today you can buy a device that reads and writes CDs and DVDs (all formats) for \$50 or less.

Recently, a friend who lives in California sent me a link to a European Commission webiste. The site said that the transition to open-source software was underway, but that it wouldn't move quickly. In part, that's true.

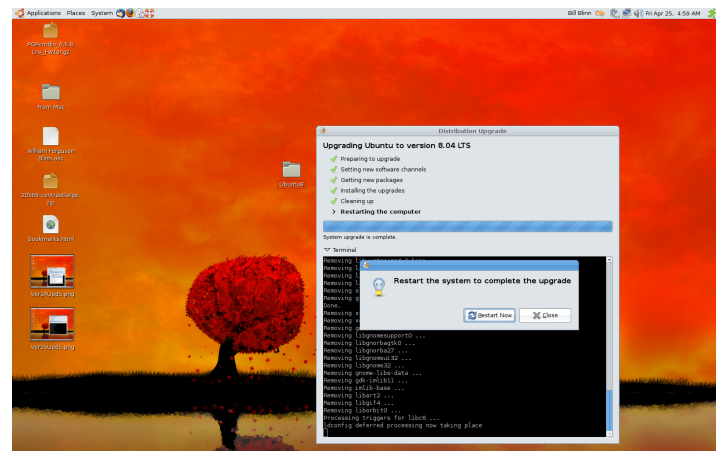
Avalanche Coming

The changeover will be slow for a while, but the tipping point likely will blind-side Microsoft.

The article says that the EU's parliamentary IT department is testing the GNU/Linux distribution Ubuntu, OpenOffice, Firefox and other open source applications and that these products meet the Parliament's office requirements.

British member of parliament James Nicholson says that a fast conversion would raise serious problems in terms of support and guarantees for the IT infrastructure.

Recent fines on Microsoft imposed by the European Commission total nearly 2 billion euros. And now there's a version of Linux that's astonishingly easy to install and maintain. I'm currently evaluating Ubuntu Linux version 8.04 ("Hardy Heron") because I think that Ubuntu is a company that should be making Microsoft very nervous.



Updating to this new version from the previous version involved responding to no more than half a dozen prompts and the process, including the removal of components the system no longer needed, was entirely automatic.

The future is closer than it appears. **B**

on the market by A.J. Stinnett

"A good manager will divide work into logical steps, arrange work so that it flows smoothly, and ensure that employees aren't required to perform tasks that are unnecessary."