Infrared remote control support in video4linux drivers

Authors: Gerd Hoffmann, Mauro Carvalho Chehab

Basics

Most analog and digital TV boards support remote controllers. Several of them have a microprocessor that receives the IR carriers, convert into pulse/space sequences and then to scan codes, returning such codes to userspace ("scancode mode"). Other boards return just the pulse/space sequences ("raw mode").

The support for remote controller in scancode mode is provided by the standard Linux input layer. The support for raw mode is provided via LIRC.

In order to check the support and test it, it is suggested to download the v4l-utils. It provides two tools to handle remote controllers:

- ir-keytable: provides a way to query the remote controller, list the protocols it supports, enable in-kernel support for IR decoder or switch the protocol and to test the reception of scan codes;
- ir-ctl: provide tools to handle remote controllers that support raw mode via LIRC interface.

Usually, the remote controller module is auto-loaded when the TV card is detected. However, for a few devices, you need to manually load the ir-kbd-i2c module.

How it works

The modules register the remote as keyboard within the linux input layer, i.e. you'll see the keys of the remote as normal key strokes (if CONFIG_INPUT_KEYBOARD is enabled).

Using the event devices (CONFIG_INPUT_EVDEV) it is possible for applications to access the remote via /dev/input/event<n> devices. The udev/systemd will automatically create the devices. If you install the v4l-utils, it may also automatically load a different keytable than the default one. Please see v4l-utils ir-keytable.1 man page for details.

The ir-keytable tool is nice for trouble shooting, i.e. to check whenever the input device is really present, which of the devices it is, check whenever pressing keys on the remote actually generates events and the like. You can also use any other input utility that changes the keymaps, like the input kbd utility.

Using with lircd

The latest versions of the lircd daemon supports reading events from the linux input layer (via event device). It also supports receiving IR codes in lirc mode.

Using without lircd

Xorg recognizes several IR keycodes that have its numerical value lower than 247. With the advent of Wayland, the input driver got updated too, and should now accept all keycodes. Yet, you may want to just reassign the keycodes to something that your favorite media application likes.

This can be done by setting v4l-utils to load your own keytable in runtime. Please read ir-keytable.1 man page for details.