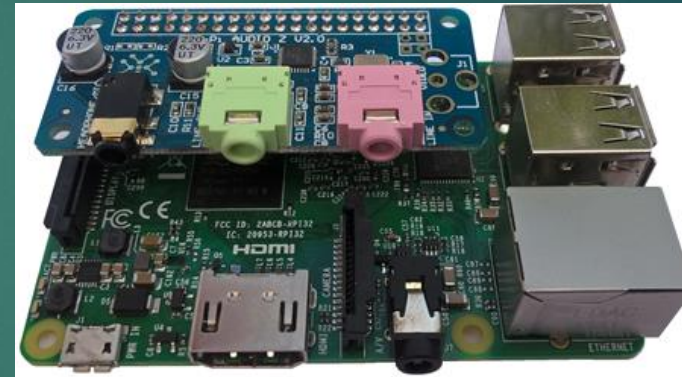


Remote station prototype with a Raspberry Pi – Part 1

SW installations



Summary

- ▶ **Prototype configuration**
- ▶ **Raspberry Pi installation**
 - ▶ **Raspberry Pi SD card installation**
 - ▶ **Raspberry Pi configuration**
- ▶ **Flrig installation**
- ▶ **WSJT-X installation**
- ▶ **Fe-Pi sound card configuration**
- ▶ **Mumble softwares installation**
 - ▶ **Mumble server Installation on RPi**
 - ▶ **Mumble client installation on Rpi**
 - ▶ **Mumble client installation on PC**
- ▶ **VNC Viewer installation on PC**

Prototype configuration



ttyUSB0
YAESU FT1000 Mk V
4800, 8, N, 2
CAT link

ttyUSB1
YAESU FT1000 Mk V
PTT DVS2 socket

IN/OUT audio link



« remote »
PC

Raspberry Pi SW Installation

Rpi SD card installation

- ▶ **Install the Raspberry Pi imager ([RPi Imager](#))**
- ▶ **Download and install the Rpi OS on the SD card (cf. previous link)**

RPi SD card installation du Rpi (cont'd)

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- ▶ **On the SD card root :**
 - ▶ **Create an empty file named `ssh` to authorize the remote control by VNC**
 - ▶ **To connect the RPi to the WiFi network create the file `wpa_supplicant.conf` with the following content :**
 - ▶ `country=fr (change if needed)`
 - ▶ `update_config=1`
 - ▶ `ctrl_interface=/var/run/wpa_supplicant`
 - ▶ `network={`
 - ▶ `scan_ssid=1`
 - ▶ `ssid="MaBoxInternet"`
 - ▶ `psk="ClefSecurite"`
 - ▶ `}`

Raspberry Pi configuration

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- ▶ in Preferences /Raspberry Pi configuration (graphical interface) select the keyboard type, the screen definition (full HD if possible) and timezone
- ▶ Edit the file `/boot/config.txt` to include the Fe-Pi parameters
- ▶ `sudo nano /boot/config.txt`
 - ▶ `# Uncomment some or all of these to enable the optional hardware interfaces`
 - ▶ `dtoverlay=i2c-arms=on`
 - ▶ `dtoverlay=i2s=on`
 - ▶ `#dtoverlay=spi=on`
 - ▶ `# Additional overlays and parameters are documented /boot/overlays/README`
 - ▶ `# Enable audio (loads snd_bcm2835)`
 - ▶ `dtoverlay=audio=on`
 - ▶ `dtoverlay=fe-pi-audio`

Raspberry Pi configuration

- ▶ **Install the system updates if any**
 - ▶ **sudo apt-get update**
 - ▶ **sudo apt-get dist-upgrade**
 - ▶ **Reboot the Rpi**
- ▶ **Install Pulse audio**
 - ▶ **sudo apt-get install pulseaudio**
 - ▶ **Reboot the RPi**

frig installation

flrig installation

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- ▶ **Dependencies installation :**
 - ▶ **sudo apt-get install libfltk1.3-dev libjpeg9-dev libxft-dev libxinerama-dev libxcursor-dev libsndfile1-dev libsamplerate0-dev portaudio19-dev libpulse-dev**
- ▶ **Download flrig-1.3.53.tar.gz** (<http://www.w1hkj.com/files/flrig/>)
 - ▶ **Check for the latest version**

flrig installation

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- ▶ **cd ~/Downloads**
- ▶ **tar -zxvf flrig-1.3.53.tar.gz (check the version)**
- ▶ **cd flrig-1.3.53**
- ▶ **./configure --prefix=/usr/local --enable-static**
- ▶ **make**
- ▶ **sudo make install**
- ▶ **sudo ldconfig**

WSJT-X installation

WSJT-X installation

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▶ Dependencies installation

▶ `sudo apt install libqt5multimedia5-plugins libqt5serialport5 libqt5sql5-sqlite libfftw3-single3`

▶ New dependency

▶ `sudo sed -i "s/# en_US.UTF-8/en_US.UTF-8/g" /etc/locale.gen`

▶ `sudo locale-gen`

▶ Download `wsjtx_2.3.1_arm.deb`

(<https://physics.princeton.edu/pulsar/k1jt/wsjtx.html>)

▶ Check for the latest version

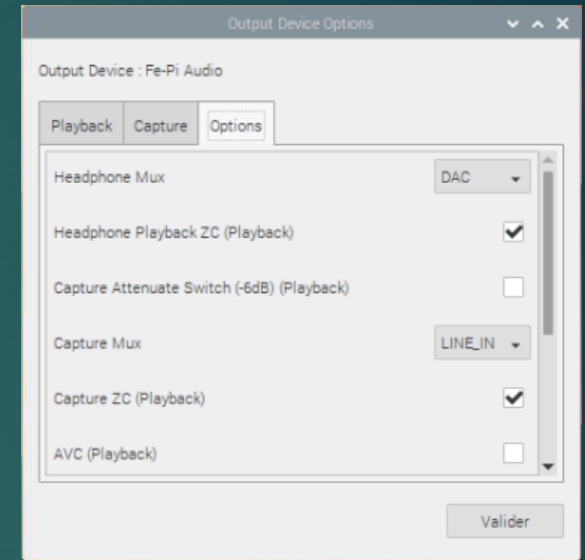
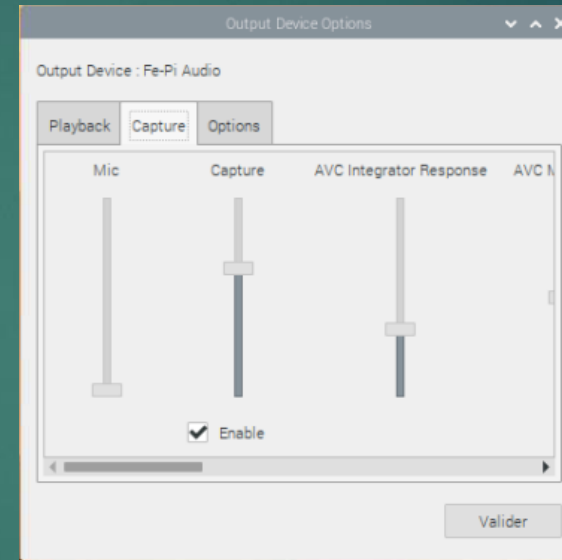
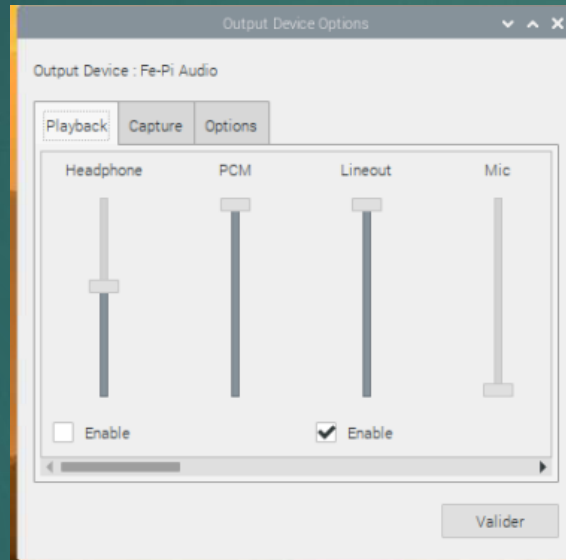
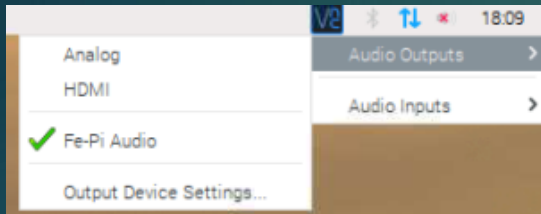
WSJT-X installation

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- ▶ **cd ~/Downloads**
- ▶ **sudo dpkg -i wsjtx_2.3.1_armhf.deb**

Fe-Pi sound card configuration

Fe-Pi sound card configuration



Installation of Mumble softwares

Mumble server installation on Rpi

- ▶ **mumble server installation (murmur)**
 - ▶ **sudo apt-get install mumble-server --fix-missing**
- ▶ **Server configuration**
 - ▶ **sudo dpkg-reconfigure mumble-server**
 - ▶ **sudo nano /etc/mumble-server.ini**
 - ▶ Change the welcome text (welcometext)
 - ▶ Put a server password : serveurpassword
 - ▶ Put the RPi IP address (host variable) to allow an automatic launch at RPi boot.
- ▶ **Restart the server**
 - ▶ **sudo /etc/init.d/mumble-server restart**

Mumble client installation on Rpi

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- ▶ **mumble client installation**
 - ▶ **sudo apt-get install mumble --fix-missing**
- ▶ **mumble client configuration**
 - ▶ Go through the various wizard menus selecting the right audio IN /OUT from the RPi to the radio and the option « Continuous » for the activity

Mumble client installation on PC

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- ▶ **mumble client download[3]**
- ▶ **client configuration**
 - ▶ Create a client
 - ▶ Enter mumble server IP address IP and password
 - ▶ Select a microphone and a loudspeaker for the client
 - ▶ Configure the audio with the option « vocal activity » (the T/R is managed through the radio PTT from flrig)

VNC Viewer installation

VNC Viewer installation on PC

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- ▶ **Select and download the software**
 - ▶ Double – click on EXE and follow the wizard menus

References

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- ▶ **[1] Raspberry Pi OS :** <https://www.raspberrypi.org/downloads/>
- ▶ **[2] Raspberry :** <https://www.raspberrypi.org/documentation/configuration/wireless/headless.md>
- ▶ **[3] Mumble :**
 - ▶ <https://www.mumble.info/>
 - ▶ <https://www.mumble.info/downloads/>
 - ▶ [KM4ACK : mumble installation on RPi](#)
- ▶ **[4] VNC Viewer :** <https://www.realvnc.com/fr/connect/download/viewer/>
 - ▶ <https://www.raspberrypi.org/documentation/remote-access/vnc/README.md>
- ▶ **[5] flrig :**
 - ▶ <http://www.w1hkj.com/>
 - ▶ [KM4ACK : flrig installation on RPi](#)
- ▶ **[6] WSJT-X :** <https://physics.princeton.edu/pulsar/k1jt/wsjt.html>
- ▶ **[7] fldigi :** <http://www.w1hkj.com/>