Comm Audio Testing Document

Juliana French A00998091

Alex Xia A00991905

Luke Lee A00970469

Vafa Dehghan Saei A00983481

Table of Contents

Test Environment

To fully test this program, you will need at least three separate computers connected to a LAN.
Testing done on Windows 10 OS, connected to LAN with firewall disabled (Windows Defender turned off for private networks).
Additionally, each computer will need a speaker and microphone if one is not already built in. This could be a headset with a mic, or a desktop microphone and a loudspeaker.
Although undocumented, this program was also tested on Windows 7 OS, and the source code should work on other OSes because of Qt.

Test Cases

A list of test cases, separated by category.

Program execution

No.	Desciption	Step(s) Taken	Expected Result	Outcome
1	Program compiles	- ctrl + b in Qt Creator	No errors	PASS
2	Program runs	- navigate to folder with CommAudio.exe - click on CommAudio.exe	MainWindow GUI loads	PASS

File Transfer

3	In transfer mode, server can load drop down with available files.	- click on Transfer menu bar item, scroll to Settings - in the Settings window popup, select Server under host mode, and make sure transfer mode is set to file transfer - click OK - click on Transfer menu bar again - click connect	Center Table widget should now include a list of .wav & .mp3 in the current directory	PASS

4	In transfer mode, client can connect, and retrieve a playlist.	- run executable *see test 2 - click on Transfer menu bar item - in the Transfer menu dropdown, click on settings - in the settings window popup, make sure Client is selected under host mode, and make sure transfer mode is set to file transfer - click OK - click on Transfer menu bar again **before the next step a server instance must be running on the LAN, see test 3 for running server** - click connect	Center Table widget should now include a list of .wav & .mp3 that is identical to the one on the server, indicating a list of songs the client can download	PASS
5	In transfer mode, after client has connected and retrieved a playlist, the client can download a specific song	*see test 4 for getting a playlist as a client - click on a song title from the playlist - click the save song button	Status bar should now indicate a file is being saved. In the executable's directory, a file with the same name as the song should appear, and its file size should gradually increase, until it's the same size as indicated in the playlist.	PASS
6	After a client downloaded all the bytes of a song from the server, the client should see a popup notification, and the server should display a status message.	*see test 5 for downloading a song	Same as title	PASS
7	A client should be able to	*see test 6 for downloading	After seeing the	PASS

	download multiple songs after each other	a song once - run test 6 again, this time clicking on a different song before hitting save	popups, all the songs downloaded are in the project directory	
8	A song on the client side that is finished downloading is playable.	*see test 6 for downloading a song - navigate to project directory (folder containing CommAudio.exe) - click on the .wav or .mp3 file	Windows Media Player should popup, and the song should start playing	PASS

Streaming - file

9	In streaming mode, server can listen for connections	- run executable *see test 2 - click on Transfer menu bar item - in the Transfer menu dropdown, click on settings - in the settings window popup, select Server under host mode, - under transfer mode select streaming mode, - click OK - click on Start Speaker	Status bar message displays listening	PASS
10	In streaming mode, a client can connect to a streaming server	- run executable *see test 2 - click on Transfer menu bar item - in the Transfer menu dropdown, click on settings - in the settings window popup, select Client under host mode, - under transfer mode select streaming mode, - click OK - click on Transfer menu bar again	Music will start playing	PASS

		before the next step a server instance must be running on the LAN, see test 4 for running server - click start mic		
11	In streaming mode, multiple clients can connect at once to a streaming server	*see test 10 for running a streaming server & client - run mutiple clients	Music will start playing on each client	PASS *note that all clients will get their own fresh copy of the same song to stream.

Streaming - microphone

12	In mic mode, server can listen for connections	- run executable *see test 2 - click on Transfer menu bar item - in the Transfer menu dropdown, click on settings - in the settings window popup, select Server under host mode, - under transfer mode select microphone mode, - click OK - click on Start Speaker	Status bar message displays listening	PASS
13	In mic mode, a client can connect to a mic server, and talk	*make sure PC microphone and speaker is working before proceed - run executable *see test 2 - click on Transfer menu bar item - in the Transfer menu dropdown, click on settings - in the settings window popup, select Client under host mode,	Speaker on client side will match the input from server side mic, and server side speaker will match input from client side mic. The two should now be	PASS

		- under transfer mode select microphone - click OK - click on Start Speaker **before the next step a server instance must be running on the LAN, see test 4 for running server** - click start mic	able to hold a conversation.	

Media Player

14	Can select & play a file saved in a local directory	- click Play button	File starts playing and the duration field is updated to the duration of the song	PASS
15	Pausing works	*song already playing, see test - click Pause button - click Play again	When song is played again, it is played from position it was when it paused	PASS
16	Stopping a song works	*song already playing, see test - click Stop button - click Play again	When song is played again, it is played from beginning	
17	Progress bar works	While a song is playing, the progress bar moves to the right of the screen. Optionally, click and drag the bar to scrub the song back or forward.	When song is played, the progress bar moves with it, and the song will jump when the progress bar is dragged	PASS
18	Fast forward works	Press the fast forward button	Song playing speeds up.	PASS
19	Slow forward works	Press the slow down button	Song playing slows down	PASS

Multicasting

20	Multiple clients connect and play a song from the server in sync		Clients in the stream before the server starts playing play the song in sync with each other.	PASS
21	Client(s) connect to the server and the server chooses a song to play. Another client joins		Client joining after server starts streaming plays song in sync with original client(s).	FAIL

Screenshots

Illustrations of the test cases at work.

Execution

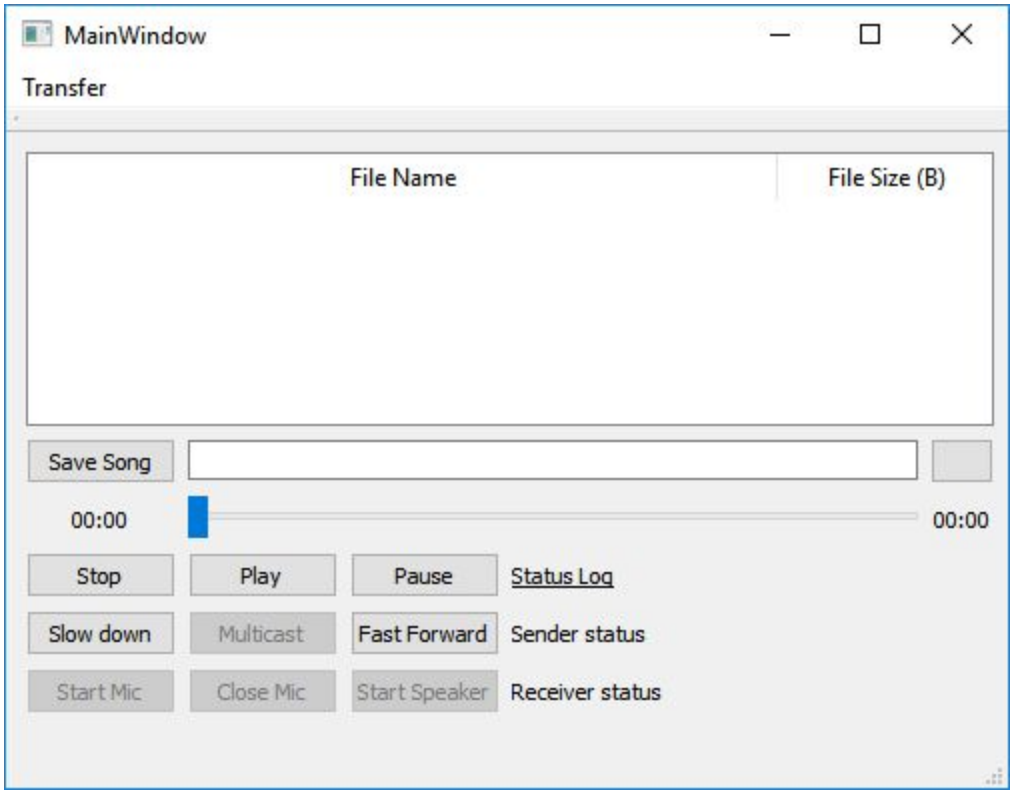


Figure 1: Test 1 & 2, program starts and runs

File Transfer

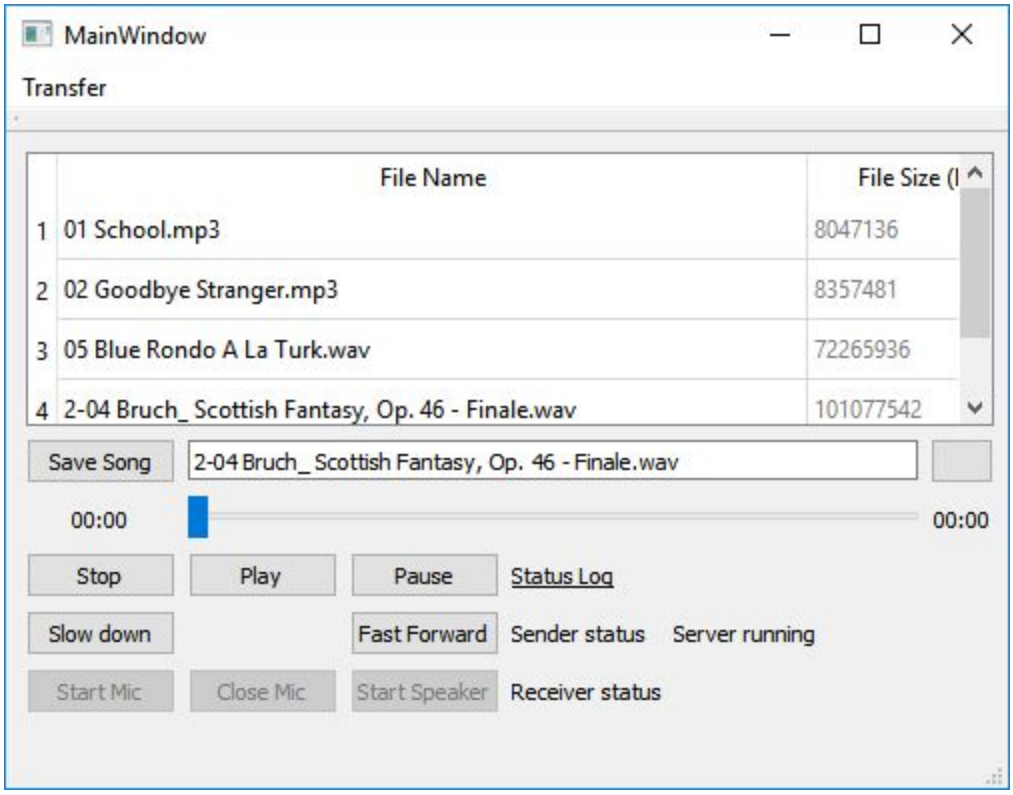


Figure 2: Test 3, Server connects and displays list of file in current directory.

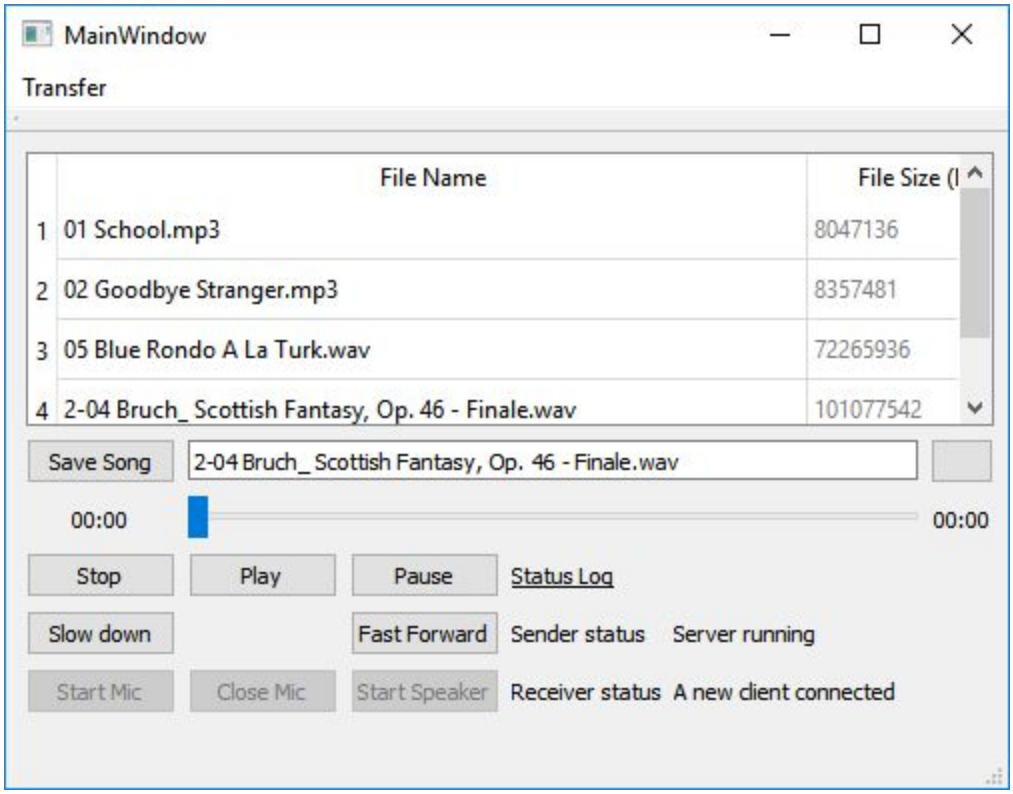


Figure 3: Test 4, Client receives playlist from server.

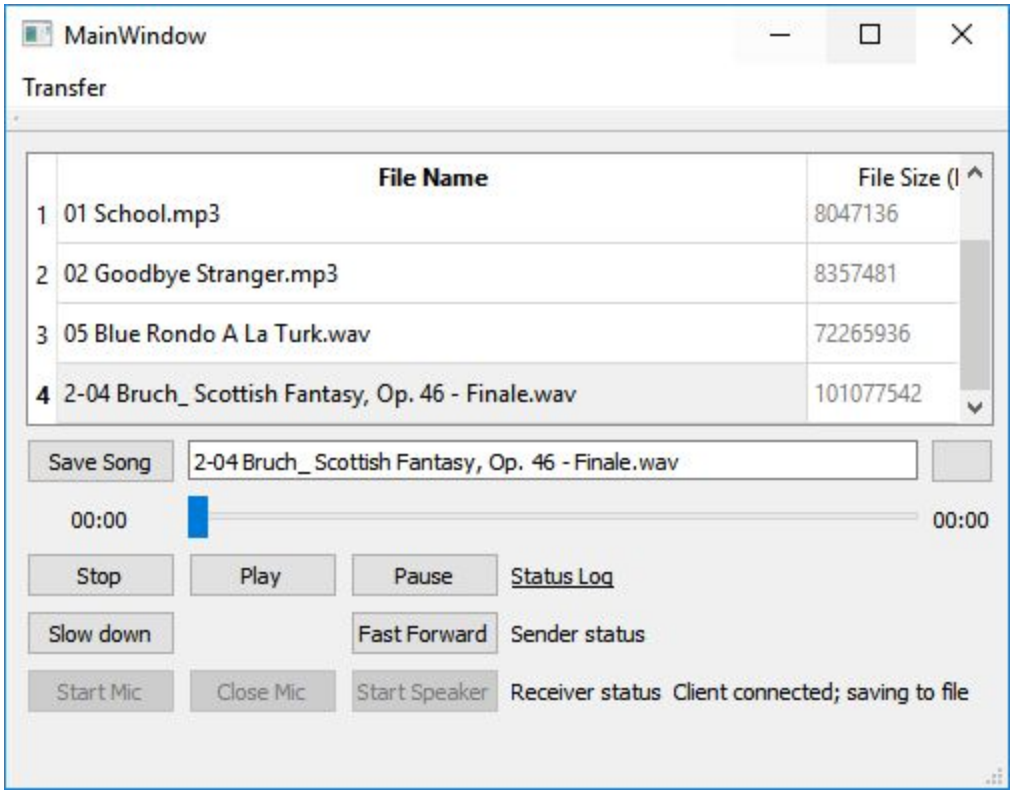


Figure 4: Test 5, Client downloads a specific song from server.

Figure 5: Test 6, Client confirms download complete from server.

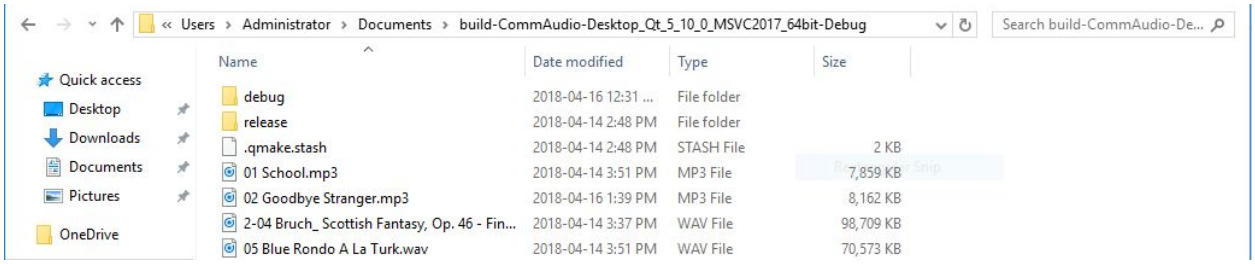


Figure 6: Test 7, Client can download multiple files from the server.

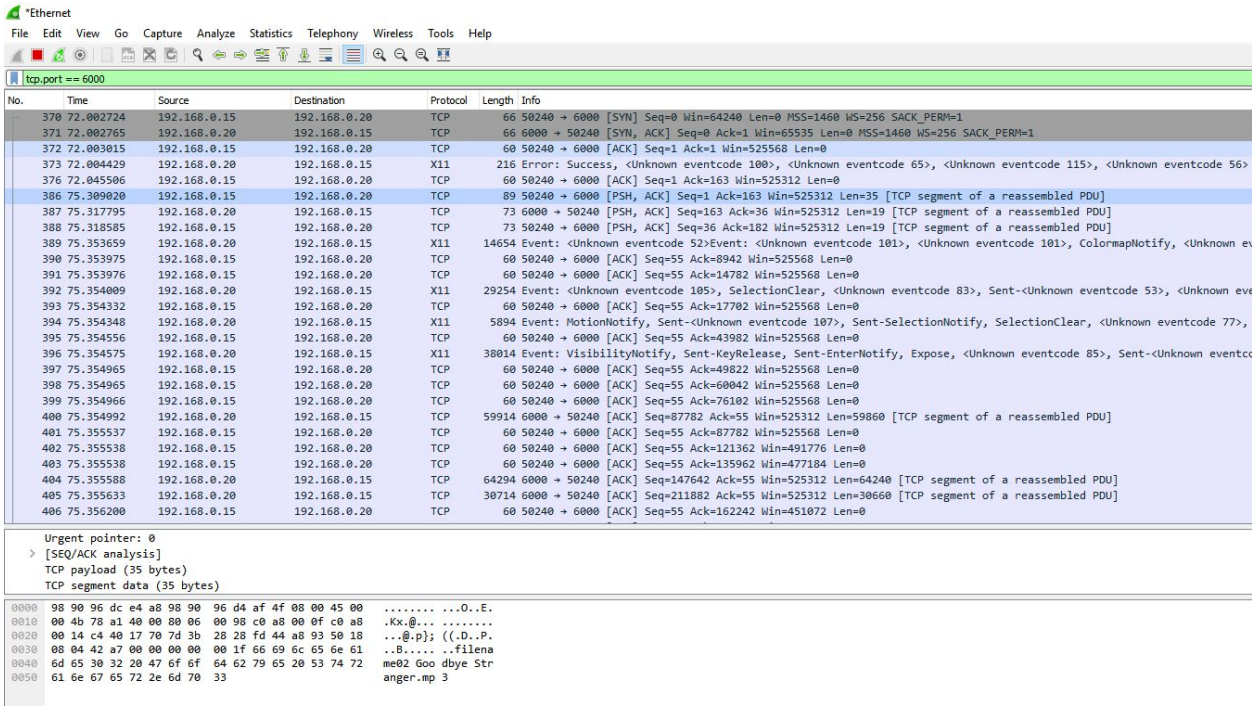


Figure 7: Test 7, wireshark output.

Figure 8: Test 8, Client's download is playable on another application (Groove Music).

Streaming: Music

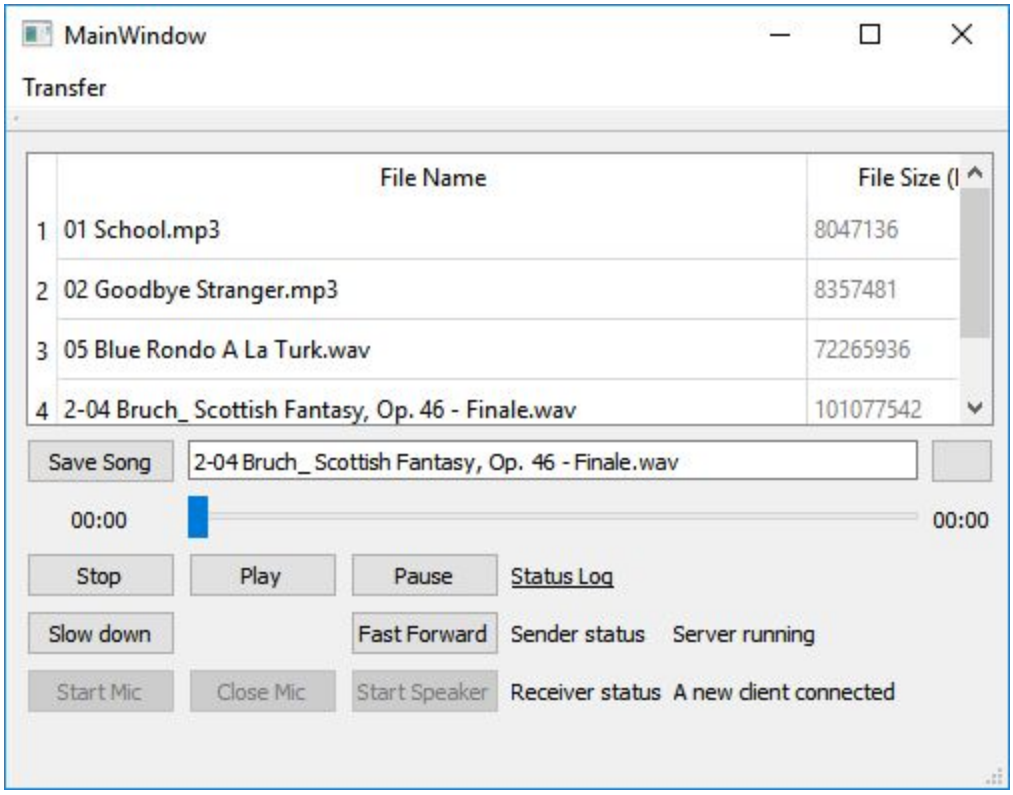


Figure 9: Test 9, Server listening for connections with one found.

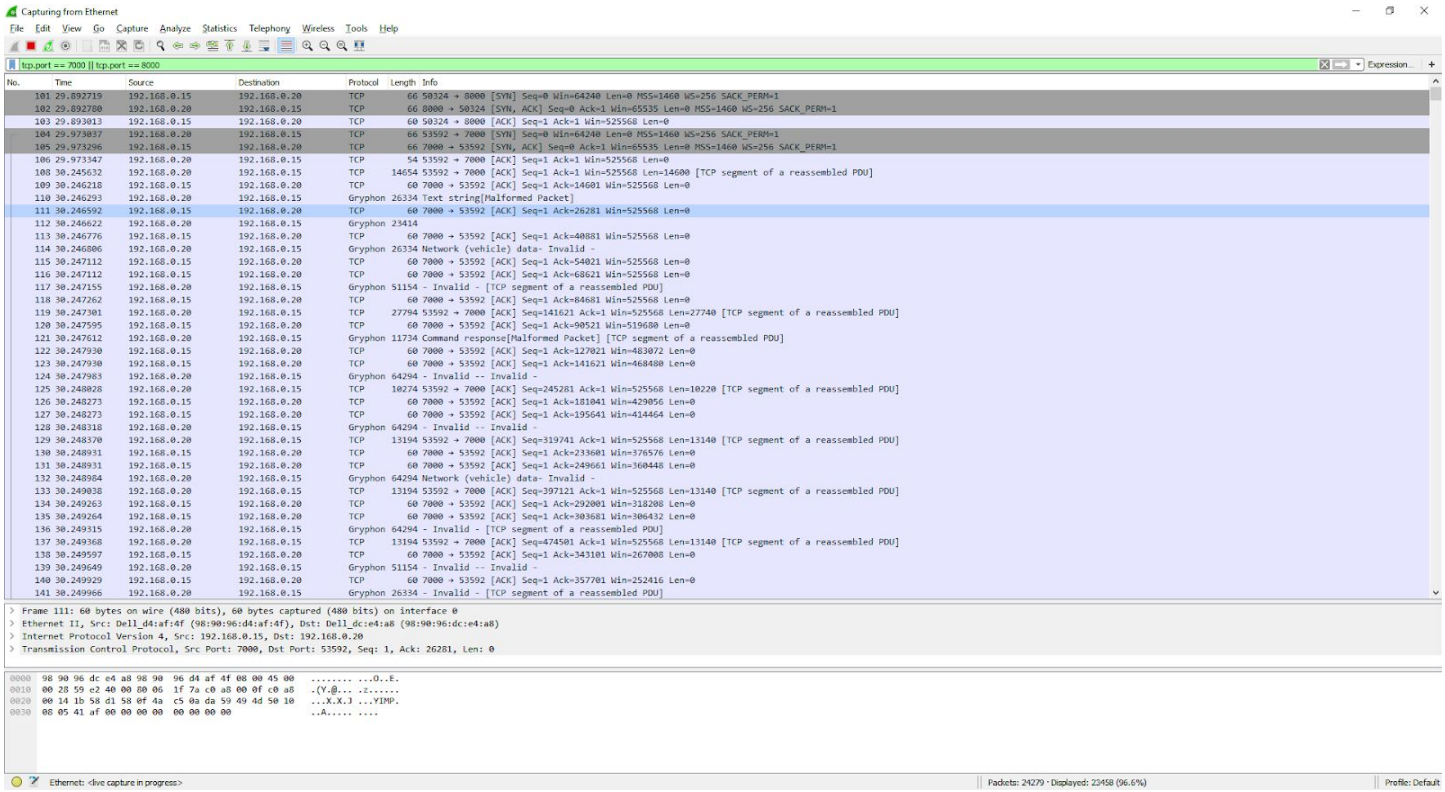
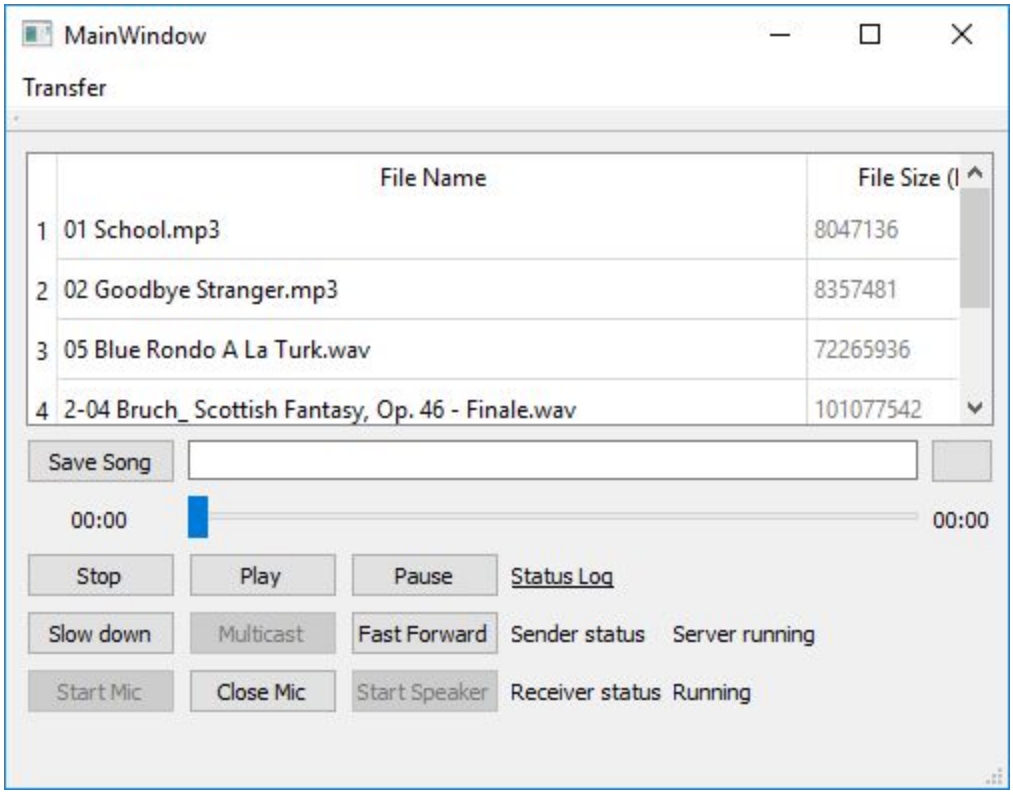


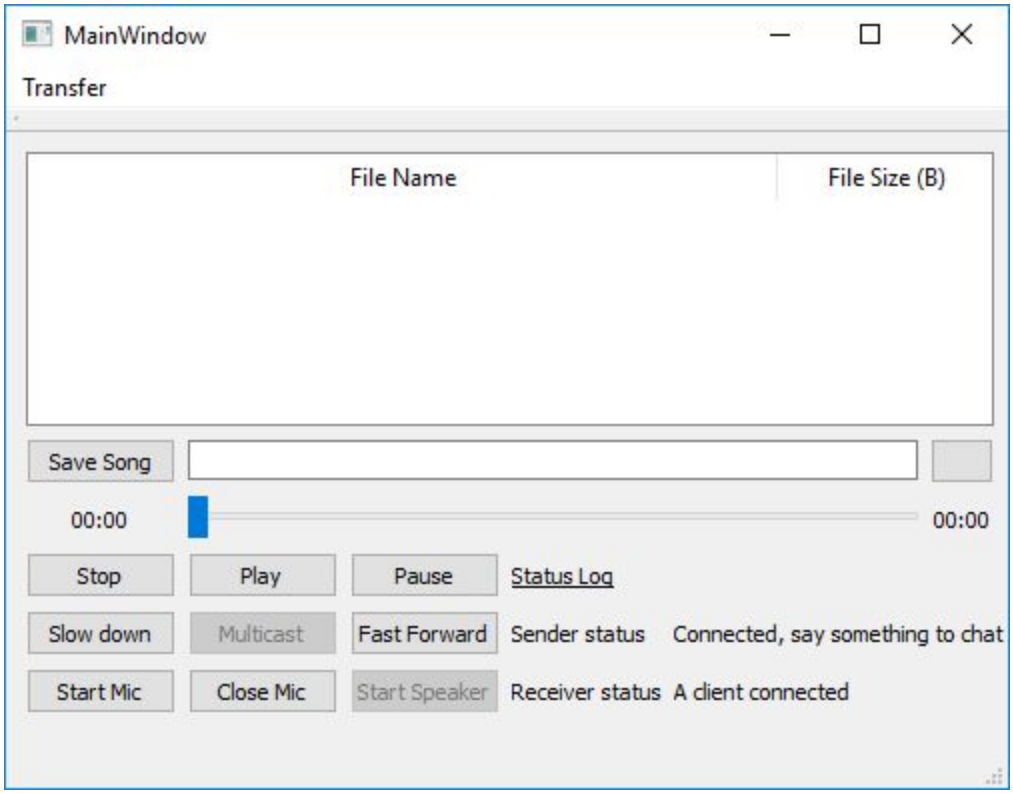
Figure 10: Test 10, Wireshark capture of streaming.

Test 11: See Test 10, and lab demo.

Streaming: Microphone

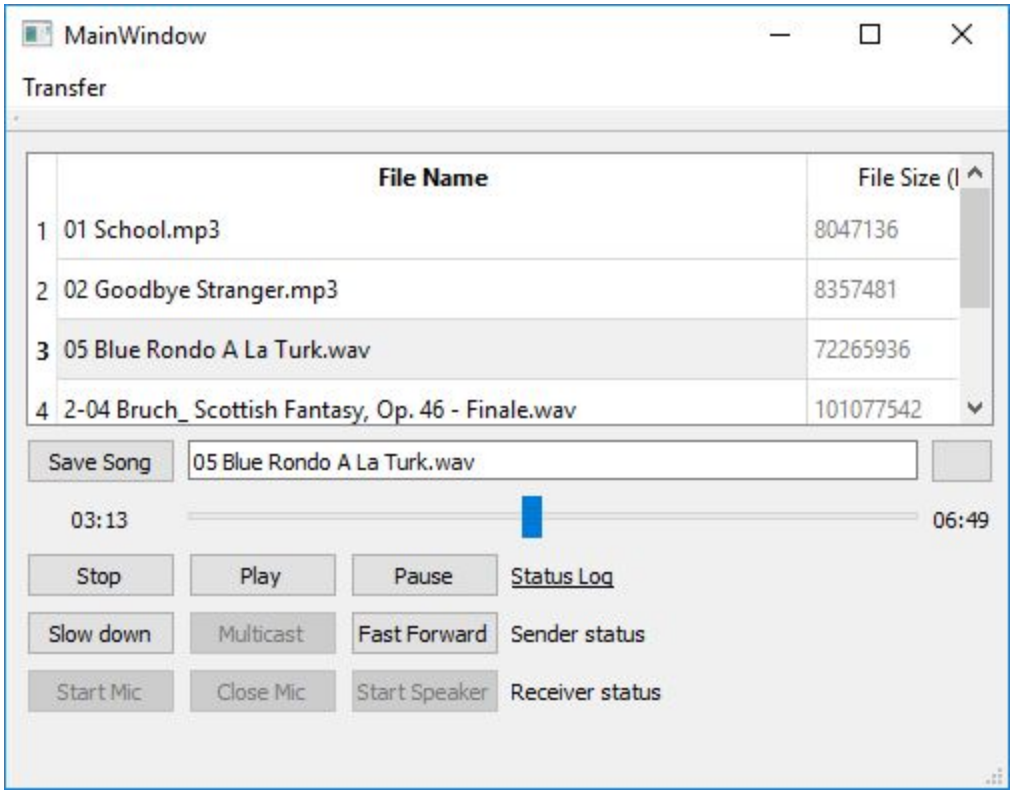


Test 12: Server listening for microphone connections



Test 13: Client connects to voice chat.

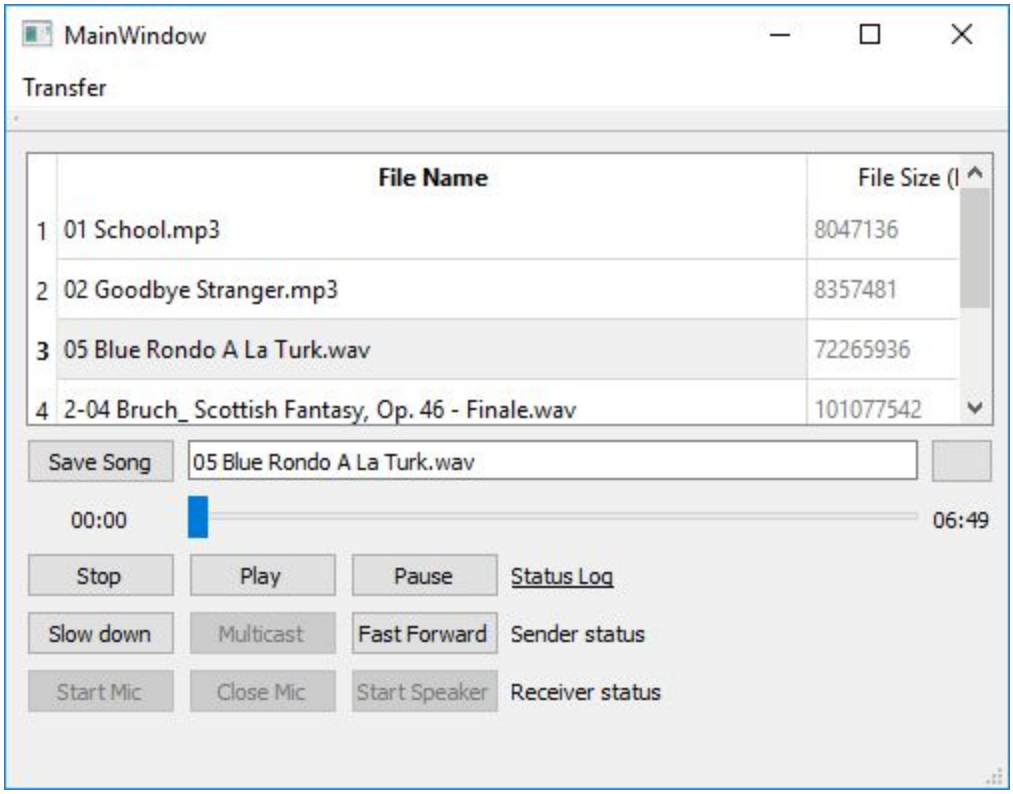
Media Player Options



Test 14: Play shows progress bar moves, see demo to hear audio output.

See Test 14

Test 15: Pause stops song but does not reset back to the start. See demo.



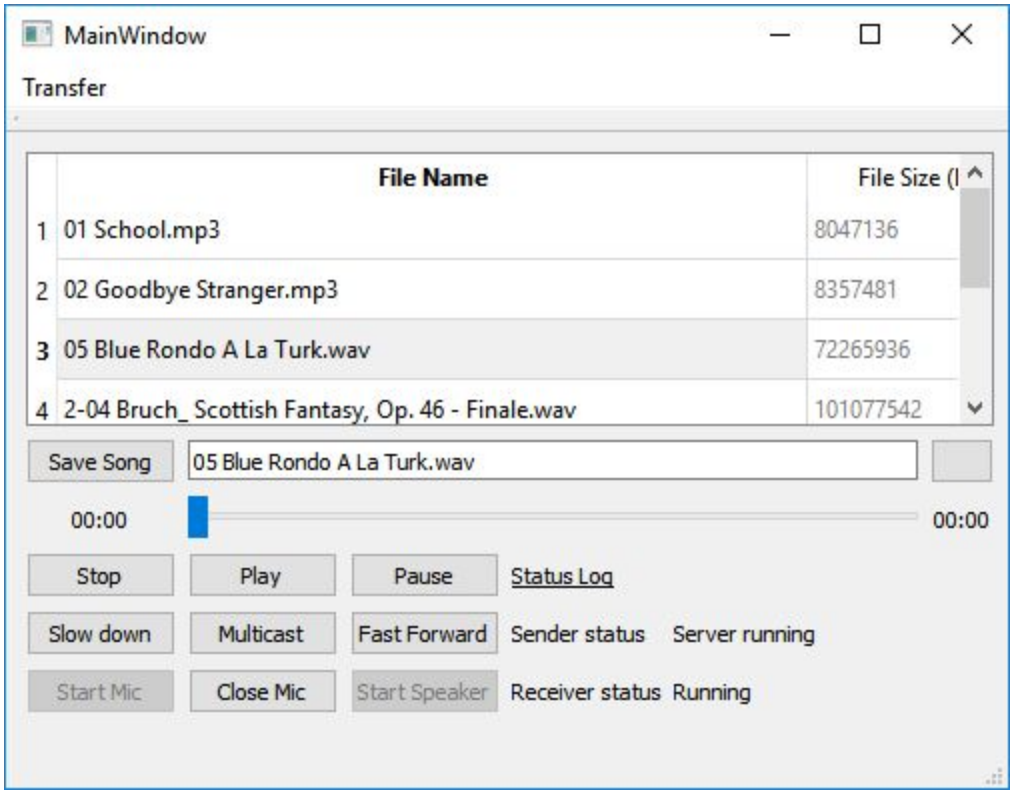
Test 16: Song stops playing and progress bar returns to start. See demo.

See Test 14
Test 17: Progress bar follows song progression. See demo.

See demo for proof.
Test 18: Fast forward makes the song play faster in increments.

See demo for proof.
Test 19: Slow down makes the song slow down but keep playing forward. See demo.

Multicasting



Test 20, See demo to hear clients play song in sync with each other.

See demo.

Test 21, See demo; client can't join after server started to cast.