Bluetooth state in PipeWire and WirePlumber

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FOSDEM’23
PipeWire and WirePlumber
Bluetooth Audio profiles

- Bluetooth Classic (BR/EDR)
  - Advanced Audio Distribution Profile (A2DP)
  - HandsFree Profile (HFP)
  - Legacy HeadSet Profile (HSP)
- Bluetooth Low Energy
  - LE Audio
Bluetooth Classic Audio Profiles
# Stereo audio: A2DP

<table>
<thead>
<tr>
<th>Codec</th>
<th>Mandatory</th>
<th>Proprietary</th>
<th>Library Licence</th>
<th>Bi-directional</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC (XQ)</td>
<td>✓</td>
<td></td>
<td>GPL2</td>
<td></td>
</tr>
<tr>
<td>AAC</td>
<td></td>
<td></td>
<td>Fraunhofer</td>
<td></td>
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<tr>
<td>AptX (HD)</td>
<td>✓</td>
<td></td>
<td>GPL2</td>
<td></td>
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<tr>
<td>LDAC</td>
<td>✓</td>
<td></td>
<td>Apache 2</td>
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<tr>
<td>Opus</td>
<td></td>
<td></td>
<td>BSD</td>
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</tr>
<tr>
<td>LC3 Plus</td>
<td>✓</td>
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<td>Fraunhofer</td>
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<tr>
<td>FastStream</td>
<td></td>
<td></td>
<td>GPL2</td>
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<tr>
<td>AptX LL</td>
<td>✓</td>
<td></td>
<td>GPL2</td>
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</tbody>
</table>
Mono audio and telephony: HFP and legacy HSP

Both profiles define both the (e)SCO audio streams and the interactions with the modem through a defined set of AT commands.

- Backends
  - oFono
  - hsphfpd
  - native

![Diagram showing the relationship between components](image-url)
Mono audio and telephony: HFP
and legacy HSP

Both profiles define both the (e)SCO audio streams and the interactions with the modem through a defined set of AT commands

- Backends
  - oFono
  - hsphfpd
  - native
- Optional support of ModemManager
Mono audio and telephony: HFP and legacy HSP

- Codecs
  - Mandatory
    - CVSD
  - Optional
    - mSBC
Mono audio and telephony: HFP and legacy HSP

- **Codecs**
  - Mandatory
    - CVSD
  - Optional
    - mSBC
  - Hardware SCO offload support
LE Audio
LE Audio

New set of profiles to unify stereo and mono audio

- Better sound quality with new Isochronous channel and LC3 codec
- Able to support bidirectional audio
- Multi-stream support
- Hearing aids support
- New Auracast™ mode to broadcast audio
LE Audio

- Re-use and expand the BlueZ Dbus Media API
- Still experimental in both BlueZ and PipeWire
- Broadcast supported at Kernel level but needs work in BlueZ, PipeWire and the UX
Thank you!

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