

Media Controller Connectors

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Background

- We need a way to represent the signal inputs and outputs to the hardware
- Two ways:
 - Physical connectors
 - Logical connections
- Using physical connectors is hard, because:
 - The Kernel may have no idea about how the inputs/outputs are physically wired;
 - Sometimes, the same board may be physically wired on different ways;
 - On some devices, it is possible to use different physical connectors by either switch the piggy back cable or by switching a switcher;
- The logical connection is always visible to Kernelspace, and it is the approach the current V4L2 API handles. So, it is proofed to work.

Current types of connections

- Right now, V4L2 drivers have 3 types of connections
 - RF connections.
 - one physical connector corresponds to one logical connection;
 - Composite TV (typically, RCA connectors)
 - Typically, one composite TV logical connection corresponds to one physical connector (after piggy back cables);
 - Exception: SCART connectors (that may also have S-Video connections on it).
 - S-Video (typically, 4-pin miniDIN with 2 analog signals on it)
 - Typically, one pair of analog TV signals correspond to one physical connector.
 - It is usually not possible to route Y-signal and C-signal to different entities.
- On ALSA side (as found on TV devices):
 - Stereo inputs may be either one 3,5mm stereo TRS plug or two RCA connectors;
 - Drivers handle it as one 2-channel connection. It is usually not possible to route each audio signal independently to different entities.

NXP SAA7134HL diagram

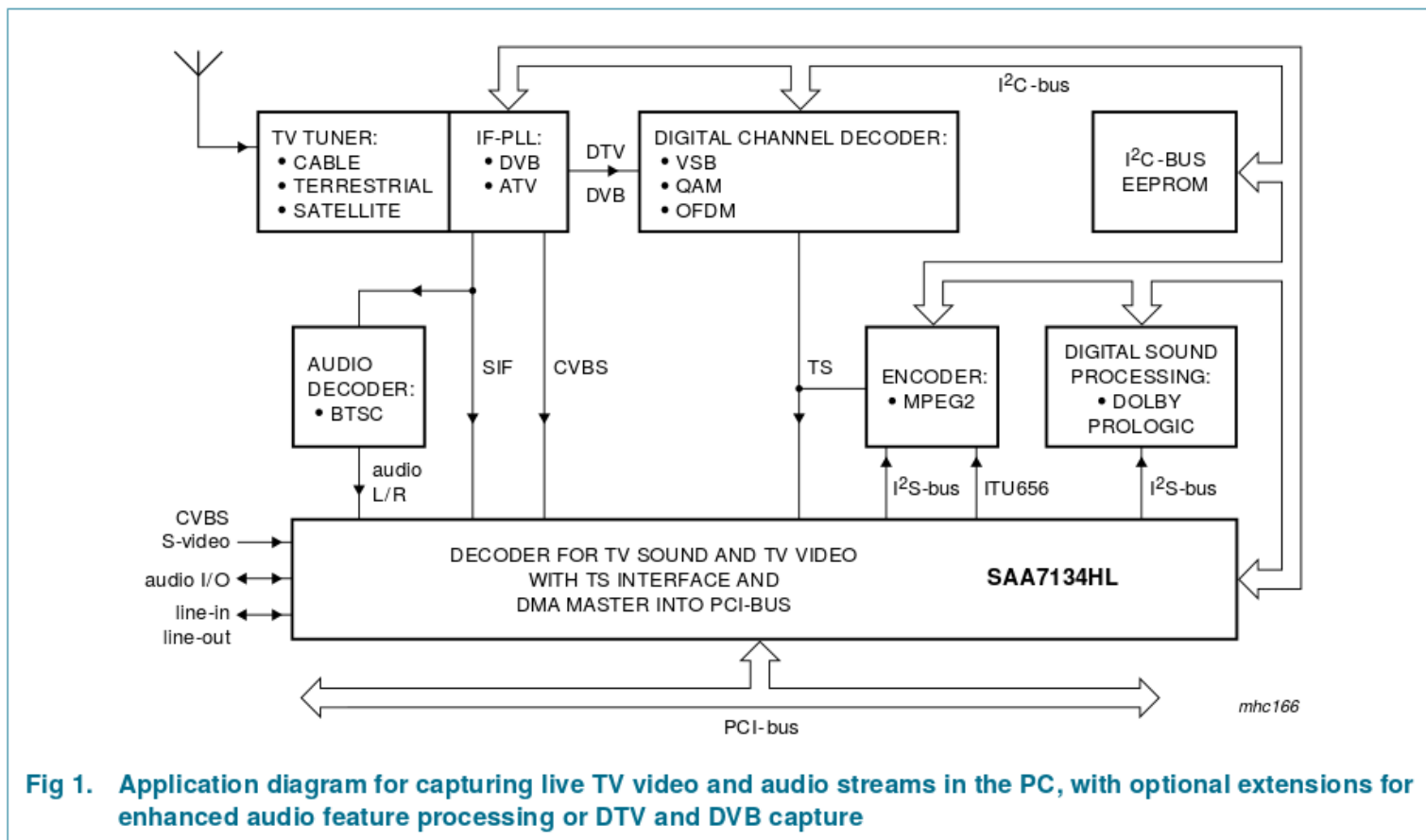
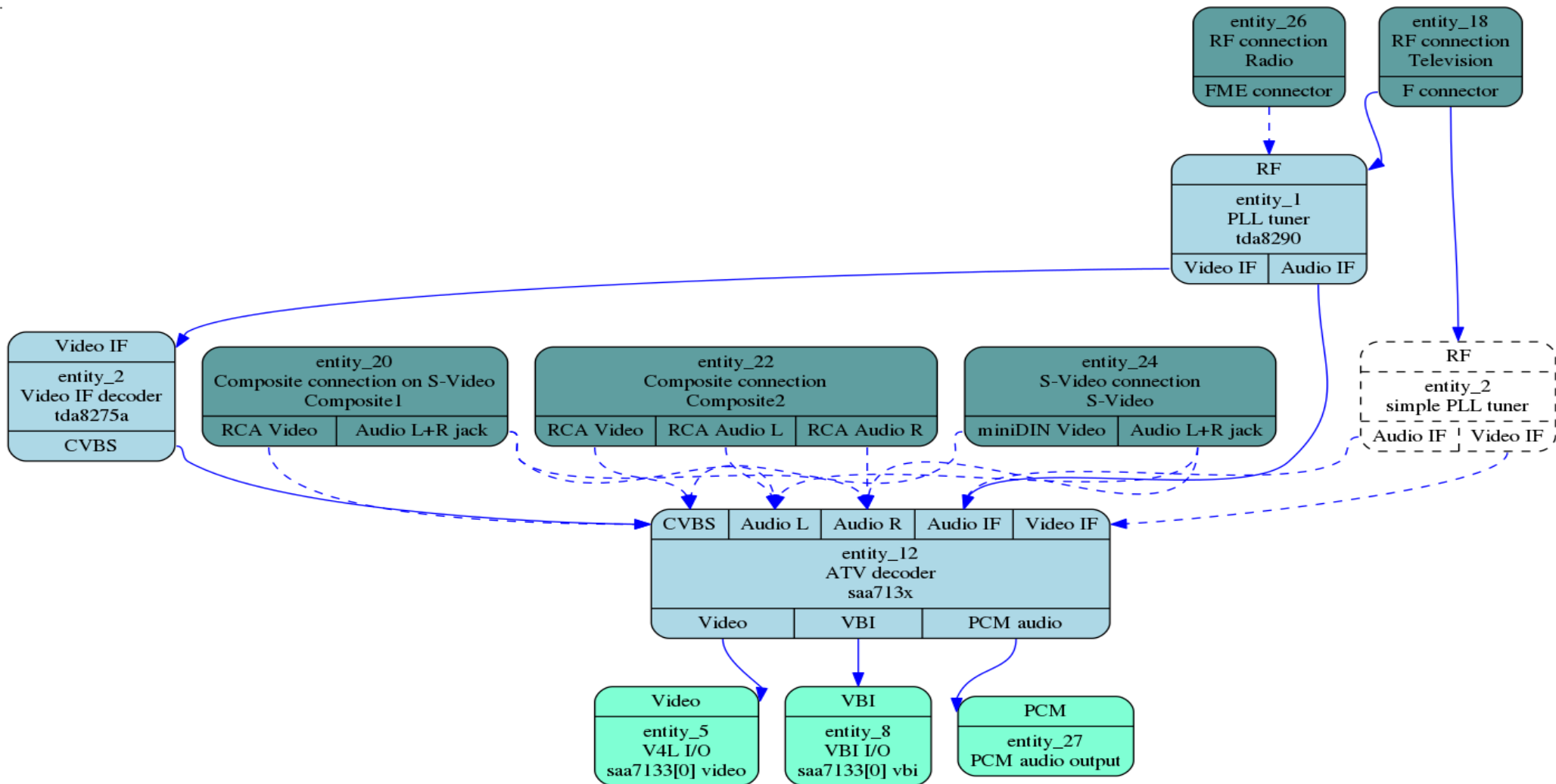


Fig 1. Application diagram for capturing live TV video and audio streams in the PC, with optional extensions for enhanced audio feature processing or DTV and DVB capture

Source: http://www.nxp.com/documents/data_sheet/SAA7134HL.pdf

NXP saa7134hl usecases



Proposal

- We should map one logical connection as one “connection” entity;
- Whenever multiple signals should be routed together, we'll map one signal set as just one PAD;
- On connections like DVI and HDMI, where multiple signal sets are mapped, with independent routes, we'll have multiple PADs (one for each signal set that needs an independent routing logic):
 - Analog signals (DVI-A);
 - Digital signals, e. g. DVI-D or TMDS;
 - CEC;
 - ARC (Audio Return Channel);
 - HEC (HDMI Ethernet Channel);
 - EDID/DDC? Likely not needed.
- Correspondence with physical connectors will be done via properties API