

# Linux Dokunmatik Ekran NASIL

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## Özet

Bu belgede bir dokunmatik ekranın XFree86 altında nasıl kurulacağı anlatılmaktadır. Yazarın sadece EloTouch(R) ve MicroTouch(R) marka aygıtlarla tecrübesi olduğundan bu NASIL belgesi çoğunlukla bu aygıtlara özel olacaktır. Belgede verilen örnekler aygıtların seri porttan yani `/dev/ttyS0` veya `/dev/ttyS1`'den bağlandığını kabul edecektir. (USB aygıtlar hakkında bilgi verebilerseniz memnun olurum!)

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## 1. Aygıtın Yapılandırılması

Dokunmatik ekranlar `XF86Config` dosyasının (çoğunlukla `/etc/X11/XF86Config` veya `/etc/XF86Config`) `Xinput` bölümünde yapılandırılırlar. İlk olarak `/usr/X11R6/lib/modules/` dizininde bulunması gereken aygıt sürücüsü modüllerinin (yukarıda bahsedilen aygıtlar için bunlar `xf86Elo.so` ve `xf86MuTouch.so` dosyalarıdır) varlığını kontrol edin. Ardından `XF86Config` dosyasına baktığınızda aşağıdaki gibi bir bölüm görmelisiniz:

```
Section "Files"
...
ModulePath "/usr/X11R6/lib/modules"
...
EndSection
```

X sunucusu tarafından modülün yüklenebilmesi için aşağıdaki gibi bir bölüm olmalıdır:

```
Section "Module"
    Load "xf86Elo.so"
EndSection
```

Burası hassas bölümdür. X aygıt hakkında bazı parametrelere ihtiyaç duyar. Bununla ilgili bölüm aşağıdaki gibi olmalıdır (ayrıntılı bilgi için `XF86Config` kılavuz sayfasına bakabilirsiniz):

```
Section "Xinput"
    SubSection "Elographics"
#the entry for a MicroTouch device would be SubSection "MicrotouchFinger"
    Port "/dev/ttyS1" # for a device at serial port 2
    DeviceName "TouchScreen" #could be any unambiguous name
    MinimumXPosition 300
    MaximumXPosition 3700
    MinimumYPosition 300
    MaximumYPosition 3700
    UntouchDelay 10 #not supported with MuTouch
    ReportDelay 10 #not supported with MuTouch
    AlwaysCore #activates the device on startup
    EndSubSection
EndSection
```

`MinimumXPosition` gibi değerler elbette kurmaya çalıştığınız donanıma özeldir (yani dokunmatik ekranın monitörünüze göreceli konumu ile ilgilidir). Bu değerler monitörünüzün (0,0) ve (xmax,ymax) noktalarının (xmax ve ymax Xserver için seçtiğiniz çözünürlüğe bağlıdır, 1024x768 gibi) dokunmatik ekranınızda nereye eşlendiğini gösterir. Aygıt sürücüsü bu değerleri okur ve diğer koordinatlara genişletir. Örnek bir durum şöyle gösterilebilir:

```
-----dokunmatik ekran alanı-----
I                                     I
I #####görünebilir ekran alanı##### I
I #x                                # I
I # (0,0)                          # I
I # (MinimumXPosition,MinimumYPosition) # I
I #                                # I
I #                                # I
I #                                # I
I #                                # I
I #                                # I
I #                                # I
I #                                # I
```

```
I # (MaximumXPosition,MaximumYPosition) # I
I # (xmax,ymax) # I
I # x# I
I ##### I
I I I
-----
```

Bu haritalama deneme yanılma metoduyla yapılabileceği gibi aygıtın ham çıktısını okuyarak da yapılabilir (seri port programlama bilgisi gerekeceğinden [Linux Seri Port Programlama NASIL<sup>\(B4\)</sup>](#) belgesine ihtiyacınız olabilir). EloTouch ve MicroTouch için bu belgenin yazarı tarafından hazırlanmış basit bir aracı <http://www.sgoc.de/touchcal.html> adresinden indirebilirsiniz.

## Aygıtın Etkin Hale Getirilmesi

X başladıktan sonra bir Xterminal'de aşağıdaki komutu çalıştırın:

```
xsetpointer aygutismi
```

Buradaki *aygutismi* ifadesi `XF86Config` dosyasında `DeviceName` "...." bölümüne yazdığınız ifade olmalıdır, bizim örneğimizde: `TouchScreen`.

Aygıtın açılışta çalışır duruma gelmesi için dokunmatik ekran bölümünde (önceki bölüme bakın) `AlwaysCore` seçeneğini kullanın.

## Dokunmatik Ekran ve Farenin Paralel Kullanımı

Dokunmatik ekran ve fareyi birlikte kullanabilmek için farenizin özelliklerini `Xinput` bölümünde belirtmelisiniz. Bu tanımlamalar `Pointer` bölümündekilerle aynı olmalıdır. Aşağıda PS/2 fare için bir örnek bulunmaktadır:

```
Section "Xinput"
    SubSection "Mouse"
        Protocol "PS/2"
        Port "/dev/mouse" #/dev/psaux'da olabilir
        DeviceName "Mouse"
        AlwaysCore
    EndSubSection
...
EndSection
```

Bu noktaya, özellikle `AlwaysCore` seçeneğine işaret eden çok kişi oldu, hepsine teşekkür ediyorum.

## XFree86-4 Altında Yapılandırma

Yazan: Lee Monamy

ELO dokunmatik ekran için örnek `XF86Config-4`:

```
Section "InputDevice"
    Identifier "ELO touchscreen"
    Driver "elographics"
    Option "Device" "/dev/ttyS0"
    Option "MinimumXPosition" "300"
    Option "MaximumXPosition" "3700"
    Option "MinimumYPosition" "300"
    Option "MaximumYPosition" "3700"
    Option "UntouchDelay" "10"
```

```
Option "ReportDelay" "10"
Option "SendCoreEvents" "yes"
EndSection
```

Sürüm 4 ile sürüm 3 arasındaki önemli fark port (Port) \*değil\* aygıt (Device) tanımlamanızdır, aksi halde hata alırsınız. Ayrıca sürüm3 'deki `AlwaysCore` yerine artık `SendCoreEvents` kullanılmaktadır.

```
(II) XINPUT: Adding extended input device "TOUCHSCREEN" (type: Elographics
↳ Touch Screen)
```

Yukarıdaki gibi bir çıktı görseniz bile `ServerLayout` bölümünü de eklemeniz gereklidir:

```
Section "ServerLayout"
Identifier "Default Layout"
Screen "Default Screen"
InputDevice "Generic Keyboard"
...
InputDevice "ELO touchscreen"
EndSection
```

## Örnek Yapılandırma

Yazan: Dirk Mueller

Microtouch SMT3 Serisi için:

```
Section "InputDevice"
Identifier "MicroTouchFinger"
Driver "mutouch"
Option "Type" "finger"
Option "Device" "/dev/ttyS0"
Option "ScreenNo" "0"
Option "MinimumXPosition" "0"
Option "MaximumXPosition" "16383"
Option "MinimumYPosition" "0"
Option "MaximumYPosition" "16383"
EndSection
```

"Type" seçeneği "finger" ya da "stylus" değerlerini alabilir. Microtouch 3M-Touch tarafından satın alındığından kaynakları [burada](#)<sup>(B6)</sup> bulabilirsiniz.

## Ek Bilgi

Wong Yeow Sen XFree86 4.2'de yapılandırma seçeneklerinin isimlerinin değiştiğini bildirdi (en azından Red Hat 7.3'de). Eğer bölmelendirme değerleriniz ayrıştırılmıyorsa aşağıdakini deneyin:

```
...
Option "MinX" "100"
Option "MaxX" "4000"
Option "MinY" "100"
Option "MaxY" "4000"
...
```

## Fujitsu LifeBooks Dokunmatik Ekranlar

Yazan: Joerg Hau

Bu aygıtlar hakkında ayrıntılı bilgi aşağıdaki adreslerde bulunabilir:

- Harald Hoyer tarafından yazılan [Linux Touch Panel Drivers for the Fujitsu Lifebooks B112/B142/B2130<sup>\(B7\)</sup>](#). Maalesef bu sayfalar sadece XFree 3.x için hazırlanmıştır ve 2000 yılından bu yana güncellenmemektedir.
- Kenan Esau tarafından yazılan [Lifebook Series B Touchscreen driver<sup>\(B8\)</sup>](#), Harald'ın sürücülerinin XFree 4.x için uyarlanmış halidir.
- Ben [Joerg Hau] de Kenan'ın sürücülerini Fujitsu LifeBook B142 için kullandım (<http://www.mysunrise.ch/users/joerg.hau/linux/b142.htm>) ve harika bir sonuç elde ettim.
- ...

## Önerilen Kaynaklar

- XF86Config kılavuz sayfası
- <http://www.elotouch.com/Support/linux.asp>
- <http://www.3M.com/3MTouchSystems/downloads/legacy.jhtml#Linux>
- <http://www.hof-berlin.de/tablet/tablet.html> (Bu URL'yi gönderen Christer Olofsson'a teşekkür ediyorum)
- <http://freshmeat.net/projects/xf86elousb> (iTouch USB için sürücü)
- Dokunmatik ekranınızla birlikte gelen kitapçık :-)

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(B4) <http://www.tldp.org/HOWTO/Serial-Programming-HOWTO/>

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(B6) <http://www.3M.com/3MTouchSystems/downloads/legacy.jhtml#Linux>

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(B7) <http://parzelle.de/Linux/Lifebook/>

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(B8) <http://www.conan.de/lifebook/lifebook.html>

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11 Şubat 2007