



## Co-funded by the Creative Europe Programme of the European Union

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#####  
AIR GENERAL SETUP INSTRUCTIONS  
#####
```

```
# AIR
```

```
Setup for a debian server running AIR platform.
```

```
## AIR packages
```

```
AIR packages and configuration files will be located under `/var/air`.
```

```
### Required packages
```

```
* `apt install htop` (optional)  
* `apt install jackd2`  
* `apt install ffmpeg`  
* `apt install puredata`  
* `apt install icecast2`
```

```
Also install PD extra libraries:
```

```
```
```

```
apt install pd-3dp pd-ableton-link pd-ambix pd-arraysize pd-autopreset pd-  
bassemu pd-beatpipe pd-boids pd-bsaylor pd-chaos pd-cmos pd-comport pd-creb pd-  
csound pd-cxc pd-cyclone pd-deken pd-deken-apt pd-earplug pd-ekext pd-ext13 pd-  
extendedview pd-fftease pd-flex-dev pd-flex-doc pd-flite pd-freeverb pd-ggee  
pd-gil pd-hcs pd-hexloader pd-hid pd-iem pd-iemambi pd-iemguts pd-iemlib pd-  
iemmatrix pd-iemnet pd-iemutils pd-jmmp pd-jsusfx pd-kollabs pd-lib-builder pd-  
libdir pd-list-abs pd-log pd-lua pd-lyonpotpourri pd-mapping pd-markex pd-maxlib  
pd-mediasettings pd-mjlib pd-moonlib pd-motex pd-mrpeach pd-mrpeach-net pd-  
nismuk pd-osc pd-pan pd-pddp pd-pdogg pd-pdp pd-pdstring pd-pduino pd-plugin pd-  
pmpd pd-pool pd-puremapping pd-purepd pd-purest-json pd-readanysf pd-rtclib pd-  
scaf pd-sigpack pd-slip pd-smlib pd-syslog pd-tclpd pd-testtools pd-unauthorized  
pd-upp pd-vbap pd-wiimote pd-windowing pd-xbee pd-xsample pd-zexy  
```
```

```
## Configure Puredata
```

```
Configure Puredata paths under `File -> Preferences -> Path`:
```

```
Add paths:
```

```
- `/lib/puredata/extra`  
- `/usr/lib/pd/extra`  
- `/var/air/air-mixer`
```

```
## Icecast
```

```
## air user
```

```
Create air user: `useradd air`
```

### Add realtime permission

Edit `/etc/security/limits.conf` and add:

```

```
air - rtprio 100
air - nice -10
air - memlock unlimited
```

```

## Configure realtime permissions and limits for jack\_recorder service

... by adding the following under the `[Service]` section:

```

```
LimitNICE=-10
LimitMEMLOCK=5000000000
LimitRTPRIO=100
```

```

## VNC Server

Install XFCE: `apt install task-xfce-desktop`

Configure VNC server: <https://www.digitalocean.com/community/tutorials/how-to-install-and-configure-vnc-on-debian-11>

N.B.: Configure the VNC server under `air` user.

Start the VNC server with `vncserver`

Kill the VNC server with `vn`

VNC server is not accessible directly via the internet. To access it, create a `ssh` tunnel by running:

```
ssh -L 5901:localhost:5901 root@air.ijs.si
```

and then pointing your VNC client to `localhost:5901`

## Ensure that jackd runs automatically

### jackd.service

Create `jackd.service` file in `/var/air/systemd`

```

```
[Unit]
Description=JACK audio connection kit
After=multi-user.target
```

```
[Service]
ExecStart=/usr/bin/jackd -ddummy
Type=simple
Restart=always
User=air
```

```
[Install]
WantedBy=multi-user.target
```

```

### Starting the service

1. Symlink `/var/air/systemd/jackd.service` to `/usr/lib/systemd/system/`:

```
- `cd /usr/lib/systemd/system/`  
- `ln -s /var/air/systemd/jackd.service`
```

2. Start the service: `systemctl start jackd`

## AIR Core Mixer & Blender files

Copy AIR Core Mixer files (PD, etc) to `/var/air`

## Install .NET

Add package registry:

```
```
```

```
wget https://packages.microsoft.com/config/debian/12/packages-microsoft-prod.deb  
-O packages-microsoft-prod.deb  
sudo dpkg -i packages-microsoft-prod.deb  
rm packages-microsoft-prod.deb  
```
```

Install the SDK:

```
```
```

```
sudo apt-get update && \  
  sudo apt-get install -y dotnet-sdk-7.0 dotnet-runtime-6.0 aspnetcore-runtime-  
6.0  
```
```

## Stream JACK to Icecast

```
```
```

```
ffmpeg -f jack -i ffmpeg -ar 48000 \  
-content_type audio/mpeg  
icecast://source:ZNxVwf5ElrTB3knRLH@127.0.0.1:8080/air.mp3  
```
```

To test, you can:

1. Run `jack\_metro -b 120` as user `air`
2. Connect the metro output to ffmpeg input: `jack\_connect metro:120\_bpm ffmpeg:input\_1` and `jack\_connect metro:120\_bpm ffmpeg:input\_2`
3. Enjoy beeping sound at `http://air.ijs.si:8080/air.mp3`

## Caddy server

Used for reverse proxy tasks and serving recording files to the users of the AirRecorder web app

1. Install caddy with `apt install caddy`
2. Remove `/etc/Caddyfile` and symlink caddyfile from `/var/air/caddy/Caddyfile`

## jack\_recorder\_server

The server that records jack inputs when instructed to do so.

1. Symlink `/var/air/systemd/jackrecorder.service` to  
`/usr/lib/systemd/system/`:  
- `cd /usr/lib/systemd/system/`  
- `ln -s /var/air/systemd/jackrecorder.service`

2. Start the service: `systemctl start jackrecorder`

## AirRecorder

A web interface for JACK recorder

1. Symlink `/var/air/systemd/airrecorder.service` to `/usr/lib/systemd/system/`:
  - `cd /usr/lib/systemd/system/`
  - `ln -s /var/air/systemd/airrecorder.service`
2. Start the service: `systemctl start airrecorder`

### ## Jacktrip

Jacktrip is used for producing audio in different locations connected via internet.

1. Install jacktrip: `apt install jacktrip`
1. Symlink `/var/air/systemd/jacktrip.service` to `/usr/lib/systemd/system/`:
  - `cd /usr/lib/systemd/system/`
  - `ln -s /var/air/systemd/jacktrip.service`
2. Start the service: `systemctl start jacktrip`