

**Sun City Summerlin
Computer Club**

**Digital Music
SIG
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Agenda

- Music Match 8.1 – Brief Overview
- Presentation – Back To Basics
 - Recording MP3 Files From:
LP, FM Stereo or Tape
- Open discussion

Presentation

Recording Stereo LPs, Audio Tapes and FM Stereo Radio

As

MP3 Files on Your Hard Disk

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Digital Audio File Formats

- Microsoft WAVE (.WAV) Uncompressed
 - 44,100 samples per sec, two stereo tracks, 16-bit samples.
 - One minute of sound consumes about 10.6 MB of disk space. (44,100 x 2 x 2 x 60 = 10,584,000 bytes per minute.)
 - CD Quality (same specs).
- Motion Picture Experts Group Level 3 (.MP3) Compressed
 - Size varies based on sample rate.
 - 128 Kbps (CD quality), 64 Kbps (“FM” quality).
 - At 128Kbps, uses about 1 MB / minute of sound.
 - Use 160Kbps for ultimate fidelity (for classical, symphony).

Digital Audio File Formats (2)

- MP3Pro (.MP3) – New Standard Double compressed
 - Size varies based on sample rate.
 - 64 Kbps (CD quality), 48 Kbps (“near CD” quality).
 - At 64Kbps, uses about .5 MB per minute of sound.

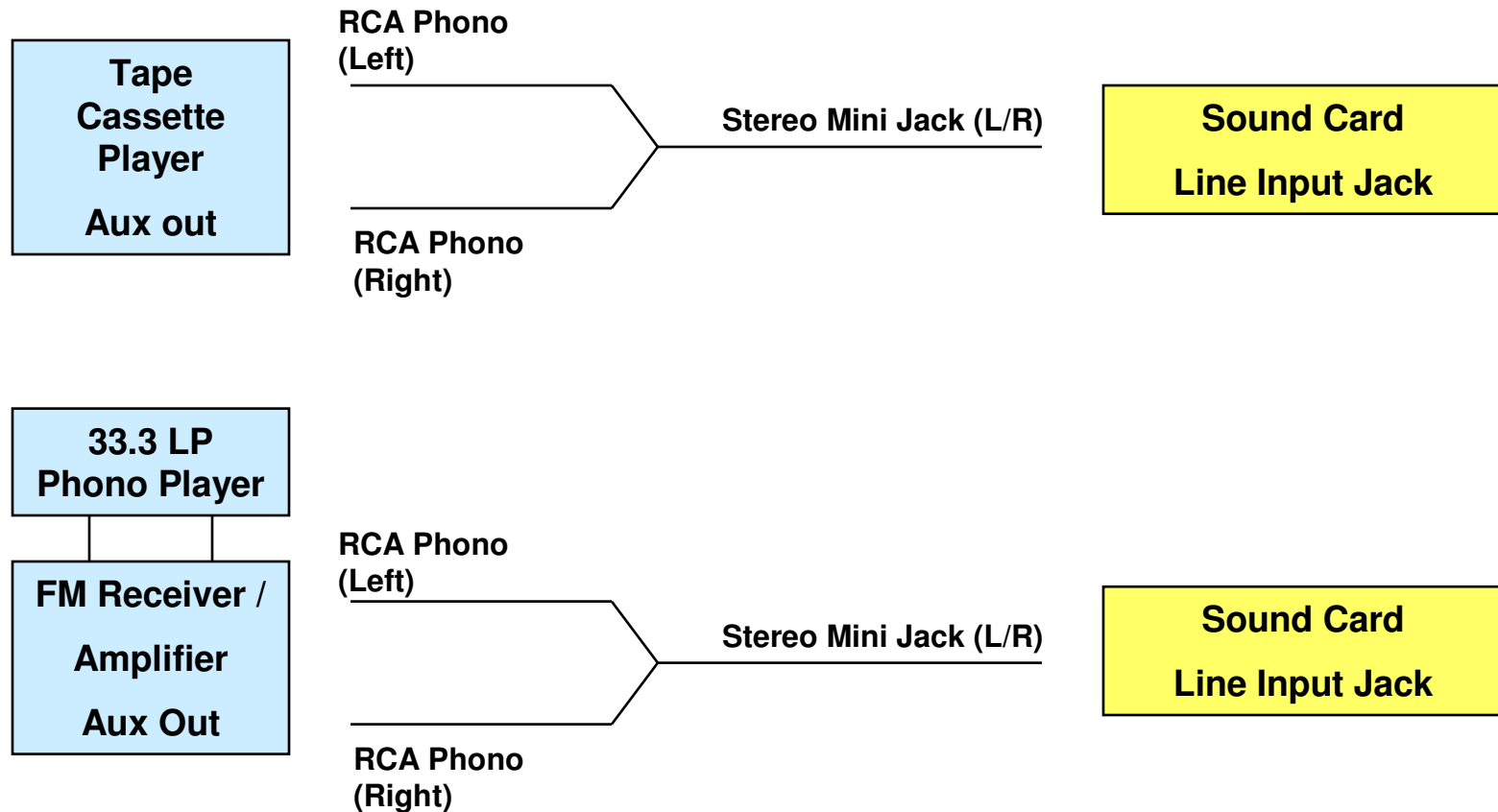
- Microsoft Windows Media Audio (.WMA) Compressed
 - Size varies based on sample rate.
 - Supports Digital Rights Management standards.
 - MS claims files about half the size of .MP3 files.

- More Information
 - <http://ekei.com/audio>

Sound Card / Chip Basics

- Able to synthesize analogue stereo sound from digital output stream (D to A conversion = numbers to an electronic wave form).
- Able to convert analogue stereo input to a digital sound stream (A to D conversion = an electronic wave form to numbers).
- Contains a programmable sound synthesizer.
 - Number and richness of “voices” varies.
 - Used for MIDI music output.
 - Best sound cards use “wave tables”.
- Connects to CD drive so PC can “play” music CDs.
- Card has line in, line / speaker out, and microphone jacks.
- <http://www.howstuffworks.com/sound-card.htm>

Converting Audio Tapes and LPs



Preliminary Steps

- Hook up equipment as per preceding diagram.
- Power on all the stereo equipment.
- Use Windows Volume Control to set levels and mute the Mic input.
- Clean the LP, tape heads, stylus, ...
- “Play” the tape / LP to be recorded into the line-in jack (PC speakers will output the sound) to test reception.
- Rewind or re-queue the audio to be recorded.
- Launch the recording software (MusicMatch or GoldWave).
- Adjust program settings as needed to record from Line Input (Set MP3 bit rate to 128 or 160 – no point in going higher)

Recording

- Two Approaches:
 - Record entire LP or Tape as a single MP3 (easiest).
 - Record individual songs / pieces as individual MP3s.
(start / stop between each piece)
- Activate recording on the PC recording software.
(Normally it will ask for a path \ file name to save to)
- Start playing the LP, tape or single song you want to record.
- Stop the LP, tape or single song.
- Stop the recording software.
- Save the MP3 file, if necessary.
- Set up for recording the next LP, tape or single song.

Installing GoldWave

- Site is: <http://www.goldwave.com>
- Make a folder C:\GoldWave to hold the downloads.
- Download main GoldWave self-extractor / installer.
- Download LameWin self extractor / installer (MP3 encoding).
- Download Calogg.zip (Ogg-Vorbis encoding).
- Run or unzip the downloaded files.
- Install GoldWave in C:\Program Files\GoldWave.
- Install LameWin in C:\Program Files\Lame.
- Unzip Calogg.zip to C:\Goldwave folder.
- Copy C:\Goldwave\calogg00.dll to:
 - C:\Windows\System32 (WinXP); C:\Windows\System (Win9x)
- Copy C:\Program Files\Lame\lame_enc.dll to:
 - C:\Windows\System32 (WinXP); C:\Windows\System (Win9x)

Post-Processing a Full Album

- Use GoldWave, Nero WAVE editor, Spin Doctor (or equivalent)
 - <http://www.goldwave.com>
- If recorded the entire tape or LP, can break it up:
 - Open the “full album” MP3 file.
 - View the entire wave form.
 - Zoom in as needed.
 - Identify start / end of each song. (short interval of 0 level between).
 - Highlight the song from start to end. (include some silence at each end).
 - Save the highlighted segment as a separate MP3 file.

Post-Processing Single Songs

- Use GoldWave or Nero WAVE editor (or equivalent)
 - <http://www.goldwave.com>
- Open the “single song” MP3 file.
- View the entire wave form – look for spikes.
- “Play” the song listen for scratches, pops, tape hiss, etc.
- Try the various automatic filters.
- Adjust recorded volume level as needed.
- Trim off any start / end garbage.
- Apply fades in or out if desired.
- Save the cleaned up file back as a separate MP3 file.
(Name it as: “<Artist> - <Title>.mp3”)

Adding Finished Songs to Music Library

- Launch your favorite music jukebox program (MusicMatch, WMP, ...)
- Move the converted songs to your standard music library folder.
- Invoke the “Add file(s) to Music Library” function.
 - Select the converted .MP3 files for each song
 - Click the “Add” button
 - Find the newly added songs
 - Invoke the “Edit Track Tags” function (MusicMatch 7.2)
 - Add tags for Artist, Album and Title
 - Use the “Rename Files” function
- The .MP3 files are now cataloged in the Music Library.
- They can be played, added to play lists and burned to audio CDs.

Useful Web Links

- <http://www.howstuffworks.com>
- <http://www.zdnet.com>
- <http://www.cdfreaks.com>
- <http://www.roxio.com>
- <http://www.nero.com>

- Turntable repair parts:
 - www.TurntableBasics.com

Web Music Sources

- <http://www.mp3.com/>
- <http://www.emusic.com/>
- <http://www.midikaraoke.com/>
- <http://www.half.com/products/music/index.cfm>
- <http://www.jumpmusic.com/>
- <http://www.secondspin.com>
- <http://www.winmx.com/>

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Round Table Questions and Answers