making music

ONLINE REHEARSAL PLATFORMS

An introduction to online platforms for delay-free, virtual music rehearsals

WHAT IS A REHEARSAL PLATFORM?

These are websites or software that allow musicians to meet up in a virtual music room to play together using their internet connection. All of the platforms listed in this resource use specialist techniques to minimise 'latency' which is the delay heard on online video conference platforms (Zoom, Microsoft Teams etc), making it impossible to keep in time when playing music.

Why not use Zoom?

Video conference platforms like Zoom can be great for some rehearsals, you can see each other and they are good for social interaction, but they have too much of a delay or latency to make rehearsing together and hearing each other practical.

Do be aware that online audio latency cannot be minimised to the point where the audio from one musician will instantly reach the headphones of another. Many of these platforms give users a handy latency display showing how long their audio signal is taking to reach other members; latency in this context is displayed in milliseconds, and 25 milliseconds is considered to be an acceptable timeframe. Anything above 50 milliseconds will make it impossible to stay in time.

BEFORE GETTING STARTED

Before starting with these platforms:

Have realistic expectations

Whilst these platforms should exceed the experience of using online conferencing tools for music rehearsals, do remember that they're never going to be a perfect replacement for an in-person rehearsal and ensure your group is aware of this!

Equipment and technical ability

Some of these platforms require specific equipment and a certain amount of technical knowhow. Do use your group's collective knowledge to make sure everyone can use the platform.

Troubleshooting

It's rare that these platforms will perform straight 'out of the box' so do be prepared to persevere and experiment with the technology and your group's setup when using these platforms.

No video

Most of these platforms are audio only, so that your internet connection is fully dedicated to audio. This may mean having a re-think as to how you manage and direct rehearsals as the group cannot see each other. On some occasions it may be possible to simultaneously use a rehearsal platform whilst also having the group use Zoom to see each other, however this may slow the internet connection and cause an audio delay.

WHAT EACH MEMBER NEEDS

An overview of what all members will need to use to get the most out of a rehearsal platform:

Computer / Device

Most platforms require all users to be using a desktop or laptop computer. However some do work with handheld devices (smartphones, tablets etc) instead.

Power Options

These platforms will perform better if your device/laptop is plugged directly into its power supply.

Wired Headphones

All users will need headphones to hear the other members of the group. Wireless headphones should be avoided as they can add a delay to the system.

Audio Interface (recommended for some platforms)

This is a physical device that connects to your computer via USB or Firewire allowing you to plug one or more microphones into your computer. Ideally all attending an online rehearsal should be using one of these, as the audio interface can process audio signals faster than a computer's inbuilt hardware.

Asio4All Audio Driver (audio interface alternative for Windows users)

If using a Windows computer, the free driver software 'Asio4All' can be used as an alternative to an audio interface. Once installed this small piece of software allows your computer's built in microphone to be used with the rehearsal platforms.

Microphone

When using an audio interface you will need to use a compatible microphone and audio cable.

Ethernet wired internet connection

All platforms recommend that everyone attending the rehearsal plug their computer / device directly into their internet router using an ethernet cable (rather than relying on the WiFi connection). If your device / computer does not have an ethernet socket you can use a USB to ethernet socket converter, which will allow you to plug into the router.

HOW TO SET UP AND USE THE PLATFORMS

The rest of this resource introducers the following three rehearsal platforms:

SonoBus

A free, easy to set up platform that allows users to join on a computer, laptop or mobile/tablet device.

JamKazam

A platform with free and paid for options allowing users to setup private rehearsals spaces online. This platform also offers video rehearsal.

Jamulus

A free platform that can be configured to work with private or cloud servers to increase quality / connection speeds.

SONOBUS

How to set up and attend an online rehearsal using Sonobus:

Download the platform:

Versions for Mac, Windows and Linux can be found on the official website: www.sonobus.net alongside information about the Apple and Android apps which are currently available as test platforms.
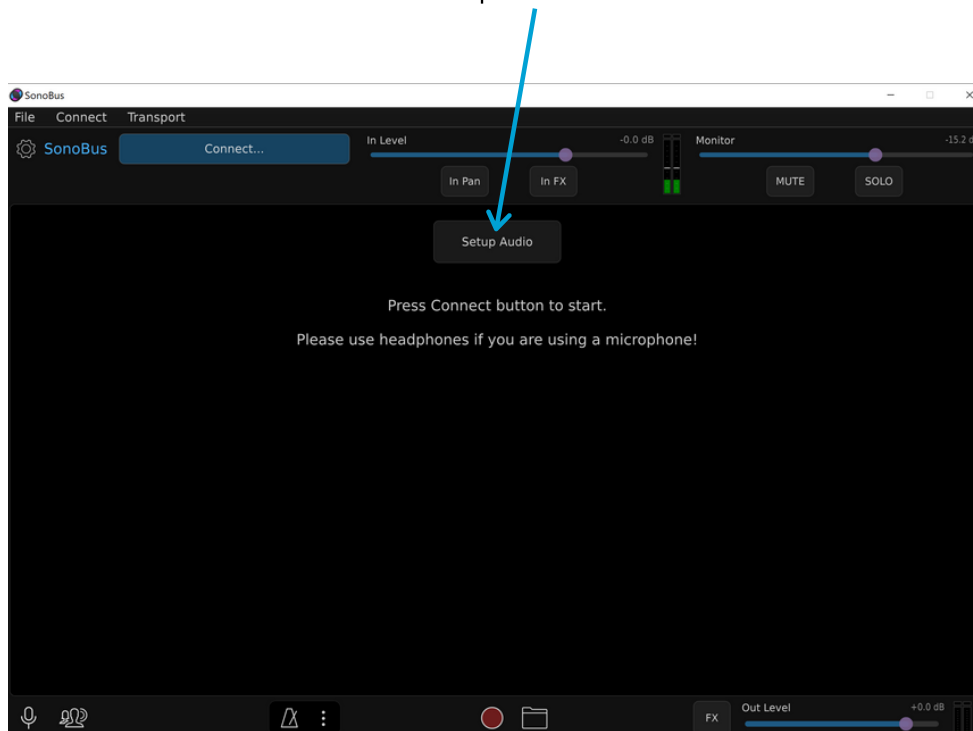
Prepare your device:

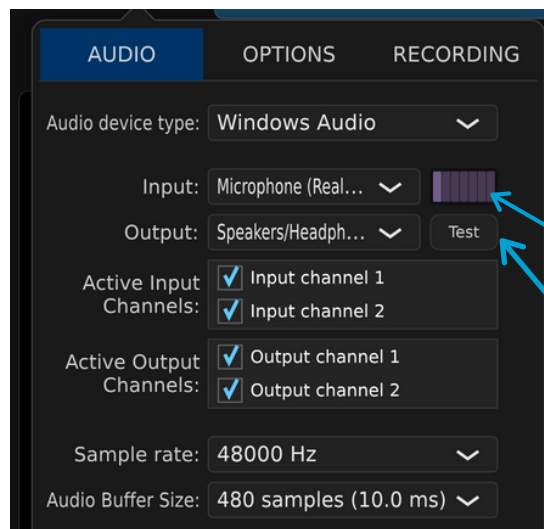For best results, before launching the software:
- Connect your computer or device to your internet router using an ethernet cable
- Plug your computer or device directly into the power supply (rather than running off battery power)
- Plug in your headphones - these platforms will create feedback if used without a pair of headphones
- If you have an audio interface for your microphone, set this up and plug into your computer

Launch the platform:

You will see the screen below - first of all select 'Setup Audio' seen in the middle of the window
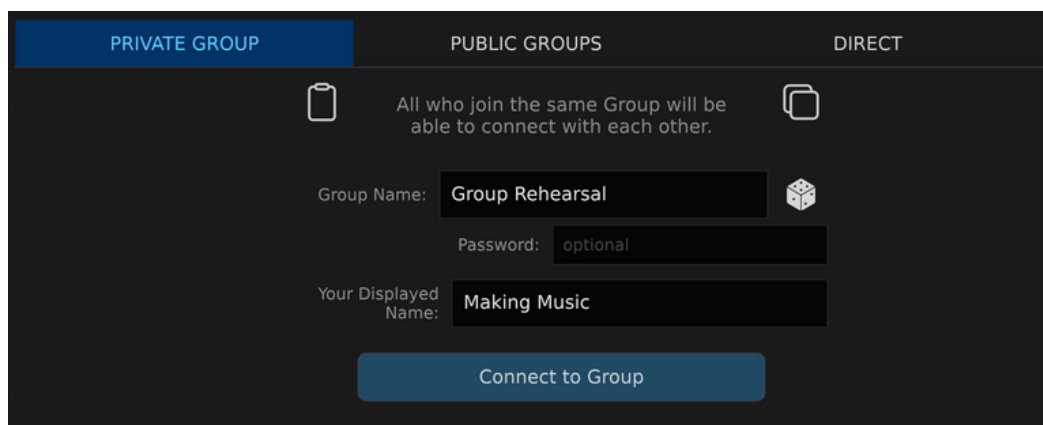

Setup audio:

After selecting 'Setup Audio' you will see these options

- Choose your audio device - this will be your audio interface if you are using one
- Select your desired microphone as your 'input'
- Select your headphones for your 'output'
- Test your microphone by making sounds into your microphone. If it is working correctly the Input display bars should light up in response to sounds heard on the microphone
- Test your headphones by clicking 'Test' - you should hear an audio tone lasting 1 second

Set up a rehearsal room:

- Click the blue 'Connect...' button found in the top left corner of SonoBus
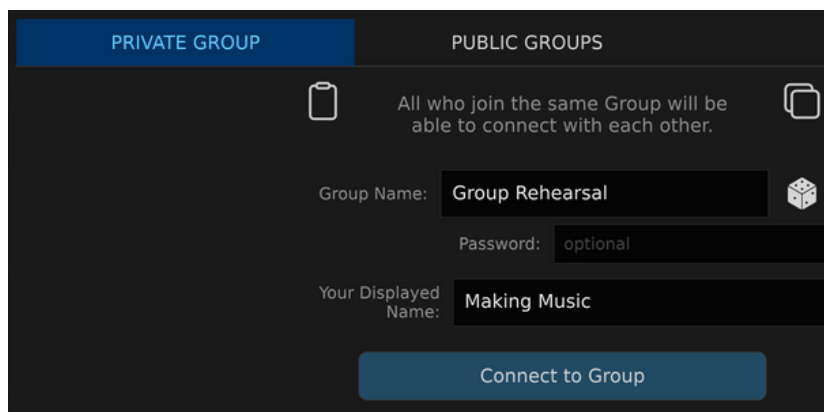- You'll be shown the following options:

- Leave 'Private Group' selected seen at the top left of the options (the selected option will be highlighted blue)
- Type a name for the rehearsal in the 'Group Name' field
- If you would like to password protect the rehearsal space, add a password in the 'Password' field
- Add your own name or role in the group in the 'Displayed Name' field
- Click 'Connect to Group' to start the rehearsal
- If rehearsing immediately leave SonoBus running. Alternatively close SonoBus - your rehearsal space will be saved for you to use in the future
- NOTE: It is possible to re-use the same rehearsal room on multiple occasions, so you shouldn't need to repeat this setup process

Invite members to the rehearsal room:

- Send the 'Group Name' and password (if using one) to those wishing to attend the rehearsal and set a time / date to meet in the online rehearsal space
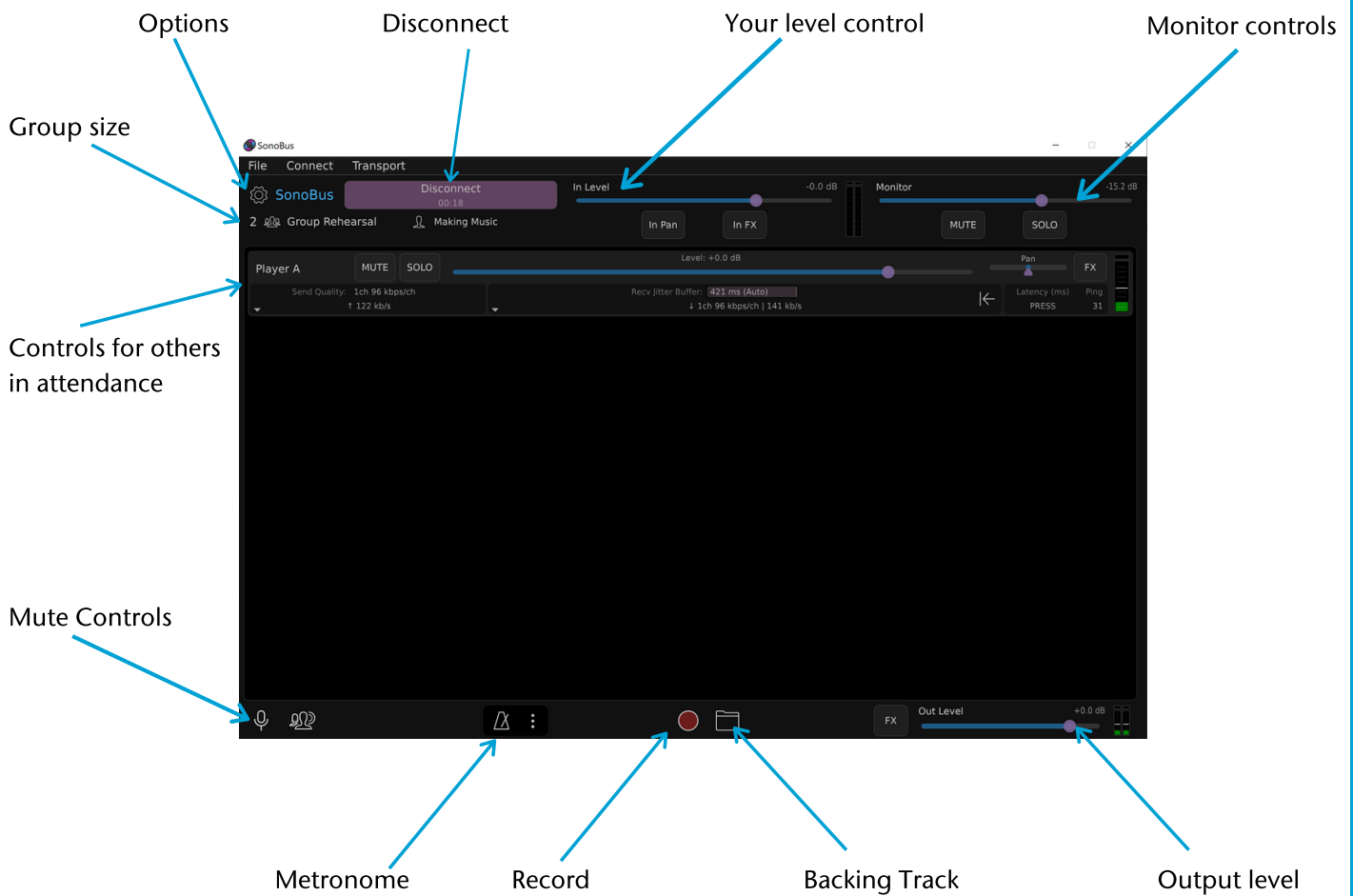
Joining a rehearsal:

- Open the SonoBus software
- Check your audio settings (as shown previously)
- Click the blue 'Connect...' button found in the top left corner of SonoBus
- This is the same process as initially setting up a rehearsal space, however this time the Group Name and Password will have to match identically to the details added when initially setting up the room to make sure you enter the correct room
- Select 'Private Group'
- Type in the correct 'Group Name'
- Add the password if necessary
- Type your 'Displayed Name' - we recommend using first name and instrument or section
- Click 'Connect to Group'
- You will now be taken to the rehearsal room

In the rehearsal:

You are now in the rehearsal space - please see below for key features and controls:

Options   Disconnect   Your level control   Monitor controls

Group size

Controls for others in attendance

Mute Controls

Metronome   Record   Backing Track   Output level

Options
This opens up the options window allowing you to make changes to your own audio setup

Disconnect
Click this button to leave, it also displays how long you have been attending the rehearsal

Your level control
This slider controls your microphone's level - as you move the slider to the right the louder you will appear within the rehearsal

Monitor controls
This slider controls how loud you will hear yourself in your headphones - this does not impact how loudly or quietly others hear you in the rehearsal

Output level
This slider controls the overall volume of the entire rehearsal room

Backing track
Click here to open up an audio file on your computer to play to the entire rehearsal room as a rehearsal backing track

Record
Click here to make an audio recording of some of, or all of, the rehearsal

Metronome

Click here to turn on and see options for a rehearsal room metronome

Mute controls

These allow you to mute just yourself or the entire room

Controls for others in attendance

For every other person in the rehearsal room you will see a horizontal rectangle of controls and information as shown below:

The blue slider allows you to control how loudly you hear that performer in your headphones.
And if you click the 'Latency - PRESS' button (far right) you will see the current latency delay between yourself and that other performer in milliseconds.

Group size

This number shows how many are currently attending the rehearsal

Troubleshooting:

Now you should be up and running, hearing each other in the rehearsal space. However it could be the case that some or perhaps all of the members are having latency issues. Here are some suggestions to try and lower the latency delay when using SonoBus:

- Click the 'Latency' button for each of the other performers' controls within your view in SonoBus. This should allow you to see which people have the largest latency delays
- Ensure that all in attendance are plugged directly into their internet routers rather than relying on WiFi
- Make sure you're not using any of the SonoBus audio effects
- Ask all members to change their 'Send Quality' to an uncompressed option
- Whilst using an audio interface is preferable, some models do not perform well with SonoBus, so do check the official website help page for information about known issues with certain models
- Time of the day - it could be that you're attempting to rehearse when the network is receiving a lot of traffic
- Location - in theory those living furthest geographically away from the rest of the group will have a longer latency time. This could make it impossible to get a fast connection with those in another country
- Listen - if an individual has a latency issue that cannot be resolved it may be that it's best for them to listen in on this occasion, with their microphone muted and then investigate the issue before the next rehearsal

JAMKAZAM

How to setup and attend an online rehearsal using JamKazam:

Sign up to the platform:

Visit the platform's website: www.jamkazam.com where you will need to create an account giving you access to use the web browser version of the platform as well as the option to download the software version for Apple or Windows computers.

Choose your JamKazam Plan

There's a free version of JamKazam and also paid-for subscription service versions with more features (as of March 2021):

Free Plan:
- 1 hour max continuous rehearsal time
- 4 players in each session
- Maximum of 4 hours use a month

Silver Plan: ($4.99 a month per player)
- Unlimited continuous rehearsal time
- 6 players in each session
- Maximum of 10 hours use a month
- Better audio quality
- Additional tools to lower latency
- Added low quality video connection

Gold Plan: ($9.99 a month per player)
- Unlimited continuous rehearsal time
- Unlimited players in each session
- Unlimited use a month
- Better audio quality
- Additional tools to lower latency
- Higher-quality video connection
- Recording features
- Access to email help

We recommend trying the free service with a very small group to see if this platform suits your group's needs before committing to a subscription plan.
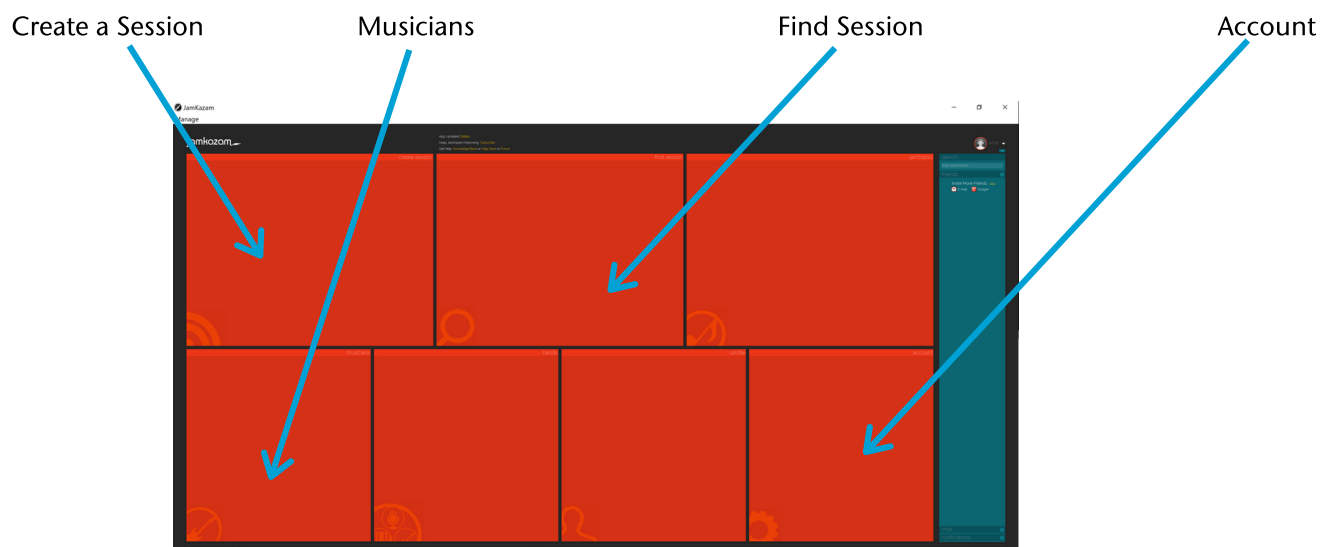
Prepare your device:

For best results, before launching the software:
- Connect your computer to your internet router using an ethernet cable
- Plug your computer directly into the power supply (rather than running off battery power)
- Plug in your headphones - these platforms will create feedback if used without a pair of headphones
- If you have an audio interface for your microphone, set this up and plug into your computer

Launch the platform:

You will see the home screen as shown below - here are the keys parts you will use:

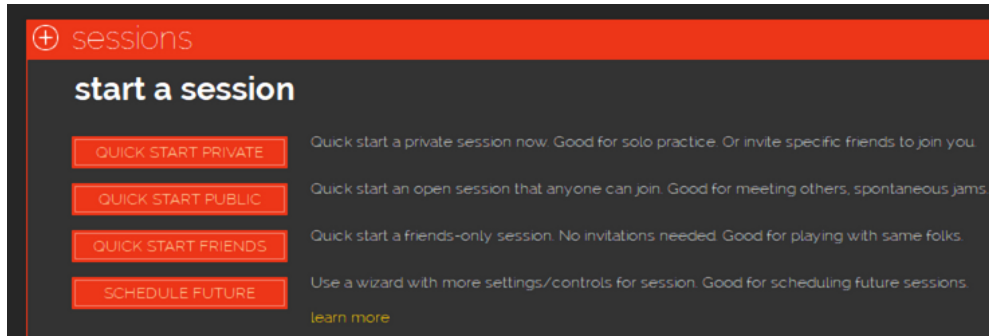Create a Session   Musicians   Find Session   Account

Connect with friends:

- Click 'Musicians' on the home screen
- Search and follow all other members of your group on JamKazam. By befriending each other you can now both appear in the same private rehearsal session
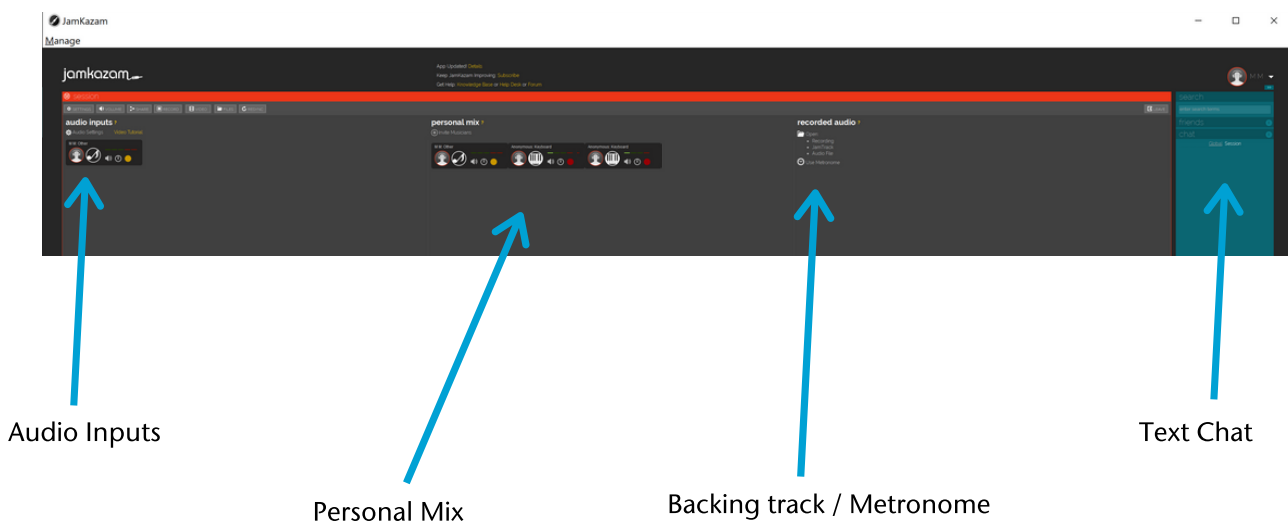
Setup a rehearsal room:

- Select 'Create a Session' on the home screen
- You'll be shown the following options:

- Select 'Schedule Future'
- Complete the form with details of the rehearsal (time, date etc)
- Invite 'Friends' to the rehearsal
- Agree to one of the suggested legal policies for your rehearsal - these are mostly in regards to broadcasting a rehearsal to additional listeners, which some JamKazam plans will allow you to do. Make sure you select 'Fans may not listen to the session' to ensure this is a private rehearsal rather than a performance
- Review and publish the scheduled rehearsal - all invited parties will receive a notification of the upcoming event
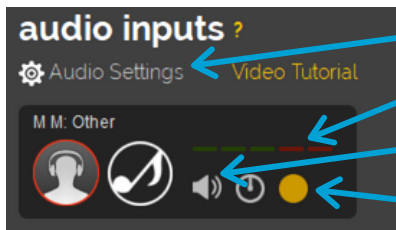
Join a rehearsal:

- Once invited to a rehearsal session click 'Join' to enter
- Belows shows what a typical session looks like - the screen can loosely be split into four parts:

Audio Inputs

Personal Mix
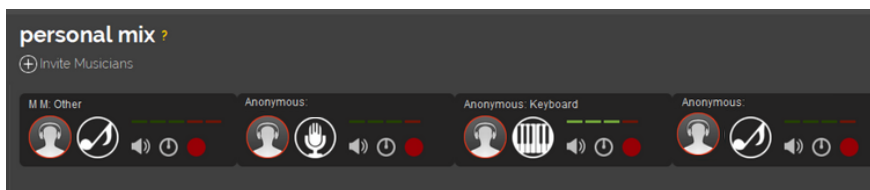
Backing track / Metronome

Text Chat

Audio Inputs

This shows details regarding the audio coming from you into the session

- Open 'Audio Settings' to make any required changes
- Watch the bars here light up to confirm your audio is reaching the system
- Click the speaker icon to open a mixing desk slider to change your level
- This is a connection quality indicator light that shows your current connection / latency stats - green is high quality, orange is ok and red is low quality

Personal Mix

This section shows a panel for each person in the rehearsal including yourself - the image below shows four members in a session:
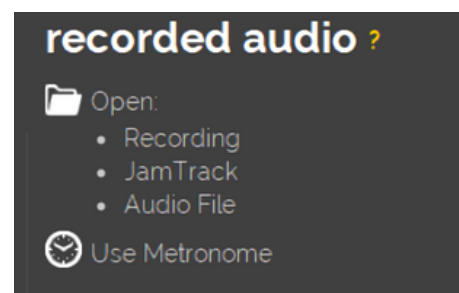

- Each person's panel is identical to the one seen in the audio inputs section, with a visual indicator showing that the person is making a sound, a level control slider (opened by clicking on the speaker logo) and connection quality indicator
- Throughout the rehearsal use the level sliders to raise or lower each member's volume in the mix to a balance that suits you. These will not impact what others in the rehearsal hear, you're just adapting the rehearsal mix that you personally hear.
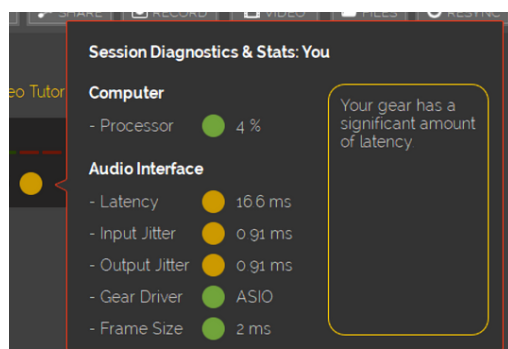
Recorded audio

In this section you can:
- Open a backing track from your computer which can be heard by all attending the rehearsal
- Turn on a metronome which can be heard by all attending the rehearsal

Session diagnostics

If you click on the the Connection Quality Indicator light on your Audio Input panel a pop-up will show a detailed breakdown of your connection quality.

A traffic light colour system is used to indicate the connection quality for all the neccesary processes, click on each specific section for hints and tips to lower the latency.

Troubleshooting:

Now you should be up and running hearing each other in the rehearsal space. However it could be the case that some or perhaps all of the members are having latency issues. Here are some suggestions to try and lower the latency delay when using JamKazam:

- Ensure that all in attendance are plugged directly into their internet routers rather than relying on WiFi
- Make use of the Session Diagnostics window to see which elements of your setup is causing the issue
- JamKazam has several links in the platform to online videos to help you set up and get the most out of the system
- JamKazam also offers an online Help Desk, Knowledge Base and Forum with advice and tips
- Time of the day - it could be that you're attempting to rehearse when the network is receiving a lot of traffic
- Location - in theory those living furthest geographically away from the rest of the group will have a longer latency time. This could make it impossible to get a fast connection with those in another country
- Listen - if an individual has a latency issue that cannot be resolved it may be that they are best to listen in on this occasion, with their microphone muted and then investigate the issue before the next rehearsal

JAMULUS

How to set up and attend an online rehearsal using Jamulus:

Download the platform:

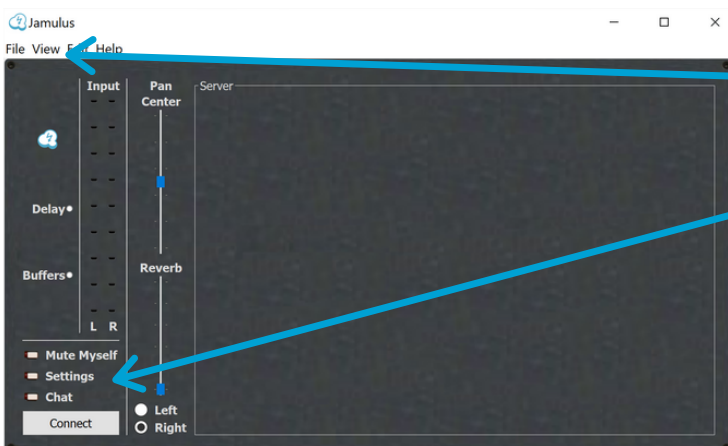Versions for Mac, Windows and Linux can be found on the official website: www.jamulus.io

Prepare your device:

For best results, before launching the software:
- Connect your computer or device to your internet router using an ethernet cable
- Plug your computer directly into the power supply (rather than running off battery power)
- Plug in your headphones - these platforms will create feedback if used without a pair of headphones
- If you have an audio interface for your microphone set this up and plug into your computer

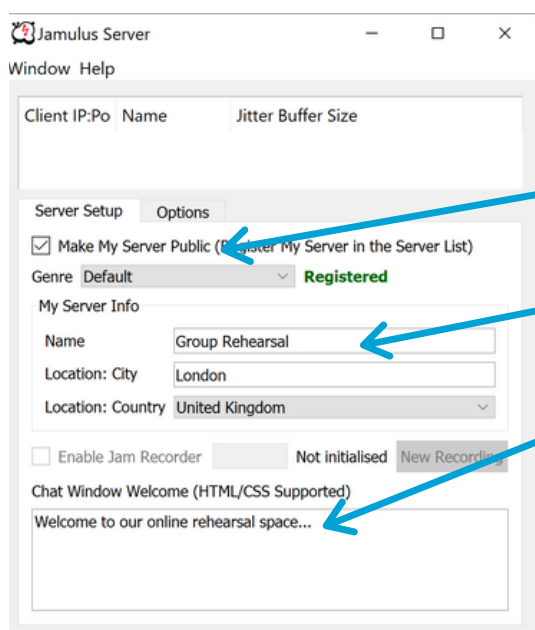## Launch the platform:

You will see the screen below:

- Click 'View > My Profile' to add your name to your profile

- Click 'Settings' to open an audio settings window which allow you to select your audio interface or microphone

Set up a public rehearsal room:

- The person setting up the rehearsal space needs to open the 'Jamulus Server' software - this should have downloaded with the Jamulus software, and will open a window as seen below

- Tick 'Make My Server' Public

- Enter a name for your rehearsal space

- Add some welcome text to indicate that your group are in the correct location

- This rehearsal space should now be available for anyone to join, share its name and meeting date / time with your group

Set up a private rehearsal room:

To set up a private rehearsal space in Jamulus you will need to create your own server for the group to use. Unfortunately you cannot complete this process within the Jamulus software.
There are three ways to create or use a specialist server:

Create a Private Server using a home computer
This route involves using an additional computer to act as the rehearsal's server space. The computer will have to be on for the duration of each rehearsal and its IP address shared with the group - this is an address code that the group will use to join the rehearsal. Additionally the broadband router that the server computer will be plugged into will need to be re-configured to allow 'Port Forwarding'.

These processes are quite complex and we recommend seeking guidance from somebody with server setup knowledge to assist with creating the server.

Create a Private Server using a cloud host
In this scenario you will rent cloud server space from a host company (for example Amazon Web Services). For a monthly fee you will gain access to your own server which you can set up to act as your private rehearsal space in Jamulus. Once set up you will have an IP address that people will connect to in Jamulus to join the rehearsal - only those with the address will be able to join.
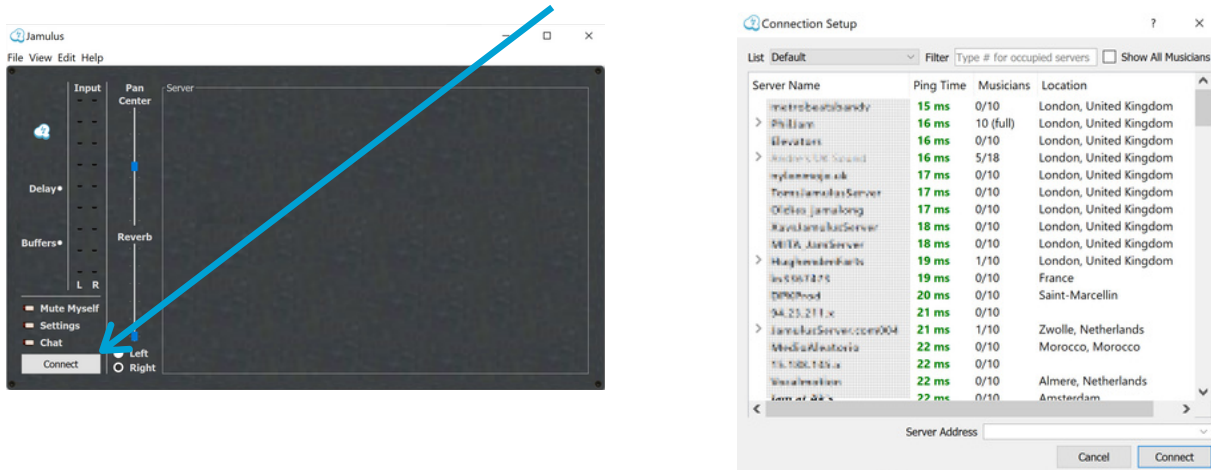
Calibrating the server to work for your needs can be a complicated procedure, we recommend seeking guidance from somebody with previous experience of doing this.

Use an open source Private Server
A music organisation called Koord - www.koord.live have created cloud servers that anyone can use for free to host their private rehearsals in Jamulus. They describe the process as the online equivalent of renting a rehearsal studio (but without any cost). To set up a rehearsal, create an account on the Koord website, select 'Create Session', choose your closest server (currently London is only listed for UK) and a session IP address will now be created that will operate for two hours. Share this IP address with anyone wishing to access your rehearsal.
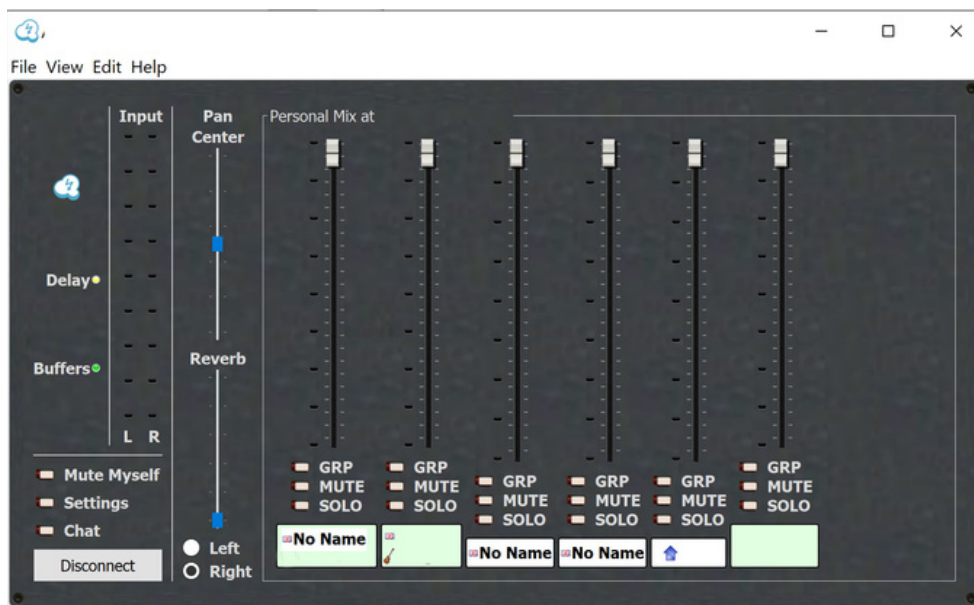
Join a rehearsal:

- Open the Jamulus software and click the 'Connect' button

- This will open the Connection Setup window

- If you're joining a public rehearsal, find and click on the rehearsal name in the list of servers and select 'Connect' - you will now be in the rehearsal room

- If you've been sent a server IP address to join a private rehearsal, paste or type in the address code into the 'Server Address' and click 'Connect' to enter the rehearsal room

In the rehearsal:

- You are now in the Jamulus rehearsal space. The layout imitates a mixing desk with a slider for each person in the rehearsal, with the first slider being for your own level

- Lower the slider positions to balance the levels of those in the rehearsal - making these changes does not impact what others hear, it just changes your personal listening experience

- As more people join the rehearsal you will see more sliders appear on your screen

- Jamulus also has a text chat function, click the 'Chat' button to open the chat window

Troubleshooting:

Now you should be up and running, hearing each other in the rehearsal space. However it could be the case that some or perhaps all of the members are having latency issues. Here are some suggestions to try and lower the latency delay when using Jamulus:

- Ensure that all in attendance are plugged directly into their internet routers rather than relying on WiFi
- Jamulus has a good network of users on social media. If possible explore those groups to see and learn from other people's experiences
- Location - in theory those living furthest geographically away from the rest of the group will have a longer latency time. This could make it impossible to get a fast connection with those in another country
- Listen - if an individual has a latency issue that cannot be resolved it may be that they are best to listen in on this occasion, with their microphone muted and then investigate the issue before the next rehearsal

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Visit **www.makingmusic.org.uk/resources**
for more support and advice