ANWIDASOFT

A n e w w o r l d i n d i g i t a l a u d i o

Effects Processor Pro v. 2.0

Effects Processor Pro is a real-time audio effects processor for Win 95/98.

Program overview

EPP offers a flexible palette of high quality effects (phaser, flanger, chorus, tremolo and C-Delay) to enhance any audio material.
A simple, accurate and customizable tool for your creativity.

- real-time processing of every input (CD, line-in, mic, synth...) of your audio board. PLUG YOUR GUITAR AND PLAY!!
- real-time and off-line processing of .WAV files
- effective real time; really low latency time.
- no noise due to processing: all processing procedures and links between effects sections are made with 64 bit accuracy, this ensures a truly clean and noiseless sound.
- fully user controllable effects patch
- presets support
- five effects simultaneously
- built-in limiter
- many, carefully scaled, control parameters

Main menu

To enter the main menu just click the right mouse button on the form representing the processor unit.

Command:

Open:	open a .WAV file
Live Input:	allows real time processing of every input of your sound card
Effects patch:	modify effect chaining order
Presets:	store, recall, modify your favorite settings
Preferences:	sound card settings, temp file folder....
Mixdown:	process permanently .WAV file on HD
Exit:	exit EPP
Help:	call this help
About... :	open "about" info window

Using EPP

Please, before using EPP read carefully the Installation & configuration section.

Usage:
To start a processing session with EPP click the right mouse button on the form representing the processor unit to enter a menu containing the "Live input" and the "Open" commands.

Live Input processing
In this modality (activated by the "Live Input" command) EPP will allow real time processing of signals coming from the input of your sound card. This signal can be of any type that your sound card will accept (line input, mic input, SPDIF input, CD-rom, synth.....). To obtain a complete list of the inputs supported by your sound card, please, look at the recording control panel of your sound card mixer.
Live input processing either requires an audio card with full duplex, or two cards, one for recording and one for playback.

To use the "Live Input" mode you have to:

1) Select the desired input from the mixer recording panel of your sound card.
2) Turn off any monitor channel and turn on the wave output from the mixer output panel.
3) Use the connected device (instruments,tape deck, DAT, CD player etc.) as usual
4) Start EPP and select from the menu the "Live Input"
5) Apply the effects as you like

As an example, think you desire to process an audio CD from the CD-Rom player. Be sure that your CD-Rom is correctly connected with the proper cable to the audio board (this is an internal connection that should had been executed during the hardware installation of the sound card. If this connection isn't present you won't be able to listen to CD from the sound card output).
-Turn on the CD/line input from the mixer recording panel. In many sound cards is available a "monitor" channel. This output allows to listen the signal that you are feeding into the sound card. If your sound card has this channel, turn it off, otherwise, once the equalizer will be activated, you will listen to the dry (un-equalized) signal also and you will perceive a delay like effect. (Notice that this consideration applies to other situations, as it happens for example when you intend to process the internal synth of your sound card. In this case you have to turn off the synth output channel also).
- Open the audio CD with any CD player program you own (as for example the standard Windows CD player). Start to play the file with it.
- Turn on EPP and choose from the menu the "Live Input" mode.

Wave file processing
Choose, from the up mentioned menu, the "Open" command and open the .WAV file you intend to process.

Notice
We chose to limit the file formats only to .WAV files 16 bit signed, a standard for high quality audio processing under Windows systems. EPP is not meant to be an editor, or a converter.
It supports only the 16 bit format because we think the 8 bit format is not fit for serious audio applications. For the same reason we put some limitations also to the sampling rate, in fact 16khz is the minimum accepted sample rate.

Now you are ready to process it.
- Press play button to hear your audio file.
- Adjust, following your taste, the sliders of the equalizer.
- When you have achieved a desired result, you can permanently process your audio file choosing the "Mixdown" command from the menu. The program will ask you to enter the name of the destination file.

- Press play button to hear your audio file.
 - Turn on the current selected effect (the default one is phaser) clicking on the "On/Off" button on the processor unit.
Now this button should become lighted (this means that this effect is active) and you should be able to hear the phaser factory preset.
- Try to move the knobs to familiarize with their behaviour (for accurate explanations on every effect, follow the links below).
- To select another effect you must use the spinning button called "Mode".
- If you desire to modify the effect chaining order, choose the "Effects patch" command in the menu.

The available effects in version 2.0 of EPP are:

- Phaser
- Flanger
- Chorus
- Tremolo
- C-Delay

We advise you to use, at first, one effect at a time, so it'll be easier for you to understand its working.
- Choosing the "Presets" command you can recall the factory presets or store your custom settings.
- When you have achieved the desired result, you can permanently process your audio file choosing the "Mixdown" command from

the menu. The program will ask you to enter the name of the destination file.

Tips
- While you are processing you may cause distortion (keep in mind that digital distortion is unpleasant, and different in nature from the analog one). This unwanted effect is generally caused by high settings of the feedback parameters. To avoid it, just decrease the volume slider until no distortion occurs. Remember however that to obtain high dynamics and low noise, you should keep the volume as high as you can, without causing distortion.

Effects patch

The "Effects patch" command allows you to modify the effect chaining order. In the default setting, all the effects are available and positioned in the following order: phaser, flanger, chorus, tremolo, C-Delay.

You must use the two list boxes to add, remove or change the order of an effect.
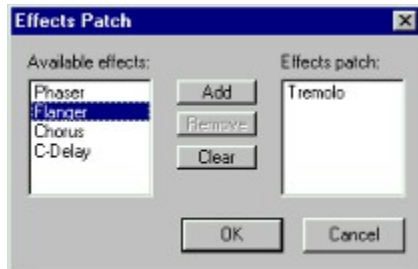
- Select one effect from one of the two list boxes, then choose the desired button.
- As a shortcut, use the mouse double clicking instead of the buttons.
- Double clicking on an effect present in the "Available effects" box, will add it to the "Effects patch" box
- Double clicking on an effect present in the "Effects patch" box, will remove it from the "Effects patch" box
- The "Clear" button removes all the effects from the "Effects patch".

How to store, recall, modify your favorite settings.

By the "Presets" command you will access the following dialog.
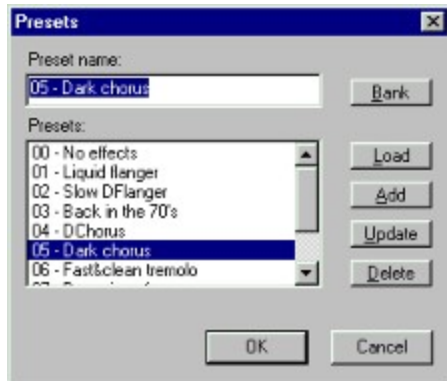
Load: use it to recall a selected preset (or alternatively use double clicking on the desired preset)
Add: this command takes a photograph of the current state of EPP, saving all parameters (knob values, effects patch configuration...)
Update: it modifies the selected preset overwriting it with the current state.
Delete: it deletes the selected preset.

Bank: use this button to load a new equalizer preset bank. To create a new preset bank just create a void file with an ASCII text editor (i.e. NotePad or WordPad) and save it, in a desired directory, with the .PRS extension   (for example mypreset.prs). In this way you will be able to create as many new folders as you need.

Phaser

The phaser program produces stereo phasing. This effect, popular in the '70s, creates a sound similar to a <u>Flanger</u>, but less metallic.

Parameters:
frequency: affects phasing timbre
depth: regulates the modulation depth.
rate: regulates the speed of the modulation
feedback: controls signal recirculation. It creates a sharper timbre
degree: allows stereo enhancing of the incoming audio signal
mix: controls the unprocessed/processed signal ratio

Tips:
- If the rate parameters is equal to 0Hz (in this way no modulation takes place), this phaser works as a stereo allpass-filter (plus unprocessed signal added). This creates a sophisticated notch filtering action (for example, apply it on a clean trumpet and you will obtain, with a proper frequency and feedback setting, a beautiful muted trumpet)

- please, read the note on how to <u>avoid distortion</u>

Flanger

Flanging is an effect produced by mixing a signal with a delayed time-varied copy of itself. This generates a typical "whooshing" sound.
This flanger program produces stereo flanging with two flanges that move in a user definable relationship with each other.

Parameters:
delay: affects flanging timbre
depth: regulates the modulation depth
rate: regulates the speed of the modulation
feedback: controls signal recirculation. It creates a sharper timbre
degree: allows stereo enhancing of the incoming audio signal
mix: controls the unprocessed/processed signal ratio

Tips:
- If the rate parameters is equal to 0 (in this way no modulation takes place), this flanger works as a stereo comb-filter, and it can be useful to produce interesting effects
- If you choose big delay & depth values with a slow rate you obtain chorus like effects
- please, read the note about "detuning" in the modulation paragraph
- please, read the note on how to avoid distortion

Chorus

Chorus is an effect that creates the impression that a given part is being played by more musicians together. It is used often to sweeten and widen the sound of an instrument.
As for a <u>flanger</u>, it is produced by mixing the incoming audio signal with a delayed time-varied copy of itself. Unlike <u>flanging</u>, the chorus delay is wider (>8ms).
This chorus program is a four voice chorus (two stereo pairs).

Parameters:
delay: affects chorus timbre and dimension
depth: regulates the <u>modulation</u> depth
rate: regulates the speed of the <u>modulation</u>
feedback: controls signal recirculation creating a sharper timbre, and a "small reverb" sensation
degree: allows stereo enhancing of the incoming audio signal
mix: controls the unprocessed/processed signal ratio

Tips:
- you can use this effect as a spatial enhancer:
1) put rate = 0 (in this way no modulation takes place)
2) set a big delay, and a big depth value
3) increase degree (and feedback, if you want)

- please, read the note about "detuning" in the <u>modulation</u> paragraph
- please, read the note on how to <u>avoid distortion</u>

C-Delay

This effect creates a rich chorused delay. Its flexibility allows to obtain a great variety of effects like crisp and wide stereo <u>choruses</u>, long delays (up to 1 second), modulated delays, spatial enhancing and more.

Parameters:
delay: affects the delay length
depth: regulates the <u>modulation</u> depth
rate: regulates the speed of the <u>modulation</u>
feedback: controls the echo decay
degree: allows stereo enhancing of the incoming audio signal
mix: controls the unprocessed/processed signal ratio

Tips:
- Setting the rate control to 0, you obtain a classic steady (not chorused) delay
- Using delay values <80 ms, this effect can be used as a spatial enhancer (please read the notes about <u>chorus</u>)

- please, read the note about "detuning" in the <u>modulation</u> paragraph
- please, read the note on how to <u>avoid distortion</u>

Tremolo

This effect continuously changes the amplitude of a signal creating the impression of a pulsing source. Thanks to the additional resonant low pass filter, it's the perfect tool to achieve great vintage sounds (electric pianos,guitars...).

Parameters:
frequency: controls the resonance frequency
depth: regulates the modulation depth
rate: regulates the speed of the modulation
feedback: controls the resonance level
degree: allows stereo enhancing of the incoming audio signal
mix: controls the unprocessed/processed signal ratio

Tips:
- Setting the rate control to 0 (in this way no modulation takes place), you obtain a resonant low pass filter controllable by the frequency and the feedback parameters.
- please, read the note on how to avoid distortion

Delay modulation

Here are two examples on how delay, depth and rate parameters affect delay modulation over time. These should clarify how they work
In this case, we used a sinusoidal modulation that ensures smooth transitions. Surely, this is not the only possibility. You can choose any periodic wave shape, to modulate the delay value (more info in the Future improvements & other projects section).
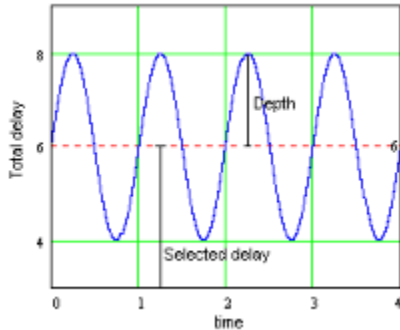

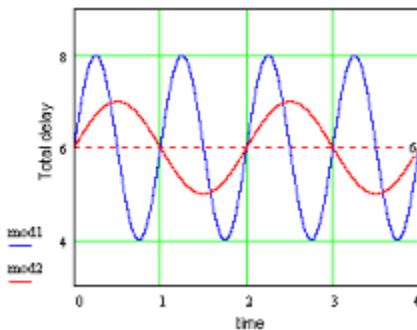*Fig. 1   Delay modulation*

Fig. 2   Different modulation settings

This second example shows two different modulation setting.
Modulation 1 (the blue one) is obtained with Delay=6ms, Depth=2ms and Rate=1Hz.
Modulation 2 (the red   one) is obtained with the same Delay but with Depth=1ms and Rate=0.5Hz.

Modulation 2 is slower and softer (less depth). This second modulation will cause also less detuning (pitch changing).
In fact, the more the modulation has steep fronts (fast delay changes) , the more the pitch modification will be audible.
So if you don't want UFO like effects, decrease rate when you increase depth.
EPP has been already regulated to limit these "horrible" effects (that they are horrible is our opinion, since many software developers are perfectly happy to obtain such stuff).   However in order to keep EPP flexibility, it's still possible to obtain some "unpleasant"   borderline effects.

Installation & configuration

General system requirements
- Pentium processor
- 16 bit sound card (full duplex 16 bit sound card to take full advantage of the "live input" feature)
- Video board with at least 800X600 resolution and 256 colors (recommended >=65536 colors).

Installation
To install EPP you have to:
- create a proper folder on your hard disk
- unzip "EPP20.ZIP" (the zipped file you have found on the net) into that folder
- create a short cut to "EPP20.EXE"

Uninstalling EPP
To remove EPP from your hard disk simply:
- delete the Effects Processor Pro folder and all its contents
- delete "EPP20.INI" from your Windows folder
- delete the shortcut you created for EPP20.EXE

Fine tuning latency time
Latency time is the minimal time necessary to get the effect of a parameter change. Thus it is desirable to get it as short as possible. These are the steps necessary to tune EPP for its maximum performance during real-time wave file processing.
Notice that the same steps can be followed to tune EPP for the live-input processing modality. Just choose live-input mode instead of opening and playing a file.

- enter "Preferences" in main menu
- choose the audio board(s) you intend to use as input and output
- open main menu
- open a stereo 44.1 Khz .WAV file
- play it with all the effects off

If you can't hear anything:
- check that your audio board is correctly installed. If it is (this means that it must work with other audio softwares) try to enlarge latency time as told below. If your audio board still doesn't play anything, please, contact us.

If audio material is frequently chopped:
- enter "Preferences" in main menu
- increase latency time.
- if necessary, repeat all the steps above until everything is OK

Now turn on progressively some effects. After a certain number of them have been activated, you might encounter the up-mentioned problem again. In fact, it exists a trade-off between activated effects (that corresponds to power of computation required) and latency time. In this case increase latency time.
If EPP doesn't work with all filter sections on, even if latency time is set to its maximum value, your machine is not fast enough. This should not happen if your computer has a P166 (INTEL or AMD) CPU or better.

if everything is already OK:
- enter "Preferences" in main menu
- decrease as much as you can (that is without encountering the above mentioned problems) the latency value
- when latency time becomes short for your hardware setup, some clicks of different nature may be caused by particular latency values. Please, try to make manually changes to avoid this problem

Multitasking
Once you have tuned Effects Processor Pro for its optimum performances, if you desire to allow more multitasking while audio is being played, increase the number of buffers used. In this way you will avoid glitches in the audio stream while executing other programs. Notice that increasing the number of buffers will enlarge the delay introduced between live audio input and output.
To allows smooth operations with common sound cards (as Sound Blaster) during "Live Input" mode, the default value of the number of buffers is set to 5. This value can be decreased to 3 if wave file processing only is required.
The "turbo mode" option, accessible from the input preferences, allows faster reactivity while using the live input mode. This modality is less sensible to the increasing of the number of buffers in order to achieve better multitasking performances. If you want to privilege multitasking operations, disable the related check box.
The balance between short latency time values on one hand, and minimizing the risk for glitches on the other, is done by adjusting the number of buffers on the proper "Preferences" combo box.   As a general rule, it's better to have a few large buffers, rather than many small ones. We suggest you to find the optimal settings for both wave file processing mode and live input mode. Generally, the optimal values for the live input mode will work with the wave file processing mode also (while the contrary isn't usually true). However it might be not the best setting for this last one.

Important additional notes

- response time is directly proportional to the length of the buffer sent to the audio board. Minimum latency allowed is strictly related to the characteristic of your sound card (mainly), of your CPU power and of your hard disk transfer rate. Too short latency time might not work with your hardware.
- remember that many Sound Blaster boards (and similar) haven't got 48Khz sample rate files playback capability, so some problems may occur for this kind of files.
- please, notice that many Sound Blaster don't support real 16 bit full duplex. Often they acquire the incoming signal with 16 bit accuracy using then low quality 8 bit format for the output. This obviously implies a sound degradation.
- the default setting of latency time, should work well with Sound Blaster (or similar boards). We have tried EPP with Sound Blaster 16 value PnP, 32 PnP, AWE 32, AWE 64, IBM Mwave, Turtle Beach Pinnacle and Pro Audio Spectrum boards. If you have some problems with some other models, please, contact us.

Perhaps it might be useful to show you, as an example, the latency values we use on our machines:

Pentium 133Mhz   RAM 24MB
Hard Disk EIDE 1.7Gb
SB 16 value PnP

Live Input Processing   (turbo mode ON)
LATENCY=150 ms
BUFFERS =5

Wave File Processing
LATENCY=130 ms
BUFFERS =3

Notice:
130ms is the lower limit to make Sound Blaster work on this system (and for what we could experience, this should be a standard value for many other machines using a Sound Blaster).

K6 233Mhz   RAM 16MB, 32MB, 64MB
Hard Disk EIDE 3.2Gb
Turtle Beach Pinnacle

Live Input Processing (turbo mode ON)
LATENCY= 60ms
BUFFERS= 3

Wave File Processing
LATENCY= 15ms
BUFFERS= 3

With this setting all effects in real time with no problem.

Version history

v. 2.0 (September '99)
Enhancements:
- Live input support
- new player engine (multiple bufferization)
- tremolo + resonant LP effect
- presets support
- temporary folder management (folder, free space, etc..)
- new   preferences dialog layout
- message after Mixdown if distortion occurred

Fixed bugs:
 - initialization of CDelay in mixdown procedure
 - icon in the task bar and processor unit hidden (values in the ini > screen res)
 - no more clicks changing frequency in the phaser effect

v. 1.5 (September '98)
Enhancements:
- Windows 98 support
- new effect (C-Delay)
- built-in limiter
- flanger depth widened
- degree control of chorus improved

Fixed bugs:
- fixed a problem regarding the graphic interface visualization   (that was spoilt during particular conditions of working)
- solved a problem that caused crashes using Guillemot sound cards
- corrected other minor bugs

v. 1.0 (January '98)
First release

See Future improvements & other ANWIDA Soft projects to know what we have in store for you.

Future improvements & other projects

ANWIDA Soft has been working in digital audio software since 1995.
We have developed   Parametric Equalizer Pro   and Graphic Equalizer Pro
Look for the most updated release and download it from our WWW site: http://www.anwida.com.

Our future goals include:

Improvements of EPP:
- add other effects (distortion, reverb..)
- add user definable modulation wave shape
- eliminate transition clicks due to real time changes of some knobs (as delay or depth).
- MIDI external control over knobs and sliders

New projects:
- develop a real-time high quality mixing console (this is the natural extension of ParEq)
- develop a real-time high quality reverb
- develop a real-time high quality multitap delay processor
- develop a real-time high quality dynamic processor

- adopt DirectX (ex ActiveMovie) audio plug-in architecture

Visit us at http://www.anwida.com for the latest news.

Parametric Equalizer Pro

Parametric Equalizer Pro is a professional real-time parametric equalizer that lets you shape the timbre of a sound by boosting or attenuating its frequency components. The high quality and flexibility of the program's filter bank, together with its intuitive user interface, enable you to make subtle or radical changes to your audio material.
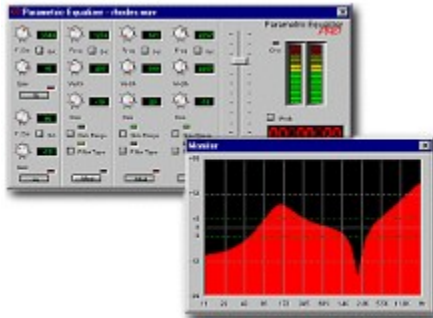

Fig. 1   Parametric Equalizer Pro v 2.5

Look for the most updated release and download it from our WWW site: http://www.anwida.com

Graphic Equalizer Pro

Graphic Equalizer Pro is a professional real-time graphic equalizer.
It enables you to add up to 12 dB of boost or cut at any of 15 bands centered around International Standards Organization (ISO) 2/3 octave frequencies from 20Hz to 20kHz. This two channel system offers completely independent channel control.

The perspective used in designing Graphic Equalizer Pro was to obtain the warmth of a classic analog equalizer with the clarity and the accuracy of the digital domain processing. This was achieved adopting the best analog equipment's topology.

Fig. 1   Graphic Equalizer Pro v 1.5

Look for the most updated release and download it from our WWW site: http://www.anwida.com

Shareware, distribution, warranty & copyright

Evaluation and Registration
This is NO free software.
EPP is a SHAREWARE application (JUST FOR $30 U.S.).
Subject to the terms below, you are licensed to use this software for evaluation purposes without charge. Shareware distribution, in fact, gives users a chance to try software before buying it. But if you try a shareware program (as EPP) - and continue using it - you are required to register it. Registration numbers can only be given out by ANWIDA Soft.
To register and encourage further development, please follow the directions in this help file.

Distribution
As shareware, you can give copies of EPP to anyone you think might find it useful. You can also upload it to BBS, FTP or HTTP sites. The package may be distributed on CD-ROM.

You are prohibited from:
- permitting other individuals to use this software except for evaluation purposes;
- modifying, translating, reverse engineering, decompiling, disassembling, or creating derivative works based on this Software;
- renting, leasing, granting a security interest in, or otherwise transferring rights to this software;
- removing any proprietary notices or labels on this software.

Disclaimer of Warranty
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About ANWIDA Soft

ANWIDA Soft has been working in digital audio software since 1995.
All our work relies on the synergy between our wide professional experience in the musical & in the scientific field.
This allows us to produce carefully designed products developed by musicians for musicians.

Available from ANWIDA Soft   Parametric Equalizer Pro   and Graphic Equalizer Pro

Andrea Forlani
E-mail: forlani@anwida.com

Massimiliano Tonelli
E-mail: tonelli@anwida.com

How to register

When you install <u>EPP</u> the program is in a "demo" mode. This means that you cannot use all features of the full version, but you can test the software before you decide to purchase it.

Without registering your copy of <u>EPP</u>, the following restrictions apply :

- Audio stream pauses every 15 seconds during <u>wave file processing</u>
- Audio stream stops every 1 minute during <u>live input processing</u>
- You are not able to save files longer than 15 seconds

Registration price: Effects Processor Pro $30US

Registering Effects Processor Pro you will get a personal registration number; as a registered user you will receive further passwords to unlock all the intermediary minor releases (when available).

<u>Minor releases</u> correspond to an increment in the minor version number (i.e. 1.3,1.4)   Minor releases consist of bug fixes, little changes and small feature additions.
<u>Major releases</u> correspond to an increment in the major version number, (i.e. 1.0,2.0).   Major releases will contain major new enhancements and features over the previous version.

Tech support is provided for free to the registered users

We accept two modalities of payment:

1) On-line: all major credit cards accepted; visit us at http://www.anwida.com for the latest on-line registering options.
2) By mail: send us the <u>registration form</u> available in this help, with money (US $) or checks (US $, payable to Andrea Forlani) enclosed to the address below. We will send by e-mail to you your personal password to unlock all <u>EPP</u> features. If you haven't got an e-mail address, please, add 5 US $ for mail delivery.

Please, be sure to send your mail order to:

Andrea Forlani
Via Baracca, 16
61100   PESARO
ITALY

For more information about registrations, contact us at <u>sales@anwida.com</u>, for any other information:

ANWIDA Soft

E-mail
Information: <u>info@anwida.com</u>
Tech Support: <u>support@anwida.com</u>

WWW
<u>http://www.anwida.com</u>

Effects Processor Pro Registration Form

Name (first&last):_____
[Company]:   _____
Address: _____
                  _____
City: _____State/Prov:_____Zip:_____
Country: _____

E-mail: _____
Phone #:   _____
FAX #:   _____

Version of EPP
you are using: __.____

Pricing: ____copies of Effects Processor Pro at $30US = $_____

You may answer these if you like !

Where did you ear about this program? _____
What do you use EPP for ?   _____
CPU you are using: _____
OS you are using: _____
Sound Card: _____

What kind of competence have you got in music?

[   ] None

[   ] Multimedia

[   ] Musician   Instrument(s): _____

[   ] Sound Engineer

[   ] Other (please be specific): _____

Comments/Suggestions: _____
_____
_____
_____
_____

°°° THANK YOU !!! °°°