

What's next for Bluetooth in PulseAudio?

Sanchayan Maity

What is PulseAudio?

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- ▶ Network capable sound server program

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- ▶ Initial release on 17 July 2004

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- ▶ Network capable sound server program
- ▶ Initial release on 17 July 2004
- ▶ First appeared for users in Fedora Linux with version 8

Bluetooth Profiles

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- ▶ What is a profile?

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 - ▶ Audio/Video Remote Control Profile (AVRCP)
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 - ▶ Headset Profile (HSP)

Bluetooth Codecs

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- ▶ Available codecs?

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 - ▶ LDAC
- ▶ So which is better?

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- ▶ In progress work by Pali Rohár

Challenges

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- ▶ Profile and codec switching
- ▶ Patent encumbered licenses?
- ▶ How to support multiple encoders or decoders?

- ▶ What is GStreamer?

- ▶ What is GStreamer?
- ▶ Why?

Example Pipeline

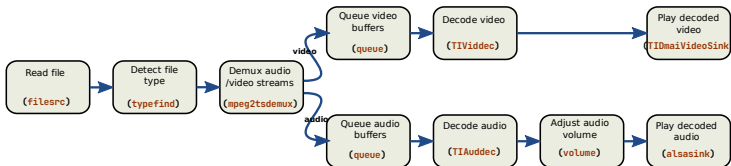
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Example GStreamer Pipeline

The goals of GStreamer are to separate the application (e.g. Video player, Video editor, etc.) from the streaming media complexity (e.g. hardware acceleration, remoteness)
GStreamer - streaming media
D-Bus - inter process communication
Use **gst-launch** command to create the GStreamer pipeline

```
gst-rtsp-server - v4l2src ! video/x-raw,width=1280,height=720 ! omxh264enc ! video/x-h264,profile=baseline ! h264parse config-interval=1 ! rtph264pay name=pay0 pt=96
```



```
gst-launch filesrc location="video.ts" ! typefind ! mpeg2tsdemux name=demux \  
demux. ! 'video/x-h264' ! queue ! TIIViddec ! TIDmaivideosink \  
demux. ! 'audio/mpeg' ! queue ! TIAuddec ! volume volume=5 ! alsasink
```

Figure 1: GStreamer Pipeline

Progress so far

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- ▶ LDAC support upstreamed in GStreamer

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- ▶ LDAC support upstreamed in GStreamer
- ▶ Support for Low-Overhead MPEG-4 Audio Transport Multiplex (LATM) AAC in GStreamer

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- ▶ GStreamer wrapper around Pali Rohár's *libopenaptx*

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- ▶ GStreamer wrapper around Pali Rohár's *libopenaptx*
- ▶ Implementing profile and codec switching
- ▶ Proof of concept with GStreamer tested

Conclusion

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What's next?