mpd-box Documentation

Release 0.1.2

The mpd-box team

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MPD-Box start a song in Music Player Daemon by simply scanning a NFC.

It creates a new way to interact with your music. Once setup for the first time, just grab a tag and start listening to it without having to navigate a screen interface. Remove it, and it will stop.

Summary

This documentation cover all technical aspects on server side.

1.1 Installation

To actually run mpb-box, you need to install on local machine **mpd** and **redis**. Then follow one of the follow.

1.1.1 MPD

Follow instructions from Music Player Daemon official documentation.

Note: It is highly recommanded to install MPD using a local configuration (per user) to avoid forbidden access to music's file. Instruction can be found on arch linux wiki (works great on every distribution).

You can use `mpc` to verify your installation

```
pi@raspberrypi ~ $ mpc status
volume: 90%   repeat: off   random: on    single: off   consume: off
```

MPD should automatically start on start. If you installed it using a local configuration, make sure you did configure your `.profile` to launch it on login.

MPD-Box does not manage your music yet. You need to configure a path in MPD and save some files in it. We recommand to create then a symbolic link to your medias and access a USB stick.

1.1.2 Redis

Follow instructions from Redis Quick Start documentation.

1.1.3 MPD-Box

pip

You can use pip to install mpd-box.

```
pip install mpb-box
```

setuptools

MPD-Box is available as a python module defined in `setup.py` on root folder. Use git to clone code from github repository.

```
git clone https://github.com/mpd-box/mpd-box.git
```

Then install it in your python environment.

```
cd mpd-box
python setup.py install
```

Feel free to read Python documentation about Installing Python Modules to learn more about setup.py.

You should now be able to run mpd-box using command line.

```
mpd-box start
```

> **Warning:** You system might require mpd-box to run as root to access hardware *(like NFC reader)*. To do so, just run mpd-box using `sudo`.

Next section is about how to configure and run mpd-box.

1.1.4 Zeroconf (optional)

It might be usefull installing Ahari-daemon to activate *zeroconf* and have an easy access from other devices.

This will use local hostname as a domain name on your local network. If your device is named `MPD-Box` (recommanded) then you will be able to access it using MPD-Box.local as a domain name.

Installation procedure depend on your operating system.

1.2 Configuration

MPD-Box use python ConfigParser module to store and read app config file.

Default configuration is saved in `mpd_box/config.default.cfg` but is override by `~/.mpd-box.cfg` or `/etc/mpd-box.cfg`

You can read default config file to learn about MPD-Box, but main properties are the followong :

```
[mpd_box]
# List of readers to activate
mpd_box.readers =
        mpd_box.readers.nfc.raspberry_explorer_board

# Port to access MPD-Box services
port = 6543

[mpd]
# Redefine port to access MPD
# default : 6600
port = 6600

[redis]
# Redefine port to access Redis
```

```
# default : 6379
port = 6379
```

> **Warning:** If run as administrator, ~ is relative to root user, probably /root. MPD-Box will first try to access local user config file and only if could not find it will try /etc/mpd-box.cfg

1.3 Run

1.3.1 Console

You can run MPD-Box using command line mpd-box.

```
mpd-box start
```

1.3.2 Daemon

To run as daemon.

```
mpd-box start --daemonize
mpd-box restart
mpd-box stop
```

1.3.3 As a service

You can run MPD-Box as a unix service. Copy mpd-box-daemon script to /etc/init.d directory.

```
sudo cp <mpd_box_path>/scripts/mpd-box-daemon /etc/init.d/mpd-box
```

You can now use service command line to controle mpd-box.

```
sudo service mpd-box start
sudo service mpd-box status
sudo service mpd-box restart
sudo service mpd-box stop
```

It will automatically start on system launch. Logs can be consulted in /var/log/mpd-box.log.

1.4 Readers

Readers are independant modules of MPD-Box you can activate or deactivate to fit your needs.

To activate a reader, just put its name in your configuration file. (See *configuration section*)

1.4.1 List of readers

Raspberry Explorer Board

This reader has been design to work with the NF explorer Board.

Installation

This reader require you to install a python library to allow MPD-Box accessing the hardware : **nxppy**

```
pip install nxppy
```

This can take few minutes since your rapsberry needs to compile it.

Configuration

In your configuration file, add `mpd_box.readers.nfc.raspberry_explorer_board`:

```
[mpd_box]
# List of readers to activate
mpd_box.readers =
        mpd_box.readers.nfc.raspberry_explorer_board
```

Behaviour

Put a tag, music start. Remove it, music stop.

1.5 API

MPD-Box has two distinct API to use. First one is from MPD, other one is running on Pyramid and designed to manage tags.

1.5.1 Cheatsheet

MPD

MPD provide an API to control most feature. You can find Client Libraries reaady to use and implement on your project.

MPD-Box use python-mpd2.

MPD-Box API

MPD-Box has a RESTFull API to control tags.

Method	URI	Description
GET	*/current-id*	*Return current tag-id read by mpd-box*
Tags		
POST	*/tag/(tag_id)*	*Create a tag*
GET	*/tag/(tag_id)*	*Retrieve an existing tag*

1.5.2 Full reference

Tags related

GET /current-tag-id

Return id of current tag.

```
{
        "current-tag-id": "2499F6C5"
}
```

If no tag selected, return `current-tag-id = None`.

POST /tag/(tag_id)

```
POST /tag/2499F6C5
```

JSON is send as content in POST request (and not as parameters).

```
{
        "id": "2499F6C5",
        "random": true,
        "repeat": true,
        "songs": [
                "Folder/Artist X/Track 2.mp3",
                "Folder/Artist X/Track 7.mp3",
                "Folder/Artist Y/Track 42.mp3",
                ...
        ]
}
```

Is saved in redis with key `tags:(tag_id)`.

GET /tag/(tag_id)

Return description of a tag. Exact same structure as saved in REDIS

```
GET /tag/2499F6C5
```

Return JSON structure

```
{
        "id": "2499F6C5",
        "random": true,
        "repeat": true,
        "songs": [
                "Folder/Artist X/Track 2.mp3",
                "Folder/Artist X/Track 7.mp3",
                "Folder/Artist Y/Track 42.mp3",
                ...
        ]
}
```

If tag_id is undefined, return 404 error code.

1.6 Hardware

Since day one, PD-Box has been design to run on a **Raspberry Pi** (Model B) using its dedicated NFC Explorer Board. However, there is no reason this project does not work on other configuration.

As a target platform, Raspberry Pi will be used as reference to define perfomance limitation.

1.6.1 Raspberry Pi

This page explain how to install MPD-Box on a Raspberry Pi.

Required hardware :

- Raspberry Pi
- SD Card (8go min)
- USB Adapter for power supply
- Ethernet cable (USB wifi card also works)
- NFC explorer board
- Some NFC chip (one included with NFC explorer, your credit card works too)

Operating System

Any linux distribution is good. We recommand to visit raspbian official website and download the latest version.

Copy it on your SD card, then plug it on your raspberry. Turn it on, and you should have a debian runnning :)

Activate NFC explorer board

To be able to use the NFC reader, you have to activate the SPI connector.

Open a terminal and write :

```
$> sudo raspi-config
```

The option to activate SPI can be found as follows: `Advanced Options` > `SPI` > `<Yes>`.

Now reboot your Raspberry Pi by typing the following command: sudo reboot

Install MPD-Box

Follow the instruction from the *installation section*. You should then be able to use it now.

Activate raspberry_explorer_board reader

Follow instruction from the *Raspberry Explorer Board Reader*.

1.7 Frequently asked questions

1.7.1 How can I get a MPD-Box ?

There is no commercial use of MPD-Box for now. It all started as a personnal side-project and will more than likely stay like one.

However, I would recommand you to try finding a Hackerspace or Fablab near your place. Maybe someone there will be interested to help and build one.

Also, feel free to send an email for more support at mpd-box@sebastienbarbier.com.

1.8 Changelog

1.8.1 0.1.2 (not released yet)

- Fix bug if config file does not exist

1.8.2 0.1.1 (2015-11-14)

Initial version

- Web service to read, access, and edit tags
- Reading tags for Raspberry EXPLORE-NFC
- Logging using RotatingFileHandler
- Config file with ConfigParser
- Run as process, daemon, or service

Thanking

Thanks to Jordi Parra for inspiring this project with his "Spotify box" project.

Indices and tables

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