Online Translation(s):
https://codingspirit-de.translate.goog/dokuwiki/doku.php?id=fmlist_scanner:start&_x_tr_sl=en&_x_tr_tl=de

1. Introduction to FMList Scanner

Introduction

FMList Scanner, hereinafter referred to as *scanner*, was motivated by Günter Lorenz. The scanner should collect broadcast transmitter information for the FMLIST (https://www.fmlist.org/, Station database of the UKW / TV working group). The project was presented first on September 8, 2018 at the VHF conference in Weinheim (see https://ukw-tagung.org/).

For simple, the scanner checks for receivable UKW/FM stations with the contained digital RDS signal. The RDS signal is decoded to collect PI codes, PS text and more .. necessary for transmitter identification.

In addition, DAB(+) channels are also scanned and decoded with all relevant meta information.

There are several options, to (de)activate frequency ranges or channels. All data is collected, ideally together with GPS coordinates from a GPS mouse. The collected data can be uploaded to the FMLIST station database https://www.fmlist.org/ and viewed / verified online.

Links / Resources

- German manuscript: https://codingspirit.de/Linux-ist-sexy-Freiheit-Skript.pdf
- German slides: https://codingspirit.de/Linux-ist-sexy-Freiheit-Folien.pdf

The manuscript and slides may be updated so that the current version should always be accessed via the links above.

- Source code: https://github.com/hayguen/fmlist_scan
- Mailing list: https://groups.io/g/fmlist-scanner

Requirements

For scanning, there are following prerequisites:

1. *Raspberry Pi 3B+* with a suitable power supply (note: a Pi 3B or 4B is also fine)
    - currently, there are promising tests with an *Orange Pi 3 LTS*, which currently is much cheaper
    - a Debian/Ubuntu PC or Notebook might be used, but mobile operation from a power bank get's difficult
2. Micro SD card, 16 GB or more
3. USB memory stick or another micro SD card plus an USB adapter
    - we strongly recommend to use a micro SD card, labelled with "Endurance"
    - USB memory stick get defect within few weeks!
4. perform a remote and headless setup, else you'll temporarily need:
    - USB keyboard
    - a screen and an adapter from the HDMI jack of the Raspberry Pi
5. for the setup: PC or notebook, micro SD reader or adapter on micro SD card
6. WiFi or ethernet cable to router with internet
    - necessary for regular (daily) upload of results. much longer periods, multiple weeks, are also possible
    - mandatory whilst setup
7. RTL-SDR with RTL2832 chip and R820T or R820T2 tuner - ideally with a short USB extension cable
8. a (magnetic) antenna suited for UKW/FM and/or DAB frequencies
    - some adapters to fit the antenna-input jack of the RTL-SDR device
9. GPS mouse - for mobile operation
    - get coordinates for logging and later visualization on FMLIST
    - date/time has to be retrieved via GPS, cause Raspberry Pi has no Realtime Clock (RTC) nor a battery
10. piezo buzzer and LEDs
    - notifies status: progress and errors - without having a screen or display
11. ATX knobs
    - perform reboot and *upload of results* without a keyboard
12. power bank - for mobile operation

Here is a complete Amazon shopping list including optional parts, but without possibly temporarily required devices: https://amzn.to/2DtgQo8

Attention: some parts are included several times as an alternative or for the case of delivery bottlenecks! Unfortunately, some parts cannot be sent outside of Germany either.

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