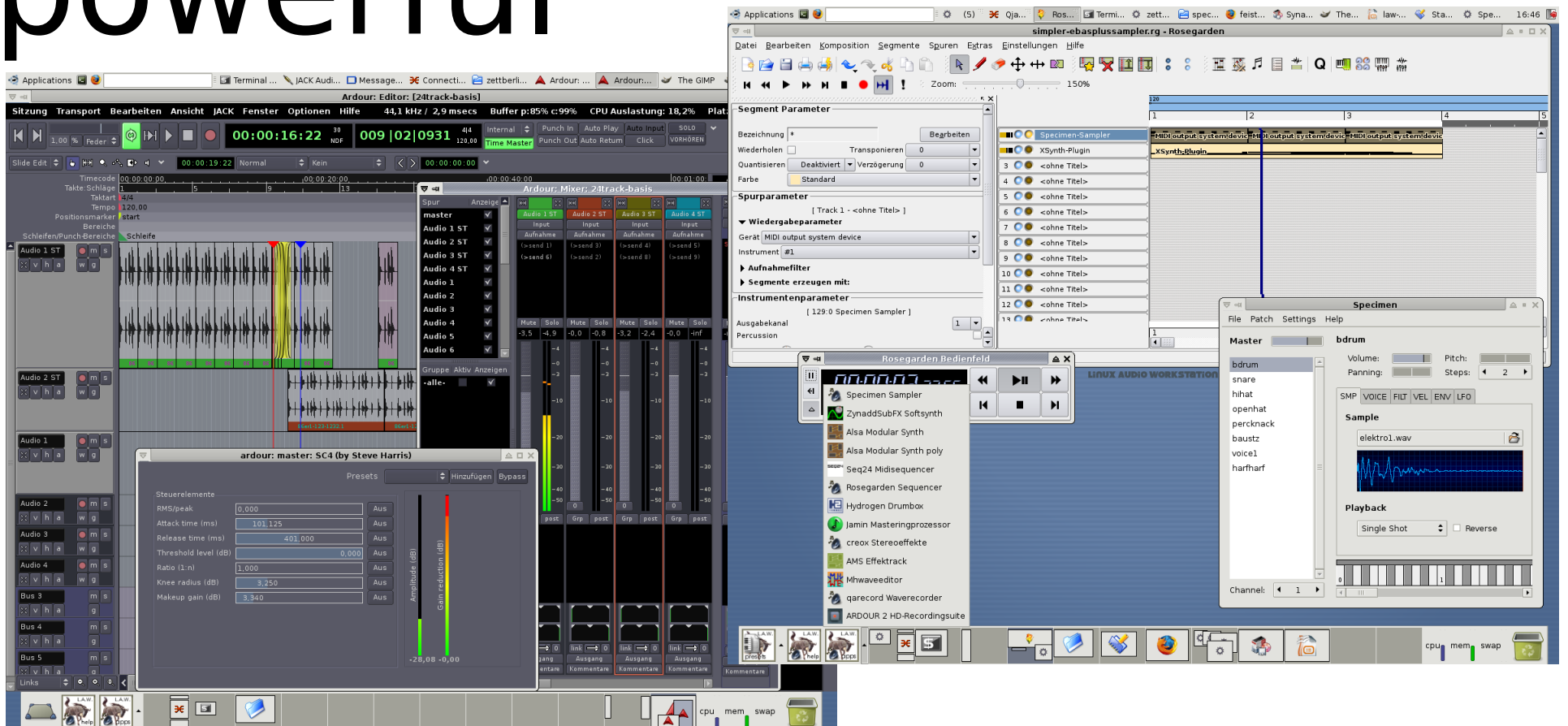


Getting Linux to produce Music fast and powerful



The plan: Having a
Linux-computer, that can
be used by musicians for
serious work.

usable unlimited

reliable

5 features, a musician demands from his/her audio-PC.

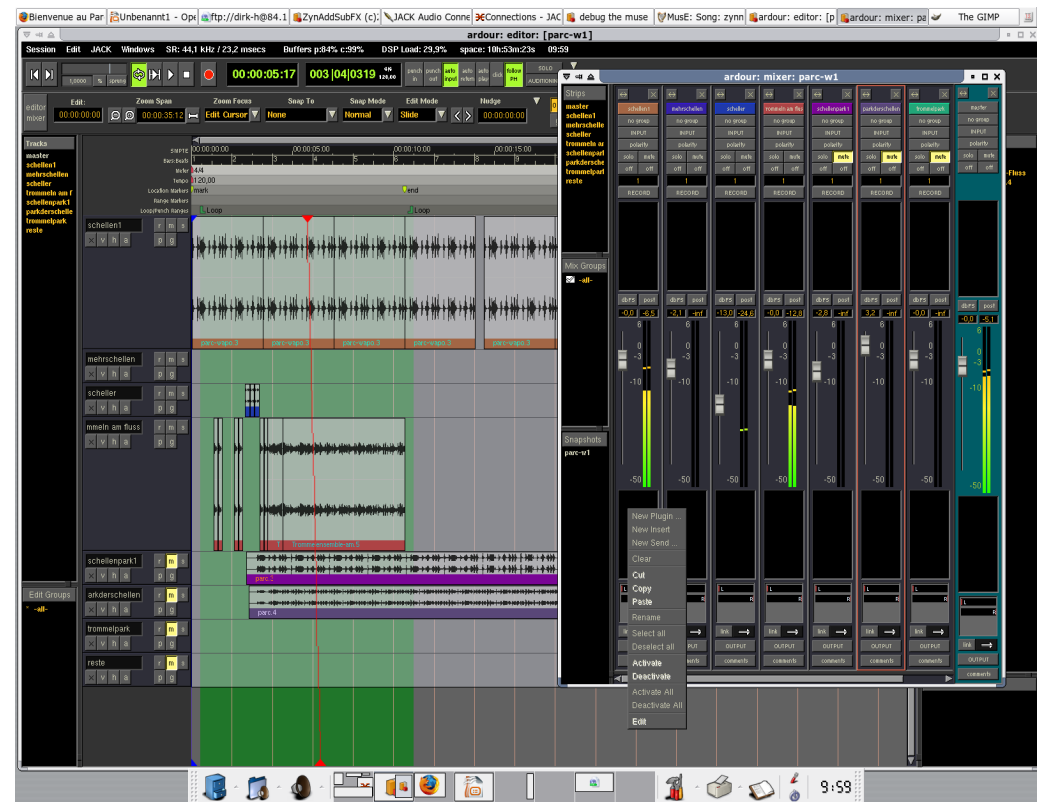
- The 3 most important:

- 1) stability
- 2) stability
- 3) stability

- 2 other:

- ✓ understandable user interface

- ✓ all needed functions integrated



Goals

- zero hardware issues
- sane optimisations
- plays music 30 secs after startup
- does not trade functionality for usability

means and methods 1: prerequisites.

- collaboration with a system-builder
- finding a distro that supports the chosen hardware

means and methods 2: installation.

- set up all hardware and optimize it for audio
- integrate and preset the applications
- provide user-oriented documentation

The box:

- AMD Athlon64 3800
- 1Gb RAM, 200GB HD
- MSI K9N Neo Mainboard
- DVD-Burner, Nvidia Geforce 7300 GC
- Chieftec DH Tower
- Zalman CNPS Heatpipe-Cooler
- MAudio Audiophile 2496 Soundcard with envy24 chipset



The distro

- ubuntu feisty fawn amd64
 - supports the chosen hardware
 - provides an optimized kernel
 - has most of the needed applications in standard-repositories
 - easy to maintain for the user

Why no audio-distro?

- problems with the graphics-chipset
- tests will be continued to provide alternative systems via multiple-boot

The desktop

The screenshot displays a Linux desktop environment with the Xfce desktop manager. The background features a dark blue theme with a silhouette of a dog and the text "XFCE LINUX AUDIO WORKSTATION".

Key windows and their content include:

- Terminal (zettberlin64@ubu64: ~):** Shows error messages: "Failed to open device", "X Error: BadDevice, invalid or uninitialized input device 169", "Major opcode: 147", "Minor opcode: 3", "Resource id: 0x0", "Failed to open device", and "Warning: no locale found: /usr/share/locale/qjackctl_de_DE.UTF-8.qm".
- JACK Audio Connection Kit [(default)] Started:** A control panel with buttons for Start, Stop, Messages, Status, Connect, Patchbay, and About. It displays "Started RT 52% 441.00 Hz" and "Stopped 00:00:00".
- Connections - JACK Audio Connection Kit:** A window showing audio connections between clients. The "Readable Clients / Output Port" list includes alsapcm, ams_130_0, ardour, and specimen (with sub-ports out_left and out_right). The "Writable Clients / Input Port" list includes alsapcm, ams_130_0, ardour, and qaRecord.
- qaRecord:** A recording application window with a file menu, a time display (0:00:00), a level meter for L and R channels, and buttons for Record, Pause, and Stop. A buffer menu is open, listing various audio plugins like Specimen Sampler, ZynaddSubFX Softsynth, and Ardour.
- Status - JACK Audio Connection Kit:** A window showing system status: Server state: Started, CPU Load: 52%, Sample Rate: 44100 Hz, Buffer Size: 128 frames, Realtime Mode: Yes, Transport state: Stopped, XRUN count since last s...: 17 (20), Maximum scheduling d...: 12.851 msec, and Time of last reset: 23:12:27 (02:56:29). It includes a Reset button and a Refresh button.
- Messages - JACK Audio Connection Kit:** A log window showing messages such as "callback (18)", "of at least 0.705 msecs", "callback (19)", "connection graph change.", "connection graph change.", "connection change.", "connection change.", "connection change.", "02:08:05.791 Audio connection graph change.", "02:08:05.805 XRUN callback (20)", and "**** alsapcm: xrun of at least 12.851 msecs".

The desktop also shows a taskbar at the bottom with icons for applications and system status (cpu, mem, swap, trash).

The menu

The image shows a screenshot of the Xfce Linux desktop environment. The desktop background features a black silhouette of a dog and the text "XFCE LINUX AUDIO WORKSTATION".

On the left, the "Desktop Menu" is open, listing various applications and system tools. The "System" menu is expanded, showing options like "Aktualisierungsverwaltung", "Benutzer und Gruppen", "Bulk-Rename", "Datum und Uhrzeit", "Dienste", "Freigegebene Ordner", "Konsole", "Network", "Process manager", "Sprachunterstützung", "Synaptic-Paketverwaltung", "Systemüberwachung", "Terminal", and "Thunar Dateimanager".

In the center, there are two file manager windows. The left window shows a directory structure with folders like "Pentax-filmchen", "Pentax-Mai2006", "picarchiv", "scans", "september2004", "sodi", "sophiejurek", and "vids-oktober". The right window shows a directory with folders like "dinosauren", "futurama 07 - A Pharaoh T", "Futurama 1-01 - The Spac", "Futurama - 112 - When Ali", and "Futurama - 207 - A Head In".

On the right, a terminal window titled "menu.xml - KWrite" displays XML code for defining menu items. The code includes entries for applications like "ARDOUR2", "lash", "muse", "rosegarden", "H2-Drums", "seq24", "Synths", "ZynAddSubFx", "AMS", "AMsynthE", "Specimen-Sampler", "SF-Editor Swami", "VSTi-Cheese-Mashine", "VSTi-Crazy Diamonds", "VSTi-Jonorange", and "VSTi-chrystal".

The bottom of the screen shows the Xfce taskbar with icons for "presets", "help", "apps", "terminal", "network", "process manager", "synaptic", "system monitor", "terminal", "thunar", "firefox", "bluefish", "vnc", "gimp", "xterm", "qjackctl", "garecord", "cpu", "mem", and "swap".

The set of Apps 1

- Ardour (HD-recorder)
- Rosegarden (sequencer)
- Seq24 (pattern sequencer)
- Rezound, mhw (wave editors)

The set of Apps 2

- Specimen (sampler)
- AMS (modularsynth and FX-host)
- ZynAddSubFX (synth)
- LADSPA and DSSI collections

The set of Apps 3

- Hydrogen(drum-sequencer)
- Jamin (mastering FX)
- creox (more FX)
- Utilities:
 - qjackctl
 - qarecord

Other Applications

- about 30 other audioapps including PD, SND and Csound
- graphics and video
- the usual desktop apps
- complete build-system is installed

Freedom **AND** comfort

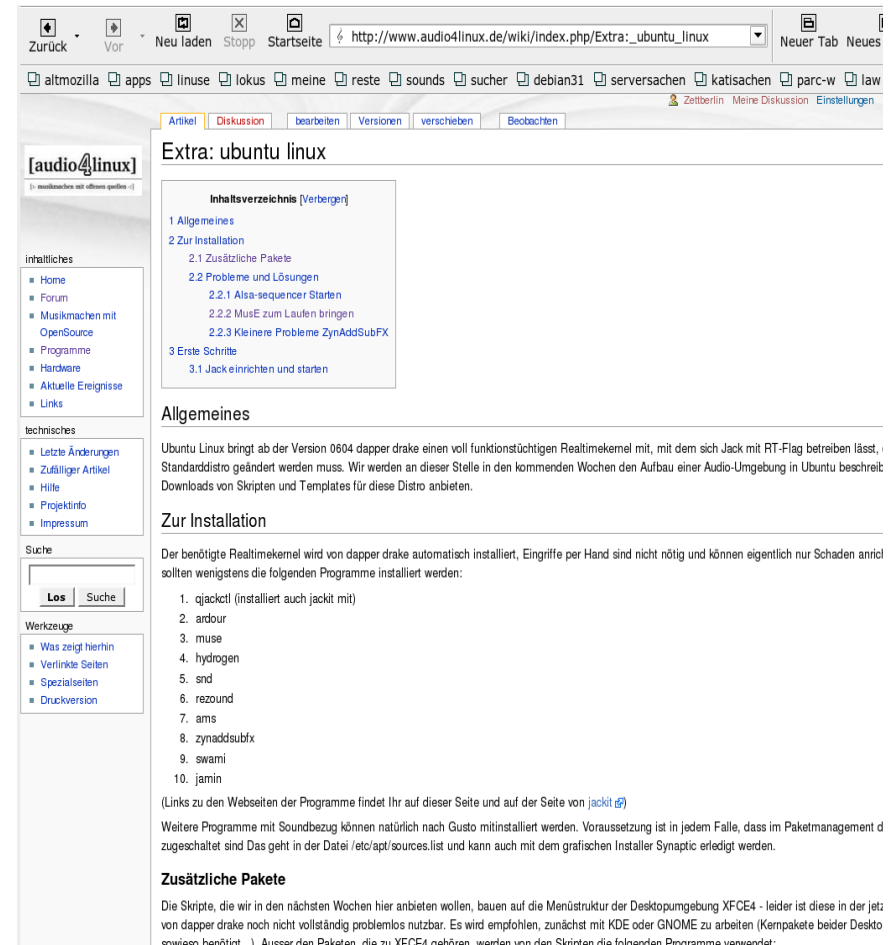
- Unrestricted configurability and extensibility.
- we don't try to make complex things look simple.



- we explain complexity to make obstacles transparent.

What we have no name for... : the LAW-framework

- 1.) Wrapper-scripts and scripts to start complex scenarios.
- 2.) Templates, presets, samples
- 3.) Online help as usefull dialogs and html-pages.
- 4.) Wiki and Forum on the Internet



The screenshot shows a web browser window with the address bar displaying http://www.audio4linux.de/wiki/index.php/Extra:_ubuntu_linux. The page title is "Extra: ubuntu linux". The main content area features a table of contents with sections: "1 Allgemeine Infos", "2 Zur Installation" (with sub-sections "2.1 Zusätzliche Pakete", "2.2 Probleme und Lösungen" (with sub-sections "2.2.1 Alsa-sequencer Starten", "2.2.2 MusE zum Laufen bringen", "2.2.3 Kleinere Probleme ZynAddSubFX"), and "3 Erste Schritte" (with sub-section "3.1 Jack einrichten und starten"). Below the table of contents is a section titled "Allgemeines" which states: "Ubuntu Linux bringt ab der Version 0604 dapper drake einen voll funktionstüchtigen Realtimekernel mit, mit dem sich Jack mit RT-Flag betreiben lässt, Standarddistro geändert werden muss. Wir werden an dieser Stelle in den kommenden Wochen den Aufbau einer Audio-Umgebung in Ubuntu beschreiben. Downloads von Skripten und Templates für diese Distro anbieten." Below this is a section "Zur Installation" which states: "Der benötigte Realtimekernel wird von dapper drake automatisch installiert, Eingriffe per Hand sind nicht nötig und können eigentlich nur Schaden anrichten. Sollten wenigstens die folgenden Programme installiert werden:" followed by a numbered list of 10 packages: 1. qjackctl (installiert auch jackit mit), 2. ardour, 3. muse, 4. hydrogen, 5. snd, 6. rezaound, 7. ams, 8. zynaddsubfx, 9. swami, 10. jamin. Below the list, there is a note: "(Links zu den Webseiten der Programme findet Ihr auf dieser Seite und auf der Seite von [jackit](#))". Further down, it says: "Weitere Programme mit Soundbezug können natürlich nach Gusto mitinstalliert werden. Voraussetzung ist in jedem Falle, dass im Paketmanagement eingeschaltet sind. Das geht in der Datei /etc/apt/sources.list und kann auch mit dem grafischen Installer Synaptic erledigt werden." At the bottom, there is a section "Zusätzliche Pakete" which states: "Die Skripte, die wir in den nächsten Wochen hier anbieten wollen, bauen auf die Menüstruktur der Desktopumgebung XFCE4 - leider ist diese in der jetzt von dapper drake noch nicht vollständig problemlos nutzbar. Es wird empfohlen, zunächst mit KDE oder GNOME zu arbeiten (Kernpakete beider Desktopumgebungen benötigt...). Ausser den Paketen, die zu XFCE4 gehören, werden von den Skripten die folgenden Programme verwendet:"

Zoidberg-Synthax

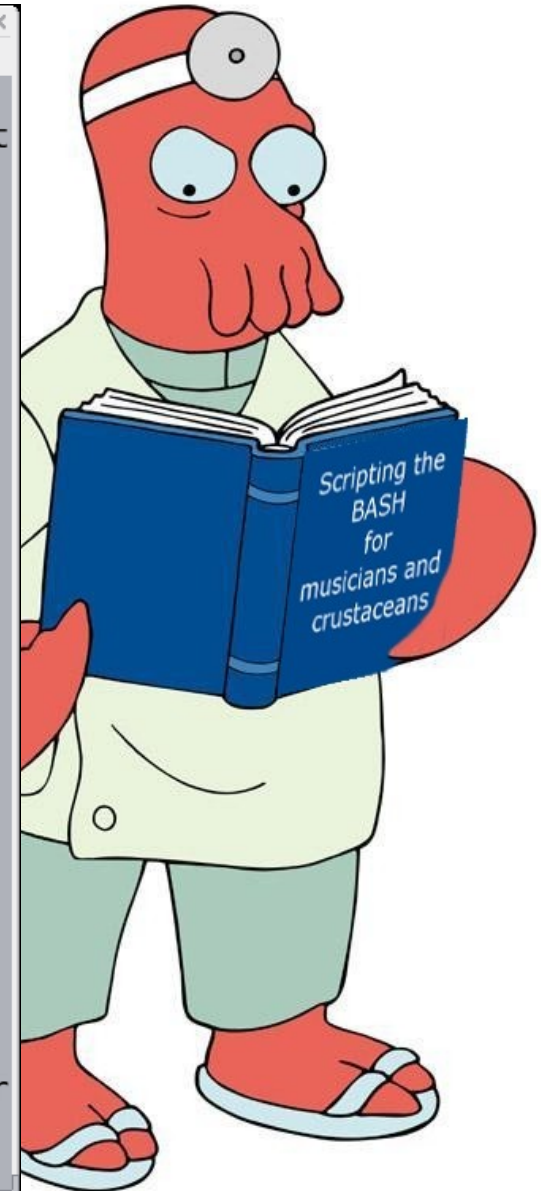
```
zettberlin@zettsusenova:~/bin/law
Datei Bearbeiten Ansicht Terminal Reiter Hilfe
^
#!/bin/bash
#Systemdienste stoppen, die für Audio nicht gebraucht werden, nicht
installierte Dienste sollten auskommentiert werden.
#das Skript muss mit rootrechten laufen und sollte vom Starter an
ein xterm geschickt werden

# webserver und Konsorten anhalten
/etc/init.d/httpd stop ;
/etc/init.d/apache2 stop ;
/etc/init.d/mysql stop ;
/etc/init.d/proftpd stop ;
/etc/init.d/pure-ftpd stop ;
/etc/init.d/sendmail stop ;
/etc/init.d/mailman stop ;
/etc/init.d/named stop ;
/etc/init.d/ypbind stop ;

#Drucker aus
/etc/init.d/cupsrenice stop ;
/etc/init.d/cups stop ;

#und auch der Scanner
/etc/init.d/sane-dev stop ;

#lowlevel Netzwerkfunktionen abstellen
# Vorsicht: in dieser Liste könnten Funktionen stehen, die auch für
den Normalbetrieb benötigt werden (nfs, ntp etc)
-- EINFÜGEN --
```



A word on money:

- As a L.A.W.-PC is sold, 30% of the profit will go to projects, that are important for Linux audio and not funded by a company yet.

Issues:

- Ardour 0.99 - package does not work (Ardour 2 is installed from source).
- Muse does not work properly.
- Ubuntu's lowlatency-kernel is not premium.

virtues:

- IRQ can be set explicitly for 3 PCI-slots.
- On-board sound-chip provides a separate channel for multimedia.
- USB and IDE do not interfere.

What can we do with it.

The screenshot displays a Linux desktop environment with several music production applications open. At the top, a window titled "seq24-0.8.6 /home/zettberlin64/law/bleepfest/seq01.seq24" shows a piano roll interface with tracks for "bas", "drums", "perc1", "riff1", "ans", "algschw1", and "melancholerik". The "riff1" track is selected, showing a waveform and a MIDI piano roll. To the right, a "Specimen" window shows a sample named "finghit01.wav" with a waveform and a MIDI piano roll. Below these, a window titled "AlsaModularSynth1.8.6 - (3) - FM-Bas-delayed5-midiccontrolled.ams" displays a complex modular synthesis patch. The patch includes modules such as "MCV ID 12", "ENV ID 3", "ENV ID 18", "Lin VCA ID 4", "Mixer ID 33", "LADSPA Parametric1 ID 22", "LADSPA fbdelay_1s ID 27", "LADSPA fbdelay_1s ID 28", "LADSPA Mvclpf-3 ID 20", "VCO ID 24", "VCO ID 15", and "LADSPA sc4 ID 29". The patch is interconnected with various signal processing and synthesis modules. The desktop environment includes a taskbar at the bottom with icons for "presets", "help", "apps", and system status indicators for "cpu", "mem", and "swap".

What can we do with it.

The screenshot displays the Ardour audio software interface. The top bar shows the project name "Ardour: Editor: 24track-basis" and various system metrics like CPU usage (34,6%) and buffer status. The main workspace is divided into several sections:

- Transport and Playback:** Includes a play button, a timecode display showing "00:00:05:21", and a "Time Master" section with "Punch In" and "Punch Out" buttons.
- Project Settings:** Shows "Takte: Schläge 1", "Taktart 4/4", and "Tempo 120,00".
- Waveform Editor:** Displays multiple audio tracks with waveforms. A red vertical line indicates the current playback position.
- Mixer (Ardour: Mixer: 24track-basis):** A multi-channel mixer with faders, knobs, and buttons for each track. The tracks are labeled "Audio 1 ST" through "Audio 6". The mixer also shows "Mute" and "Solo" buttons for each track.
- Plugin Window:** A window titled "ardour: Bus 4: DJ flanger (by Steve Harris)" is open, showing various parameters for the flanger effect, such as "LFO sync", "LFO period (s)", "LFO depth (ms)", and "Feedback (%)".

The bottom of the screen shows a Linux desktop environment with various application icons and system status indicators like "cpu", "mem", and "swap".

Next:

- Testing the machine in realworld-scenarios.
- Prove, that it can be used for professional tasks.

See the L.A.W. perform at the bleepfest - 01 of april - cbase

- Build more machines like that.

Linux Audio is just IT



FREEDOM

ART

METHODS

TOOLS