

What's next for Bluetooth in PulseAudio?

Sanchayan Maity

asymptotic.io

What is PulseAudio?

- Initial release on 17 July 2004
- First appeared for users in Fedora Linux with version 8
- Features?
 - Audio mixing
 - Per application volume controls
 - Multiple sources and sinks
 - Combine multiple sound cards and synchronize multiple playback streams
 - Bluetooth support
 - Command line interface with scripting capabilities
 - Sound daemon with reconfiguration capabilities

Bluetooth Profiles

- What is a profile?
- Some of the widely used bluetooth profiles
 - Advanced Audio Distribution Profile (A2DP)
 - Audio/Video Remote Control Profile (AVRCP)
 - Hands-Free Profile (HFP)
 - Headset Profile (HSP)

Bluetooth Codecs

- Available codecs?
 - Low-complexity subband codec (SBC)
 - Audio Processing Technology (aptX, aptX-HD)
 - Advanced Audio Coding (AAC)
 - LDAC

So which is better?

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)



Current State

- Upstream only supports SBC :(
- HSP/HFP support
- Out of tree community effort with pulseaudio-modules-bt

Challenges

- Codec switching
- Patent encumbered licenses?
- How to support multiple encoders or decoders?
- Contributors? Maintainers?

GStreamer

- What is GStreamer?
- Why?

Example Pipeline

```
gst-launch-1.0 -v audiotestsrc !  
audio/x-raw,rate=44100,channels=2,format=S32LE !  
ldacenc eqmid=2 ! a2dpsink  
transport=/org/bluez/hci0/dev_4C_BC_98_80_01_9B/sep10/fd0
```



Progress so far

- LDAC support upstreamed in GStreamer
- Support for Low-Overhead MPEG-4 Audio Transport Multiplex (LATM) AAC in GStreamer
- GStreamer wrapper around *libopenaptx*. Work done by Igor Kovalenko.
- Implementing codec switching
- Proof of concept with GStreamer tested
- Merge request opened in PulseAudio

Questions?

Thank You!