

WMLUG February 2007 Meeting Topics

How to use the LinEAK utility to enable multimedia keyboard keys

LinEAK (Linux support for Easy Access Keyboards) is a utility that lets Linux use the extra keys on Internet and multimedia keyboards. On-screen display (OSD) feedback can also be enabled with the `xosd` package. The project is located at <http://lineak.sourceforge.net/>.

Install the following:

```
lineakd
lineak_defaultplugin
lineak_xosdplugin
lineak_kdeplugins
xosd
```

My keyboard is a Logitech Elite. It has buttons for media control, volume, scrolling, email, web, and some others - 19 in all - but none of which did anything under a default install of openSUSE.

The set up process is fairly easy:

1. List the available keyboard definitions
2. Pick a definition from the list that matches your keyboard
3. Configure `lineakd` with that definition
4. Modify the configuration to define the extra keys' actions

To see what keyboard definitions are available, run:

```
lineakd -l
```

Peruse the list and find the one that is the closest to your keyboard. I chose the `LTCElite` keyboard definition. Next, run the following command to create a configuration file substituting your own keyboard definition:

```
lineakd -c LTCElite
```

This creates the `~/lineak/lineakd.conf` file. It overwrites any existing file so if you have customized yours, make a backup first!

Now edit the `~/lineak/lineakd.conf` file and add the actions you want the keys to do. See the documentation for what KDE plug-ins are available.

Here is my `~/lineak/lineakd.conf` file with the modifications I made highlighted:

```
# LinEAK - Linux support for Easy Access and Internet Keyboards
# Copyright (c) 2001,2002, 2003 Sheldon Lee Wen <leewsb@hotmail.com> (Current Maintainer)
#   and Mark Smulders <Mark@PIRnet.nl>
#   http://lineak.sourceforge.net
#
# lineakd configuration file
#
# example key configuration:
#   play   = "xmms --play-pause"
#   eject  = EAK_EJECT
#
# Lineakd supports the following modifier keys:
#   control alt shift mod2 mod3 mod4 mod5
```

```

CdromDevice = /dev/cdrom
Display_align = center
Display_color = 0aff00
Display_font = -adobe-helvetica-bold-r-normal-*-*240-*-*p-*-*
Display_hoffset = 0
Display_plugin = xosd
Display_pos = bottom
Display_soffset = 1
Display_timeout = 3
Display_voffset = 50
KeyboardType = LTCElite
MixerDevice = /dev/mixer
RAWCommands =
Screensaver =
conffilename = /home/ptenhoopen/.lineak/lineakd.conf
keystate_capslock =
keystate_numlock =
keystate_scrolllock =

Arrow =
Email = "thunderbird"
Favorites = "firefox"
Go =
Media = "amarok"
Messenger =
Mute = "KMIX_MUTE"
MyHome = "KONQUEROR_HOME"
Next = "AMAROK_FORWARD"
Play|Pause = "AMAROK_PLAYPAUSE"
Previous = "AMAROK_BACK"
Search = "kfind %f"
Shopping =
Sleep = "KDE_LOCK_DESKTOP"
Stop = "AMAROK_STOP"
VolumeDown = "KMIX_VOLDOWN"
VolumeUp = "KMIX_VOLUP"
Webcam =
iTouch =

```

You can start the lineak daemon from the command line with:

```
lineakd &
```

You can reload the configuration after making changes with:

```
lineakd -r
```

You can stop the daemon with:

```
lineakd -x
```

Extra

If your keyboard isn't listed, or is missing some key definitions, you can use the `xev` program to see what keycodes are sent when certain keys are pressed. These keycodes can then be used to modify the `lineakkb.def` file to include any missing key definitions. Please see the documentation page for much more detail.

How to set up your multi-button mouse to work in X

If you have a mouse with more than 2 buttons and a scroll wheel, you can get Linux to utilize the extra buttons (well most of them) by modifying your X setup.

For this how-to, I will configure X to work with a Logitech MX-518 mouse that has 8 buttons. It has the two standard buttons, a scroll wheel acting as the middle button, two thumb buttons, as well as 3 other buttons for sensitivity and switching between applications.

The `xorg.conf` file (symlinked to `XF86Config`) file in `/etc/X11/` is the one that must be modified. In openSUSE, it is automatically generated during installation as well as by running the configuration utility, `sax2`. Please be aware that if you run that configuration utility, your changes will most likely be lost. The file contains text warning you about editing it. As usual, make a backup copy first before editing it.

Here is the section that defines the mouse:

```
Section "InputDevice"
  Driver      "mouse"
  Identifier  "Mouse[1]"
  Option      "Buttons" "10"
  Option      "Device"  "/dev/input/mice"
  Option      "Name"    "Logitech USB-PS/2 Optical Mouse"
  Option      "Protocol" "explorerps/2"
  Option      "Vendor"  "Sysp"
  Option      "ZAxisMapping" "4 5"
EndSection
```

The portions we are interested in are the `"Buttons"` and `"ZAxisMapping"` lines. openSUSE correctly identified that the mouse has 10 buttons. Although it really only has 8 buttons, in order for the scroll wheel to work with X, the actions need to be assigned to two buttons: one for up and one for down. That is what the `ZAxisMapping` line does. It assigns `"buttons"` 4 and 5 for this purpose. As it stands, those buttons have to be used for the scroll wheel to work in X applications which makes problems for mice with more than 5 buttons.

In order to have X see the other buttons, I have to change the `ZAxisMapping` line. You may also have to increase the number of buttons in the `"Buttons"` line. Here is the updated version:

```
Section "InputDevice"
  Driver      "mouse"
  Identifier  "Mouse[1]"
  Option      "Buttons" "10"
  Option      "Device"  "/dev/input/mice"
  Option      "Name"    "Logitech USB-PS/2 Optical Mouse"
  Option      "Protocol" "explorerps/2"
  Option      "Vendor"  "Sysp"
  Option      "ZAxisMapping" "9 10"
EndSection
```

By making that change, the last two button definitions are used for scrolling. However, this change breaks scrolling since applications expect buttons 4 and 5. To fix that, we have to map the buttons in a different order by creating or modifying the `.xmodmap` file in your home directory to include:

```
pointer = 1 2 3 6 7 8 9 10 4 5
```

This results in the following button mappings for this mouse, where 'P' is the physical button and 'X' is the button mapping in X:

P	X	Function
1	1	Left
2	2	Middle
3	3	Right
4	6	Thumb back

5	7	Thumb forward
6	8	Sensitivity increase (not reported by xev)
7	9	Sensitivity decrease (not reported by xev)
8	10	Application switcher (reported by xev as Left)
9	4	Scroll up
10	5	Scroll down

Notice that the physical buttons 9 and 10 have been mapped to 4 and 5. This ties in with the `ZAxisMapping` line and makes the scroll wheel work. Now the thumb buttons should work too. In Firefox, they work as page back and page forward. However, I had trouble on another computer getting this to work.

For troubleshooting, you can use the `xev` program to see what mouse buttons are reported as being pressed. To get the other buttons to work or change their behavior, an application such as `xbindkeys` can be used to define what the button does. However, for this mouse, the sensitivity buttons aren't reported back to X perhaps because they change the mouse's sensitivity on the fly and may be internally hard-wired for this purpose only.

“If I have seen further [than certain other men] it is by standing upon the shoulders of giants.”

- Isaac Newton (1642-1727), British physicist, mathematician, universal genius. Letter to Robert Hooke, February 5, 1675

Disclaimer: The above material, although my own composition, was extracted by me from various Google search results - not all of them useful. I am not a genius and don't claim to know everything. To quote Socrates, “As for me, all I know is that I know nothing.”

- Pat TenHooen, January 24, 2007