VOICEMEETER

Virtual Audio Mixer for Windows

USER MANUAL

Step By Step Manual for Windows Vista, Win7, Win8.

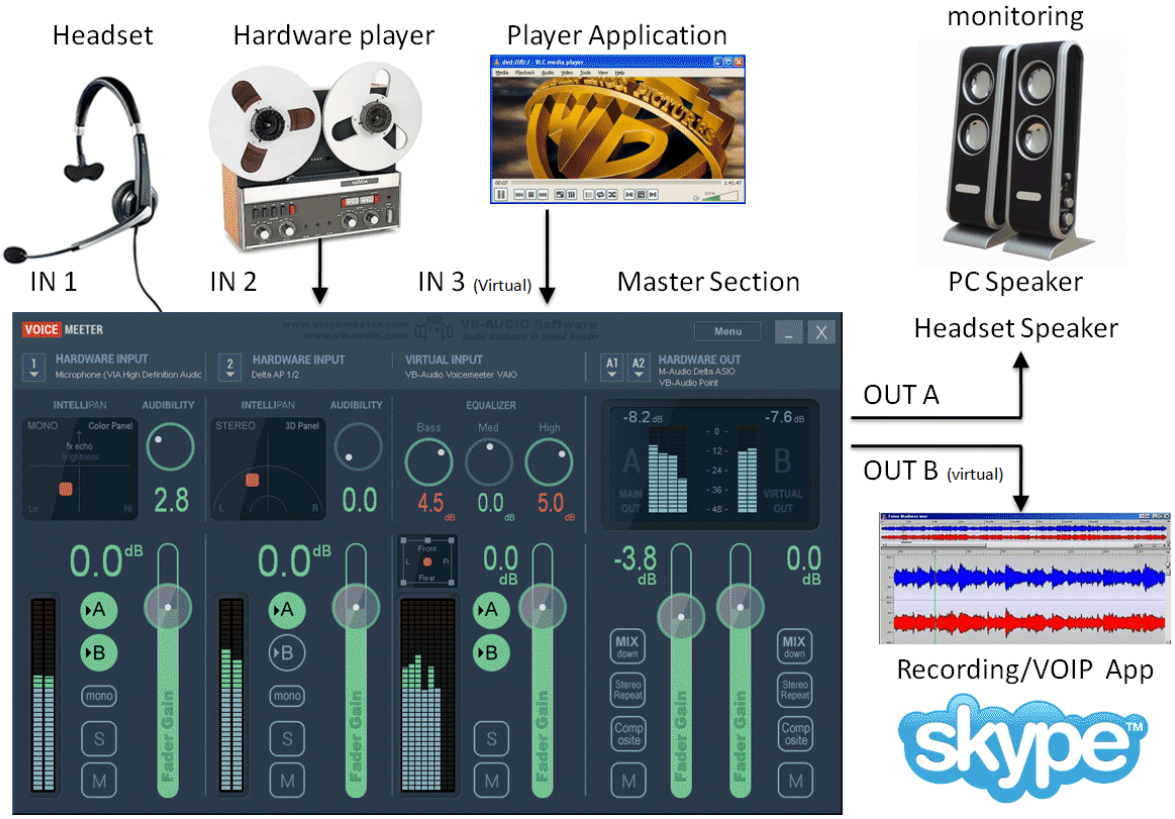
Additionally:
How to talk and send music in the same time on Skype or Google Voice?
How to manage 2 headsets on Skype or Google voice?
How to record Conference-Call in 8 tracks for post production?

Fair Trade, Affordable For Everyone
Voicemeeter is a donationware, free to download and free to use! It allows you to set the license price according to your means, if you find this application useful.
Thanks for your participation and support!

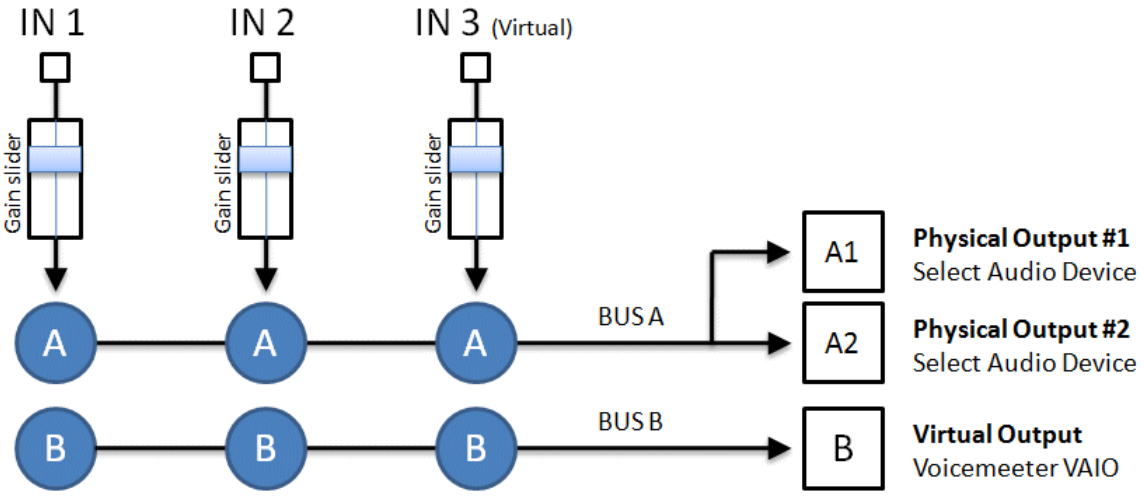
Windows XP, VISTA, WIN7, WIN8, WIN8.1 32/64 bits (MME, WDM/WASAPI, KS, ASIO).
www.voicemeeter.com / www.vb-cable.com

INTRODUCTION:

Voicemeeter is a virtual mixing console able to manage 3 audio inputs (2 physicals and 1 virtual) and 3 audio outputs (2 physicals and 1 virtual) though 2 busses A & B.



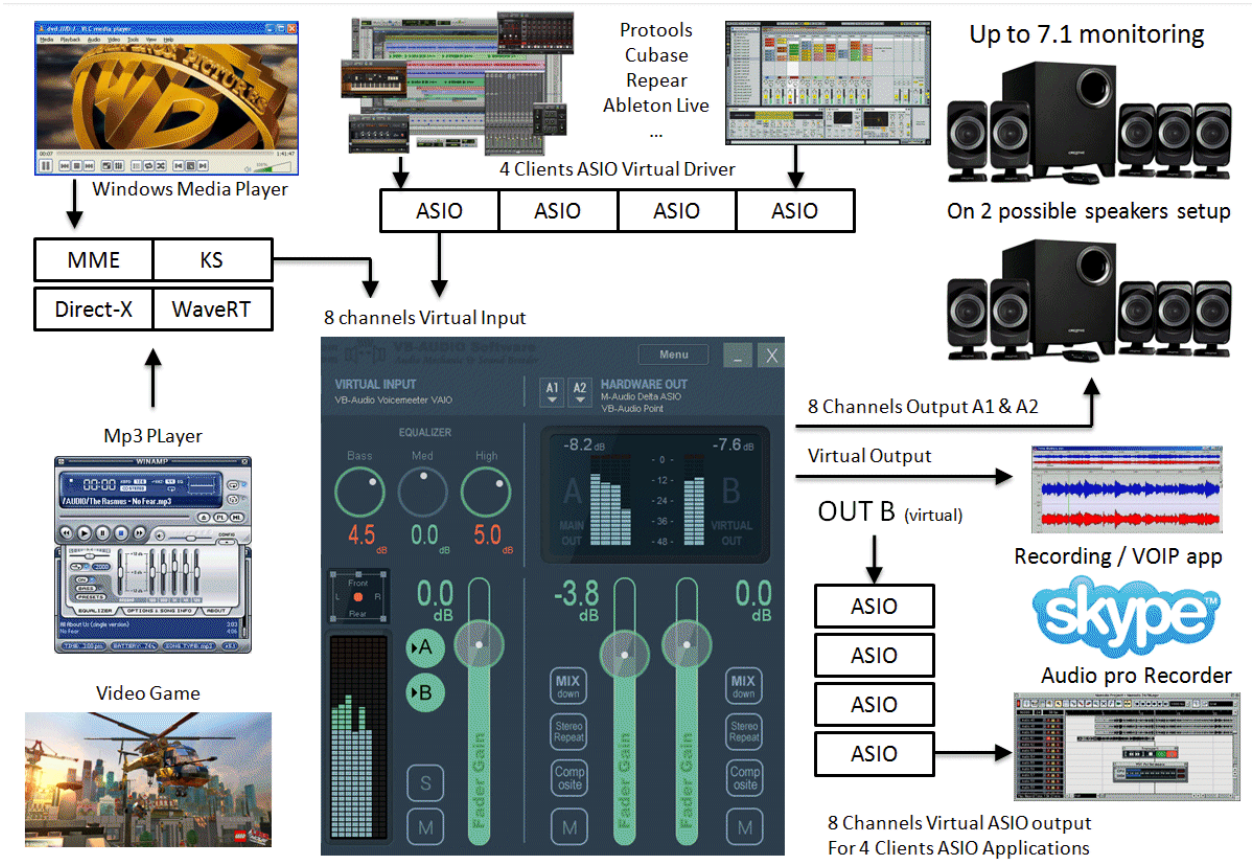
As Mixing Console, Voicemeeter offers large amount of use case combinations: To mix in real time your voice with your music, your movie, your video game or web radio and share it on internet through VOIP applications. Voicemeeter is also able to let you manage 2 Headsets and create new VOIP experiences …



Voicemeeter General Diagram (3 inputs / 2 Buses Mixing Console)

Voicemeeter as Universal Virtual Audio Device:

Voicemeeter offers Virtual Audio Point on Input #3 and on BUS B (Output B). This Virtual Audio I/O (VAIO) supports all possible Audio Interfaces and allows connecting whatever audio applications, including audio pro DAW or musical instrument working with ASIO devices.

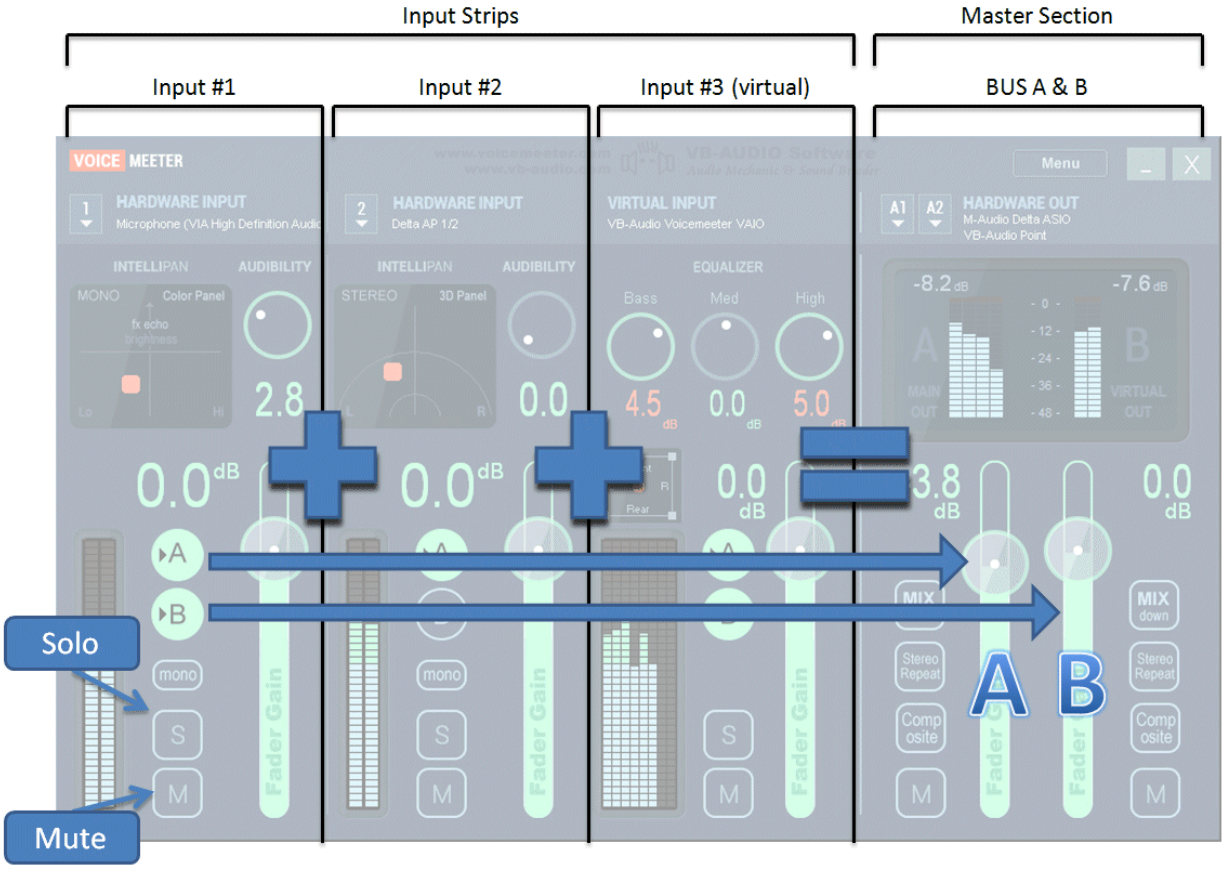


Audio interfaces type supported by Voicemeeter Virtual audio I/O (Voicemeeter VAIO).

Interface Type	Description
MME	The MME API or the Windows Multimedia API (also known as WinMM) was the first universal and standardized Windows audio API. This audio interface type is expected to work with whatever audio device but with latency time possibly around 100ms.
WDM	That we call WDM (Windows Driver Model) audio interface in voicemeeter is handled by WASAPI : the Latest Microsoft Audio Functions to get best audio performances and small latency (< 30ms) – available since Windows VISTA
KS	Kernel Streaming or Direct Kernel streaming API allows low latency audio streaming, since Windows XP, but unfortunately not all audio devices provides this interface.
WaveRT	The WaveRT miniport driver is supported in Windows Vista and later Windows operating systems and can offers good audio performances and small latency (comparable to KS).
Direct-X	Direct-X Audio Interface is used by Video Game and some audio software. Latency is usually comparable to MME,
ASIO	Audio Stream Input/Output (ASIO) is a computer sound card driver protocol for digital audio specified by Steinberg, providing a low-latency and high fidelity interface between a software application and a computer's sound card.

Audio Mixing Console Basis:

An audio mixing console is a device able to sum different audio signals (sounds) coming from different inputs and route them to different outputs. Mixing desk is usually composed by Strips and Busses. While strips are connected to Inputs, busses are connected to outputs.



This schema above shows how basically Voicemeeter can mix 3 inputs into 2 busses (in BUS A if button A is switched on, on BUS B if button B is switched on). Typically BUS A can be used for monitoring (speakers) and BUS B for VOIP or audio recording applications.

Each strip (each input) can go through different processing before summing to the busses. Voicemeeter includes funny panels to tweak the sound on input #1 and #2 and a regular 3 band Equalizer on input #3 (the Virtual Input).

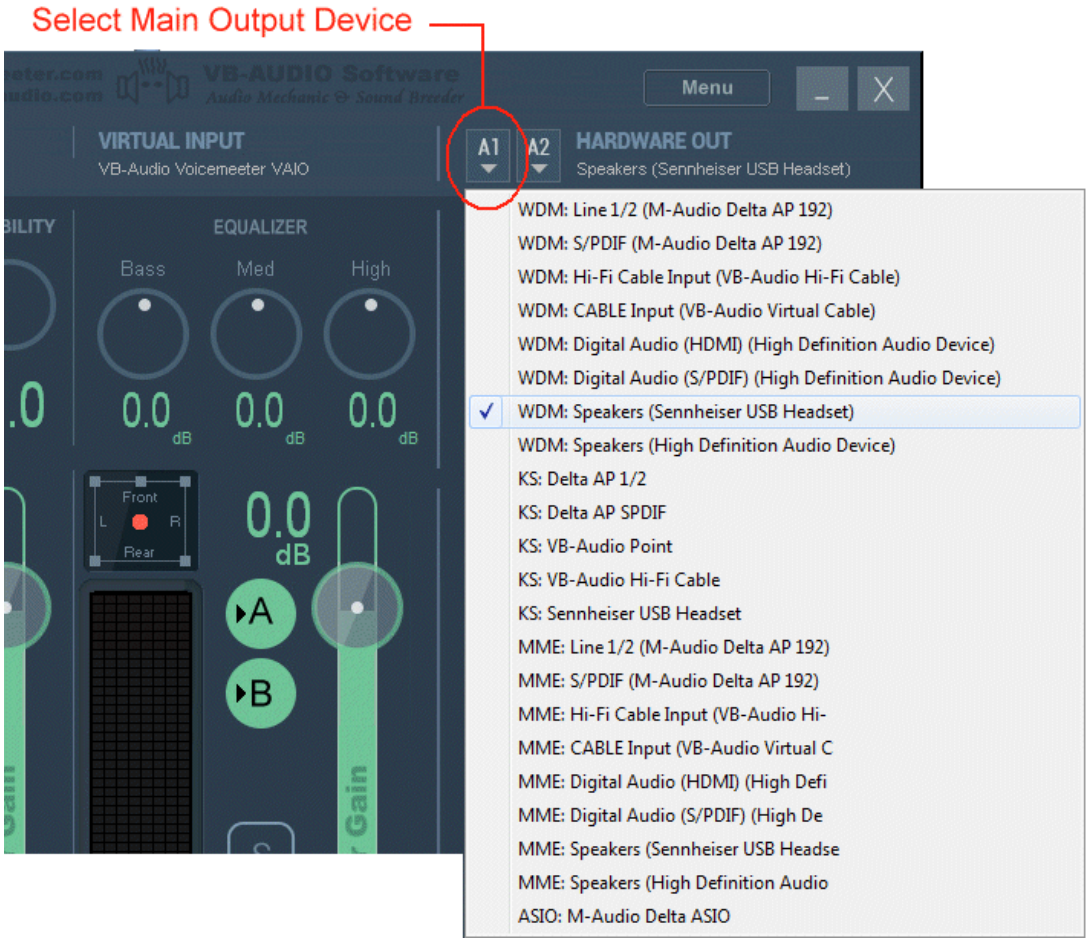
Again on usual Mixing Console, we have on each strip a SOLO button (to listen one or several strips only) and a MUTE button to simply mute the signal of the Strip or Bus.

Finally the Fader Gain allows to set the sound volume for each Strip and Bus.

Other controls will be explained later, but basically we have described here the outlines of what is an Audio Mixer, generally speaking.

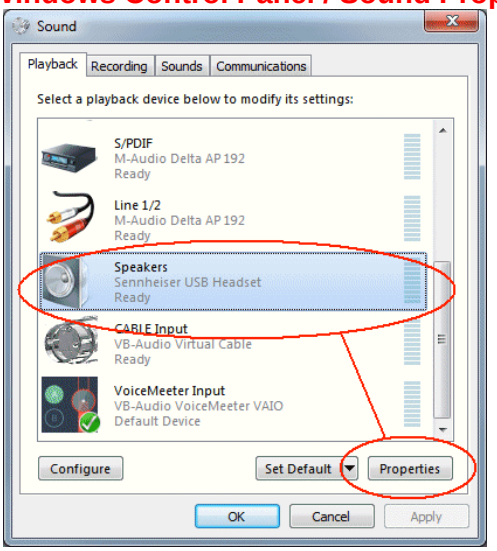
STEP 1: Select main audio Output Device

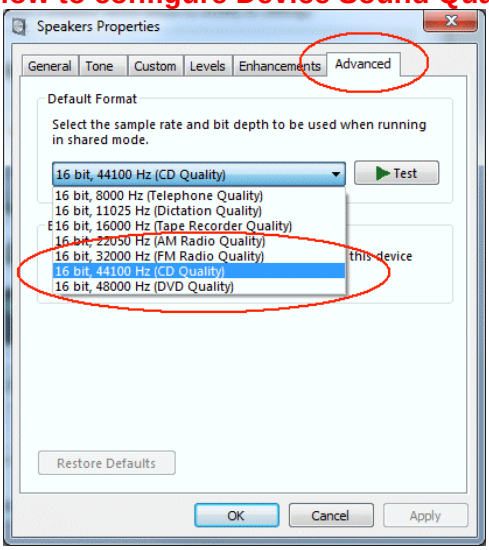
To make Voicemeeter working, you need at least to select the main output device used for BUS A (A1). We recommend to select first ASIO (if exists) or WDM device type to get best Latency.



The main audio output device (A1) can work in 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz or 96 kHz. This will also be the main sample rate of the entire mixing process and Virtual ASIO points (Voicemeeter will support whatever sample rate on other inputs or outputs points).

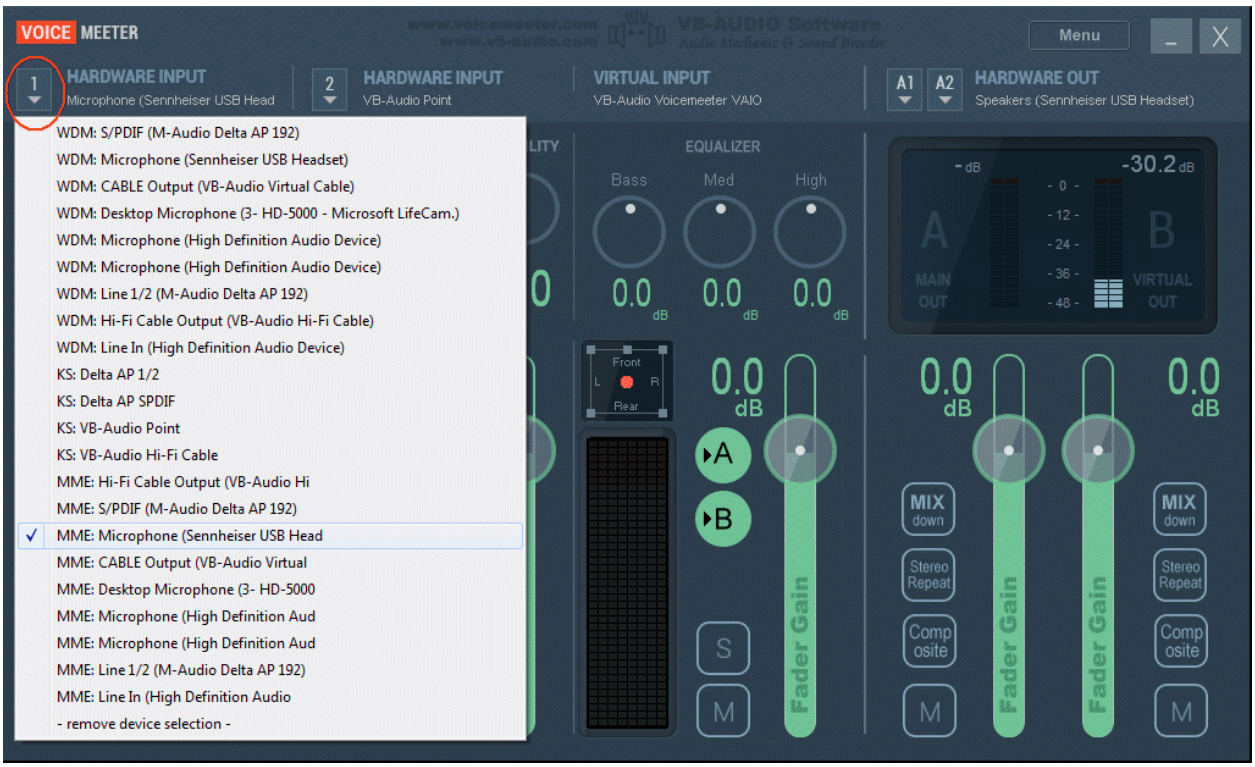
Windows Control Panel / Sound Properties allow to configure Device Sound Quality:





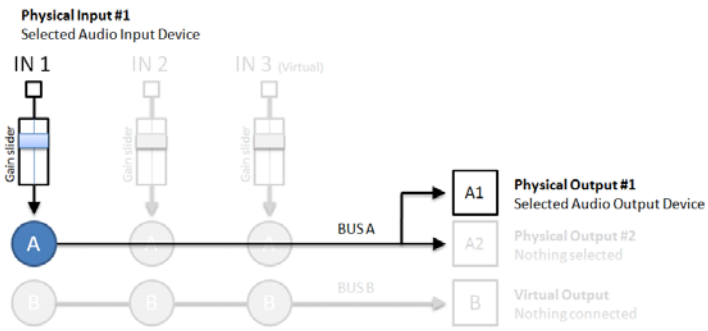
STEP 2: Select an Input Device.

Select audio input device on strip #1, for example your microphone! Then you will be able to listen to your voice in real time.



REM: it's better to select WDM driver (present since Windows VISTA) to get best latency and audio performances. If using MME driver you might have a bigger delay between input and output. Use MME driver only if WDM are not present or does not work correctly with your audio hardware configuration.

KS can be better than WDM in most cases but not all audio device are presenting such audio interface. In the example above, Sennheiser USB Microphone and onboard Audio Device are not present as KS device, but only in WDM and MME.



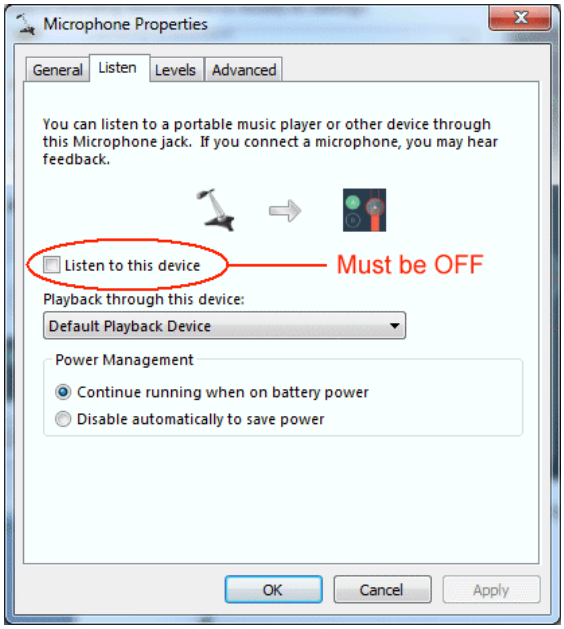
After Step 2, Voicemeeter is routing signal from selected input (e.g. Microphone) to A1 selected Output. Then you can hear from this audio output the sound coming in input #1. A & B button are switch to send signal in BUS A or/and BUS B.

Monitor Input in Real Time

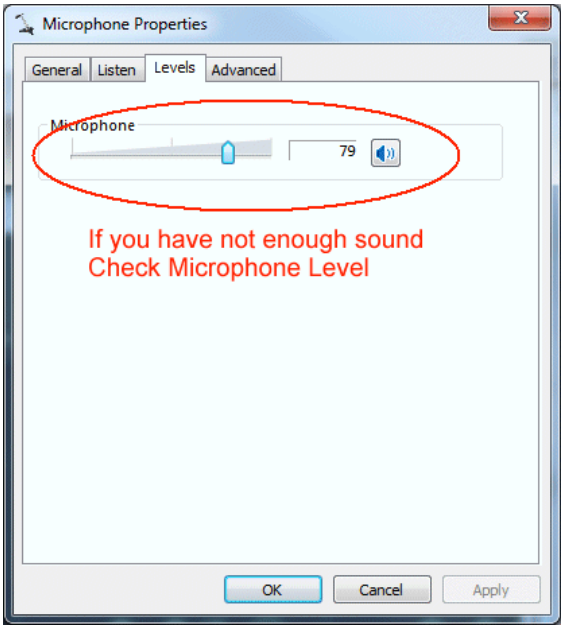
After Step 2, you can hear what is coming in selected input. Blue VU-meter will show you level in real time. Input signal is per default sent to both busses (A & B) and we have routed the BUS A to an output device in Step 1.

WINDOWS CONFIGURATION WARNING

Windows “Listen” option can disturb voicemeeter routing, so be sure that this option is disabled or makes sense for you.

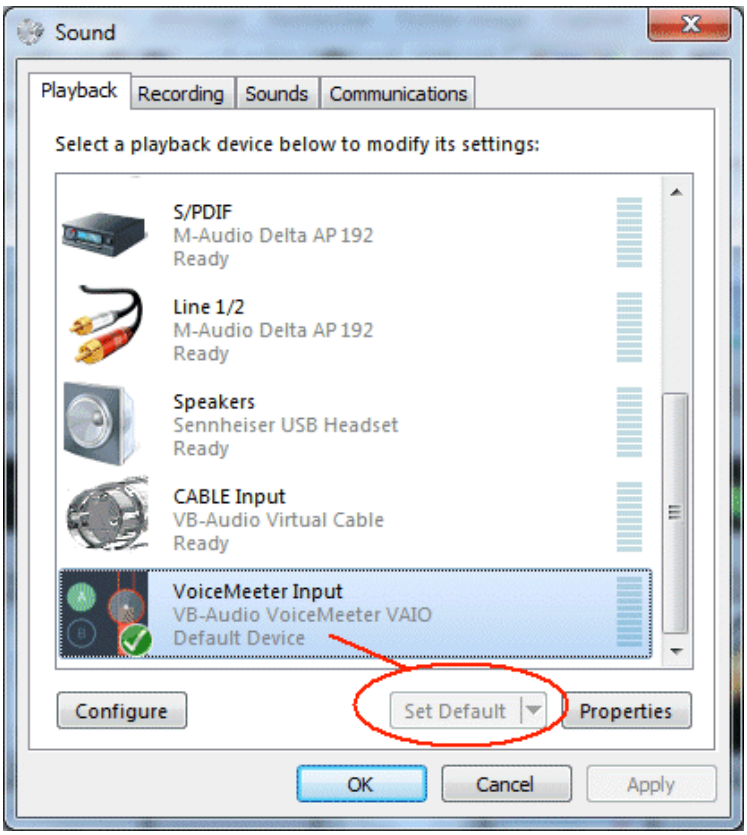


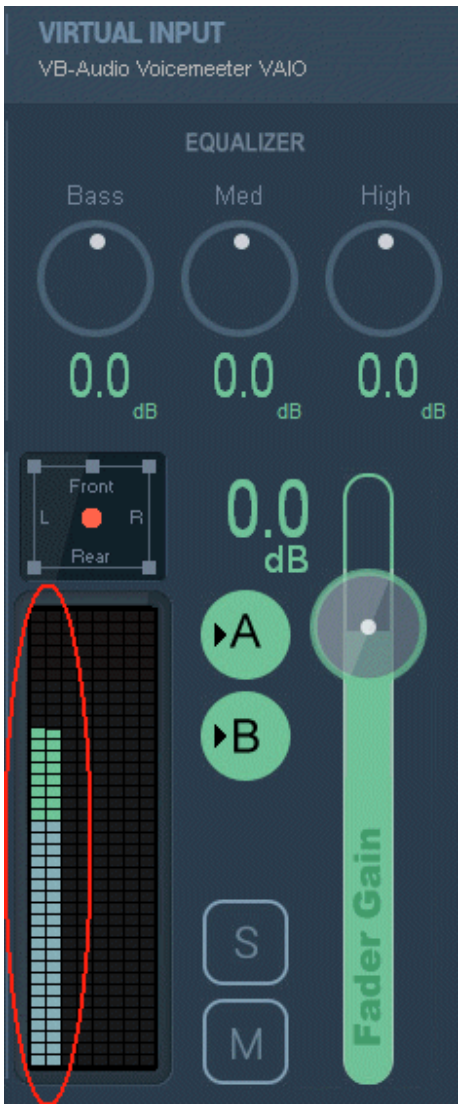
if your input level is too weak (or too loud), check the level of the selected input device. (Adjust possible pre-amp gain if any).



STEP 3: Use Voicemeeter Virtual Input as default playback device.

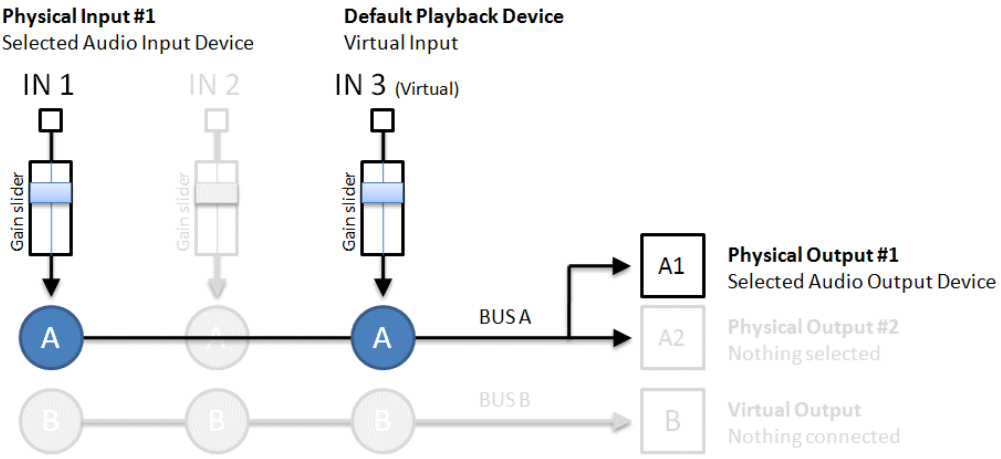
Strip #3 is the virtual input of Voicemeeter. It is shown as regular system audio device and can be used by another application as playback audio device.





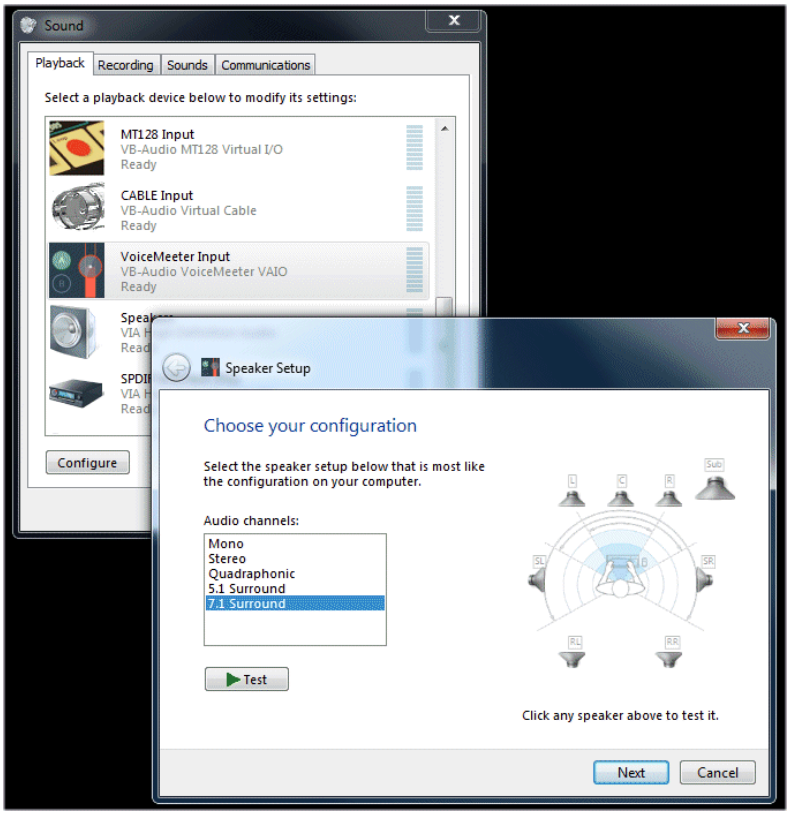
If Voicemeeter Input is set as default audio device, every sound played on the computer will go on the Virtual Input (Strip #3) of Voicemeeter Mixing Console.

You can launch a Media Player or Web Radio and check that you can hear the sound coming from it on the Voicemeeter Virtual Input (IN 3).



Virtual Input is Multi -Channel !

Strip #3, the virtual input of Voicemeeter. Can now manage until 8 channels and get 5.1 audio from DVD for example.

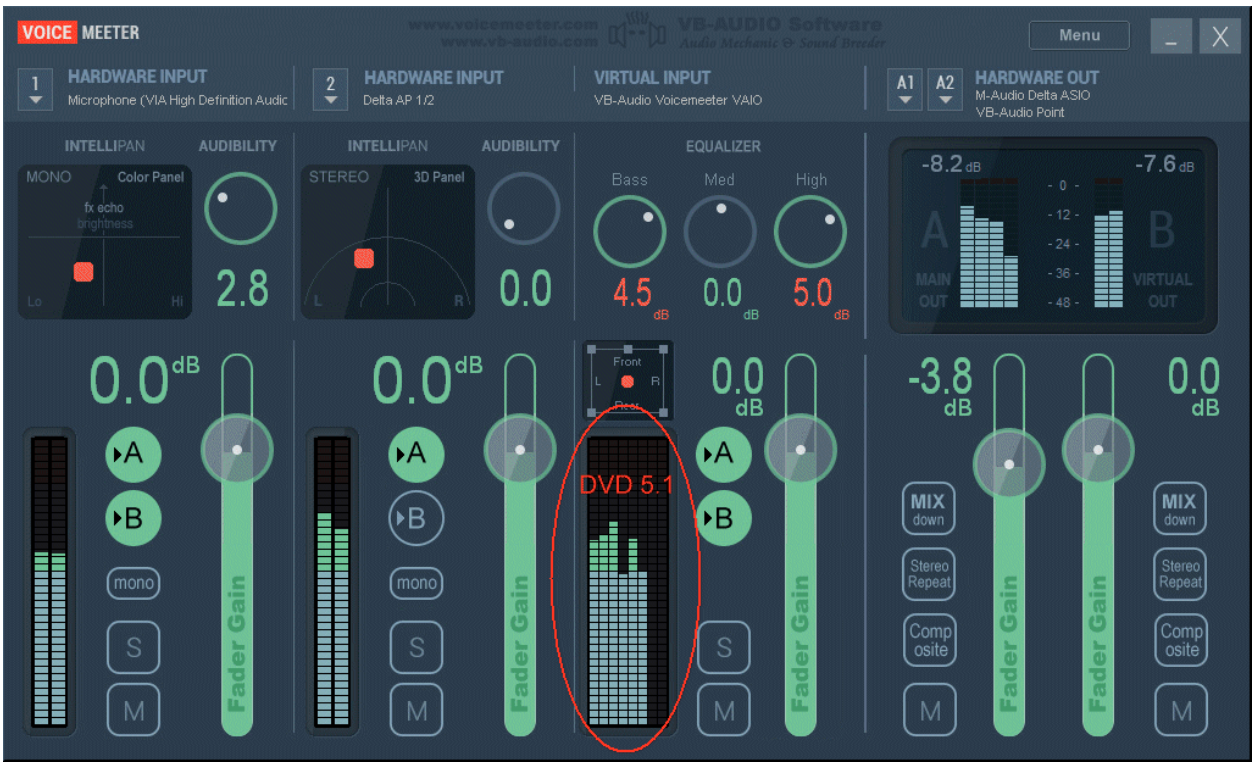


Windows Control Panel /Sound Dialog Box allows configuring Audio device (playback and recording devices).

To get multichannel audio from DVD player you need to configure the Voicemeeter Input in multi-channel (click on configure button on the left bottom after having selected the Voicemeeter input).

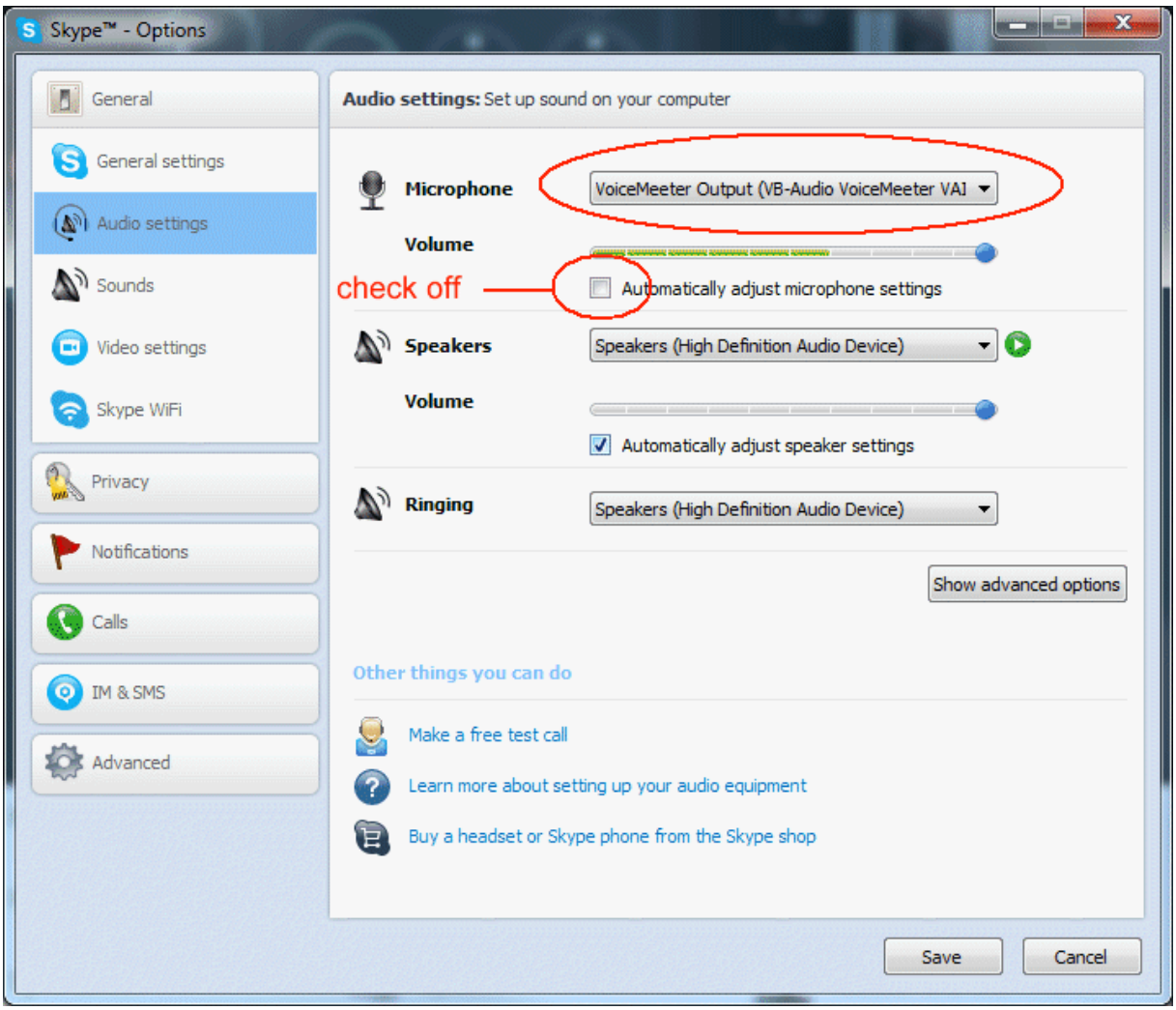
When playing DVD you will see 5.1 audio signal incoming on Voicemeeter Virtual Input and also on possible A output level (if your output device support the same number of channels).

Note that BUS B is also multi-channel but level meter shows always 2 first channels only.

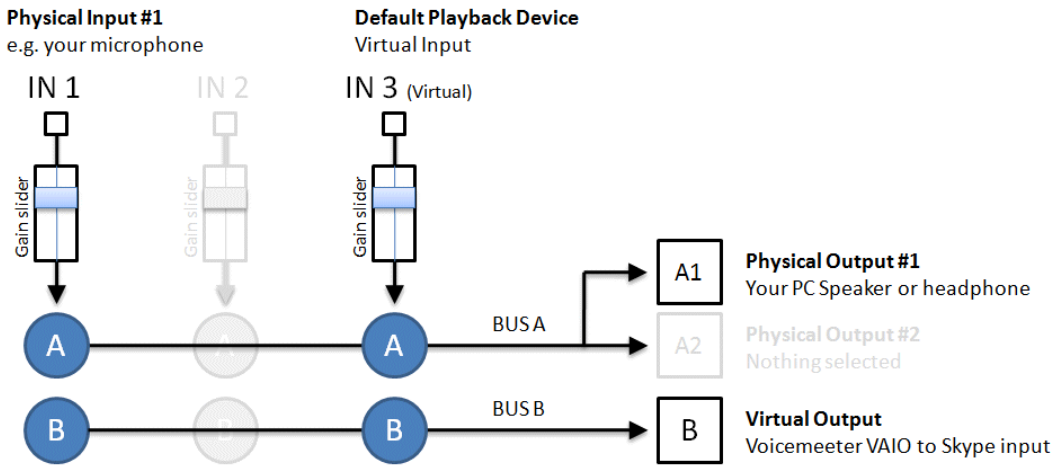


STEP 4: Send the Mix Output to Skype Input.

BUS B, not used yet, can be used to send the mix to virtual output that can be connected to another application (typically a recording or VOIP application).



For example in Skype you can select the Voicemeeter Virtual Output as Microphone.



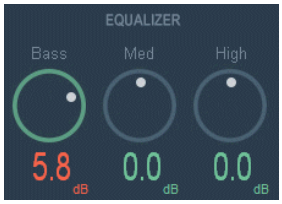
STEP 5: Enjoy with new Audio Controls.

While you are talking you can tweak your voice in real time.

INTELLIPAN MONO
This effect is stereo, but made for mono VOIP. It gives a spectral identity to your voice by acting on 3 frequency bands and a tiny reverb on the half top.

INTELLIPAN STEREO
Right click on panel to switch to this 3D positioning control panel allowing you to give a spatial identity to your voice (dedicated to new coming stereo VOIP applications).

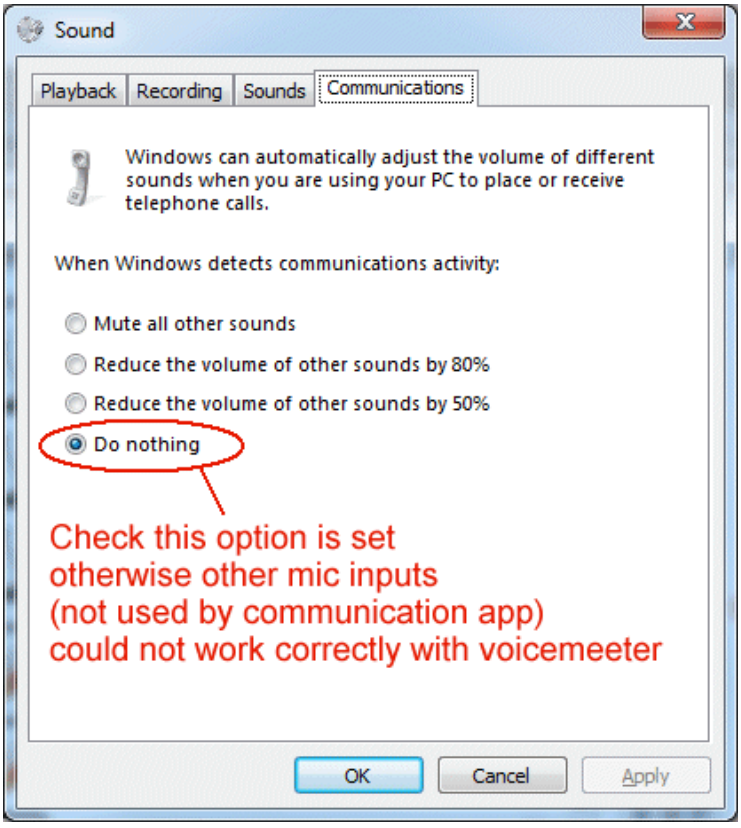
AUDIBILITY CONTROL
This single knob controls a compressor / gate allowing to boost your voice and manage noisy talk.
This needs To be adjusted according microphone capabilities and sound environment. Keep it at zero to disable this effect.



EQUALIZER
3 Bands Equalizer to boost or remove bass, medium and high frequency (treble).

trick: All controls go back to default value if double click on it !

WINDOWS CONFIGURATION WARNING WITH VOIP



Communication options can mute audio device not used by VOIP Application like our microphone connected to Voicemeeter and no more on Skype.

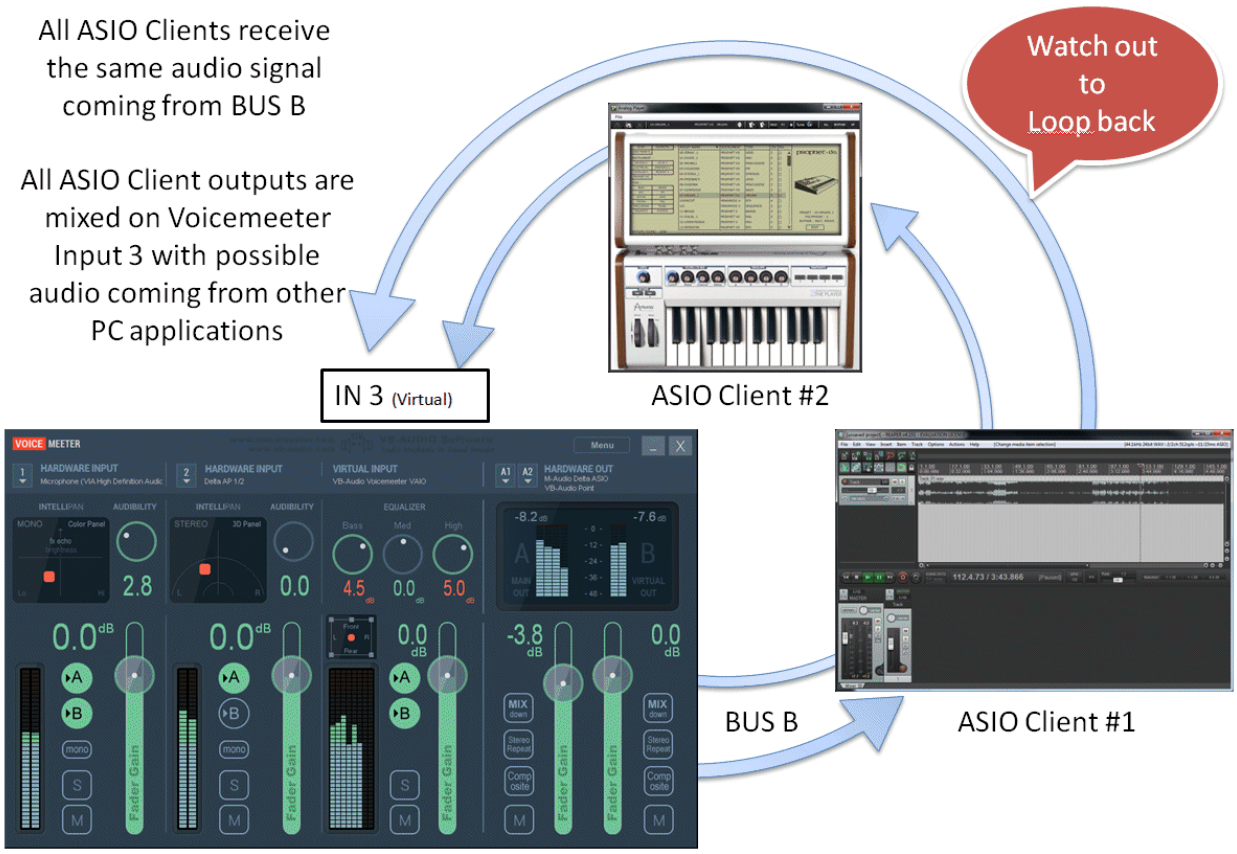
About Built In Microphone:

Built in Microphone can also work not as well as expected: First, speaker in notebook can be captured by built in microphone and generates feedback loop. Secondly built in microphone can have strange behavior according different exotic options present to manage this microphone and communication functions.

We recommend using USB headset or external microphone to also improve sound quality.

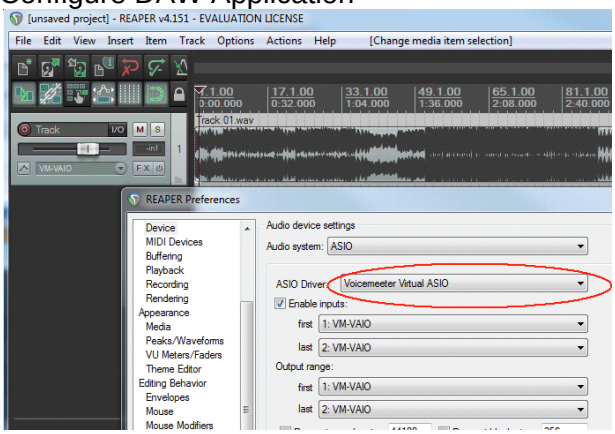
STEP 6: Connecting ASIO Application to Voicemeeter.

With Voicemeeter version 1.0.2.4, Virtual I/O's support also ASIO interface with 4 different client applications. These 4 possible sources get signal from BUS B (as usual) and their outputs are mixed together on the Virtual Input (with possible PC Sound already coming from player, browser, Skype, or whatever video game or audio app).



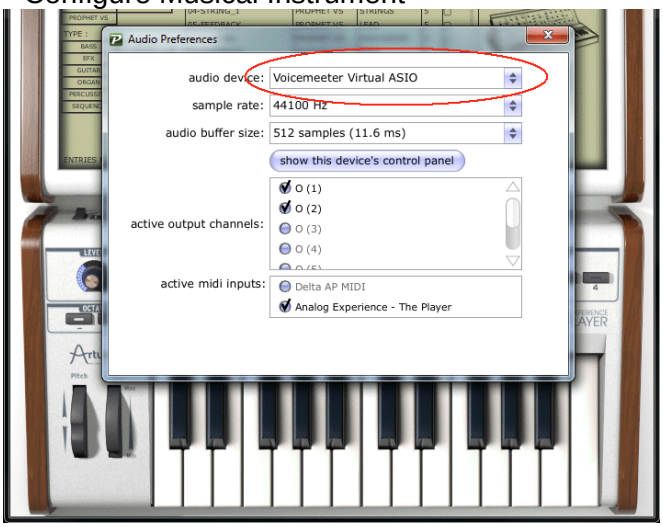
For Recording Applications, take care about the loop back! You might have MUTED outputs or disable monitoring otherwise output signal will come back on input infinitely.

Configure DAW Application



Select Voicemeeter Virtual ASIO device
In whatever audio applications using ASIO

Configure Musical Instrument



Special Routing Options on Output BUS.

Voicemeeter provides 3 additional routing modes for each Busses A & B in order to use the possible 8 output channels in different ways.

MIX DOWN
This button is made to make a stereo mix-down with 5.1 or 7.1 sound coming from DVD player on virtual input (strip #3). Left and right channels, Center, Sub and rear are combined to output on stereo speakers.

STEREO REPEAT
This button is made to use possible 8 outputs channels with a stereo signal. This stereo signal is repeated to channel 3,4 / 5;6 and 7,8.

COMPOSITE
This last button is made for audio post production. The 8 channels are composed in this way:
- ch 1,2 : usual BUS stereo output
- ch 3,4: Voicemeeter input #1 before gain fader
- ch 5,6: Voicemeeter input #2 before gain fader
- ch 7,8: Virtual input channel 1,2 before gain fader

With composite signal, it's possible to record all Voicemeeter Inputs (each in stereo) with a DAW connected to Voicemeeter virtual ASIO for example. It allows recording VOIP interview or conference and making post production process after with the 3 audio stereo tracks.

Menu for Extra functions

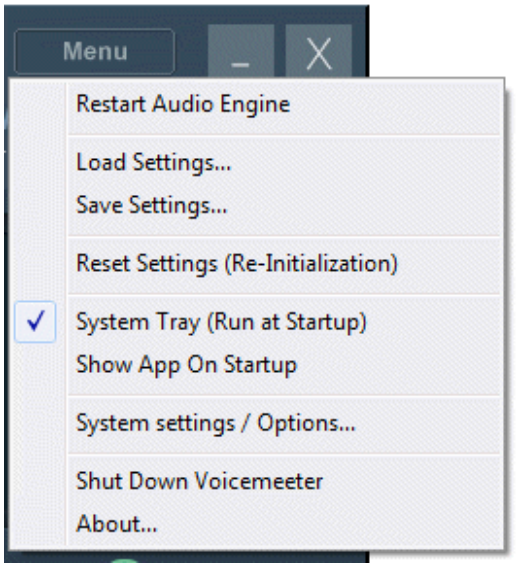
By clicking on "menu" area, user gets access to different useful functions:

The additional menu is there to provide additional functions:

- To Restart Audio Engine if required.
- To load or save current settings in a given filename.
- To reset Voicemeeter complete settings

- To set Voicemeeter in system tray (in this case it will run on system startup).
- To decide if Voicemeeter is shown on startup on run hidden.

- To open System Settings Dialog box. (see later in this document)
- To shutdown the application

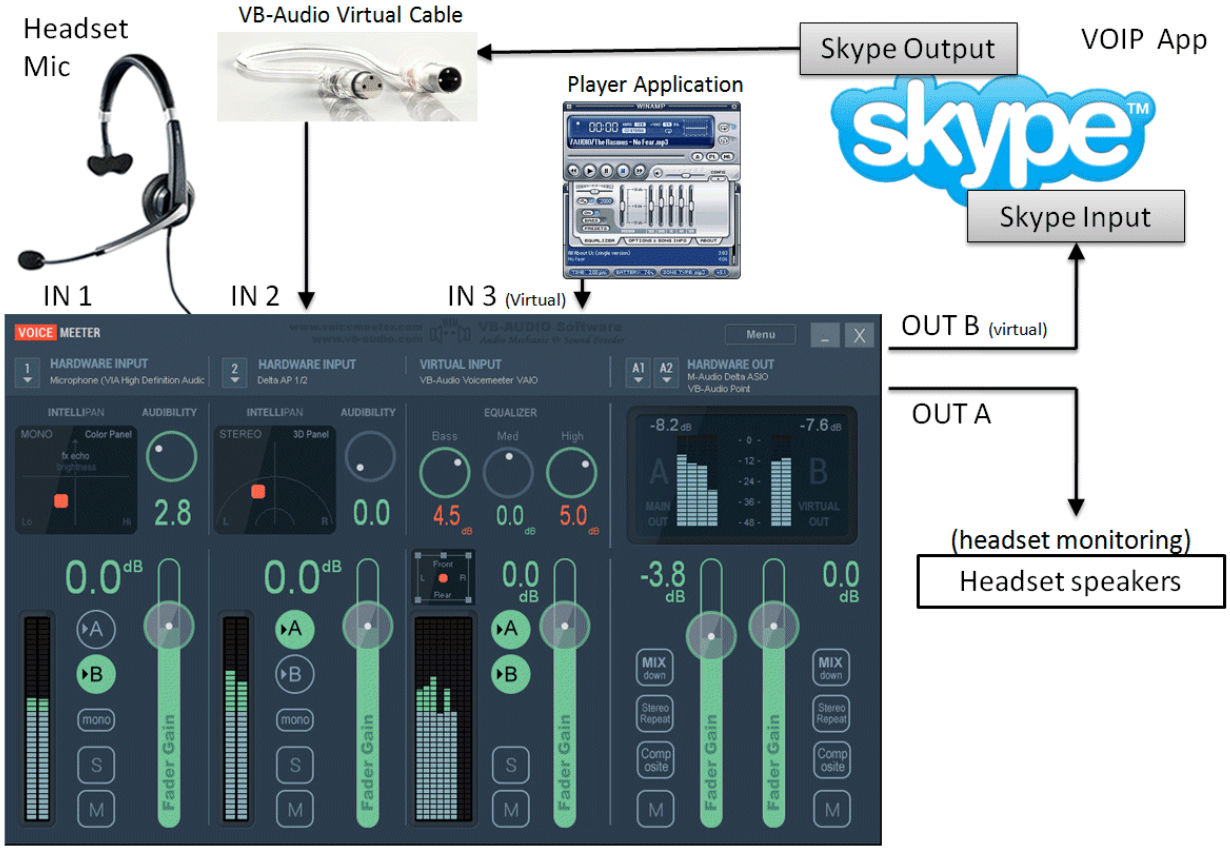


CASE STUDY #1

How to talk and send music in the same time on Skype?

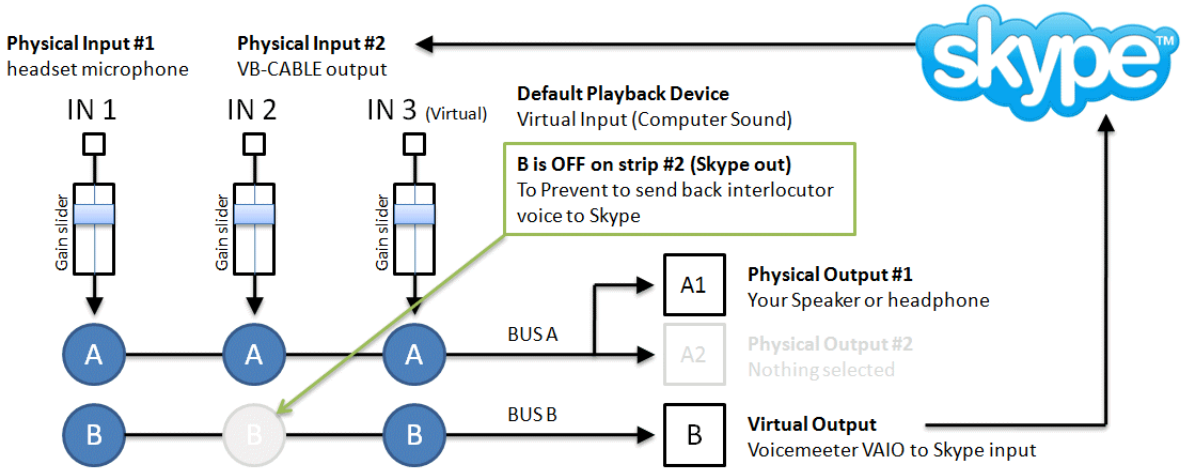
CASE STUDY #1

How to talk and send music in the same time on Skype or Google Voice? To make it, we will use a configuration very closed to our current setup after Step 5 of this document.



For this configuration, we need to install VB-Audio Virtual Cable, it makes the things more comfortable since we have control on the 3 sounds: our voice (IN 1), Skype output (IN2) and computer sound (IN 3).

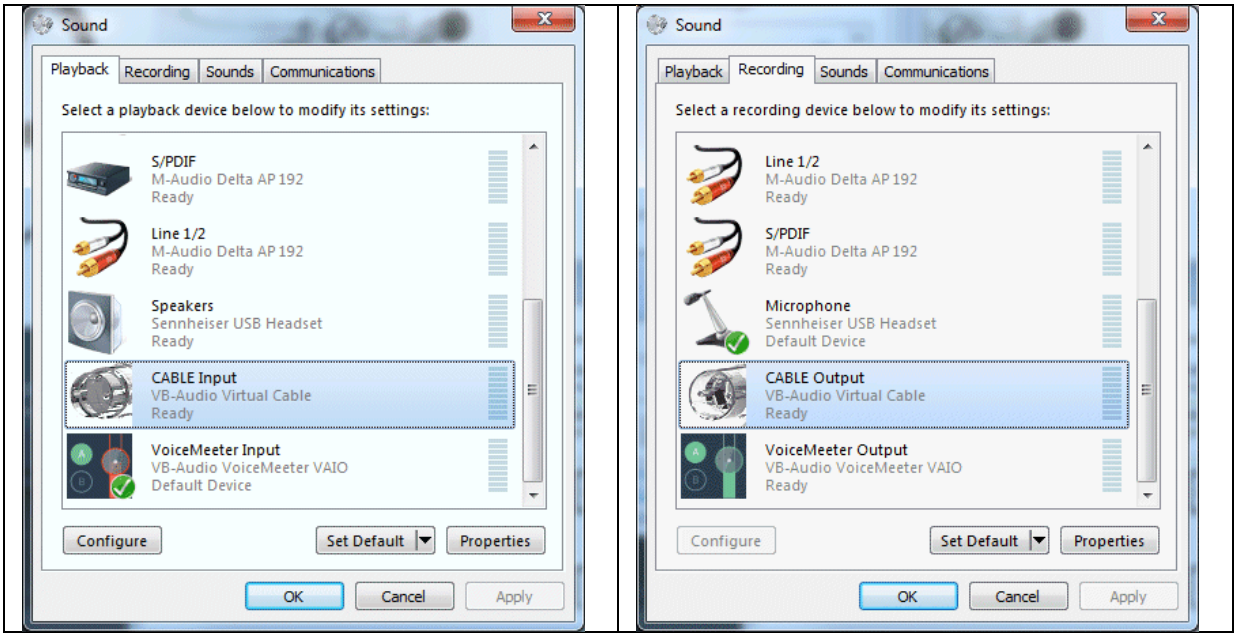
VB-Audio Virtual cable will be used to connect the Skype output to Voicemeeter Input #2.



CASE STUDY #1 – STEP 1

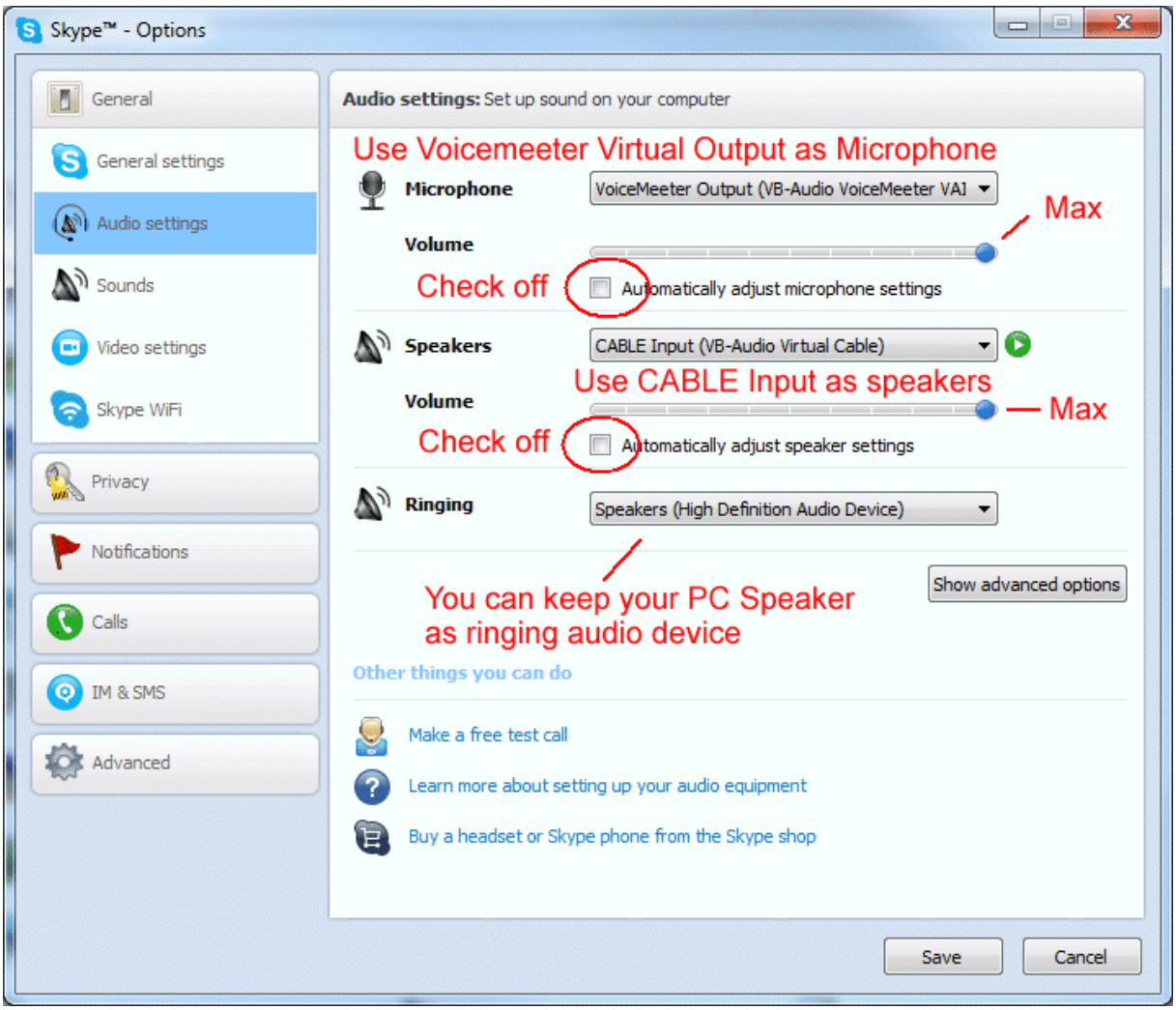
Install VB-AUDIO Virtual Cable: download it on www.vb-cable.com

After Installation, you have a new audio installed driver called CABLE Input (as playback device) and CABLE Output (as recording device). These are the two ends of the cable, and like every cable, all sounds sent to cable input will go on cable output.



CASE STUDY #1 – STEP 2

Configure Skype to receive audio from Voicemeeter B Output (Virtual Output) and send audio to CABLE (newly installed).



Note it's important to check off "Automatic gain control" because it's now Voicemeeter mixing console which takes care about levels. Also you can set level to max for the same reason.

In this above configuration, Skype will still continue to use your PC speaker to ring you, but for communication, you will need to launch Voicemeeter to make it work of course (see menu to set voicemeeter in system tray and run on Windows startup)..

CASE STUDY #1 – STEP 3

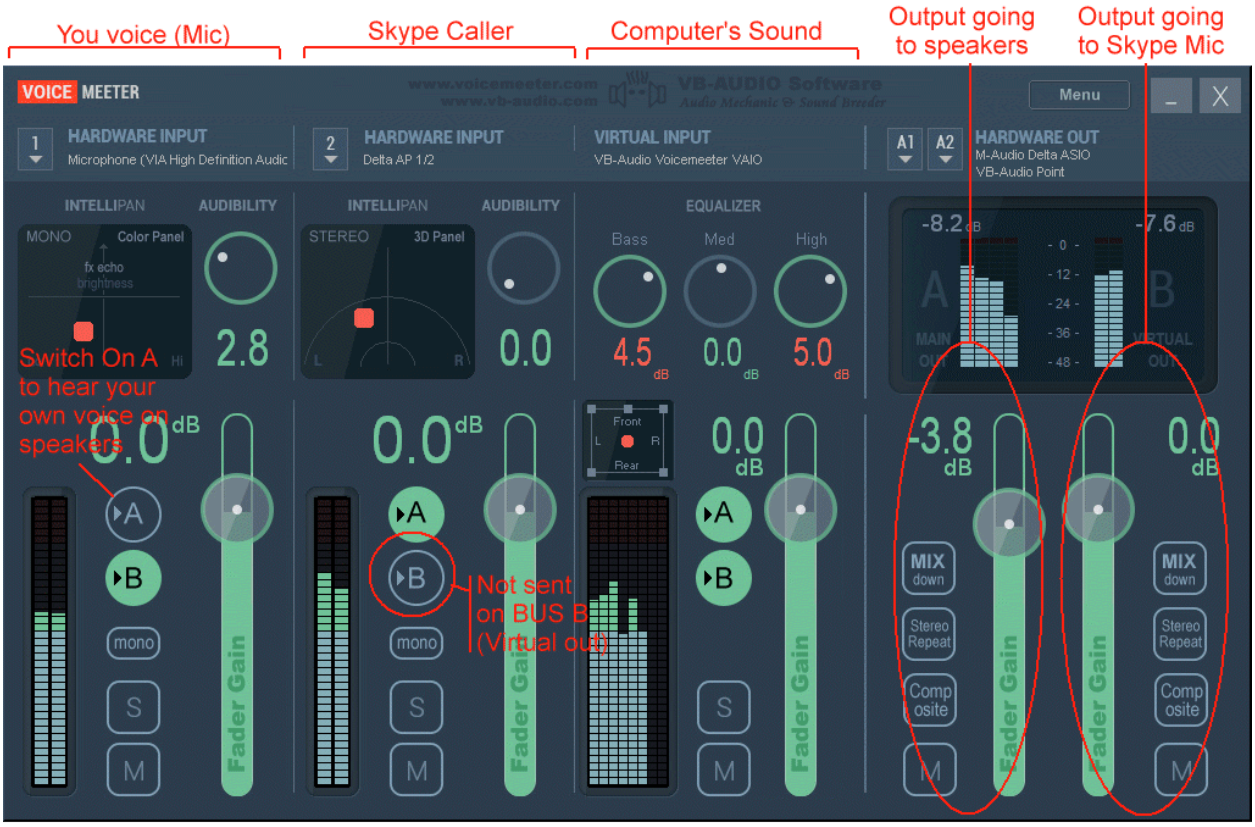
Configure Voicemeeter to connect it to skype through the VB-CABLE.

Already done in last document steps:

- Select A1 Output device: your headphone/headset speakers.
- Select Input device IN1: your headset microphone.
- Set Voicemeeter Virtual Input as default playback device (to get all computer sound in IN3 – all computer sound played on default playback device of course).

To be done to get skype output:

- Select Input device IN2: CABLE output (where Skype output is routed to).



With A / B Switches, you can decide what sound you send to monitor (speaker) and what you send to Skype (through Bus B).

Basically you will send to your headphone everything but your voice (except if you want to also hear your own voice in speaker). That's why A is off on strip #1.

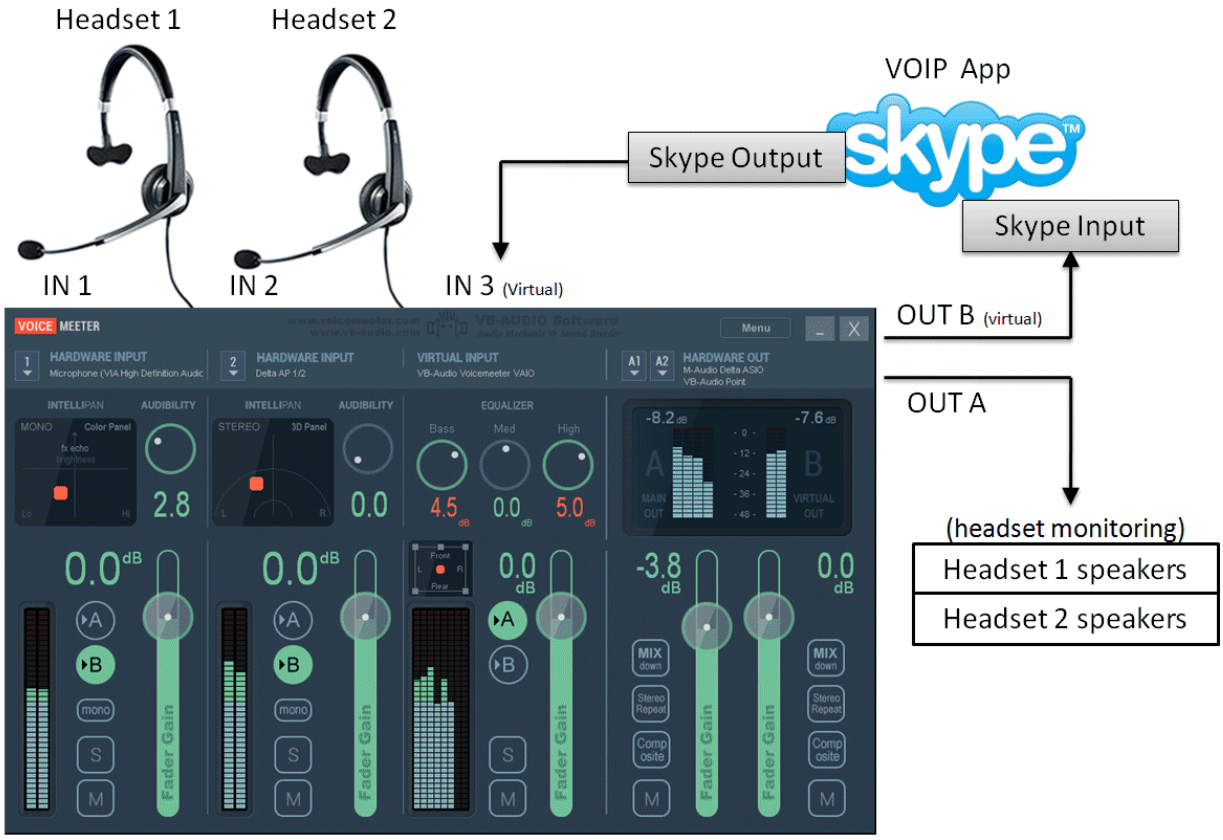
Regarding Skype, you will want to send everything (your voice and music) but skype sound (Skype caller coming in input 2). That's why B is off on strip #2. Otherwise we could have a loop back and the caller could hear his own voice again and again and again…

CASE STUDY #2

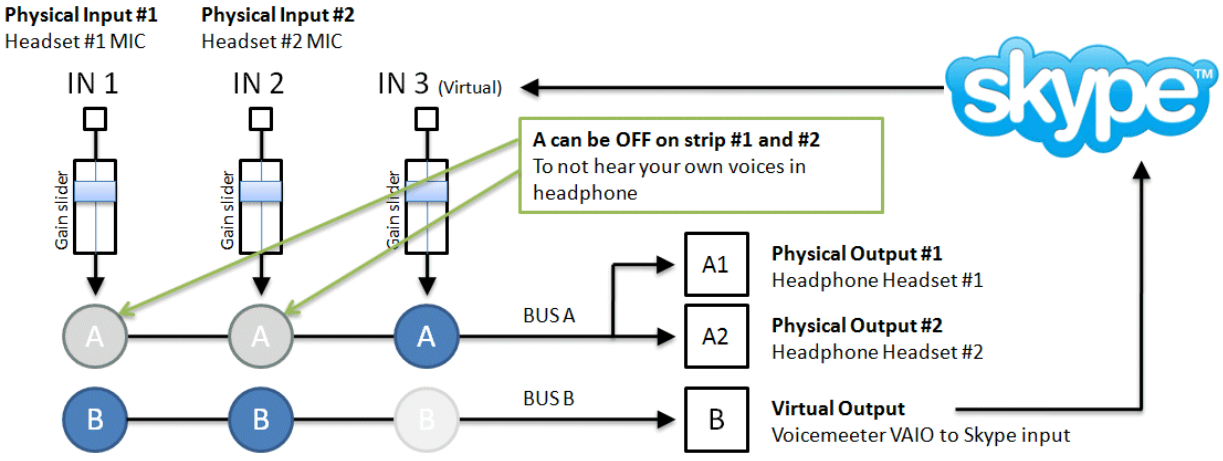
How to manage 2 headsets on Skype?

CASE STUDY #2

How to manage 2 Headsets in the same time on Skype or Google Voice? To manage 2 headsets is maybe simpler than the previous case, since we don't need additional VB-Cable.



To manage 2 Headset, we need to manage 2 different microphones, but also 2 different headphones. That's why Voicemeeter allows selecting 2 physical output devices on BUS A outputs (A1 and A2). Then both headset speakers will give the sound coming from Skype (IN3).



B button on strip #3 must be OFF to avoid Skype feedback (otherwise audio coming from Skype on strip #3 would be sent again to Skype through Voicemeeter Virtual Output).

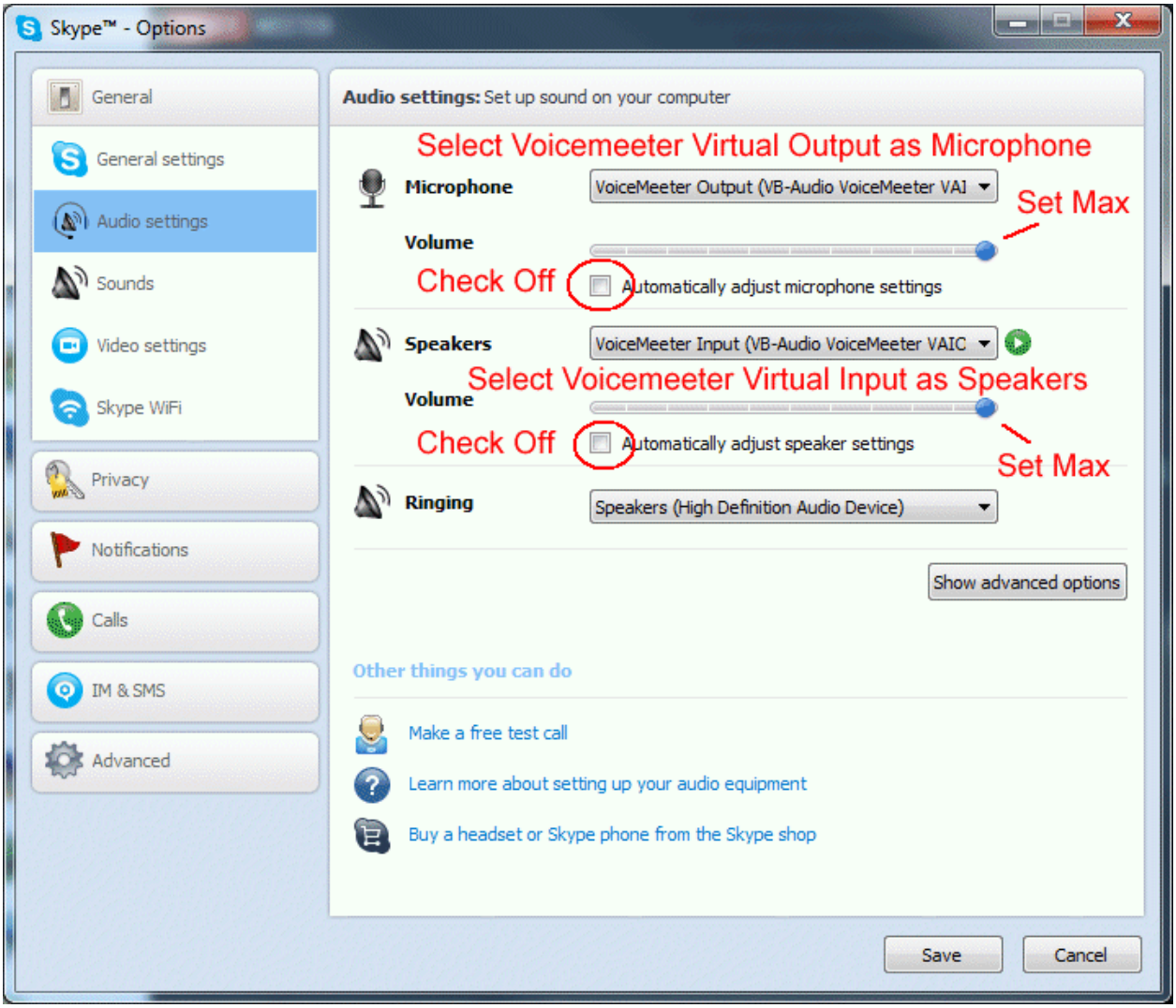
CASE STUDY #2 – STEP 1

Configure Voicemeeter to manage 2 headsets

It just means to select audio output A1 and A2 for your headphone 1 and 2. Then Select Input Device 1 for your microphone headset #1 and Device 2 for your microphone headset #2.

CASE STUDY #2 – STEP 2

Configure Skype Audio Settings to use both Voicemeeter virtual audio i/o :



Do not forget to click on SAVE button to validate your settings. Now you are ready to use VOIP application with 2 Headsets.

CASE STUDY #3

How to record Conference-Call
in 8 tracks for post production?

CASE STUDY #3

Since Voicemeeter is providing ASIO interface, we can now connect audio pro DAW to Voicemeeter, not only to playback into Voicemeeter Virtual input, but also to record the Voicemeeter Virtual Output (which is composed of 8 channels).

If we connect for example REAPER to the Voicemeeter Virtual ASIO point, we can manage 8 channels recording. And the COMPOSITE buttons is there to feed these 8 channels with the 3 Voicemeeter inputs before fader (pre fader).

Of course channel 1,2 remain unchanged compared to other modes, but the 6 other channels are replaced by voicemeeter inputs. This allows for example to make multi track recording of interview made on Skype or Google Voice and record everything on a pro audio DAW to make post production after.

Be careful to disable input monitoring in your recorder application to avoid feedback loop (prevent signal to go again into voicemeeter virtual input).

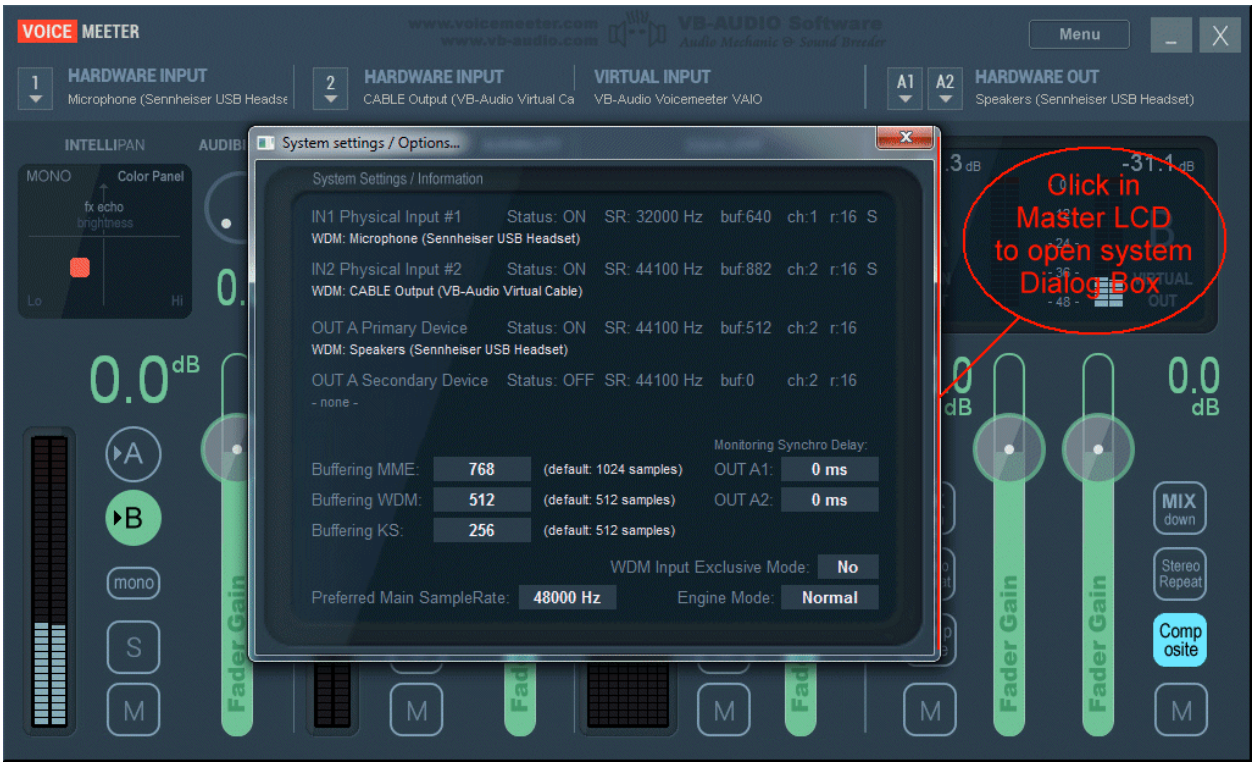
REAPER recording 4 stereo tracks coming from Voicemeeter virtual ASIO output.

EXTRA OPTIONS

Voicemeeter Latency

System Settings / Options

Click on Master Meter LCD Section to open the Options Dialog Box.



This modal dialog box will show you the status of the different audio devices used by Voicemeeter. SR is giving the current samplerate of the device (which can be different for each device, Voicemeeter is based on multi points and multi formats audio engine able to manage most of audio system configurations).

In this dialog box, you can change the latency used by MME, WDM and/or KS audio drivers. Basically MME driver support buffering between 512 and 2048 samples , while WDM and KS can go down to 256 samples (that makes audio processing very closed to the real time – practically usable to sing on a song in real time – karaoke – or to play digital piano on music in real time).

The fact is that some PC configurations will work very well with minimal buffering values while other will not (the sound stream could be not stable: too much sound's cut). That's why per default MME device uses 1024 samples buffering while WDM device is using 512 samples (these default settings should work for 100% PC configuration cases).

Under Windows XP, WDM driver are not available. (That we call WDM driver is audio device driver that can be handled by Microsoft WASAPI, for better audio performances and quality). But some audio device can support KS interface and then provide low latency support.

Preferred Main Sample Rate can be used as a wish to make Voicemeeter run output device A1 in the wanted sample rate (44.1, 48, 88.2, or 96 kHz). But it also depends on the audio device current configuration (that could stay in their own sample rate anyway).

Engine mode provides a SWIFT mode to possibly improve real time (experimental option).WDM Input device are driven in SHARED mode per default to avoid possible WASAPI Exclusive mode bug (see known issues)

KNOWN ISSUES

Voicemeeter has been validated on different levels and should work 100% in most configurations. However we have notified some few issues, some of them are related to general system configuration, other due to WDM audio device usage (managed by WASAPI):

Audio Stream becomes bad (sound is choppy, discontinued):
If the audio stream is not stable in the time, with too much cut in the sound, it means your configuration does not support the current buffering latency on one of your audio device (usually the one used for output A1). In this case you can increase the buffering in Voicemeeter System Settings Dialog Box (768 or 1024 samples for WDM). If it's not enough, select MME audio device instead of WDM (especially for Output A1) because if Output A1 is not stable, it can disturb all other audio stream: Output A1 Audio device is master while all other audio points are slaves.

Output A1 and A2 are not exactly synchronized.
On Voicemeeter every i/o are independent and we can hear more or less delay between them, especially when using 2 audio outputs on BUS A: if A1 and A2 are routed to 2 audio devices, the sound might be not exactly synchronized (one speaker output can be late and produces a small echo with other speaker output). This is normal (according technical constraint) but can be corrected by compensate one audio output with a delay line (see System Settings Dialog Box).

Voicemeeter Audio Stream can be stopped (no more sound, no meter display).
It can happen when changing audio system configuration (in Windows Control Panel / Sound properties) or when plug or unplug USB device or when launching other program that could use same audio device … In this case, simply restart audio engine or re-select an audio device out A1 or input 1 or whatever in Voicemeeter. It will restart audio stream automatically (otherwise it could mean that audio device are used by other process and cannot be used anymore by Voicemeeter).

Audio Stream is stopped or corrupted after working well several hours.
If "WDM Input Exlusive Mode" is set when using WDM device as input, some PC/Audio driver configuration can be not stable and produce this unexpected behavior (including pops and cracks in the sound) after hours of perfect streaming. In this case the workaround is to disable Input Exclusive Mode in Voicemeeter System Settings (this is done by default) or use MME or KS audio device on Inputs (instead of WDM device driver). REM: using WDM audio device on output seems to work ok (even in exclusive mode).