

“How do I route [my audio] in Zoom?”

A simple and complete guide for flawless audio in Zoom

- MAC version only for now -  
(suitable for PC, though some elements may differ)

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Feel free to share to online performers  
And let me know if you have some questions, want to report a mistakes or wants  
to add some infos!

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## Introduction

In these new days of performing live from your own home, you may want to initiate or participate in some live performances to share with your friends, family, before-the-plague audience and new audience out there. If, like me, you have been doing live shows before, you want something that will look professional – and that will sound good. The basis can easily be covered by [this kind of online guide](#), but it won't help you if your audio source is more than just your voice in a microphone. If you want to mix in some music, perform along others on the same call, go from your music studio to Zoom, or share any other audio source coming from your computer, this guide will help you properly route audio.

Here is my humble guide to try to help you join us in the wonderful world of online shows!

## Requirements

- Though this guide is made to help everybody, please let me know if a basic notion seems to be missing: this guide is made for people with little to none audio routing knowledge wanting to take online their performances, events, etc.
- Have zoom installed, and be connected to internet to be able to download any additional software. Though none of them take a lot of space, be sure to have some spare disk space.
- A set of headphones (with or without microphone built in) is a must
- This set up should take you between 10 and 60 minutes, depending on how comfortable you are with audio.

**This guide won't cover the details of every hardware you could have; though I may be available to help you with some of them, make sure you know about the input and output of your hardware. This demo is made out of a simple headphones(with mic) input/output, though it would work with any other input/output you have (I usually use my Focusrite Scarlett during performances).**

## Basic tips

-As much as possible, don't trust wifi: a direct ethernet connexion will be far more reliable than wifi. Close any massive and unnecessary internet usage (download, upload, multiple browser tab, etc.), and any software you are not using

-Try it before the main event; as much as you can, try to make a test on your own before, to have some time ahead to troubleshoot and get to fully control your new virtual set up. Use a second device to join the call from the listener point of view and see if it sounds like you want; or ask a friend!

-If you are using a live microphone, it is **essential** to use headphones. Every sound coming out of your speakers may be taken back by your microphone, and this is how you may create a feedback or just an awkward noisy audio stream where users that are with you will hear themselves back (and it can become a real problem in live performance). The easiest way to prevent any trouble is to use headphones.

-Drawing and notes are a must: as simple as using words and arrows, putting on paper the path your audio is using is a good way to visualize something that can easily become abstract and terrifying along the set up.

-Digital audio is a long chain of "volumes" you can have control over, with a really abstract sense of loudness; take note along the way of what control you have over your different sources and "keep room" for being louder or quieter in every step.

**-The mute button is the most common cause of audio not working.** I swear. If nobody hears you, don't panic, check the mute button first and laugh; yes, we've all been there and will all be back there more often than you think.

## **Step 1**

### **- Routing audio from within your computer -**

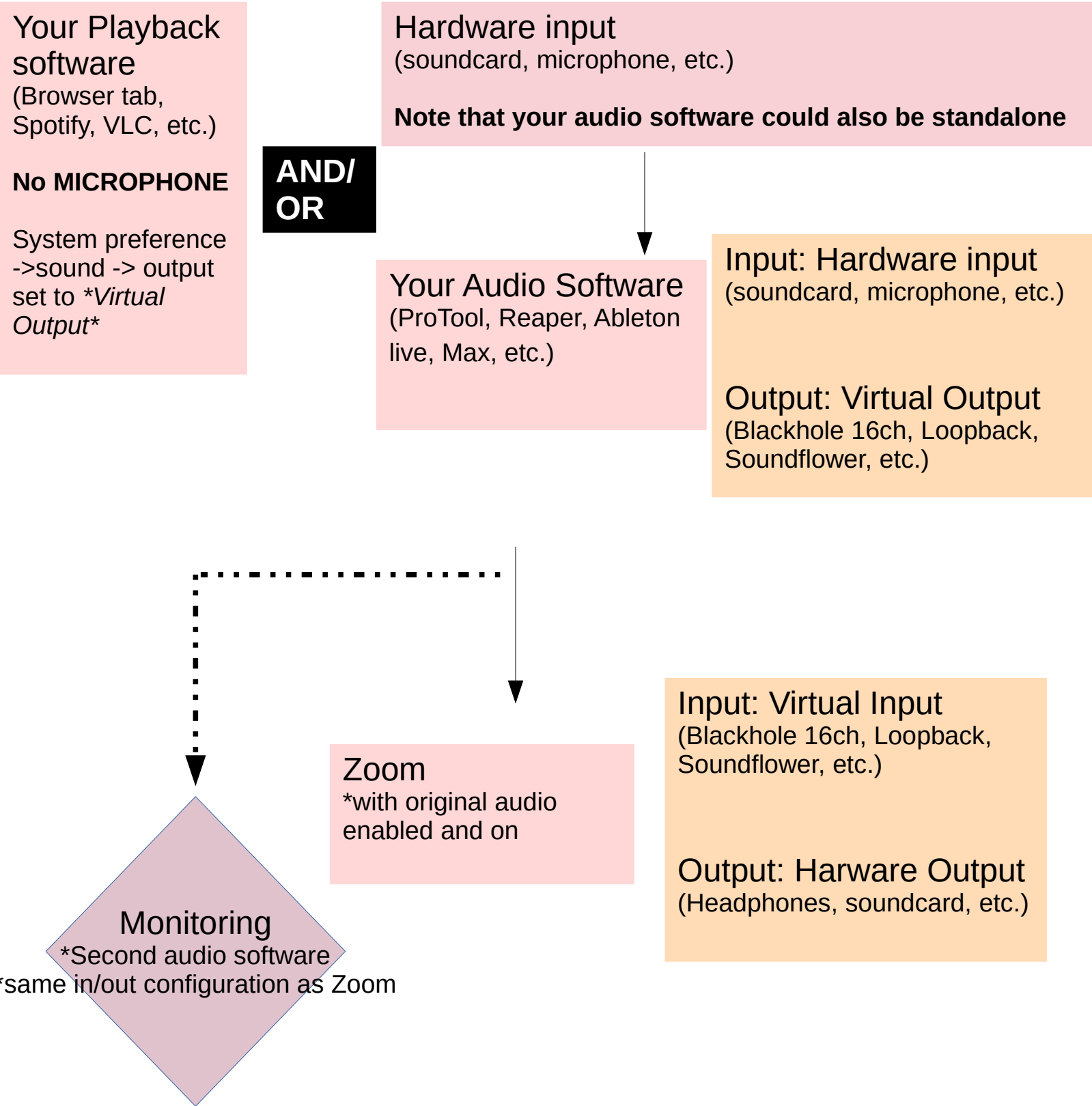
The one where you learn to use virtual routing

*You may need to do some routing within your computer, either to monitor yourself, or to send audio going from audio software you use (MAX, Ableton, Reaper, etc.) or some playback (youtube, spotify, etc.) to your Zoom call. If you are only using your microphone, you can skip this part OR start to think about adding a “mixing layer” over your practice (live effect through a DAW, by example).*

Along the way, make sure:

- Sample Rate is always the same
- Pay attention to every volume you have control over and keep some room to get it lower/higher if needed

# Patch overview



## Virtual routing tool

This is basically a tunnel you create inside your computer for audio to go from one software to the other.

\*\*Bonus: Multiple virtual routing tool can be installed and use on your computer at the same time. Once basic routing is mastered, you could add step to your patching for some interesting and useful mixing experiences.\*\*

Though many virtual routing tools exist, I highly recommend **BlackHole** as it is

1-free

2-compatible with current and older MacOS versions

*You can also look into [Loopback](#) (not free), [Soundflower](#) (compatible with older MacOS version, up to Mojave), [VB Cable](#)*

Here is a quick installer guide:

<https://github.com/ExistentialAudio/BlackHole/wiki/Installation>

**Note that in this guide, Blackhole is the default tool**

## What can go through this virtual routing tool?

It could be ProTool, Reaper, Audacity, Ableton Live, Logic, Max MSP, etc. (microphone and live performance style)

It could also be a playlist in Spotify, in VLC, on youtube, etc. If you are simply doing playback. (simple playback style)

- Note that you can have multiple software sending audio in your virtual routing tool at the same time -

# **Using audio Playback from a browser, VLC, spotify, etc.**

*Let's say you want to play music from spotify to share with your friends*

- Go into System preferences
- In "Sound", go under the "output" tab.
- Choose "BlackHole 16ch" as your output
- Once this is done, you should no longer hear what is playing on your browser, Spotify, VLC, etc through your headphones or speaker. To be able to monitor this, go to monitoring section.

## **IMPORTANT DETAILS TO CONSIDER**

- If you use this option, every sound coming from within your computer will be heard on your Zoom call. Think about muting your notifications, closing any other tab that could make noise, etc.
- You absolutely have to set your Zoom "speaker" option to your hardware output, OTHERWISE YOU MAY MAKE A FEEDBACK IN ZOOM. You won't hear it, but everybody else will do.
- If you are joining a livestream, MUTE THE LIVESTREAM TAB ON YOUR COMPUTER. Same problem as precedent point, except with an awkward delay.



# Routing audio from your hardware/Audio software

*Let's say you want to add some plugin effect to your microphone; or sing along a track; or use your microphone over the playlist you are sharing with your friend.*

- If you don't already have an audio software, I highly recommend [Audacity](#) as an easy one to start. I personally use Reaper and Max MSP

-If you are already sharing playback from your computer, Quicktime is also a possibility; you can open Quicktime, go into the menu to *make a new recording*, choose the right input for your microphone, and not press the red recording button; it will activate your microphone and since your computer output is set to **Blackhole 16 ch**, your microphone will now also be sent on Zoom.

## 1- INPUT/OUTPUT configuration:

-**in your software**, go into your parameter and set the **input** to the one you are going to use (either *built in output* or any microphone or soundcard plugged in)

-Set the **Output to Blackhole 16ch**

-Once this is done, you should no longer hear what is going out of your audio software through your headphones or speaker. To be able to monitor this, go to monitoring section.

## 2-Actually activating your input

-Most audio software are not going to make you hear the input they are receiving. You are gonna need to start "activate" them if you want them to go through **Blackhole 16 ch**. See the end of this section for some examples; this step is also necessary if you are using a software for monitoring.

## **Monitoring – Routing audio from Blackhole to your Hardware**

*How do I hear myself if all my audio is routed through Zoom?*

As I already said, *Blackhole 16 ch* is basically a tunnel you create inside your computer for audio to go from one software to the other. Time to make a parallel path to this tunnel!

As Blackhole is going into Zoom, now you just need to way to catch back that audio. Which mean a second audio software, if you were already using one. This can be Audacity, Max, Reaper, etc., as long as it is not already used in your routing.

### **1- INPUT/OUTPUT configuration:**

-in your software, go into your parameter and set the **input** to **Blackhole 16ch**

-Set the **Output** to your hardware output (built in output, soundcard, speakers, headphones, etc.)

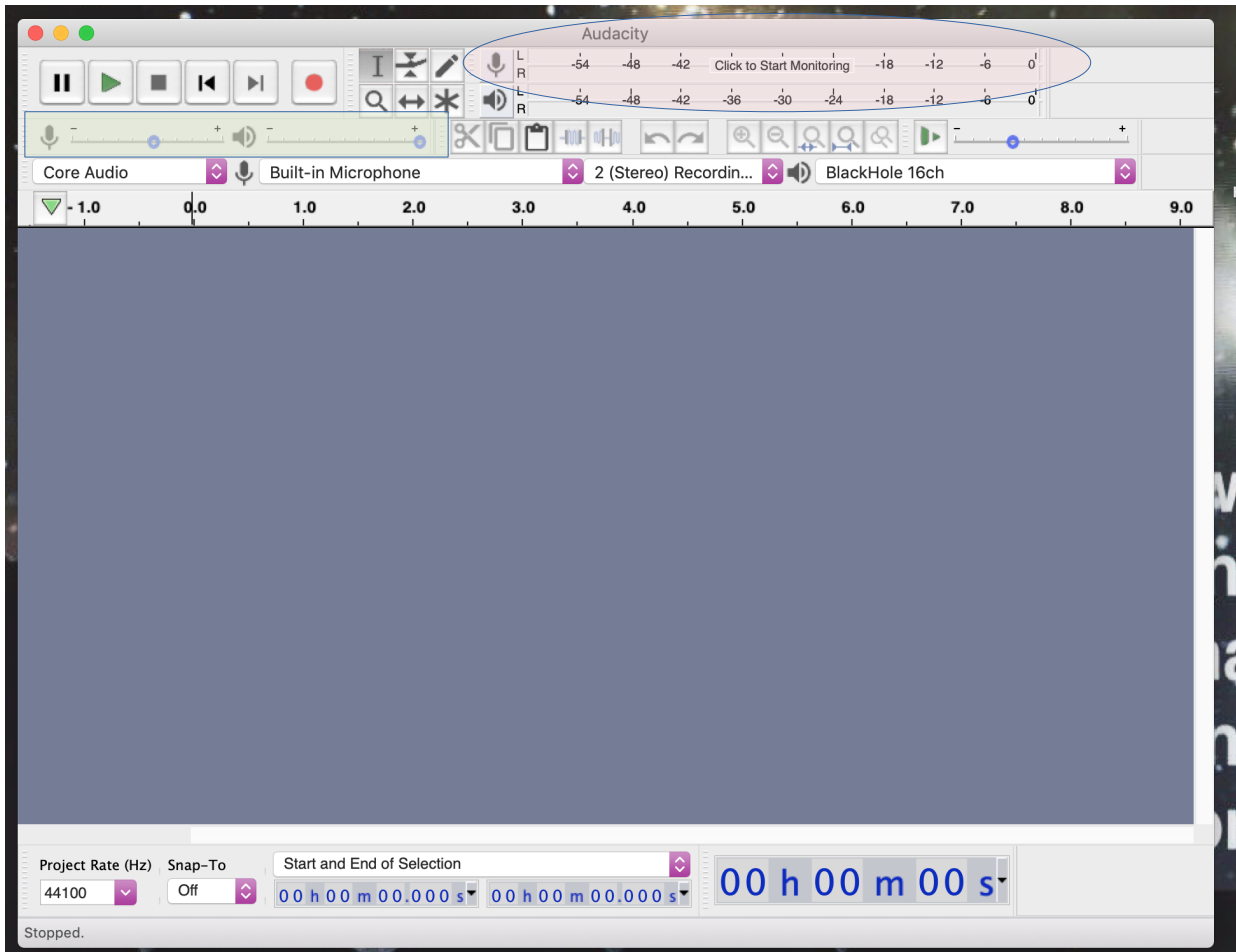
### **2-Actually activating your input**

-Most audio software are not going to make you hear the input they are receiving. You are gonna need to start “activate” them if you want them to go through **your hardware output**. See next pages for some examples; this step is also necessary if you are using a software for monitoring.

*Once this is done, everything you are sending into the zoom call can be heard through your chosen hardware output; it can be the exact same as the one chosen for Zoom or a different one; within the audio software you are using for monitoring, you can control the volume of this monitoring stream.*

## Enabling your microphone Example 1: Audacity

-Either click on the message in the middle of this meter (red circle), or click on the mic icon to activate monitoring. You can control the volume of your microphone and its output in this other menu (green square)

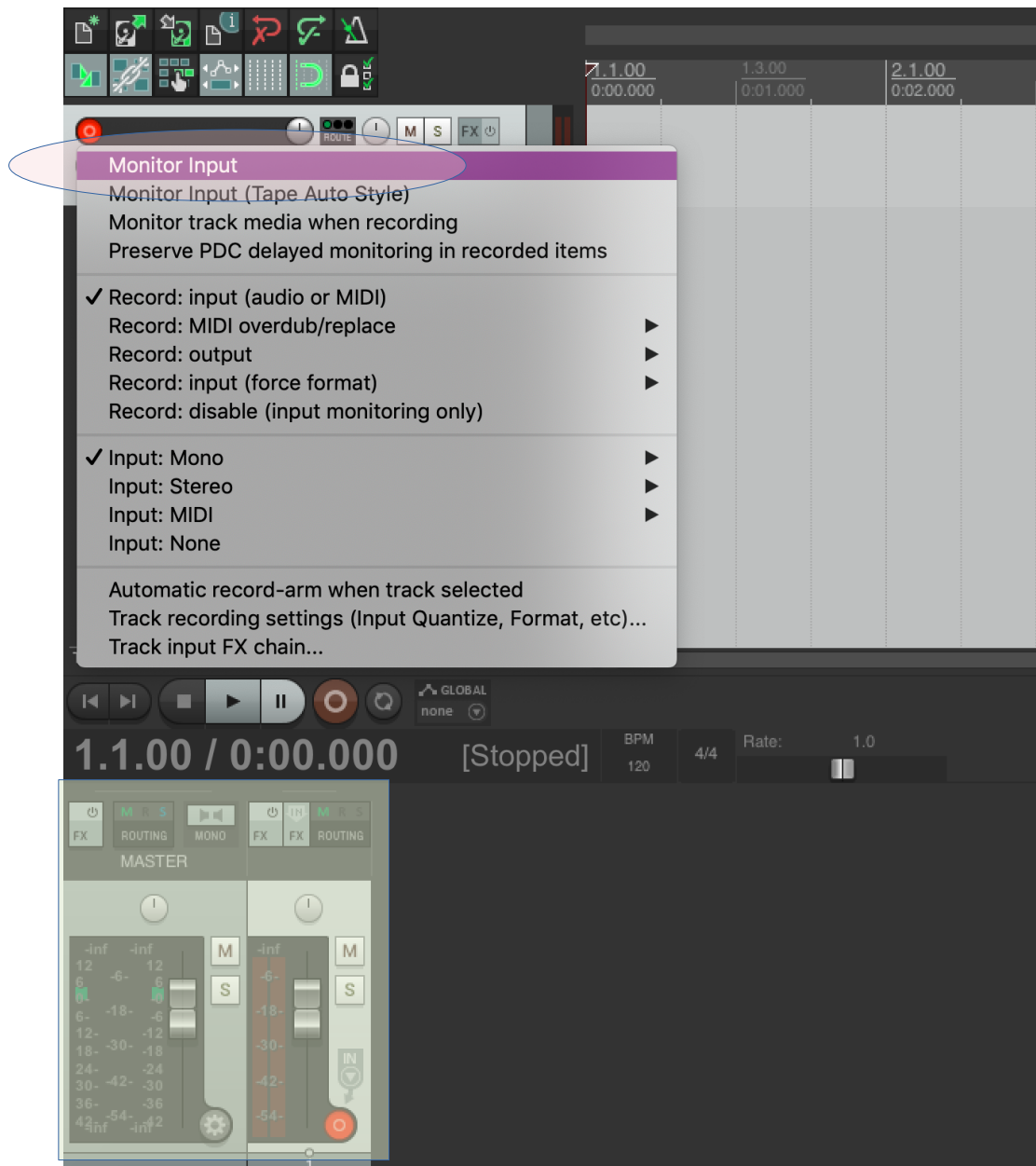


Audacity is best suited for:

- Adding a microphone over playback
- recording yourself while you perform online

## Enabling your microphone Example 2: Reaper

- Create a track; or multiple tracks if needed; make sure they correspond to the right input (either the one you plugged in your card, or 1/2 for built in input). Press the little red dot by your microphone to arm your track; right click on this button and make sure you check the option “monitor input” (red circle)
- At the bottom of your window, you have control over your input and output volumes (green rectangle)



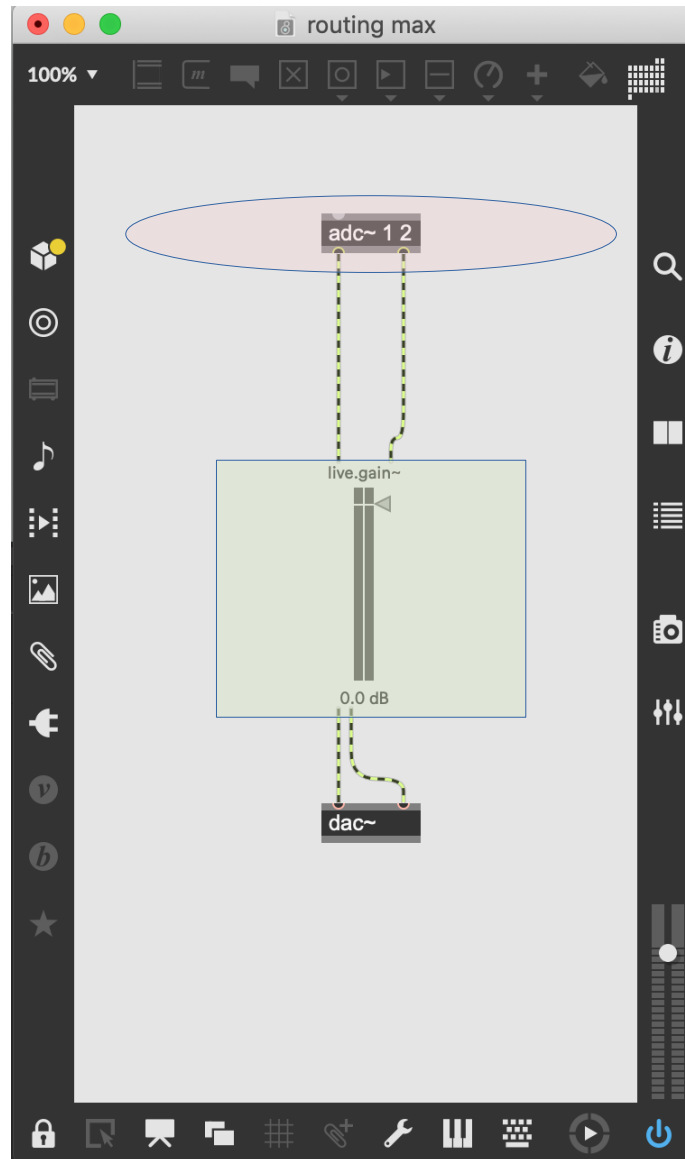
## Enabling your microphone Example 3: MAX MSP

*In this case, you are just connecting your input to your output. A simple patch like this one will do the trick.*

-In the Red circle, this is where you specify what input you are using  
-In the Green rectangle, this is where you have some control over the volume

-You can have a much more complex patch to control multiple input/output, specify different volumes, add a midi controller (like the Korg Nanocontrol), etc. The only limits is your imagination\*

\*and your Max skills. And your computer. And the software itself



## **Step 2**

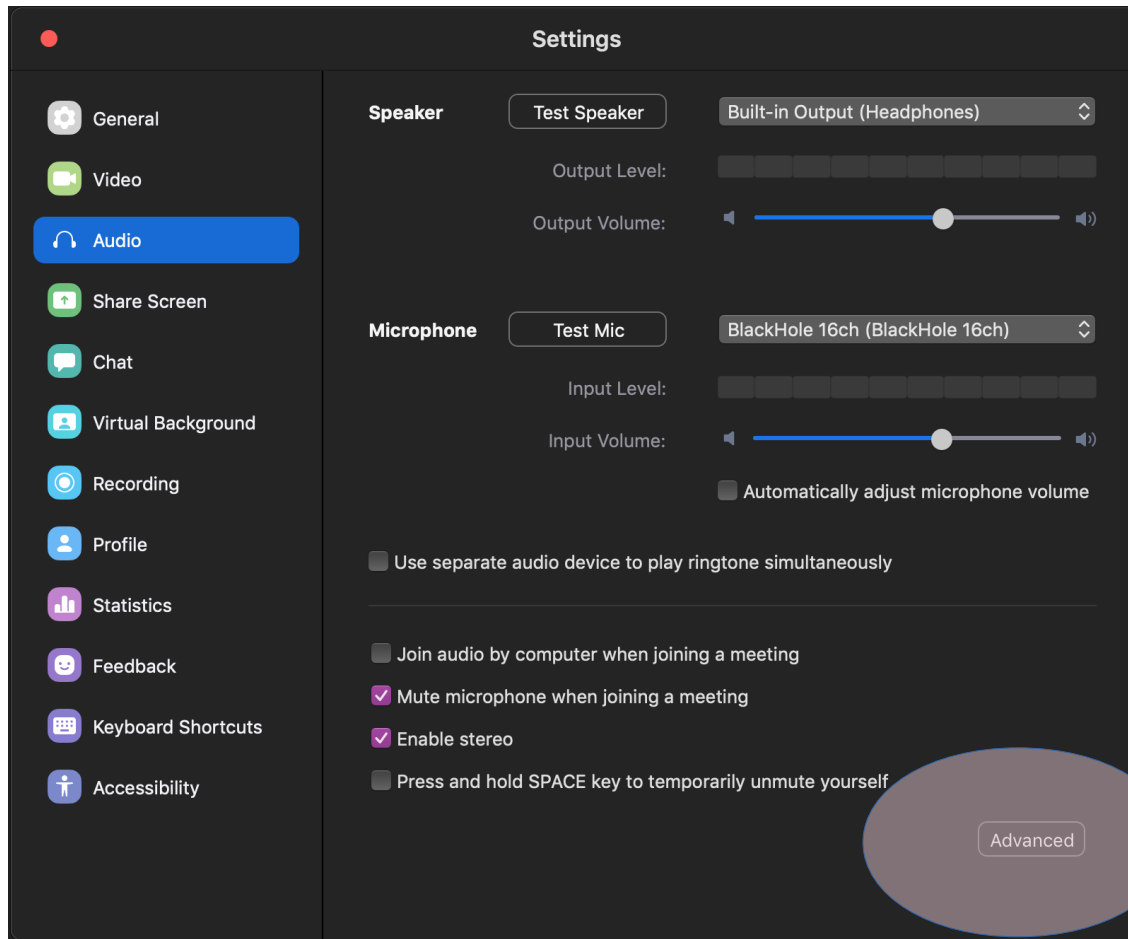
### **- Zoom parameters for live performance -**

The one where you master audio in Zoom

*A few quick steps to make sure your audio is as good as it can be. Please note that Zoom update itself regularly and these steps may not be up to date.*

## Zoom Advanced audio setting

-Either into your software parameter (click on your user name icon on the top right corner and choose “settings”), or within a call (beside the microphone icon on the bottom left corner, click on the arrow and choose “audio setting”), get into your audio parameters.



While you're here, you can already change your audio input/output...

Click here to access advanced setting!

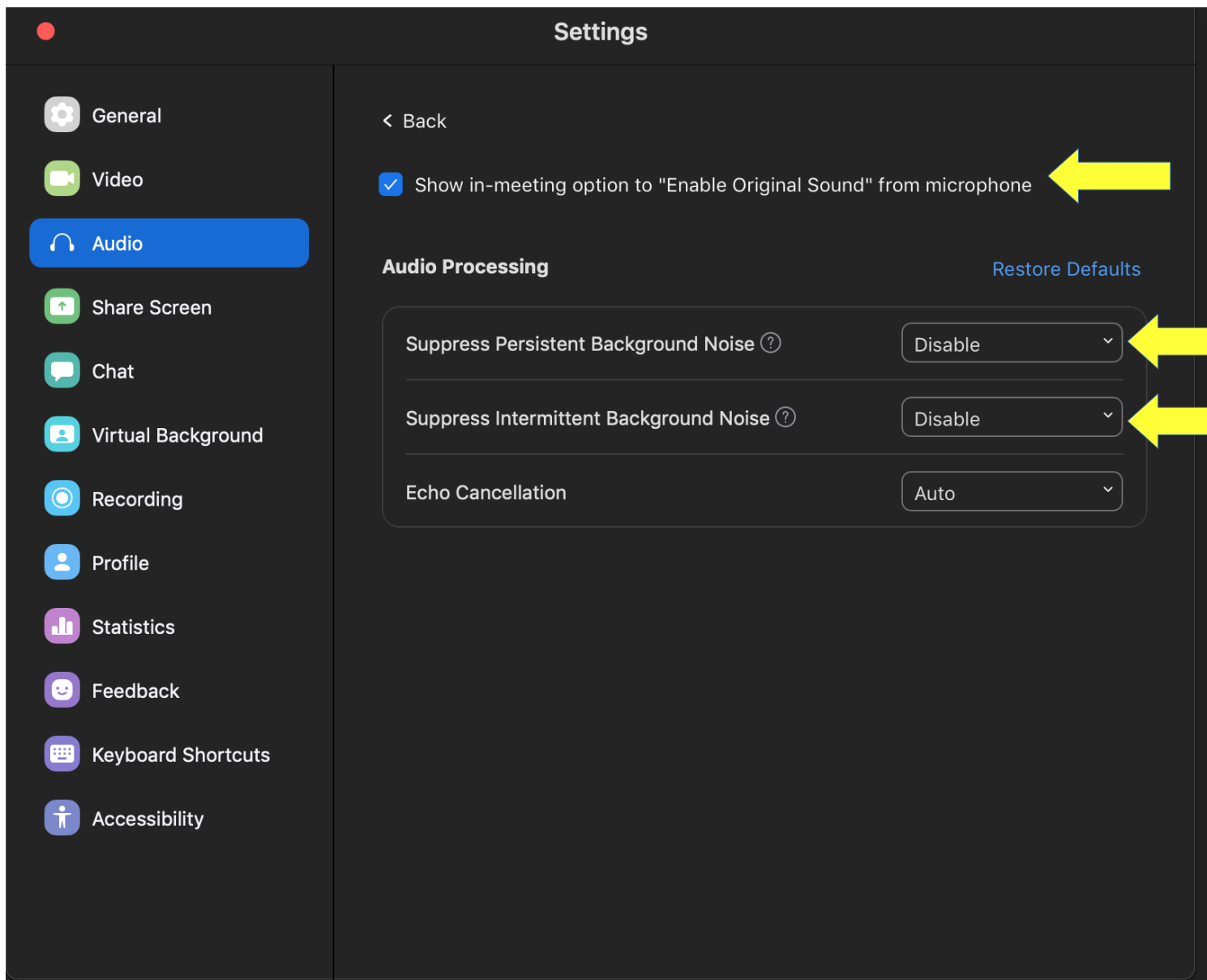
**Your audio input** should either be your soundcard/microphone, or BlackHole 16 ch if you followed the step one.

**Your audio output** should be headphones, to not accumulate any unwanted echos.

These are the 3 parameters you want to change:

- Check the box "show in-meeting option to "Enable Original Sound" from microphone"
- Disable "Suppress Persistent Background Noise"
- Disable "Suppress Intermittent Background Noise"

Go back and close the setting windows. We're nearly there!



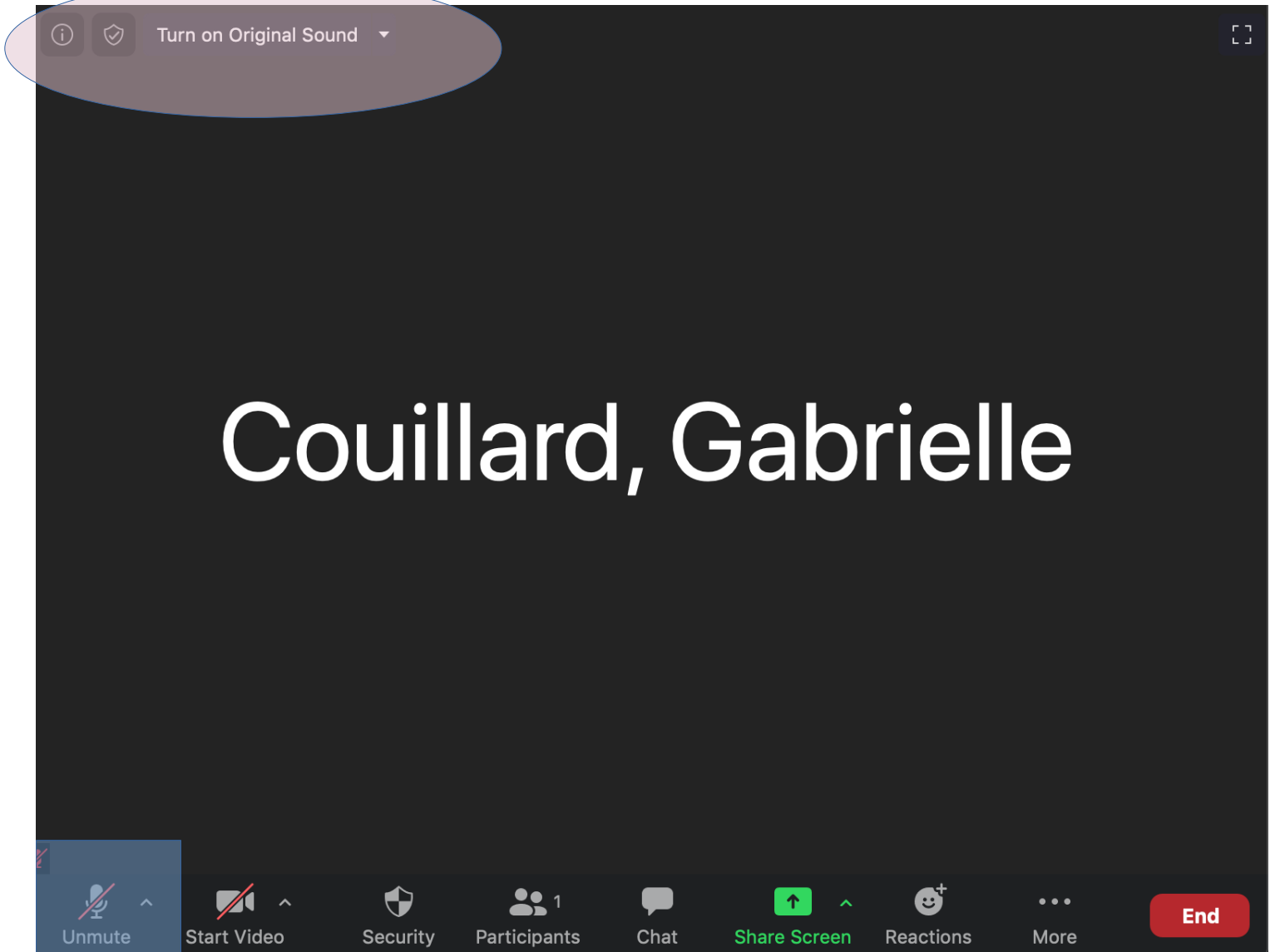


**All that you have to do now is click on this new button on the top right corner of your software: “Turn on Original Sound”.**

## YOU'RE READY TO PERFORM NOW

Last tips:

- Original sound will turn itself off if (depending of your software version)
  - you mute yourself
  - you switch between audio input
  - you leave call and come back
- In a recent update, a little arrow appeared beside the “turn on Original Sound” button: you can now lock some of your input to always have this option on.
- We know here every sound your microphone is capturing. Yes, even those low hums and breath noise. Think about muting yourself when not active.



Audio parameters and choice of Input/output are also accessible from here