

Salem Radio Labs

APPLICATION NOTE 002

Configuring ELO Touchscreens on SuSE 9.x/10.x

SCOPE

This application note details the procedures for configuring ELO 'Intellitouch' touch monitors on SuSE. Both serial (2500S series) and USB (2500U series) models are covered.

PREREQUISITES

The following packages will be needed:

EloCal

Calibration and troubleshooting utilities for ELO touch monitors. Available at:

<http://ftp.salemradiolabs.com/pub/srlabs/elocal/>

EloInput Driver for Xfree86

This is needed only if one or more USB-based touchscreens are to be configured. Available at:

<http://ftp.salemradiolabs.com/pub/srlabs/eloinput/>

PROCEDURE

Hardware Connections

Ensure that the touchscreens to be configured are properly connected to the system.

Install the EloCal Package

Open up a root shell, cd to the directory containing the downloaded RPM, and do the following:

```
rpm -i elocal-0.6.0-1.i586.rpm
```

Install the EloInput Driver (OPTIONAL)

This step is required only if one or more USB-based touch screens are to be configured.

Open up a root shell and enter the following:

```
cd /usr/X11/lib/modules/input
cp <path-to-elo-driver>/eloinput_drv.o .
```

where <path-to-elo-driver> is the path to the directory where you downloaded the EloInput driver.

Calibration

NOTE: If you already have one or more touchscreens enabled in your XF86Config(5) file, you will need to disable them (by commenting out their entries in the `ServerLayout` section of the `/etc/XF86Config` file) before running the EloCal calibration utility. Failure to do this will result in inaccurate calibration data. (NOTE: starting in SuSE 9.3, the `/etc/XF86Config` file has been renamed to `/etc/xorg.conf`. The format of the entries in the file is unchanged, however.)

Calibrate each monitor in turn by entering the following from a root prompt:

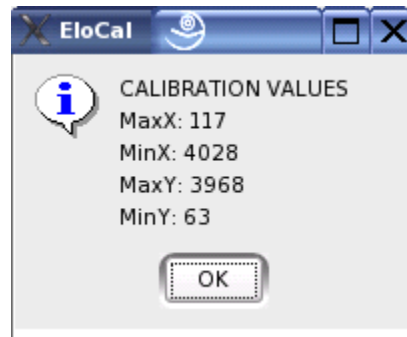
```
elocal <device>
```

where <device> is the device file name referencing the touch monitor connection. For serial touch monitors, this will be a TTY device, such as '/dev/ttyS1'. For USB monitors, this will be one of the input devices, such as '/dev/input/event0'. A test to help identify the correct device name is to do the following:

```
cat <device>
```

and then touch the screen a few times. If <device> is the correct device name, you will see random characters scroll across the screen.

Once the calibration program has been started, it will ask you to touch a series of red 'targets', after which it will display calibration data in a dialog box similar to this:



Note down these values for later use.

Modifying the XF86Config File

Open a root shell and enter the following to make a backup copy of the XF86Config file:

```
cd /etc/X11
cp XF86Config XF86Config.backup
```

Next, use a text editor (such as emacs(1)) to open up '/etc/XF86Config'. We need to create an InputSection to correspond to each touch monitor we wish to configure. For a serial touch monitor, create an entry like this:

```
Section "InputDevice"
    Driver      "elographics"
    Identifier  "Touchscreen[ <screen-num> ]"
    Option     "screenno" " <screen-num> "
    Option     "ButtonNumber" "1"
    Option     "ButtonThreshold" "17"
    Option     "Device" " <device> "
    Option     "InputFashion" "Touchpanel"
    Option     "MaxX" " <max-X> "
    Option     "MinX" " <min-X> "
    Option     "MaxY" " <max-Y> "
    Option     "MinY" " <min-Y> "
    Option     "Name" "ELO 2500S Touchscreen"
    Option     "ReportingMode" "Scaled"
```

```
Option      "SendCoreEvents" "on"
EndSection
```

where *<max-X>*, *<min-X>*, *<max-Y>* and *<min-Y>* correspond the calibration values you received from the EloCal program, *<screen-num>* is the number of the monitor screen, starting from '0', and *<device>* is the device name of the touchscreen that you used with the EloCal program.

For a USB-based touchscreen, the entry is almost identical:

```
Section "InputDevice"
Driver      "eloinput"
Identifier  "Touchscreen[0]"
Option      "screenno" "<screen-num>"
Option      "ButtonNumber" "1"
Option      "ButtonThreshold" "17"
Option      "Device" "<device>"
Option      "InputFashion" "Touchpanel"
Option      "MaxX" "<max-X>"
Option      "MinX" "<max-Y>"
Option      "MaxY" "3967"
Option      "MinY" "75"
Option      "Name" "ELO 2500U Touchscreen"
Option      "ReportingMode" "Scaled"
Option      "SendCoreEvents" "on"
EndSection
```

The primary difference between the two is the 'Driver' entry. Serial touchscreens should use the `elographics` driver, while USB touchscreens use the `eloinput` driver. The meaning of all of the other entries is the same.

Once the `InputDevice` section are written, you need to place a reference them into your `ServerLayout` section. One entry for each section, as follows:

```
InputDevice "<identifier-name>" "SendCoreEvents"
where <identifier-name> is the name you used in the Identifier entry of the referenced
InputDevice section.
```

The HID Bug Workaround

Certain versions of the 2.6.x Linux kernel contain a bug in the USB HID driver that cause corrupt X-Y coordinate data to be passed to Xfree86. A symptom of this condition will be that the mouse cursor does not properly track a touch, even after calibration data has been entered. To correct this, add the following to the `InputDevice` section in the `/etc/X11/XF86Config` file:

```
Option      "HidWorkaround" "on"
```

Note that this bug affects *only* USB-type touchscreens – COM port units are not affected by it.

An Example

Here's a real-world example. This is for a 'double-headed' setup, with the left-hand monitor being a USB type and the right-hand one using a serial connection. First, the two `InputDevice` sections:

```

Section "InputDevice"
    Driver      "eloinput"
    Identifier  "Touchscreen[0]"
    Option      "screenno" "0"
    Option      "ButtonNumber" "1"
    Option      "ButtonThreshold" "17"
    Option      "Device" "/dev/input/event3"
    Option      "InputFashion" "Touchpanel"
    Option      "MaxX" "22"
    Option      "MinX" "4025"
    Option      "MaxY" "3967"
    Option      "MinY" "75"
    Option      "Name" "ELO 2500U Touchscreen"
    Option      "ReportingMode" "Scaled"
    Option      "SendCoreEvents" "on"
    Option      "DebugLevel" "2"
EndSection

```

```

Section "InputDevice"
    Driver      "elographics"
    Identifier  "Touchscreen[1]"
    Option      "screenno" "1"
    Option      "ButtonNumber" "1"
    Option      "ButtonThreshold" "17"
    Option      "Device" "/dev/ttyS1"
    Option      "InputFashion" "Touchpanel"
    Option      "MaxX" "10"
    Option      "MinX" "4095"
    Option      "MaxY" "206"
    Option      "MinY" "4115"
    Option      "Name" "ELO 2500S Touchscreen"
    Option      "ReportingMode" "Scaled"
    Option      "SendCoreEvents" "on"
EndSection

```

And then, the ServerLayout section:

```

Section "ServerLayout"
    Identifier  "Layout[all]"
    InputDevice "Keyboard[0]" "CoreKeyboard"
    InputDevice "Mouse[1]" "CorePointer"
    InputDevice "Touchscreen[0]" "SendCoreEvents"
    InputDevice "Touchscreen[1]" "SendCoreEvents"
    Option      "Clone" "off"
    Option      "Xinerama" "off"
    Screen      "Screen[0]"
    Screen      "Screen[1]" RightOf "Screen[0]"
EndSection

```

Fire It Up

Now, you should be all set to start using your touchscreens. Restart the X server by logging out of the current session and then logging back in again.

REVISION HISTORY

Mon 14 Mar 2005 – Fred Gleason <fredg@salemradiolabs.com>

- Added 'HID Bug Workaround' section.

Mon 25 Oct 2004 – Fred Gleason <fredg@salemradiolabs.com>

- Initial document creation.

Wed 18 Jan 2006 – Fred Gleason <fredg@salemradiolabs.com>

- Removed reference to '-W' option for elocal(1).
- Added note on name change of /etc/XF86Config to /etc/xorg.conf.