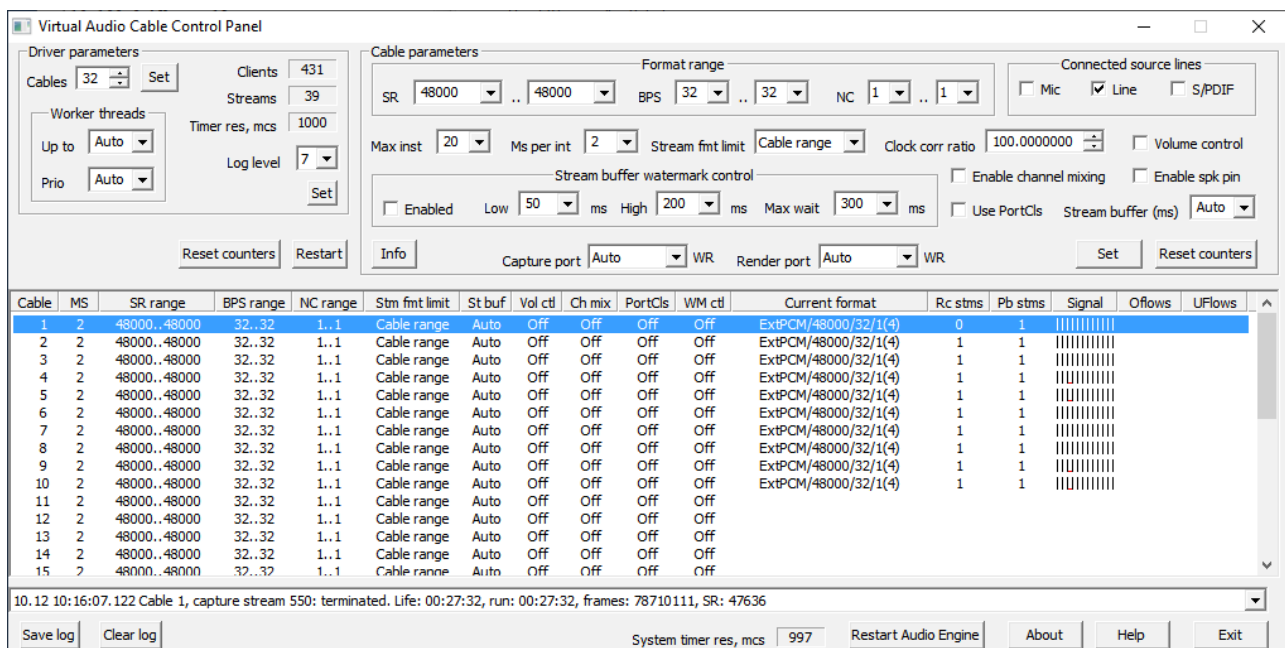


Using FT#StartUp v 1.0
 Dick Williams, W3OA
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The purpose of FT#StartUp is to expedite setting up multiple instances of WSJT-X in order to send FT4 and FT8 spots to Aggregator and ultimately the Reverse Beacon Network. This replaces FT8StartUp and supports using one or two SDRs or both halves of a Red Pitaya 122.88-16.

Preliminaries:

1. Set up Skimmer Server to run with CWSL_Tee and cover your chosen bands, up to eight if your SDR supports that many. Wes, WZ7I, describes how to do this in a blog post at <http://reversebeacon.blogspot.com/2013/03/magic-with-qs1r-two-apps-at-once.html>. If you will be using two SDRs or both halves of a Red Pitaya 122.88-16 setup a second instance of Skimmer Server in a similar manner.
2. Install WSJT-X v2.0.0 or a later version. Do not use release candidates. If an instance of WSJT-X is not running on the same computer as Aggregator you will need to change the IP address in WSJT-X's File/Settings/UDP Server/UDP Server: box to either a broadcast address (ending in .255) or the address of the Aggregator computer.
3. Install virtual audio cables, at least one for each band you want to cover. The program I used for virtual audio cables came from <http://software.muzychenko.net/eng/vac.htm>. The screen shot below shows the settings I use to setup 32 Virtual Audio Cables on a Windows 10 computer. Pay particular attention to the SR and BPS ranges. For Windows 7 you should set the BPS range to 24 .. 24.



4. Wes also advises that if you are running Windows 7 you need to add an additional step. Go to the Control Panel, Hardware and Sound, Sound, Manage audio devices. Click on the Playback tab, select "Line 1, Virtual Audio Cable". Then Click on Properties, Advanced, and from the pulldown menu select "1 channel, 24 bit, 48000 Hz (Studio Quality)", and then "OK". Repeat this for each VAC. Then repeat this process for the Recording tab of each of the Virtual Audio Cables.”
5. Obtain and store CWSL_SSBWave.exe in a known location. I suggest the [C:\WSJT](https://drive.google.com/drive/folders/1HkEILN0IeAfsdKb728PnnUXi1u6tFVCf) folder. Get CWSL-SSBWave.exe from <https://drive.google.com/drive/folders/1HkEILN0IeAfsdKb728PnnUXi1u6tFVCf>
6. Store FT#StartUp.exe in a location that is not protected by Windows.

Operation:

1. Start FT#StartUp. You should see a window as shown above. The input boxes will be empty. Each of the rows marked “Rig Number” 1 through 116 will contain the parameters FT#StartUp will use to start one instance of WSJT-X. Rigs 1 through 16 will use the first SDR, 101 through 116 will use the second SDR.
2. Use the “Browse” buttons in the top four rows to specify the file locations the program needs to operate. If you installed Skimmer Server and WSJT-X in their default locations the “Browse” buttons should open their File Dialogue in the correct location. Note that the first, third, and fourth rows ask for the relevant .exe. The second row asks for a folder. See the examples under each row. If you

will be using just one SDR you can leave the “Location of SkimServ2.ini” box blank.

3. Decide which Rigs you want to use and for each one select between FT4 and FT8 using the combo box for that Rig.
4. Click the left “Refresh FT4/8 Frequencies” button. If using two SDRs also click the right “Refresh FT4/8 Frequencies” button. FT#StartUp will read the SkimServ.ini file you specified to determine which FT4 and FT8 standard frequencies your SDR is covering and place those frequencies in each of the “Frequency” combo boxes.
5. Fill in the parameters for the “Rig Number 1” line to indicate how you want the first WSJT-X instance to operate. Use the combo boxes to select the frequency and the Virtual Audio Cable. The “UDP Port” specifies the port WSJT-X will use to send messages to Aggregator. Each port number must be unique, not used by any other application on this computer. Enter the same port number on Aggregator's “FT#” tab (see the next page for more information on setting up Aggregator).
6. Now Click the “Start Rig 1” button. FT#StartUp will start an instance of WSJT-X and CWSL_SSBWave. The CWSL_SSBWave window will be minimized. You should see the WSJT-X windows open up and operate normally. The mode, frequency, input soundcard and UDP server port should match the values you specified for Rig 1.
7. It's not necessary to make any changes in the WSJT-X windows but you may want to. For example you may want to enable PSK Reporter spotting (remember to set your callsign and grid for this option).
8. Repeat steps 5 through 7 for any additional rigs you want to set up.
9. Click the “Kill All Rigs” button to kill all the program instances FT#StartUp has started.
10. The “Start All Rigs In Use” button provides a convenient method to start multiple rigs. It will start all the rigs that have a check in the “Use?” check box. Give it a try.
11. There is another check box called “Close Wide Graph and Minimize other windows on Rig Start”. It does what it says and is provided to minimize use of system resources. The first WSJT-X window is left open because my experience led me to believe this improved decoding during long periods of unattended operation.
12. Putting a check in the “Kill All Rigs then Start All Rigs” box will cause FT#StartUp to do what it says at 2:00 am local time every day. This is provided to overcome an apparent bug in some versions of CWSL_SSBWave which can cause WSJT-X to stop decoding signals after long operating periods.

Automate Start Up: FT#StartUp will accept a command line argument, “-autostart”, that causes it to simulate a user clicking the “Start All Rigs In Use” button when it starts.

Adding Frequency Options: FT#StartUp populates the entries in its “Frequency” combo boxes from the items in FTStartUp.ini shown below. You can add additional items to these two lists and they will appear as options when you click the “Refresh FT4/8 Frequencies” buttons. Each list should be on one continuous line, (no line breaks).

[FT8 Standard Frequencies]

Frequencies=1.840,3.573,5.357,7.074,10.136,14.074,18.100,21.074,24.915,28.074,50.313,70.100

[FT4 Standard Frequencies]

Frequencies=3.575,7.0475,10.140,14.080,18.104,21.140,24.919,28.180,50.318

Aggregator:

1. Version 6.0 has a new tab, “FT#”, added specifically to receive FT4 and FT8 spots via UDP messages. The text in the upper left corner explains how to use this feature.
2. Your entries in the “Port Number” boxes here should match your entries in the “UDP Port” boxes in FT#StartUp.
3. Note that the intent was to add FT4 and FT8 spots to a node already skimming for CW or RTTY spots. Consequently, a connection using the Primary Skimmer Connection on the “Connections Tab” is still required.

Aggregator 6.1

Status Spot Filters Connections Patt3Ch.lst ini Files Skimmer Traffic Combined Skimmers Secondary Skimmers RTTYSkimServ FT# Associate Pgms

Aggregator can monitor up to 33 instances of WSJT-X for FT4 and FT8 spots via their UDP messages. The table below sets the parameters to use for each instance or "source". The "Src #" columns show the Source Number Aggregator uses to identify the source of spots it processes. Place a check in the "Use?" box if you want Aggregator to accept spots from that source. Enter the port number that source is using for sending UDP messages. Each should use a unique port. Aggregator will apply a calibration factor you specify to the dial frequency WSJT-X reports. Use 1.0 for a well calibrated receiver. Make all the needed changes to all the parameters and then click the "Apply Changes" button. Aggregator treats messages that start with "CQ" or are in the format "call call report" as CQ messages. Aggregator treats CQ message received within 10 minutes of the last CQ message from that call as a dup.

Src #	Use?	Port Number	Calibration Factor	Dial Freq	Day Time Last Msg.	Src #	Use?	Port Number	Calibration Factor	Dial Freq	Day Time Last Msg.	Src #	Use?	Port Number	Calibration Factor	Dial Freq	Day Time Last Msg.
11	<input checked="" type="checkbox"/>	2201	1,000	21140		22	<input type="checkbox"/>	2212	1,000			33	<input checked="" type="checkbox"/>	2307	1,000	3573	13 12:50:59Z
12	<input checked="" type="checkbox"/>	2202	1,000	24919	13 9:55:13Z	23	<input type="checkbox"/>	2213	1,000			34	<input checked="" type="checkbox"/>	2308	1,000	5357	13 13:11:14Z
13	<input checked="" type="checkbox"/>	2203	1,000	28180	12 15:46:28Z	24	<input type="checkbox"/>	2214	1,000			35	<input checked="" type="checkbox"/>	2309	1,000	7074	13 13:13:29Z
14	<input checked="" type="checkbox"/>	2204	1,000	50318		25	<input type="checkbox"/>	2215	1,000			36	<input checked="" type="checkbox"/>	2310	1,000	10136	13 13:13:29Z
15	<input checked="" type="checkbox"/>	2205	1,000	21074	13 13:06:44Z	26	<input type="checkbox"/>	2216	1,000			37	<input checked="" type="checkbox"/>	2311	1,000	14074	13 13:13:30Z
16	<input checked="" type="checkbox"/>	2206	1,000	24915	13 13:09:59Z	27	<input checked="" type="checkbox"/>	2301	1,000	3575	13 11:47:13Z	38	<input checked="" type="checkbox"/>	2312	1,000	18100	13 13:13:30Z
17	<input checked="" type="checkbox"/>	2207	1,000	28074	13 2:23:44Z	28	<input checked="" type="checkbox"/>	2302	1,000	7047	13 13:10:13Z	39	<input type="checkbox"/>	2313	1,000		
18	<input checked="" type="checkbox"/>	2208	1,000	50313	13 11:32:45Z	29	<input checked="" type="checkbox"/>	2303	1,000	10140	13 12:50:43Z	40	<input type="checkbox"/>	2314	1,000		
19	<input checked="" type="checkbox"/>	2209	1,000	50323	12 21:43:14Z	30	<input checked="" type="checkbox"/>	2304	1,000	14080	13 13:13:28Z	41	<input type="checkbox"/>	2315	1,000		
20	<input type="checkbox"/>	2210	1,000			31	<input checked="" type="checkbox"/>	2305	1,000	18104	13 13:13:21Z	42	<input type="checkbox"/>	2316	1,000		
21	<input type="checkbox"/>	2211	1,000			32	<input checked="" type="checkbox"/>	2306	1,000	1840	13 11:03:29Z	43	<input type="checkbox"/>	2317	1,000		

37 CQ W9JA EN43 considered a dup
38 CQ HA7TM JN97 considered a dup
36 CQ N5HHS EL29 considered a dup
38 CQ DL1JEK J060 spot generated
36 CQ W7HD DM42 considered a dup
38 CQ N1UL EL95 considered a dup
37 CQ WF5E EM13 considered a dup
38 CQ EA5WI IM99 considered a dup
35 CQ N4FTF FN32 considered a dup
38 CQ F5NBQ JN05 considered a dup
37 9Y4DG NSBSA R-06 considered a dup
37 CQ K3ABE FN20 considered a dup
37 CQ K9ZW EN64 considered a dup