A beginners introduction to Pro Audio on Linux! in 2022

Sam Thursfield
Goals

• Wider understanding of Pro Audio use case within Linux apps community

• Share some good news

• More music!
Who does “Pro Audio”?
• Recording / live sound engineers
• Composers (film music, game music, songs, …)
• Performing musicians
• Radio broadcasters
• … anyone who is not a ‘consumer’
What software do they use?

1. Digital Audio Workstation
2. Software instruments and effects
3. Hardware/software bridge (MIDI, ADC/DAC, ...)
Get Ardour 6.9 for Linux Intel/AMD 64 bit

Have questions? Answers are over there.

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Free/Demo Version
Periodically goes silent after 10 minutes.
No access to nightly (development) builds.

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Need to upgrade to to latest version, change platforms, or download again?

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About sample rate. 44.1 or 48 kHz?
How do I .... ?
Bitwig Studio

Modern music production and performance

INSTALL

Make sure to follow the setup guide before installing

Bitwig Studio is a digital audio workstation (DAW) that inspires you to take greater control of your music, giving you access to every aspect of your production. Streamline your creative process and quickly evolve your ideas into complete songs, tracks, and compositions. Record and arrange, improvise and perform, or do it all at once. Design sounds. Build instruments.

399 USD / 399 EUR

Buy
Digital Audio Workstation

It's a big and complicated app that does everything.

“Big name” DAWs:
- Ableton Live, Ardour (Harrison Mixbus), Bitwig Studio, Cubase, Logic, Pro Tools, REAPER,…

Open source DAWs: Ardour, Zrhythm, …

Other cool audio apps: bespoke.synth, ossia, Pure Data, VCV Rack, …

A DAW can host plugins…
Instruments and effects

ZynAddSubFx

Simple interface! MIDI/audio in, audio out; UI toolkit, disk access.
(No network access, no printing, no /dev, no privileged operations, ...)

U-he Zebra.
Effect plugins running in Ardour
Instruments and effects

Some open source plugin developers:

Calf Studio Gear, Chowdury DSP, Dexed, Guitarix, x42,…
- Packaged in mainstream distros as packages.

Some proprietary plugin devs supporting Linux:

Audio Damage, Loomer, Overtone DSP, Pianoteq, u-he
- Distributed as binaries, to install in $HOME
- Occasional ABI breakage issues – “libcurl-gnutls.so.4 missing” a common theme
Instruments and effects

KVR Audio database:
- **10,000 plugins** (4.5K instruments, 6.5K effects)
- 3.4K are “free” (zero-cost)
- **500** are available on Linux*

*This is an underestimate

Distributed as **binary plugins**
- **VST** (Win, Mac, Linux)
- LADSPA, LV2 (common on Linux only)
- Clap (???)
State of the art of plugin distribution:

- download as a .zip
- unpack into ~/.vst
Packaging plugins as Flatpak extensions

- Plugins must use same runtime as the plugin host (DAW) – `org.freedesktop.Platform`
- Installed via CLI - invisible in Flathub frontend

Hubert Figuiere doing basically all the work here
Bringing more plugins to Linux...

Most plugin users care about:

- Price
- Does it sound good (and look cool)
- CPU usage.

Most plugin developers care about:

- Getting paid, avoiding piracy
- Ongoing support costs
- Binary that works everywhere (*looking at you, libcurl-gnutls.so.4*)
- Protecting their special DSP algorithm that makes it sound so good.

Almost nobody cares about:

- Inspecting and modifying the source code
Getting audio out of the computer

Pipewire is amazing.
Getting audio out of the computer

- PipeWire taking over role of JACK server.
- Stable Flatpak-safe API
- Pro audio apps continue use JACK API via libpw-jack to talk to PipeWire. (ref)
- Many routing options – ‘helvum’ tool useful to visualize.
In closing...

- Keep up the great work!
- Celebrate the existing success stories:
  - ISVs are here on Linux, making great software and earning a living.
  - Pro audio users are no longer tied to Mac & Windows.
- Flathub thoughts...
  - Separate “Audio/video production” and “Audio/video player” categories?
  - Display plugins

Thanks!

Sam Thursfield