Replacing xorg input-Drivers with libinput

Presented by
Hans de Goede
Senior Software Engineer, Red Hat

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Todays Topics

- What is libinput
- Why use libinput for Xorg
- Changes required to xf86-input-libinput
- Changes required to Desktop Environments
- Desktop Environment example: GNOME
- Future plans

What is libinput

What is libinput

- Library for unified/shared input handling code for wayland display servers/compositors
- But also a chance to rectify some historical mistakes in the xorg input stack
- Usable under xorg through the xf86-input-libinput wrapper, which was initially created for easy libinput testing
- The ABI is (hopefully) stable with the recent 0.8 release

Why use libinput for Xorg ?

Why use libinput for xorg ?

- All current userspace input development work is being done on libinput
- Xf86-input-libinput is already better in several ways and only getting better:
- Old synaptics driver designed for single-touch touchpads, does not work well with multi-touch
- libinput's touchpad handling is designed for multi-touch, and already is much better than Synaptics

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Why use libinput for xorg ?

- Old drivers live isolated from each other, no possibility for events on one device to influence event handling on another device
- Xf86-input-libinput uses a single libinput context for all devices
- For example the old drivers cannot do middle button trackpoint scrolling on Lenovo x240/t440 as the middle button is emulated by the top softbutton area on the touchpad there, with libinput this just works

Changes required to xf86-input-libinput

Xf86-input-libinput changes

- Basic functionality all there since day 1
- Needs configuration support to be a full replacement for the old drivers
- Configuration support added with the 0.4 release done December 5th 2014

Changes required to Desktop Environments

Intermezzo: Crazy stuff

- For input configuration the old stack has some pretty crazy stuff going on, e.g. :
- Left handed mouse buttons are done by swapping button events for **ALL** devices at the server level
- This turns a single finger tap on a touchpad into a right mouse button click
- “Solution”: when applying left handed setting reconfigure the synaptics driver to send right click for a single finger tap, and left click for a two finger tap

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Desktop Environments

- Old driver input settings are crazy, making xf86-input-libinput a drop-in replacement is not desirable
- xf86-input-libinput has a new, clean config interface using xinput device properties
- Desktop environments will need to adjust their mouse/touchpad configuration screens

Desktop Environments

- We advise mouse/touchpad configuration screens to detect if the old or new stack is used
- For the new stack do not use any of the core X config interfaces like XSetPointerMapping()
- Instead use the new device properties for all configuration, including pointer acceleration

Xinput device properties demo

Pointer Acceleration

Pointer Acceleration

- xf86-input-libinput does not honor the global server pointer acceleration
- Instead it has a per device “libinput Accel Speed” property, allowing per device configuration
- All motion events are normalized to 1000dpi, the udev hwdb is used to get the actual device dpi
- This way all devices behave the same at the same accel setting, provided that the hwdb entries are correct

Desktop Environment Example: Gnome

Libinput and Gnome

- The upcoming gnome-3.16 release will be fully libinput ready
- Mutter reads libinput based input config settings from gsettings and applies them through an abstracted backend
- The X-backend uses the device properties and the wayland backend calls directly into libinput
- Gnome-control-center needs to know which settings are available to show the correct options in the UI, a libinput udev helper is used to set LIBINPUT_... properties on devices, and the control-center uses these
- The plan is to make the libinput udev helper part of libinput upstream so that other desktop environments can use it too

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Future

Future

- Xf86-input-libinput will be the default input driver for the upcoming Fedora 22 release: https://fedoraproject.org/wiki/Changes/LibinputForXorg
- Xorg server 1.18 will ship with the modesetting video driver integrated into the server for basic video functionality
- For Xorg server 1.20 we want to integrate the libinput input driver into the server
- Advice to all Linux distros and Desktop Environments is to get ready to switch

http://freedesktop.org/wiki/Software/libinput

Contact:

hdegoede@redhat.com