

setting up and using Jamulus

setting up for Strikes A Bell vocal practices

22 October 2020 v2, David Perasso and Jean Geiger.

Jamulus is public domain (GNU) software that allows musicians to practice together remotely. By setting up connections with low latency, musicians can stay in sync and jam or sing together.

These instructions will guide you thru the set up process, which is different between PC and Mac. The instructions cover only the client set up. Setting up a server is not covered here though there is a link to a very good article at the end of this document.

Requirements

Jamulus requirements are more demanding than the requirements for a remote conferencing program like Zoom. You will need the following:

- A laptop or desktop running Windows or Mac OS. No other platforms are supported¹.
- A hard wire connection to your router.
- **Wired** headphones.

Overview

Each musician (client, in computer speak) will run Jamulus on his/her computer. Clients connect to a server and which relays their audio to all the other clients. Each client mixes the audio from all clients into a single audio signal which is played thru the headphones. Because there is little processing, latencies under 40mS can usually be achieved which is small enough to allow musicians to jam or sing together.

Download & Installation

Going to <https://sourceforge.net/projects/ljcon/files/latest/download> should start the download of Jamulus for both Mac OS and Windows. If it doesn't, click the DOWNLOAD button.

Mac OS

Jamulus downloads as a dmg file (disk image). Depending on your settings it may automatically open (after asking you to agree to the license), if not, open it.

You will see two icons that may be dragged to your Applications folder. Drag the Jamulus icon to the Applications folder. Unless you want to set up a server you do not need to drag the Jamulus server icon.

Windows

Go to your Downloads folder (or wherever you told Jamulus to save the download).

Double-click on the JamulusSetup.exe file to run the installation.

Close out of all other programs using audio, including webpages. Check this by opening your computer's Sound Mixer (right-click on speaker icon / Volume Mixer. All programs using audio will

¹ I saw a reference to Jamulus on Linux, so it might be possible, but you're on your own.

show up in the Applications section. You should have only Speakers (under Device) and System Sounds (under Applications).

Open Jaumlus (application, not server)

If it won't open, saying that you don't have an ASIO microphone driver:

- 1) go to <http://www.asio4all.org> and download ASIO4ALL.
- 2) Install ASIO4all.
- 3) Re-start the Jamulus app.

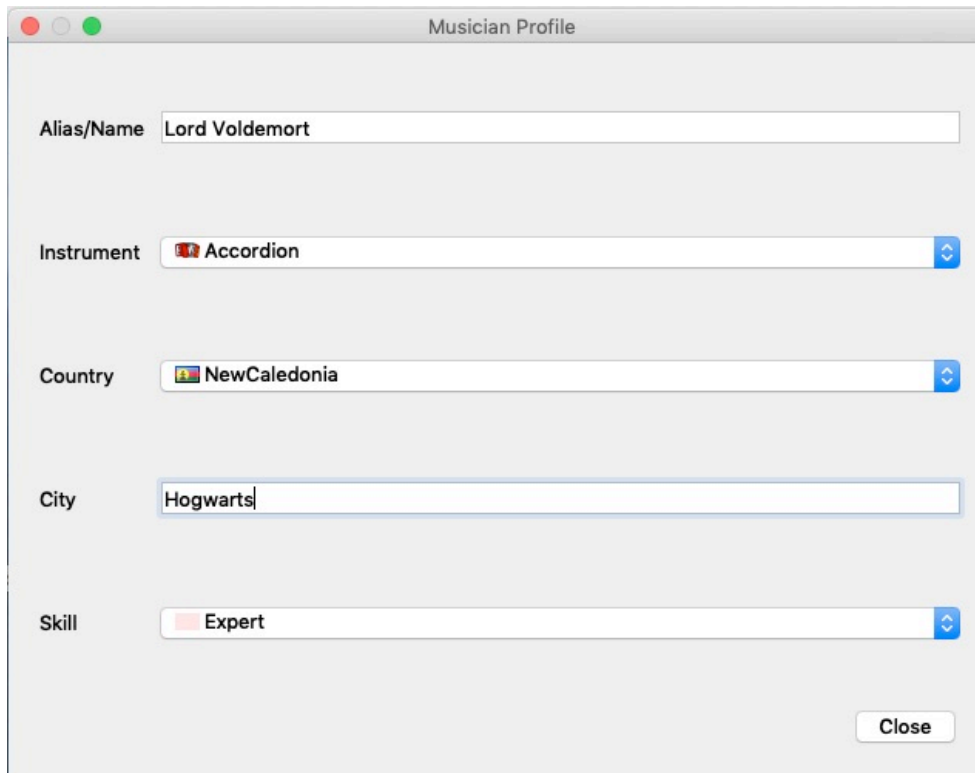
Initial settings

Before connecting to a session, you need to fill out your profile and tell Jamulus which input (microphone) and output (headphones) to connect to. Note that there are some minor differences between Mac and Windows.

Profile (Mac and Windows)

Select View->My Profile.

Fill out the profile, most important is your name. This will be important later when others are mixing your sound.



The screenshot shows a window titled "Musician Profile" with the following fields:

- Alias/Name: Lord Voldemort
- Instrument: Accordion
- Country: NewCaledonia
- City: Hogwarts
- Skill: Expert

A "Close" button is located at the bottom right of the window.

Close the Musician Profile window.

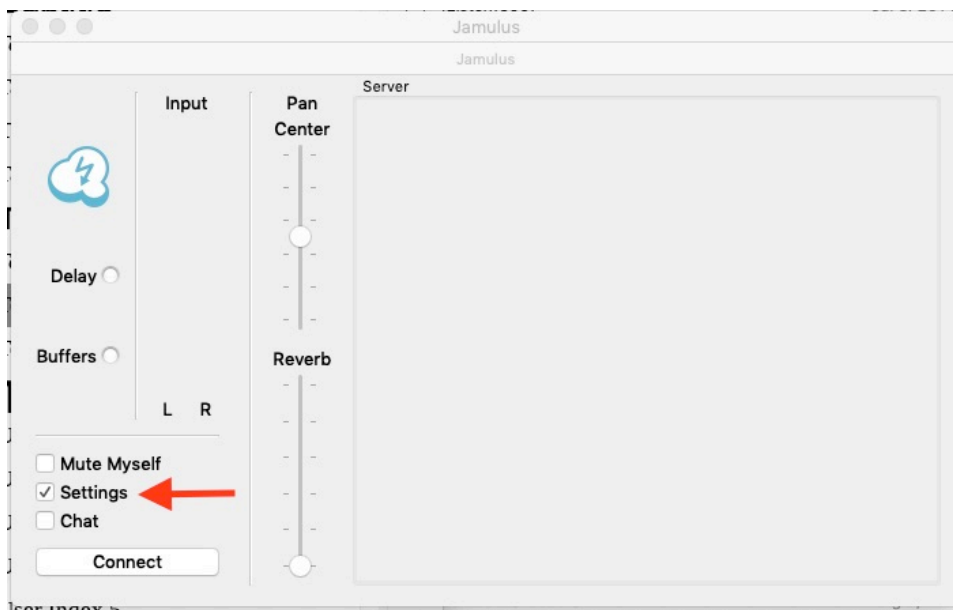
Headphones

Disconnect, turn off or otherwise make sure that external speakers are OFF. Connect your headphones.

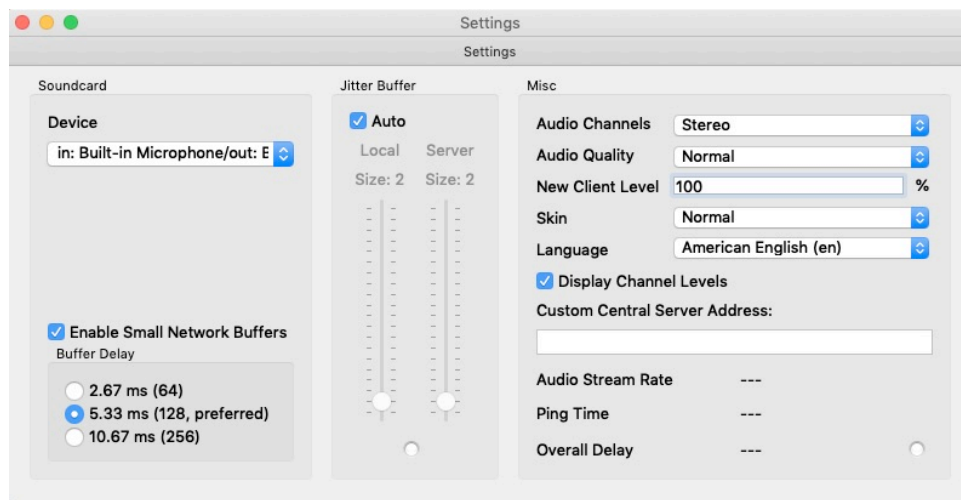
Settings (Mac and Windows)

Launch the Jamulus application and click Settings (the window may be cosmetically different).

Check Settings:.



That will bring up the Settings window. (Note Windows looks slightly different)



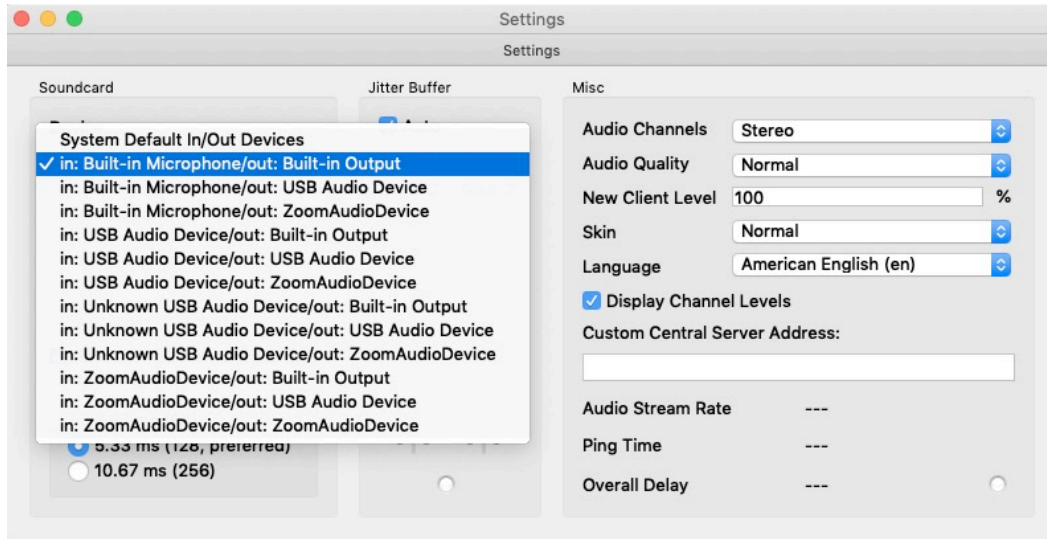
On the right side of the settings window, set as follows

- Audio Channels Stereo
- Audio Quality Normal
- New Client Level 100 (this can later be over ridden in the mixer)
- Skin Normal/Compact/Fancy -- changes window appearance
- Display Channel Levels checked. (you can uncheck this once everything is working).

Input/Output Selection

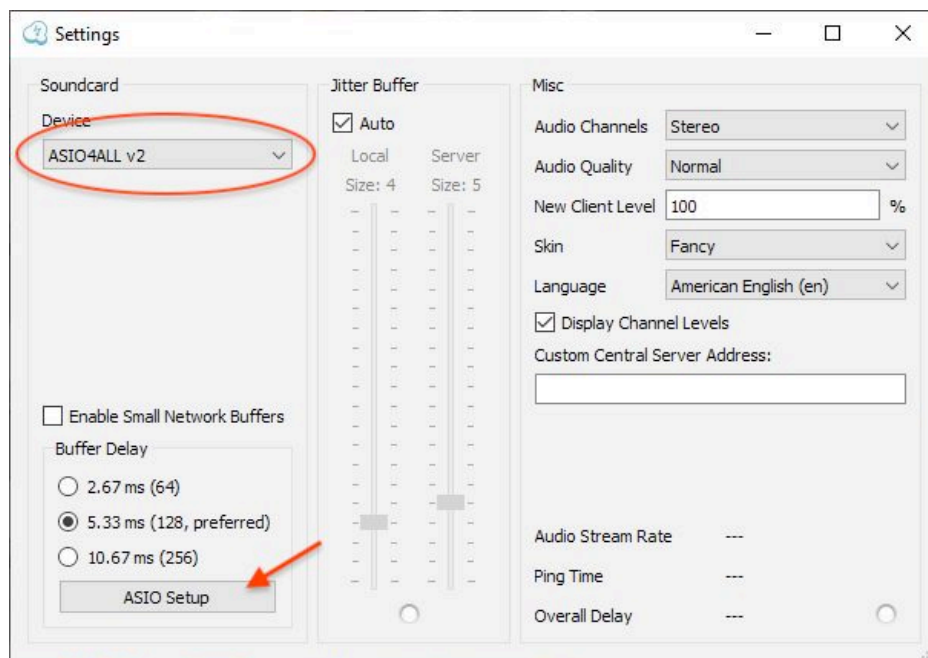
Mac OS

In the upper left of the Settings window is a choice marked Device. Click this to bring down a list of possible input and output assignments. Jamulus lists all combinations of inputs and outputs. Select the one that includes the microphone you are using and the output that connects to your headphones.



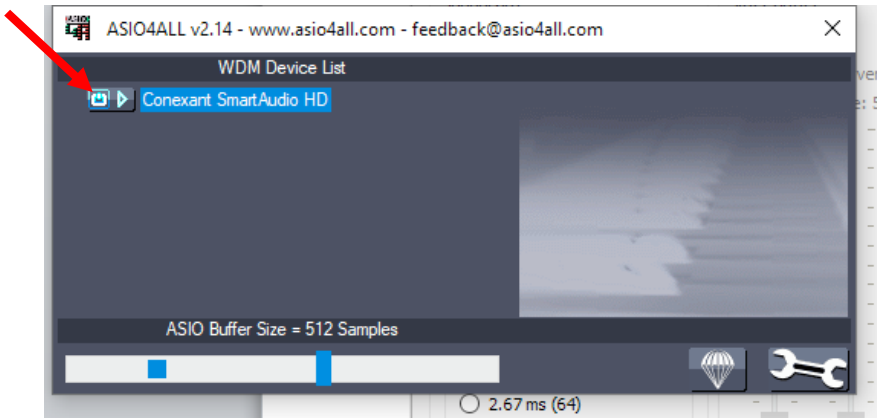
Windows

In the upper left of the Settings window is a choice marked Device. Click this to bring down a list of drivers. Select an ASIO driver.

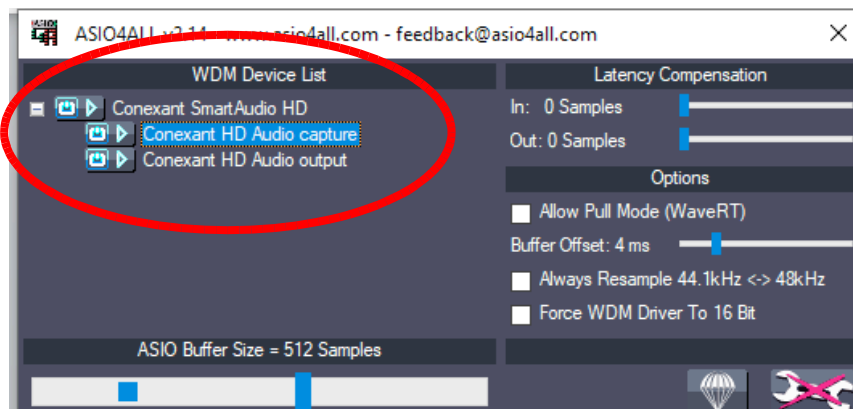


If you installed ASIO4ALL, this may be the only choice in the Device list. (You will choose your mic in the next steps.)

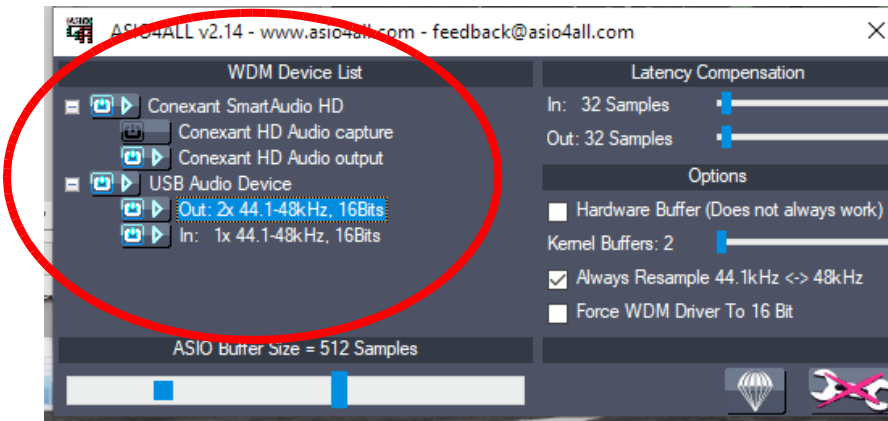
Click on ASIO Setup button. This will open the ASIO4ALL app, and will look like this:



Click on the Device List and choose your mic from the pull-down list.



(The above settings probably work if you are using your computer's mic)



(The above settings probably work if you have a USB mic.)

Connecting To a Session and Optimizing Settings

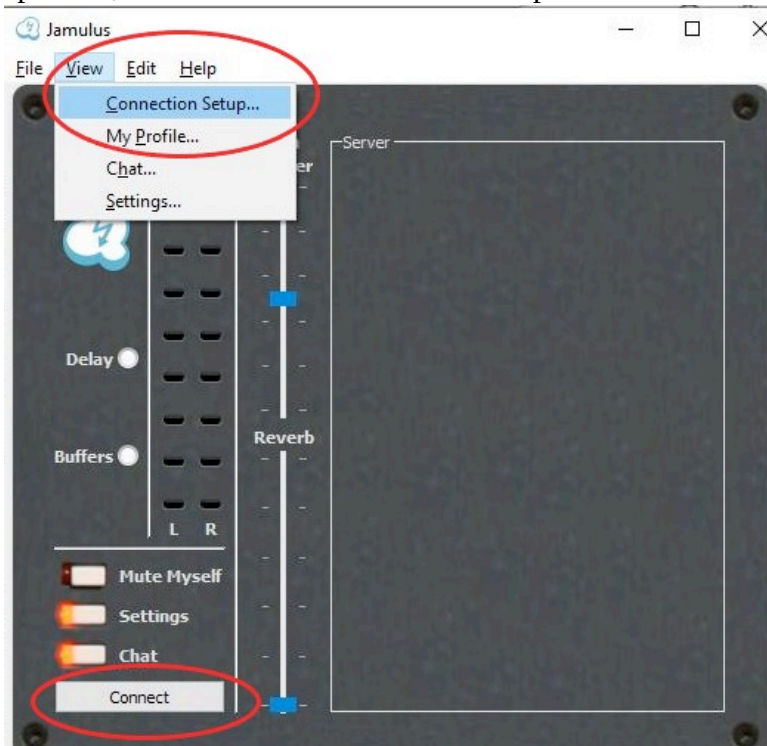
Once the above settings are correct, make a connection to a session server and adjust settings for optimum sound.

Making the connection

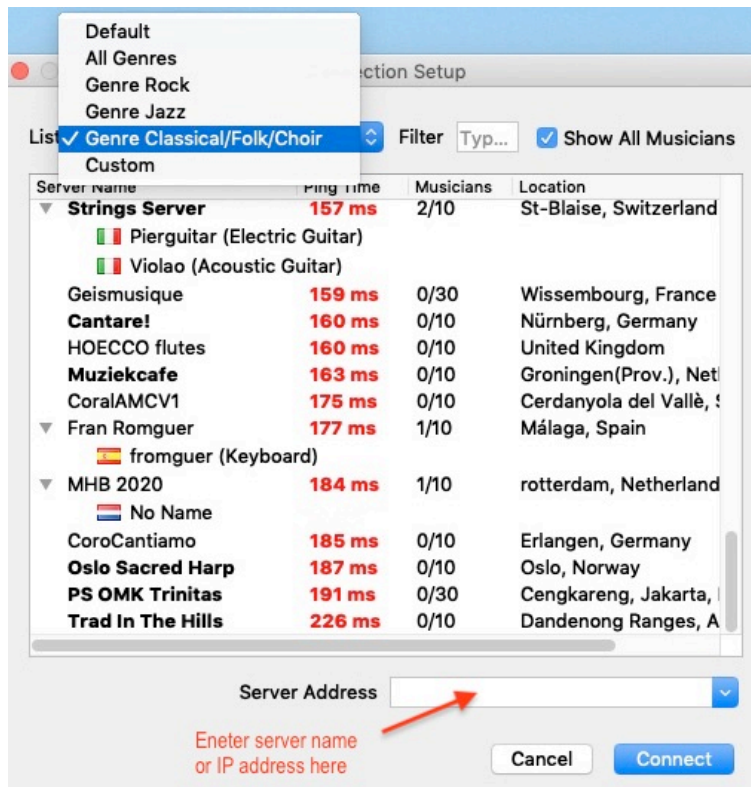
Go to the main Jamulus window and make sure that both Settings and Chat are checked. We will be adjusting settings and the chat will help with communication, so we want both windows up.

On both Mac and Windows there are two ways to bring up the Connection Setup window:

- In the main Jamulus window, click Connect (lower left).
- Go to the top menu, select View -> Connection Setup.



On both Mac and Windows the Connection Setup window will appear and you will see a list of Jamulus servers.

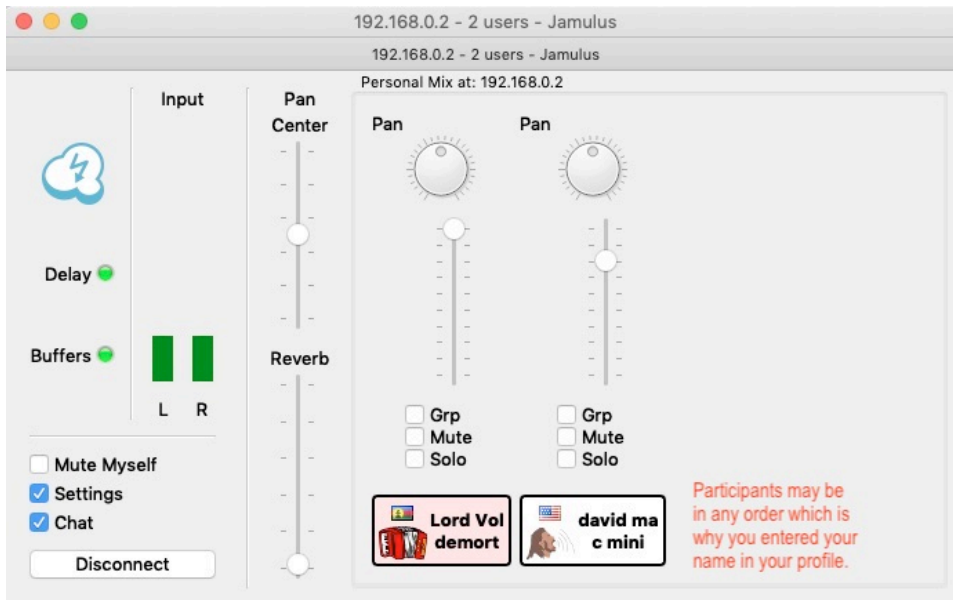


Take a minute to scroll up and down the list of servers and note the ping times. The lower the ping time, the lower the latency and the better it's going to sound. At the top of the list will be some ping times in green have good latency, ping times in brownish-green are marginal and ping times in red are unacceptable..

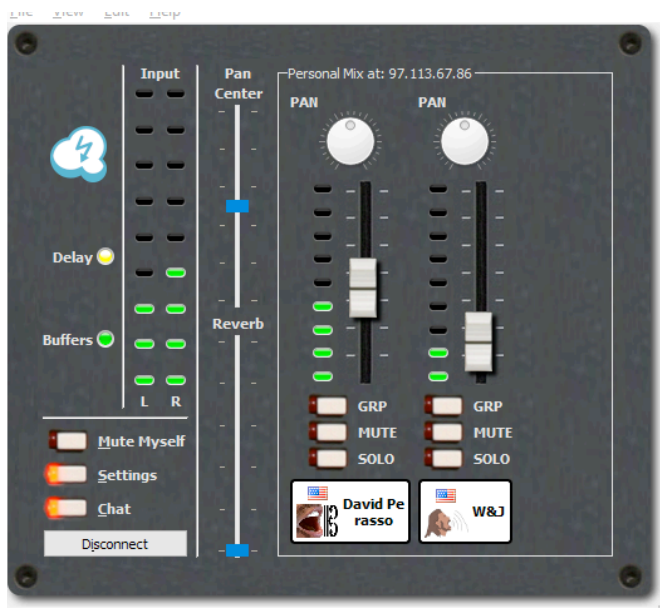
You can filter the list by selecting a particular genre, as shown above. The Musicians column shows the capacity of each session and the number of musicians currently in it .

If you were just looking for a session to join, you would type the name of a session in the Server Address field and click Connect. Because SAB's session is not public, you will be given an IP address to type in the Server Address field. It will look something like: 97.131.76.42 and it will change every time, so you will be sent the IP address just before the session starts.

Once connected, the main Jamulus window will look something like this if you have set Skin to Normal:



The main Jamulus view will look something like this if you have set Skin to Fancy:



At this point you need to verify that everyone can hear you and that you can hear others. You should see green/yellow/red dots or bars next to each slider when that person is talking or making noise (er, that is, music). If you don't see activity in the green/yellow/red dots beside your own slider, you may have selected the incorrect device in the Jamulus Settings, or your computer's audio settings are wrong, or your output and/or your microphone may not be working. (Jean and I will help you fix this).

Assuming that you can be heard and everyone can hear you, there are some other settings and features. Some of these settings will affect everyone in the session so they should be changed in consultation with the host and the other session members.

Buffer Delay

Unless you want to constantly hear pops and clicks (dropout) when the sound cuts out, your computer has to buffer. Buffering adds latency, so there is a trade off between increasing the buffer length to avoid dropout and shortening it to reduce latency.

In the lower left of the settings window set the buffer delay to 5.33 ms. This might have to be adjusted during the session.

Jitter Buffer

Unless instructed otherwise in a session, leave this on Auto. This is another setting that may have to be adjusted during a session.

Audio Quality

The choices for this setting are Low, Normal and High. Set this to Normal.

Audio Channels and Pan

We originally thought that Audio Channels set to Mono would be the best choice, but there is some issue with drivers on Windows that created problems unless this was set to Stereo, so we are going with Stereo for now though it takes more processing.

This creates a minor issue for participants because most of us have mono mic inputs which can appear as being only in the left or right channel. However, setting the Pan slider (Jamulus main window) to center seems to fix this and a mono mic will be heard in both the right and left earphones.

Mixer Levels

The right side of the Jamulus window is your personal mixer and doesn't affect how others hear you. You can independently set the level for each session member using the faders in the Jamulus main window. Adjust the other members and yourself to the levels you want.

Mute and Mute Myself

There is a Mute and a Mute Myself checkbox. Mute (in the mixer on the right side) will mute you in your own mix. Mute Myself will mute you for everyone in the session. They will not know you are muted.

Grp and Solo

- Clicking Solo mutes everyone except the clicked channel.
- Clicking Grp on more than one channel allows the fader level for those channels to be controlled by a single fader.

User Manual

A user manual may be found at

<https://github.com/corrados/jamulus/blob/master/src/res/homepage/manual.md>.

Jamulus Server

A Jamulus Server is required for any session as it is responsible for accepting the data from each client and relaying it to all other clients. If you decide that you want to set up a server you should be aware that you will have to punch a hole thru your firewall to allow remote users to make a connection to the Jamulus server application. Doing that wrong can compromise the security of your computer. If you don't know what I'm talking about, don't try to set up a server.

Because there are so many different routers it's impossible to give complete instructions on how to open your firewall, but there is a very good article that explains what is needed in a generic way with examples that can be applied to your router and computer. Give it a read before you start:

<https://audiogeek11.com/jam-music-online-with-jamulus/>

Notes on Microphone Settings in Windows

To adjust mic input volume or select which mic to use in Windows:

(Method #1 - to get to legacy Sound Settings)

- Go to the speaker icon in system tray (usu. bottom right screen -- may need to click on arrow-up symbol to bring up more icons)
- Right-click on speaker icon
- Choose Open Volume Mixer
- Click on the icon immediately above "System Sounds" brings up Sound Settings –legacy Windows version)

(Method #2 - to get to legacy Sound Settings)

- Click on Windows icon (bottom left of screen)
- Type "sound"
- Open Sound Settings
- Scroll down to the bottom to "Related Settings" / Sound Control Panel

In Sound Settings

- Go to Recording tab
- Click on Microphone / Properties
- Make sure Device Usage says "Use this device (enable)"
- Click on Levels tab to adjust mic input (you may need to also bump up the Microphone Boost level)

If you're getting feedback / echo

- Go to Sound settings (as above)
- Click on Recording tab / Microphone / Properties
- Click on Listen tab
- Uncheck "Listen to this device"

Can't hear out of speakers or headphones?

- Go to Sound Settings (as above)
- Go to Playback tab
- Make sure Speakers have a green check mark
- Right-click to Enable or Test

The screenshot shows the Windows 'Sound' settings window. The 'Output' section is selected, showing 'Speakers (Realtek High Definition...)' as the chosen device. Below this is a 'Master volume' slider set to 10. There are links for 'Device properties', 'Manage sound devices', and 'Troubleshoot'. The 'Input' section is also visible, showing 'Stereo Mix (Realtek High Definitio...)' as the chosen device. Below this is a 'Test your microphone' section with a 'Troubleshoot' button and a 'Manage sound devices' link. At the bottom, there is an 'Advanced sound options' section with a link for 'App volume and device preferences'. Under 'Related Settings', 'Sound Control Panel' is circled in red.

Sound

Output

Choose your output device

Speakers (Realtek High Definition... ▾)

Certain apps may be set up to use different sound devices than the one selected here. Customize app volumes and devices in advanced sound options.

[Device properties](#)

Master volume

10

[Troubleshoot](#)

[Manage sound devices](#)

Input

Choose your input device

Stereo Mix (Realtek High Definitio... ▾)

Certain apps may be set up to use different sound devices than the one selected here. Customize app volumes and devices in advanced sound options.

[Device properties](#)

Test your microphone

[Troubleshoot](#)

[Manage sound devices](#)

Advanced sound options

[App volume and device preferences](#)
Customize app volumes and the speakers or devices they use.

Related Settings

[Bluetooth and other devices](#)

[Sound Control Panel](#)

[Microphone privacy settings](#)