



A COMPLETE GUIDE TO AUDIO SETTINGS FOR MUSICAL INTERACTION OVER ZOOM

Intended Audience: Teachers, Gurus, Students, Online Performers, Musical Workshops, Participants in Musical Sessions, and anyone else!

Concentration: Any form of Music (Vocal or Instrumental)

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Updated: February 27, 2021, Zoom Desktop Client Version 5.5.2 (12513.0205)

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*For the latest version of this document, please visit the following link:

https://docs.google.com/document/d/1eS0TW_p0s0IfdDF0p_02MAa6PL9QVcfs0hVos3W1CFE/edit?usp=sharing

If you found this document helpful, have any questions, or would like to connect, feel free to reach out! My contact info:

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WELCOME!

INTRODUCTION:

Hello All,

I hope this message finds you well. I trust that you all are keeping in good health and elated spirits through the medium of music through these desolate and difficult times for all.

I have created a short walkthrough here of some audio settings you should change in your Zoom Desktop Client on your Laptop, PC, iMac, or MacBook. This walkthrough also includes screenshots of where you can go to find things if the written directions are hard to follow.

Of course, Zoom is not the best solution to learning music, but it is what we have to work with for the time being. This walkthrough and change of settings should improve the overall experience for us all, and will make music education more seamless over the online platform.

The following instructions are if you are following with a Laptop, PC, iMac, or MacBook which has access to the Zoom Desktop Client. For a mobile device, the extent to which audio settings can be configured may be limited, but you may reach out to me with any further questions you may have, and I can assist you to the best of my ability.

NOTE: It is **STRONGLY RECOMMENDED** to have a device such as a PC or MacBook for musical sessions, versus a mobile device such as a iPhone, iPad, Tablet, Android, etc.

RECOMMENDED MATERIALS:

1. Laptop, PC, iMac, or Macbook for the Zoom session
2. Quiet Room with a non-distracting background
3. Strong internet connection - Decent bandwidth with Wireless, or Ethernet if possible
4. Materials that are optional or needed as required:
 - a. Working Webcam - inbuilt or external
 - b. Secondary device (iPhone, iPad, Tablet, Android, etc.) - For accessing/taking notes, using iTablaPro (iOS application), recording the session, etc.
 - c. External Microphone - a USB microphone, or a Condenser Microphone connected via an XLR Cable running through an Audio Interface (such as Scarlett 2i2)
 - d. Any additional peripherals to enhance the learning experience or if needed for your device.

- e. Musical Instruments or anything that your teacher requires

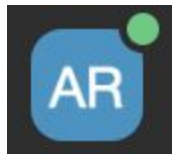
****NOTE:** *Some of the screenshots utilized in this walkthrough may NOT be the exact same as what is shown on your device due to a difference of operating software, or a slightly different version of Zoom. The written directions are the most accurate and will apply to most up-to-date or nearly up-to-date versions of Zoom. Only refer to the screenshots if you are unable to follow the written directions first.* **

PRIMARY STEPS FOR CONFIGURATION:

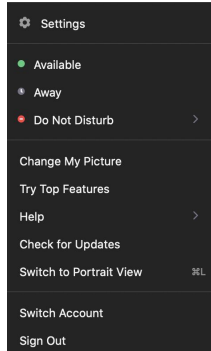
1. Ensure that you have access to a Laptop, PC, iMac, or MacBook.
2. Ensure the Zoom Desktop Client is installed on your device which you will be using for music.
3. Ensure that you have a valid Zoom Account (does not have to be licensed).
4. Ensure that the Zoom Desktop Client has the latest version installed. This walkthrough is designed for version 5.5.2 (12513.0205) . If you are unsure of how to ensure that your application is updated to the latest version follow the steps on *Pgs. 4-5*.

STEPS TO CHECK/UPDATE THE VERSION OF THE ZOOM DESKTOP CLIENT:

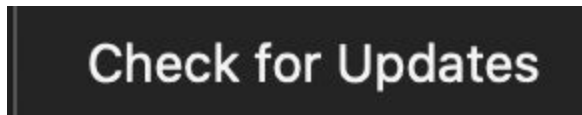
1. Ensure that you have gathered the materials as listed in “RECOMMENDED MATERIALS” and followed the steps in the section “PRIMARY STEPS FOR CONFIGURATION” before starting this process.
2. Ensure that you are logged in to your Zoom Account.
3. At the top right of the Home Screen, you will see an icon that has your initials in a colorful box or may have a profile picture that you have previously set. Find it, and click on it.



- a.
- b. The image above shows an example of the icon that should be clicked in Step 3.
4. In the dropdown menu that appears once the icon is clicked, find “Check for Updates”. Once you have found it, click on it.



- a.
 - b. The image above shows an example of the dropdown menu that appears when the icon is clicked. NOTE: This dropdown screenshot eliminates portions of the upper-half of the dropdown where the credentials of the user are located. This is for security purposes.
 - c.
 - d. The image above shows an example of the item that should be clicked in the dropdown menu, once the icon is clicked.
5. After Step 4 is completed, one of two scenarios will occur:
- a. Scenario 1: Up to Date
 - i. Once Step 4 is completed, you will receive a pop-up with the header “You are up to date”. The body of the message should read “You are on the latest version 5.5.2 (12513.0205). [Release Notes](#)”.



You are up to date

You are on the latest version 5.5.2 (12513.0205). [Release notes](#)

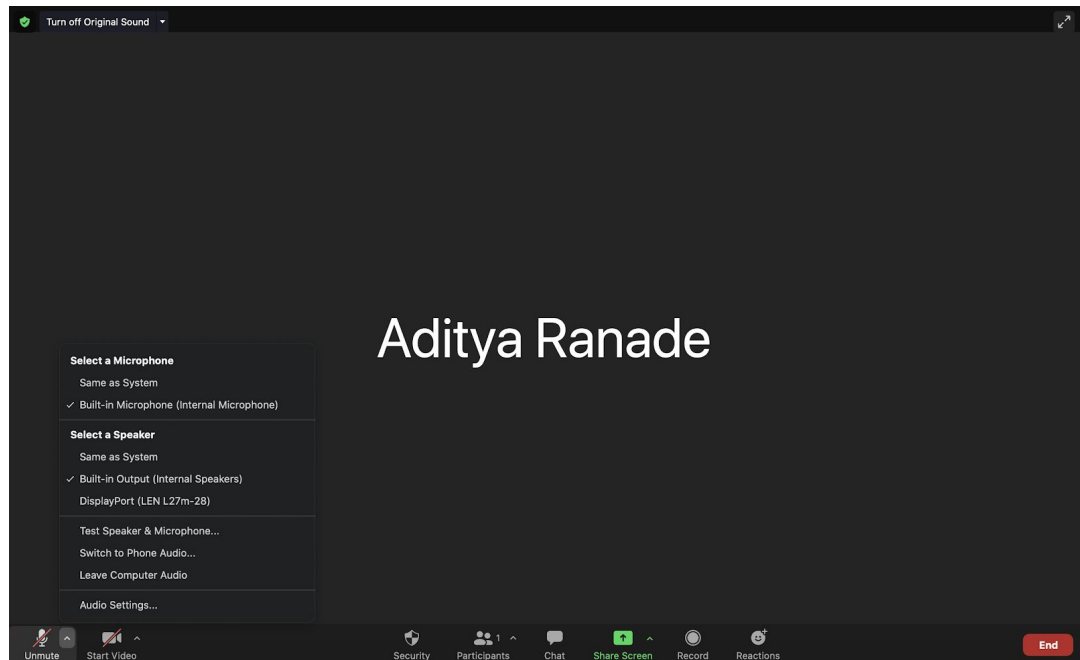
Done

- ii.
 - iii. The image above shows an example of the pop-up that you will receive if your Zoom Desktop Client is on the latest version.
 - iv. Click “Done”.
- b. Scenario 2: Not Up to Date
 - i. Once Step 4 is completed, you will receive a pop-up saying that there is a new version of Zoom available.
 - ii. Follow the steps located on the pop-up. Click “Update”, and then, click “Install”.
 - iii. Once the Update and Installation process is successful, go back to Scenario 1 and ensure that you are getting the appropriate pop-up.

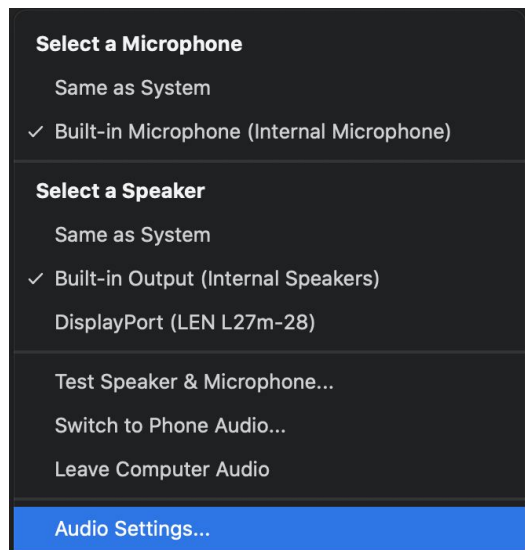
HOW TO ACCESS THE AUDIO SETTINGS THROUGH ZOOM:

Scenario 1: Already in a session

1. If you are already in a session, the way to access the audio settings is by clicking the small “^” up-arrow to the right side of the microphone (the mute/un-mute button).



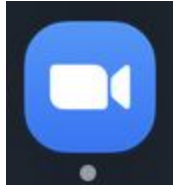
- a. This will open up a list of various different settings. Go to the item which says “Audio Settings...” and click on that. That will take you to the landing page of the audio settings for Zoom.



- a. You are now successfully in the Audio Settings for Zoom!

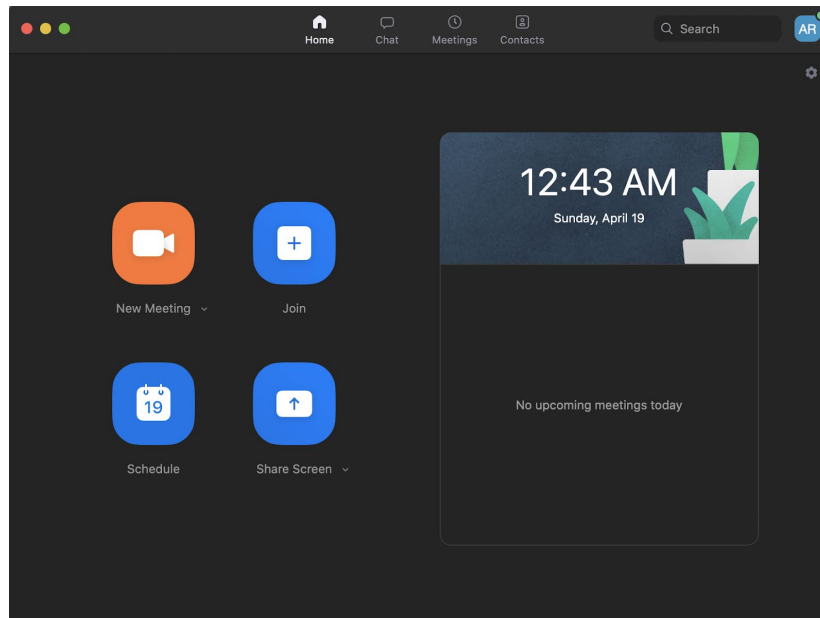
Scenario 2: Not in a session

1. If you are not in a session at the time of following this walkthrough, please open the Zoom Desktop Client like you would a regular application on your device.



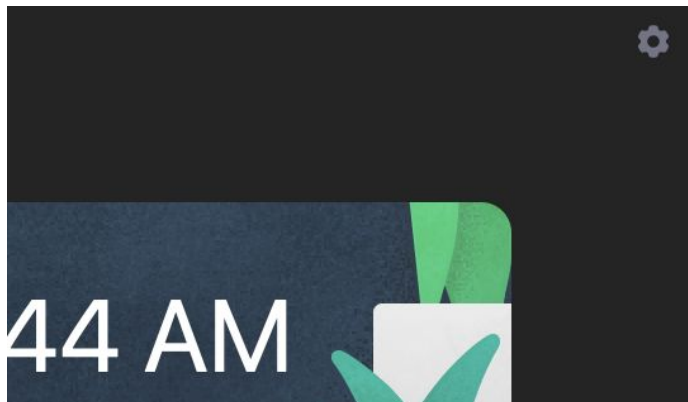
a.

2. This will take you to the landing screen:



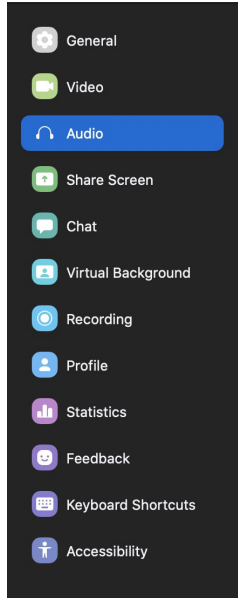
a.

3. Go to the small gear icon in the top right hand side of the screen:



a.

4. Once you click on that icon, you will be greeted with a settings screen. In the left hand section, click on “Audio”



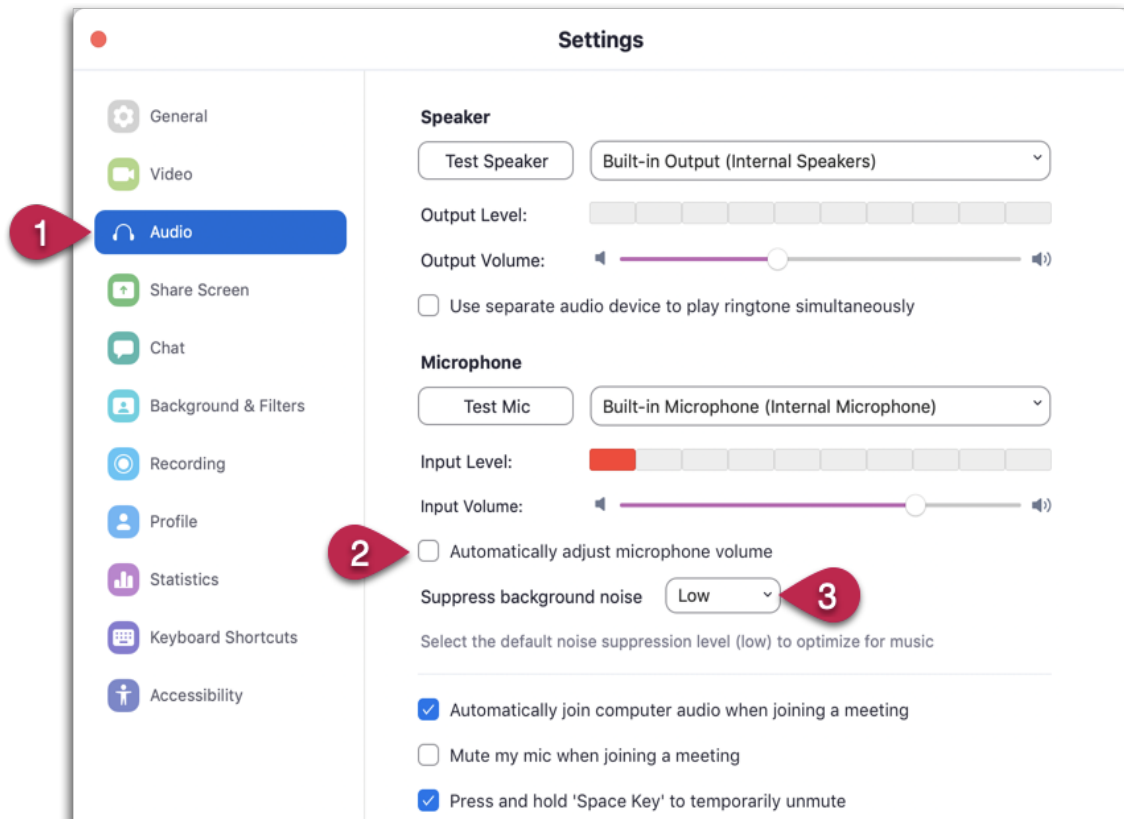
a.

5. You are now successfully in the Audio Settings for Zoom!

AUDIO SETTING CHANGES (STEP-BY-STEP WALKTHROUGH):

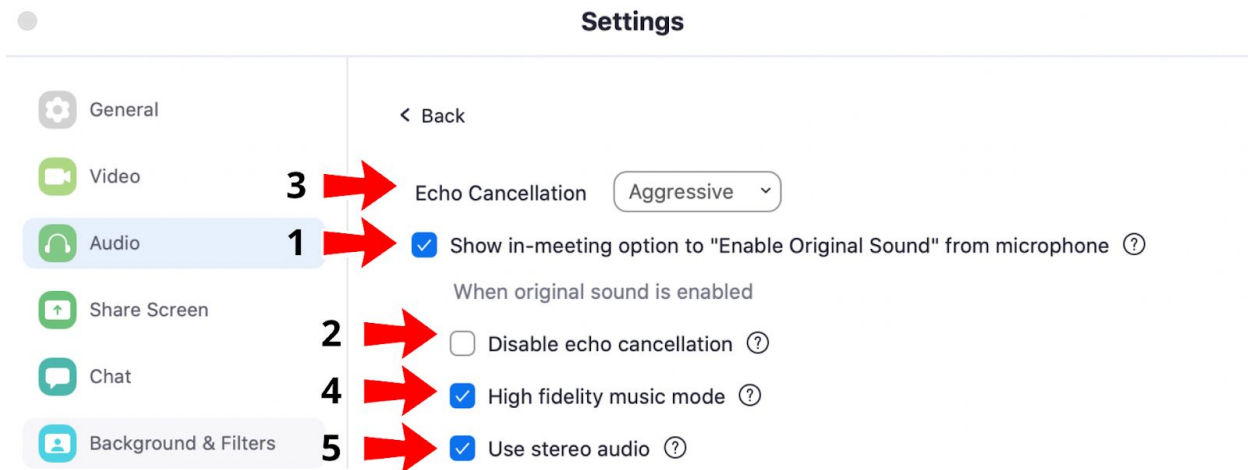
This walkthrough will NOT explain the reason behind all these changes. If you are curious and want to know more about why each of these settings are being changed, go to *Pgs. 16-17*.

Once you are successfully in the settings of Zoom, follow the steps below:



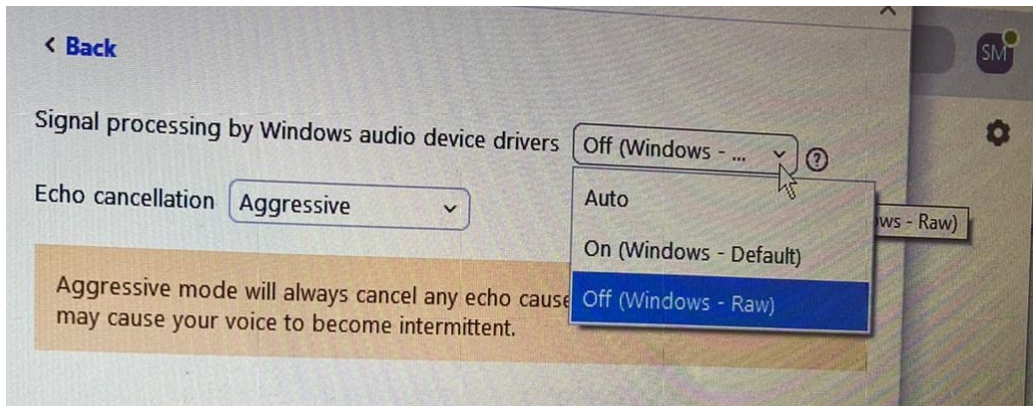
1. On the menu to the left side, make sure you are on the tab which reads “Audio”.
2. Uncheck the box for “Automatically adjust microphone volume”
3. Set “Suppress background noise” to “Low” by clicking on the dropdown, or checking the box next to “Low (faint background sound)”.

***NOTE: These Settings are no longer located in “ADVANCED” - they are located on the first page itself. EXCEPT STEP 3! *** *Updated February 27, 2021*



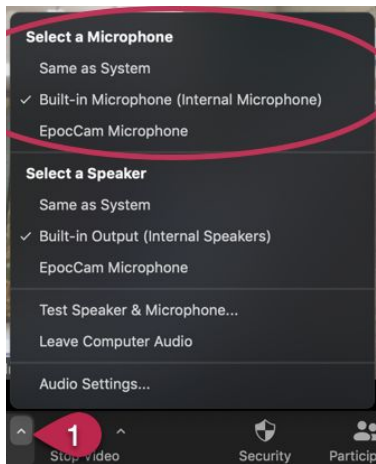
1. Check the box for “Show in-meeting option to “Enable Original Sound” from microphone”.
2. UNCHECK the box for “Disable echo cancellation”, OR check the box for “Echo cancellation”, depending on your version. ***Updated February 27, 2021***
 - a. NOTE: This option ONLY works best with headphones and a microphone that is of a decent quality. If you don’t have headphones plugged in, this will cause a lot of echo problems.
3. Make sure Echo Cancellation is set to “Aggressive”
4. Check the box for “High fidelity music mode”.
 - a. This option will increase the utilization of the CPU and will consume greater network bandwidth, so it will only suit machines that have the capacity and bandwidth to do so.
5. OPTIONAL: You may notice an additional option for “Use Stereo Audio”. You may check this box ONLY if you have a stereo capable microphone or audio interface. This option will ALSO increase the utilization of the CPU and will consume greater network bandwidth, so it will only suit machines that have the capacity and bandwidth to do so.

6. FOR WINDOWS USERS ONLY:

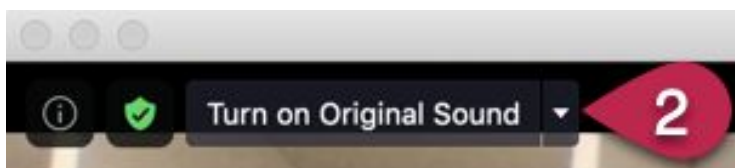


- a. You will see a section for “Signal processing by Windows audio device drivers”. Please set it to “Off (Windows - Raw)”.

Before and/or during each session:



1. Ensure that you have selected the appropriate microphone. If you have attached an external microphone successfully through a USB or other input, you will see it as an option below “Select a Microphone”. Make sure this is selected to ensure that your microphone’s input is being delivered properly.
 - a. SOMETIMES: If you plug in an external microphone, the speaker or device through which output is sent may change automatically to the microphone or external device you have plugged in. Make sure that the appropriate Speaker (output device) is also selected to your preference.



1. Ensure that you click the “Turn on Original Sound” button at the top left of your screen after you have entered or started the session. This will allow you to utilize the advanced audio settings that were changed in the steps prior to this. If you are singing or playing an instrument, activating this option will preserve the sound from your microphone and will override the echo cancellation and audio enhancements that are added by Zoom’s algorithms.
 - a. If you need to talk for an elongated time, turning this setting off might be a better option than keeping it on so that your voice will come out clearly. Zoom’s algorithms are designed for optimizing sound for talking, so turning Original Sound off, will allow for better audio quality when speaking. Turn the setting back on when going back to singing or playing an instrument.

IMPORTANT SETTINGS TO CHANGE FOR TEACHERS:

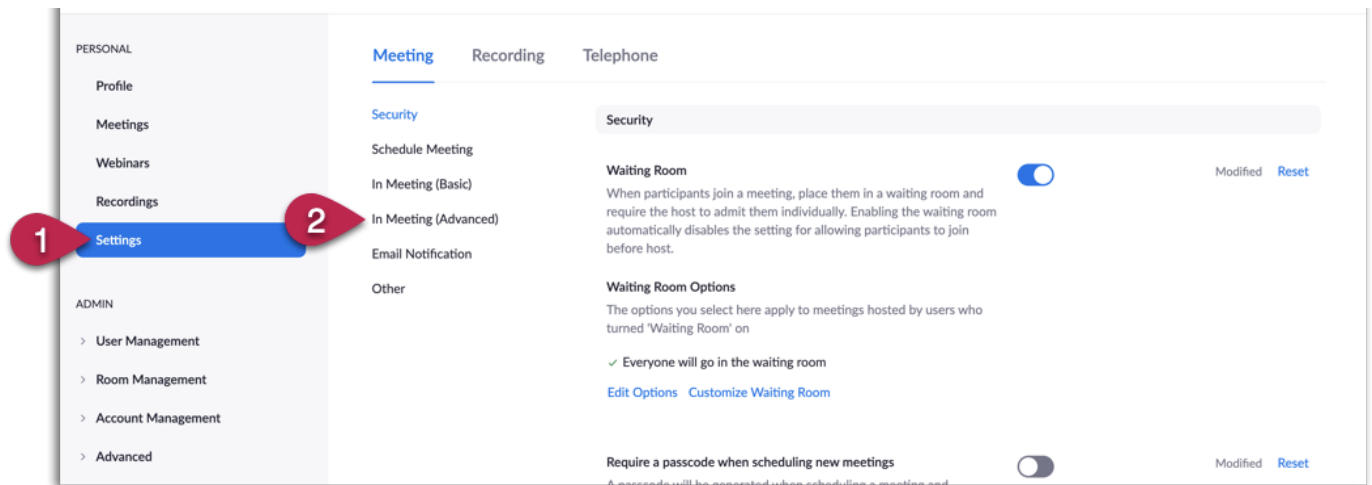
This portion of the walkthrough is primarily for session hosts or teachers.

Allowing Student(s)/Participant(s) to utilize Original Sound

If the student(s) or participant(s) in the session need to play an instrument or sing during the session, it will be beneficial to have them enable Original Sound so the host, other students/participants, or the teacher can hear them clearly.

For this set of steps, you will need to go to zoom.us and access the Web Portal. Log in to the Web Portal by signing in with your Zoom Account credentials on the zoom.us website.

Then, do the following:



1. Click on the “Settings” tab from the menu on the left.
2. Select “In Meeting (Advanced)” in the sub-menu to jump to the advanced meeting settings area (or just scroll down till you reach there).
3. Find “Allow users to select original sound in their client settings” and turn it on.
4. OPTIONAL: You may notice an additional option for “Allow users to select stereo audio in their client settings”. You may check this box if you have OR believe you have student(s)/participant(s) that have a stereo capable microphone or audio interface. This option will allow student(s)/participant(s) to use Stereo Audio while in the session.

Make sure to instruct student(s)/participant(s) to turn on this setting during the session.

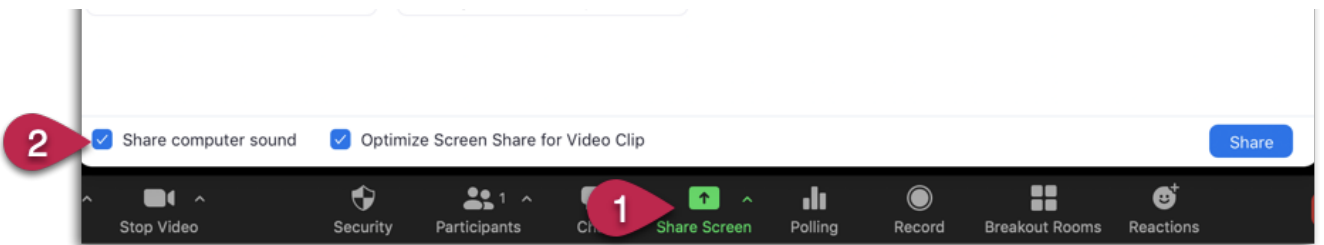
NOTE: There are several other settings that can be manipulated on this dashboard, but since this is a walkthrough for audio only, we will only go over settings that pertain to audio.

Sharing audio from a YouTube Video, Web Music Player, or any other software application

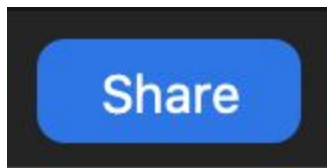
Sometimes, you may want to share a YouTube Video, some interactive interface for music on some website, or a software application for music that you have installed LOCALLY on your device.

There are some settings that need to be activated when one may want to share something like this. If you do NOT turn these settings on, the student(s)/participant(s) will not be able to hear the audio of your shared content very well. Either they will hear nothing (if they have headphones on), or they will hear patchy and intermittent noises from the audio of your shared content that is being inputted to your microphone via the speakers on your device.

Below are steps to ensure that this problem is avoided when sharing content of this kind through this medium:



1. Click on the green button in the middle at the bottom which says “Share Screen”.
2. Check the box for “Share computer sound”.
3. Share your content by clicking the blue “Share” button at the bottom left hand side of the pop-up for Share Screen.



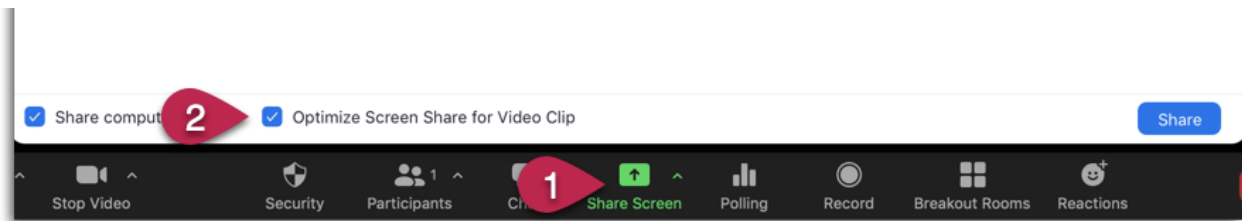
- a.
- b. The image above is an example of the blue “Share” button that should be clicked to successfully begin sharing content to student(s)/participant(s).

Optimizing the Screen Share for a video in full screen mode

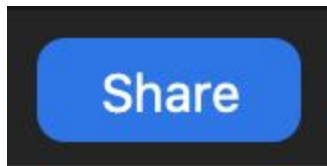
This option is for enhancing the playback quality for student(s)/participant(s) in your session for the video you want to share with them.

NOTE: This setting is ONLY for videos that are shared in full screen mode. If you are not sharing content that is meant to be shared in full screen mode, it is best to not activate this option.

Below are the steps to ensure that video playback in full screen mode is shared appropriately:



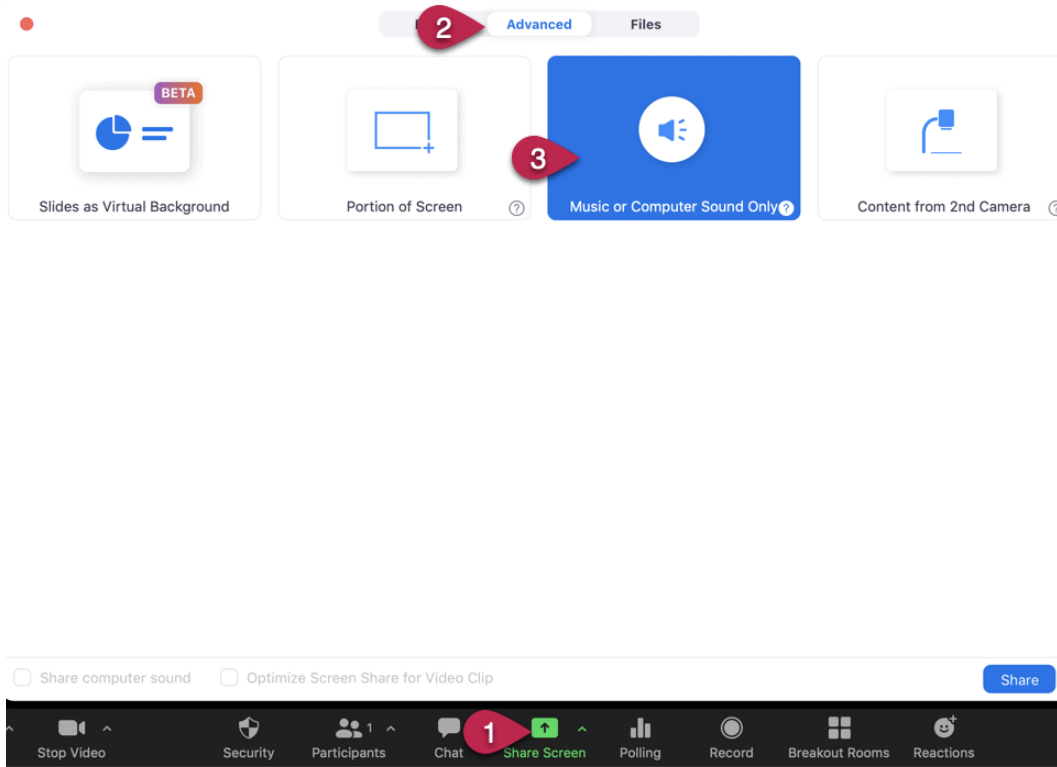
1. Click on the green button in the middle at the bottom which says “Share Screen”.
2. Check the box for “Optimize Screen Share for Video Clip”.
3. Share your content by clicking the blue “Share” button at the bottom left hand side of the pop-up for Share Screen.



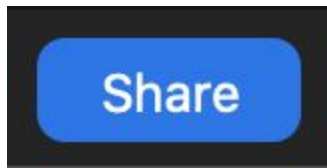
- a.
- b. The image above is an example of the blue “Share” button that should be clicked to successfully begin sharing content to student(s)/participant(s).

Sharing an audio track or audio file ONLY

At times, you may only want to share the audio of a video, or there is an audio file that you may want to share, where there is no need to “Share your screen”. If you only need student(s)/participant(s) to hear an audio file, (like a sing-along, play-along, or example track), then you can follow the appropriate option changes below:



1. Click on the green button in the middle at the bottom which says “Share Screen”.
2. Click the tab at the top of the pop-up which reads “Advanced”.
3. Select “Music or Computer Sound Only”.
4. Share your content by clicking the blue “Share” button at the bottom left hand side of the pop-up for Share Screen.



- a.
- b. The image above is an example of the blue “Share” button that should be clicked to successfully begin sharing content to student(s)/participant(s).

****NOTE:** This setting will allow the host/teacher/student(s)/participant(s) to continue seeing each other with no change in orientation for the student(s)/participant(s) cameras. **

EXPLANATION OF AUDIO SETTING CHANGES:

Some of you may be wondering, why is it that all these settings were changed, and how they will exactly help the musical interaction, and how they could possibly hinder the productivity of the teacher and student if not altered.

1. Automatically adjust microphone volume - OFF
 - a. This setting automatically alters the microphone to normalize your voice volume for all student(s)/participant(s), and the host/teacher. It evens out the dynamics that play a large role in music, which is the loudness and softness of the frequencies which are sung or played. If left on during musical interaction, this setting will normalize the volume of your voice when singing, or the volume of an instrument as you are playing it.
2. Suppress background noise - LOW
 - a. Zoom has an inbuilt noise suppression feature which can help remove distracting noises that may be taking place in the background, and that can possibly be heard through your microphone. These sounds include things like keyboard noises, crunching, noise of a fan, or an AC vent/unit, and several other things. For folks using Zoom for meetings which require no musical interaction, this setting is a lifesaver. However, this feature is disadvantageous in a session with musical interaction. The soft notes, or notes with low volume that are played or sung may be interpreted as background noise by Zoom's algorithms, and therefore, the Zoom algorithm will try to suppress this noise.
 - b. There are four options to choose from when it comes to "Suppress background noise":
 - i. Auto - best for regular meetings with no musical interaction
 - ii. Low - best for musical interaction
 - iii. Medium - best for rooms where there is constant background noise which is not too loud or distracting such as a fan or AC vent/unit
 - iv. High - best for rooms where there is constant background noise which is loud and distracting such as a lawn mower or a dog barking.
3. Enable Original Sound (advanced settings) - ON
 - a. This setting allows you to PRESERVE the sound from your microphone. It will disable Zoom's inbuilt background noise suppression, it will remove high pass filtering, and will also remove automatic gain control. You can enable or disable Original Sound as needed during your Zoom session (*See Pg. 11*).
4. Disable echo cancellation (advanced settings) - ON

- a. This setting will disable Zoom's automatic echo cancellation algorithm. If you decide to turn this setting on, it is important to make sure to use headphones and a decent quality microphone to get the best results from this alteration.
5. High fidelity music mode (advanced settings) - ON
 - a. This setting will optimize Zoom for the highest quality of musical interaction. It is important to understand that this option will increase the utilization of the CPU and will consume greater network bandwidth, so it will only suit machines that have the capacity and bandwidth to do so (an Ethernet connection or really strong Wireless connection will give you the best result).
6. Use stereo audio - ON
 - a. This setting will allow one to use the stereo capability of a stereo capable microphone or audio interface. It is important to understand that this option will ALSO increase the utilization of the CPU and will consume greater network bandwidth, so it will only suit machines that have the capacity and bandwidth to do so (an Ethernet connection or really strong Wireless connection will give you the best result).
7. FOR WINDOWS USERS ONLY: Signal processing by Windows audio device drivers - Off (Windows - Raw)
 - a. This setting is only seen in Zoom clients installed on Windows machines. The reason this setting is kept off is because the audio drivers on each Windows machine (which there are many of), alters the sound that it hears through the microphone. We don't want another layer of processing to occur before Zoom takes the input of our microphone. This could cause some unnecessary pitch changes and unclear audio.

COMMON FAQs:

1. Do I need to alter these audio settings everytime I join or begin a new Zoom session?
 - a. No! Almost all of the settings will remain intact for each Zoom session you join, as long as you do not delete and re-download the client for whatsoever reason.
 - b. The only settings you will have to check everytime you join or begin a new are located on (*See Pg. 11*)
2. Do I need to have an external microphone?
 - a. No! Your inbuilt microphone can work fine, unless there is some major issue or damage that has occurred to it. This may be a requirement for devices which have no inbuilt microphone (i.e. some desktops).

A COUPLE NOTES AND TIPS FOR ALL:

1. PLEASE REFRAIN from using a “Virtual Background” and make sure to set it to “None”. The virtual background will interfere with your video and will provide as a distraction from music. If your camera is pointed towards an instrument, the background will glitch back and forth, providing an unclear view of your instrument.
2. Please make sure your instrument or you (if singing) is/are centered and visible in the camera at all times at a CLEAR ANGLE. This way, your teacher/guru will be able to guide you in the best possible manner, whether it is fingering, posture, tabla, etc.
3. As Zoom is not the primary option when it comes to teaching music, I recommend that all students SEND THEIR PRACTICE VIDEOS OR AUDIOS to their respective teachers/gurus, to correct any mistakes that may have been missed or not picked up on during the class. This way, the teacher/guru can also ensure that students are able to follow well on Zoom, and can provide additional resources or help where required.
4. Make sure you are in a quiet place during your class, that will ensure the microphone does not pick up any extra sounds, since the background sound suppressing sound option is now disabled. Make sure there are no EXTERNAL DISTRACTIONS to focus attention only on the music.
5. Preferably, you should sit in a ROOM WITH NO ECHO, because with these audio settings, the echoed sound could bounce back into your microphone, creating gray noise and possible feedback.
6. If you have an external USB microphone, it is much preferable to use it, as it will pick up audio much clearer than the internal microphone in your PC/laptop/Mac.
7. You may need to ADJUST INPUT VOLUME accordingly. This may be a different level for all devices, however, what I have found is that the slider should be pushed all the way to the end if you are using a Mac (Apple Laptop).

CONCLUSION:

Changing these few settings will in-turn produce a better outcome for musical interactions over the remote platform. Many of you currently having microphone issues during class should be able to work them out by going through this walkthrough.

Hope this was easy to follow and please reach out if you have any questions!

Stay safe, stay happy, and stay musical!

Warm Regards,
Aditya Ranade

SOURCES:

<https://support.zoom.us/hc/en-us/articles/201362393-Viewing-the-Zoom-version-number>

<https://support.zoom.us/hc/en-us/articles/360046244692-Background-noise-suppression>

<https://support.zoom.us/hc/en-us/articles/115003279466-Enabling-option-to-preserve-original-sound>

<https://support.zoom.us/hc/en-us/articles/202954249-Optimizing-a-shared-video-clip-in-full-screen>

<https://midnightmusic.com.au/2020/09/complete-guide-to-zoom-audio-settings-for-music-teachers/>