Ellhniko mini-HOWTO toy Seiriakou Pontikiou 3 Koympiwn

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Pws na kanete ena seiriako pontiki 3 koympiwn na doyleuei swsta katw apo Linux.

Contents

1 Arnhsh Ey8ynwn

To parakatw eggrafo prosferete me kalh pisth oti periexei mono asfalh programmatismo kai diadikasies. Kamia ey8unh den einai apodex8eis apo ton syggrafea gia opoiadhpote apwleia h blabh prokaloumenh me opoiondhpote tropo se opoiondhpote an8rwpo h mhxanhma, ws amesh h emmesh synepeia twn parakatw odhgiwn.

2 Eisagwgh

H pio prosfath ekdosh toy eggrafoy aytou mporei panta na bre8ei sto `http://kipper.york.ac.uk/mouse.html`

Yparxei Iapwnikh metafrash sto `http://jf.gee.kyoto-u.ac.jp/JF/JF-ftp/euc/3-Button-Mouse.euc`; kai mia Gallikh sto `http://www.freenix.fr/linux/HOWTO/mini/3-Button-Mouse.html`. Alles metafraseis mporei na einai dia8esimes - elegjete toys topikous sas LDP mirrors.

Oi perissoteres X efarmoges einai grammenes me thn ypo8esh oti o xrhsths 8a doyleuei me ena pontiki 3 koympiwn. Seiriaka pontikia xrhsimopoiountai eyrews se ypologistes kai einai fthna na agorastoun. Polla apo ayta ta pontikia exoyn 3 koympia kai isxyrizontai oti xrhsimopoioun to prwtokollo Microsoft, to opoio sthn 8ewria shmainei oti einai idanika gia thn egkatastash X windows. (To rekor gia to pio fthno en leitoyrgia pontiki 3 koympiwn epi toy parontos brisketai sta $1.14!)

Ta perissotera pontikia diplou prwtokolloy 8a leitoyrgoun se duo katastaseis:

- katastash Microsoft 2-koympiwn.
- katastash MouseSystems 3-koympiwn.

To eggrafo ayto se odhgei mesa apo ta diafora bhmata poy xreiazontai gia na ry8misete to pontiki sas stis duo aytes diaforetikes katastaseis, eidika ta bhmata poy xreiazontai gia na xrhsimopoih8ei h pio xrhsimh katastash 3-koympiwn.

Ka8ws oi dianomes ginontai pio eukoles gia na egkatasta8oun, merika apo ta problhmata 8a eprepe na fugoyn. Gia paradeigma, h RedHat exei ena programma `mouseconfig` poy kanei thn egkatastash gia esas. Wstoso, merikes ekdoseis toy RH5.0 eixan bug sto `mouseconfig`, gia ayto ton logo sigoyreyteite oti exete elegjei gia patches.

3 Seiriakes 8ures

To prwto pragma poy prepei na kanete einai na sigoyreyteite oti to logismiko mporei na entopisei to pontiki. Ypologiste se poia seiriakh 8ura einai enwmeno to pontiki sas - synh8ws ayth 8a einai `/dev/ttyS0` (COM1 katw apo DOS) h `/dev/ttyS1` (COM2). (H `ttyS0` einai synh8ws h ypodoxh me 9 akides, h `ttyS1` h ypodoxh me 25 akides, alla bebaiws den yparxei kanenas aysthros kai proxeiros kanonas gia ayta ta pragmata.) Yparxei epishs enas isodunamos ari8mos apo syskeyes `/dev/cua`, oi opoies einai sxedon idies me tis `ttyS`, alla h xrhsh toys twra apo8arrunetai. Gia eykolia dhmioyrghste ena neo link `/dev/mouse` deixnontas se ayth thn 8ura. Paradeigmatos xarin, gia `ttyS0`:

```
ln -s /dev/ttyS0 /dev/mouse
```

4 Pontikia me diakopth

Merika pontikia, oxi synh8ws ta pio f8hna, exoyn ena diakopth apo katw shmeiwmeno '2/3'. Merikes fores ayto mporei na einai 'PC/MS'. Se ayth thn periptwsh h ru8mish '2' einai gia katastash Microsoft 2 koympiwn, kai h '3' gia katastash MouseSystems 3 koympiwn. O 'PC/MS' diakopths einai ligo pio poluplokos. 8a breite pi8anws oti h ru8mish 'MS' einai gia Microsoft, kai h 'PC' einai gia MouseSystems. Isws breite oti h ru8mish 'PC' perigrafetai ws katastash ps/2 , alla 8a prepei na kanei kai gia MouseSystems epishs. An exete tetoio pontiki, mporeite na balete ton diakopth sto '3' h 'PC', balte tis ry8miseis MouseSystems sto XConfigs (blepete parakatw) kai to pontiki 8a leitoyrgei teleia sthn katastash 3 koympiwn.

5 Synh8ismena Pontikia

An den exete diakoptes, kai kamia odhgia, tote xreiazetai ligos peiramatismos. To prwto pragma pros dokimh einai na ypo8esete oti o kataskeyasths toy pontikiou leei thn alh8eia, kai to pontiki einai plhrws Microsoft. Egkatasthsete ta Xconfigs sas gia na anamenoyn ena Microsoft pontiki (blepete to 10 (Xconfig section)) kai kanete mia dokimh.

An to pontiki den leitoyrgei ka8oloy, tote den exete pontiki Microsoft, h yparxei kapoio allo problhma. Dokimaste ta alla prwtokolla stis configs, h man selida gia to arxeio config einai to kalutero meros gia na jekinhste na caxnete. Epishs koitajte sto tmhma 12 (Diafora Problhmata) parakatw.

Ayto poy pi8anws 8a breite einai oti an ekteleste to X, to pontiki leitoyrgei kanonika alla mono ta duo ejwterika koympia kanoyn kati. Mporeite bebaiws na to dexteite ayto, kai na ejomoiwste to trito koympi (patwntas sygxronws kai ta duo koympia gia na kante klik sto mesaio) opws kanete me ena pontiki duo koympiwn. Gia na to kanete ayto, allajte to arxeio Xconfig sas opws deixnetai sto tmhma 10 (Paradeigma Xconfig) parakatw. Touto mporei na shmainei oti exete agorasei pontiki 3 koympiwn xwris kanena kalo logo, kai bebaiws den exete kanei peraiterw proodo. Opote, twra 8a xreiastei na koitajte ta mhxanhmata sas.

6 Allazontas to Pontiki se Katastash 3-Koympiwn

Akoma kai f8hna pontikia mporoun na leitoyrgoun katw apo to prwtokollo Mouse Systems, kai me ta tria koympia na leitoyrgoun. To kolpo einai na kanete to pontiki na nomizei oti einai ena Mouse Systems, kati poy spania blepete stis odhgies sas.

- Prin anacete ton ypologisth sas, krathste katw to aristero koympi toy pontikiou (kai krathste to pathmeno mexri na ginei ekkinhsh gia na eimaste sigoyroi).

Otan to pontiki prwtoparei hlektrismo, an to aristero koympi einai krathmeno katw ayto metabainei sthn katastash Mouse Systems. Ena aplo gegonos, alla oxi panta dhmosieymeno. Shmeiwste oti mia mikrh epanekkinhsh toy ypologisth sas mporei na mhn kocei ton hlektrismo sto pontiki sas kai epomenws isws na mhn leitoyrghsei. Yparxoyn alloi tropoi allaghs ths katastashs, oi opoies mporei h den mporei na leitoyrgoun me to sygkekrimeno pontiki sas. Merikes apo aytes einai ligotero drastikes apo to na epanekkinhsete ton ypologisth sas, duo einai akoma pio drastikes!

- An o ypologisths sas einai eyprositos mporeite na aposyndesete to pontiki kai na to syndeste pali me to koympi pathmeno katw (an kai den 8a eprepe fysiologika na syndeetai pragmata se anoikto ypologisth, to RS232 leei oti mporeite).
- Isws na mporesete na janabalete to pontiki typwnontas `echo "*n" > /dev/mouse`, to opoio 8a prepei na exei thn idia epidrash me to na to aposyndesete. Krathste pathmeno to aristero koympi gia katastash Mouse Systems, oxi gia Microsoft. Mporeite na topo8ethste ayto se opoiodhpote keimeno poy xrhsimopoieite gia na jekinhste thn X.
- O Bob Nichols (rnichols@interaccess.com) exei gracei ena mikro programma c gia na kanei to idio pragma, to opoio mporei na leitoyrghsei an to `echo "*n"` den leitoyrgei (kai antistrofa). Mporeite na breite ena antigrafo toy prwtotypoy kwdika toy sto `http://kipper.york.ac.uk/src/fix-mouse.c`
- Kapoios anefere oti h grammh 'ClearDTR' sto Xconfig eparkei gia na metabibash to pontiki toy sthn katastash Mouse Systems.
- An eiste arketa gennaioi, anoijte to pontiki (8ymh8eite oti ayto 8a akyrwsei thn egguhsh sas) kai rijte mia matia mesa. Se merikes periptwseis, to pontiki mporei na exei diakopth mesa, gia kapoio periergo

logw gnwsto mono ston kataskeyasth. Synh8ws sta f8hna pontikia einai ena jumper poy mporeis na metakinhseis. O diakopths h to jumper mporei na exoyn thn idia epidrash me ena diakopth 'MS/PC' poy perigrafetai sto 4 (Pontikia me Diakopth) parapanw. Mporeite na anakalucete oti o pinakas kyklwmatos einai sxediasmenos gia ena diakopth metaju twn 2 & 3 koympiwn, alla den exei topo8eth8ei. 8a moiazei kati san:

```
 -----------
| o | o | o |  SW1
 -----------
  1   2   3
```

Prospa8hste na syndesete tis akides 1-2 h 2-3, kai koitajte an allazei thn symperifora toy pontikiou. An thn allazei, mporeite eite na topo8ethste enan mikro diakopth, h na sygkollhsete tis epafes gia mia grhgorh kai monimh lush.

- Mia allh lush sygkollhshs poy isws na einai h esxath lush gia pontikia poy den katalabainoyn ka8oloy MouseSystems, apo ton Peter Benie (`pjb1008@chiark.chu.cam.ac.uk`). An o diakopths toy mesaioy koympiou einai dipolos, syndeste mia meria toy diakopth ston diakopth toy aristerou koympiou, kai thn allh meria sto diakopth toy dejiou koympiou. An den einai diakopths diplou poloy xrhsimopoihste diodoys anti surmatos. Twra, to mesaio koympi pataei ta aristero kai dejio koympia mazi. Epilejte `ChordMiddle` sto XF86Config kai exete ena mesaio koympi poy leitoyrgei.
- H esxath lush me to kollhthri perigrafthke arxika se mena apo ton Brian Craft (`bcboy@pyramid.bio.brandeis.edu`). Duo synh8ismena pontikia genikhs xrhshs einai ta 16 peronwn **Z8350**, kai ta 18 peronwn **HM8350A**. Se ka8ena apo ayta ta tsip, mia akida elegxei thn katastash toy tsip, ws akolou8ws.

```
Pin 3   Mode
-----   ----
Open    Default Microsoft. Mouse Systems if a button is held on power-up.
GND     Always Mouse System.
Vdd     Always Microsoft.
```

  (Pins are numbered as follows:)

```
          ----
pin1    -| \/ |-
pin2    -|    |-
pin3    -|    |-
        -|    |-
        -|    |-
        -|    |-
        -|    |-
pin8    -|____|-
```

  (Oi plhrofories aytes einai prosfora twn Hans-Christoph Wirth, kai Juergen Exner, oi opoioi tis anakoinwsan sto de.comp.os.linux.hardware) Mporeite na sygkollhsete mia epafh metaju ths akidas 3 kai gnd, poy 8a ka8orisei to pontiki sthn katastash MouseSystems.

  - O Peter Fredriksson (`peterf@lysator.liu.se`) exei dokimasei to tsip SYSGRATION **SYS2005**, kai brhke oti syndeontas thn Peronh 3 sto Gnd epebale thn katastash MouseSystem.
  - O Uli Drescher (`ud@digi.ruhr.de`) epibebaiwnei oti leitoyrgei se ena tsip **HN8348A**; O Ben Ketcham (`bketcham@anvilite.murkworks.net`) epibebaiwnei to **HM8348A** (H Peronh 9 einai to Gnd).
  - O Urban Widmark (`ubbe@ts.umu.se`) leei oti to idio isxuei sto tsip **EC3567A1**, opoy h Peronh 8 einai h geiwsh. To exw dokimasei kai egw kai doyleuei 8aymasia.

- O Timo T Metsala (`metsala@cc.helsinki.fi`) brhke oti sto tsip **HT6510A** h akida 3 einai h katastash epiloghs, h akida 9 einai Gnd. To idio isxuei gia to tsip **HT6513A**. H Holtek epishs ftiaxnei tsip **HT6513B** kai **HT6513F** - se ayta, h akida 8 einai Gnd.
- O Robert Romanowski (`robin@cs.tu-berlin.de`) leei oti h akida 3 - akida 8 (Gnd) doyleuei epishs se tsip **EM83701BP**.
- O Robert Kaiser (`rkaiser@sysgo.de`) epibebaiwnei oti h akida 3 - Gnd doyleuei epishs kai se ena tsip **EC3576A1**.
- O Sean Cross (`secross@whidbey.com`) brhke oti htan akida 2 - akida 7 (Gnd) se ena tsip **HM8370GP**.
- O Peter Fox (`fox@roestock.demon.co.uk`) xrhsimopoihse akida 3 - akida 8 se ena tsip **HM8348A**.
- O Jon Klein (`jbklein@mindspring.com`) brhke oti akida 3 -akida 9 efere apotelesma sto tsip **UA5212S**.

• Ws enallaktikh lush stis parapanw me8odoys sygkollhshs, na anagkaseis to pontiki na krata to koympi toy katw kata thn ekkinhsh: ayto to kuklwma apo `MathiasKatzer`.

```
     -----
  ---  R  ---------O------ + Supply
 |   -----   |        |                    C = 100nF capacitor
 |           | E      |                    R = 100kOhm
 |       __ /         |                    T = BC557 transistor
 |      /  \          O
 |   B | #V | T        /
 |-----|-#  |         /    Left button switch of the mouse
 |     | #\ |         O
 |      \__/          |
---         \  C      |
--- C        ------O----------> (to somewhere deep inside the mouse)
 |
###  Ground
```

To dokimastiko pontiki htan ena montelo MUS2S xwris marka- an leitoyrgei ayto se alla pontikia ejartatai apo to kuklwma toy pontikiou; an o diakopths einai enwmenos sthn geiwsh kai oxi sthn +Paroxh, enas npn-tranzistor opws o BC547 8a prepei na doyleuei; To R kai to C 8a prepei epishs na antallagoun.

Synepws oriste, h epilogh einai dikh sas. Meinete kollhmenoi sto proepilegmeno Microsoft duo koympiwn, h breite pws na allajte thn katastash kai na orisete thn X na to ekmetalleyteite ayto.

7 Pontikia me rodela

Pontikia me rodeles exoyn emfanistei sto proskhnio ta teleytaia merika xronia, jekinwntas me to Microsoft Intellimouse kai epekteinontas se alloys kataskeyastes. H rodela mporei na path8ei san koympi, h na kylietai panw kai katw. Me megalh diafora h kaluterh anafora gia plhrofories einai `http://www.inria.fr/koala/colas/mouse-wheel-scroll/` poy perigrafei pws na anagkasete polles X efarmoges na anagnwrisoyn thn kinhsh kulishs.

Genika, 8a xreiasteite ena sxetika kainourgio X diakomisth gia na xrhsimopoihste thn kinhsh kulishs, alla merikoi palioteroi diakomistes 8a anagnwrisoyn tis energeies klik. Paradeigmatos xarin, to Intellimouse yposthrizetai apo XFree 3.3.1 kai metagenesterh.

8 Xrhsimopoiwntas gpm gia Allagh Katastasewn Pontikou

To gpm einai to programma poy sas epitrepei na xrhsimopoieitai to pontiki se katastash konsolas. Synh8ws symperilambanetai se dianomes linux, kai mporei na jekinhsei apo thn grammh entolwn h sto keimeno ekkinhshs `/etc/rc.d/rc.local`. Shmeiwste oti oi dianomes den exoyn panta thn pio prosfath ekdosh (1.13 thn stigmh poy grafw) poy mporei na bre8ei stis topo8esies ka8reptes toy sunsite.unc.edu.

Oi kyrioteres katastaseis gia seiriaka pontikia katw apo gpm einai:

```
gpm -t ms
gpm -t msc
gpm -t help
```

gia Microsoft h MouseSystems katastaseis, h gia na ereynhsei to pontiki gia esas kai na sas pei ti brhke. Gia na trejte gpm sthn katastash MouseSystems, isws xreiasteite mia `-3` flag, kai pi8anws mia DTR epilogh, xrhsimopoiwntas th `-o dtr` flag:

```
gpm -3 -o dtr -t msc
```

To gpm synh8ws einai ikano na anagnwrizei kai ta tria koympia toy pontikiou akoma kai se katastash Microsoft. Kai neoteres ekdoseis (Ekdosh 1.0 kai neoteres (?)) mporoun na kanoyn tis plhrofories aytes dia8esimes se alla programmata. Gia na leitoyrghsei ayto , prepei na trejte to gpm me thn -R tag, etsi:

```
gpm -R -t ms
```

Touto 8a kanei to gpm na ejagei pali ta dedomena toy pontikiou se mia nea syskeyh, poy onomazetai `/dev/gpmdata`, h opoia fainetai san pontiki se opoiadhpote allo programma. Shmeiwste oti h syskeyh ayth **panta** xrhsimopoiei to prwtokollo MouseSystems. Mporeite tote na ry8misete to Xconfig sas na xrhsimopoiei ayto anti toy `/dev/mouse` opws deixnetai parakatw, alla bebaiws prepei na sigoyreuete oti to gpm panta ekteleitai otan xrhsimopoieitai thn X. Merikoi exoyn anaferei oti merikes periptwseis mesaioy-koympiou den diermhneuontai swsta apo thn X xrhsimopoiwntas thn texnikh ayth, ayto mporei na symbainei logw mias idiaiterhs egkatastashs pontikiou.

Allazontas thn sxediash koympiwn gia gpm kai X (`gustafso@math.utah.edu`)

Mporeite na anakalucete oti to gpm xrhsimopoiei diaforetikes proepilegmenes sxediaseis koympiwn sth X, etsi xrhsimopoiwntas kai ta duo systhmata sto idio mhxanhma mporei na einai mperdema. Gia na anagkasete thn X na xrhsimopoihsei ta idia koympia gia leitoyrgies epiloghs kai epikollhshs opws thn gpm, xrhsimopoihste thn X entolh

```
xmodmap -e "pointer = 1 3 2"
```

poy prokalei to aristero koympi na epilegei kai to deji na epikollaei, eite gia 2-koympiwn eite gia 3-koympiwn pontikia. Gia na anagkasete th gpm na xrhsimopoiei thn protyph sxediash koympiwn ths X, jekinhste me mia `-B` entolh, p.x.:

```
gpm -t msc -B 132
```

9 Xrhsimopoiwntas duo pontikia

Se merikes periptwseis, gia paradeigma enas epigonatios ypologisths me mia enswmatwmenh syskeyh endeijhs, isws epi8ymeite na xrhsimopoihste ena seiriako pontiki san deuterh syskeyh. Stis perissoteres periptwseis h enswmatwmenh syskeyh xrhsimopoiei to prwtokollo PS/2, kai mporei na agnoh8ei an den epi8ymeite na to xrhsimopoihste. Aplws ry8miste th gpm h th X na xrhsimopoiei thn `/dev/ttyS0` (h otidhpote) ws synh8ws.

Gia na ta xrhsimopoieite kai ta duo sygxronws, mporeite na xrhsimopoieiste `gpm -M` gia na ejagetai jana tis syskeyes. Perissoteres plhrofories sthn man selida ths gpm. Epishs, h XFree 3.3.1 kai metagenestera yposthrizei pollaples syskeyes eisagwghs, xrhsimopoiwntas ton mhxanismo XInput. Ta Ayto-paragomena arxeia XF86Config 8a prepei na periexoyn toys aparaithtoys sxoliasmous.

10 Paradeigmata arxeiwn XF86Config kai Xconfig

H topo8esia toy arxeioy ry8misewn sas gia th X ejartatai apo thn sygkekrimenh ekdosh kai dianomh poy exete. Ayth 8a einai eite `/etc/Xconfig`, `/etc/XF86Config` h `/usr/X11/lib/X11/XF86Config`. 8a prepei na deite poia einai otan jekinhste thn X - 8a anthxei sthn o8onh prin emfanistoun oles oi epiloges. H suntajh einai ligo diaforetikh metaju twn arxeiwn XF86Config kai Xconfig, etsi dinontai kai oi duo.

Seiriako Pontiki Microsoft

- XF86config:

```
Section "Pointer"
    Protocol "microsoft"
    Device "/dev/mouse"
EndSection
```

- Xconfig:

```
#
# Mouse definition and related parameters
#
Microsoft      "/dev/mouse"
```

Seiriako Pontiki Microsoft me Ejomoiwsh Triwn Koympiwn

- XF86config:

```
Section "Pointer"
    Protocol "microsoft"
    Device "/dev/mouse"
    Emulate3Buttons
EndSection
```

- Xconfig:

```
#
# Mouse definition and related parameters
#
Microsoft      "/dev/mouse"
Emulate3Buttons
```

Seiriako Pontiki MouseSystems Triwn Koympiwn

- XF86config:

```
Section "Pointer"
    Protocol "mousesystems"
    Device "/dev/mouse"
    ClearDTR            #  These two lines probably won't be needed,
    ClearRTS            #  try without first and then just the DTR
EndSection
```

- Xconfig:

```
#
# Orismos pontikiou kai sxetikoi parametroi
#
MouseSystems    "/dev/mouse"
ClearDTR                # These two lines probably won't be needed,
ClearRTS                # try without first and then just the DTR
```

Seiriako Pontiki Microsoft me gpm -R

- XF86config:

```
Section "Pointer"
    Protocol "MouseSystems"
    Device "/dev/gpmdata"
EndSection
```

- Xconfig:

```
#
# Mouse definition and related parameters
#
MouseSystems      "/dev/gpmdata"
```

11 Cables, extensions and adaptors

Ta mona surmata poy xreiazontai sto kalwdio toy pontikiou einai ta ejhs: TxD kai RxD gia metafora arxeiwn, RTS kai/h DTR gia phges hlektrismou, kai geiwsh. Metafrasmena se ari8mous peronwn, ayta einai: 9-akides 8ura 25-akides 8ura TxD 3 2 RxD 2 3 RTS 7 4 DTR 4 20 Gnd 5 7

O parapanw pinakas mporei na einai xrhsimos an epi8ymeite na ftiajte prosarmogeis metaju 9- kai 25-peronwn busmata, h kalwdia proektashs.

12 Diafora Problhmata kai Egkatastaseis

- An exete problhmata me to pontiki sas se katastash X h konsolas, elegje oti den trexete ena getty sthn seiriakh grammh, h otidhpote allo opws en prokeimenw ena modem . Epishs elegjte gia sygkrouseis IRQ.
- Einai dynaton na xreiastei na kratate pathmeno to aristero koympi enw ginetai ekkinhsh twn windows X. Merika systhmata mporei na stelnoyn kapoioy eidoys shma h aixmhs sto pontiki otan h X jekina.
- Problhmata me seiriakes syskeyes mporei na ofeilontai sto mh swsto jekinhma ths seiriakhs 8uras kata thn ekkinhsh. Ayto pragmatopoieite me thn entolh `setserial`, ektelesmenh apo to keimeno ekkinhshs `/etc/rc.d/rc.serial`. Elegjte thn man selida gia `setserial` kai thn Seiriakh-HOWTO gia perissoteres leptomereies. Isws ajizei ligos peiramatismos me tupoys, gia paradeigma dokimaste

`setserial /dev/mouse uart 16550` h `16550a` adiaforwntas apo thn 8ura poy pragmatika exete. (Gia paradeigma, sta pontikia den aresei to 16c550AF).

- H `ClearDTR` flag mporei na mhn leitoyrgei swsta se merika systhmata, ektos an apenergopoihste to RTS/CTS handshaking me thn entolh:

  ```
  stty -crtscts < /dev/mouse
  ```

  (Dokimasmeno se UART 16450/Pentium apo ton Vladimir Geogjaev `geogjaev@wave.sio.rssi.ru`)

- Ta pontikia Logitech mporei na apaitoun thn grammh `ChordMiddle` gia na epitrapei h leitoyrgia toy mesaioy twn triwn koympiwn. H grammh ayth antika8ista to `Emulate3Buttons` h kynhgoun thn grammh `/dev/mouse` sto arxeio config. Isws kalws xreiasteite tis `ClearDTR` kai `ClearRTS` grammes sto Xconfig sas. Merika pontikia Logitech asfalws den xreiazontai thn grammh `ChordMiddle` - ena sumptwma aytou toy problhmatos einai oti ta menou fainetai na kinountai me to pontiki anti na kyloun katw. (Apo: `chang@platform.com`)

- Antallagh koympiwn: xrhsimopoieiste thn entolh `xmodmap` gia na allajete to fysiko koympi poy einai kataxwrhmeno san to ka8e klik toy pontikiou. p.x.: to `xmodmap -e "pointer = 3 2 1"` 8a strecei ta koympia gia xrhsh me to aristero xeri. An aplws exete ena pontiki duo-koympiwn tote einai aplws ari8moi 1 & 2.

- Epitaxynsh: xrhsimopoieiste thn entolh `xset m` gia na allajte tis ry8miseis toy pontikiou. p.x. h `xset m 2` 8a ka8orisei thn epitaxynsh se 2. Koitajte sthn man selida gia plhrhs leptomereies.

- Arxh deikth: An h energeia toy klik fainetai na erxetai apo ta aristera h ta dejia apo ekei poy einai o kersoras, isws mporei na ftaiei oti h o8onh sas den einai ey8ygrammismenh. Touto einai ena problhma me ton odhgo S3, to opoio mporei na ftiajeis xrhsimopoiwntas xvidtune. Dokimaste `Invert_VCLK/InvertVCLK, h EarlySC`. Toutes oi plhrofories apo ton Bill Lavender (`lavender@MCS.COM`) kai ton Simon Hargrave. Sto XF86Config, mporei na fainetai ws ejhs:

  ```
  Subsection "Display"
      Modes       "1024x768" "800x600" "640x480" "1280x1024"
      Invert_VCLK "*" 1
      ...
  ```

- An exete 'anaphdhsh' twn koympiwn toy pontikiou, dhl. duo klik otan 8elete mono ena, isws exei problhma to pontiki. To problhma ayto exei ly8ei gia pontikia Logitech apo ton Bob Nichols (`rnichols@interaccess.com`) kai perilambanei thn sygkollhsh merikwn antistasewn kai enos tsip sto pontiki gia na ginei apoanaphdhsh twn mikrodiakoptwn.

- An merikoi xrhstes den mporoun na kanoyn to pontiki na doylecei alla merikoi (p.x. root) mporoun, einai dynaton oi xrhstes na mhn ekteloun akribws to idio pragma - gia paradeigma mia diaforetikh ekdosh toy X h diaforetiko Xconfig. Elegjte prosektika ta mhnumata ekkinhshs ths X gia na sigoyreyteite.

- An breite oti o deikths toy pontikiou sbhnei pragmata apo thn o8onh sas, exete ena problhma diakomisth config. Prospa8hste na pros8este thn epilogh `linear`, h isws `nolinear` sto tmhma ths kartas grafikwn, h an einai pinakas PCI, tis epiloges `tgui_pci_write_off` kai `tgui_pci_read_off`. (Touto fainetai na einai problhma ths Trident Card.)

- An o kersoras toy pontikiou den emfanizetai sthn o8onh, alla kata ta alla fainetai na leitoyrgei, dokimaste thn epilogh `"sw_cursor"` sto tmhma Syskeywn sto arxeio config.

- An to pontiki sas stamataei na leitoyrgei otan exei hlio h otan anacete mia lampa, mporei oi ais8hthres na plhmmyrizontai me fws poy mpainei mesa apo thn 8hkh. Mporeite na dokimaste na bacete to eswteriko ths 8hkhs mauro, h na balete kapoia karta apo panw.

- Pontikia Markas Microsoft syxna einai aitia problhmatwn. To kainourgio “Microsoft Serial Mouse 2.1A” exei anafer8ei oti den leitoyrgei se polla systhmata, an kai aposyndeontas kai syndeontas to pali mporei na boh8hsei. H `gpm` ekdosews 1.13 h parapanw 8a prepei epishs na yposthrizei pontikia 2.1A, xrhsimopoiwntas ton tupo pontikiou `pnp`. (Blepete to 8 (gpm section) gia to pws na to ejagete jana ayto.) To “Microsoft Intellimouse” epishs prokalei problhmata, an kai twra 8a prepei na yposthrizetai apo thn XFree ekdosh 3.3 kai neotera.

13 Dokimasmena Montela

Yparxoyn polla diaforetika pontikia ekei ejw, kai eilikrina den mporw na pw oti 8a prepei na pate kai na agorasete kapoio apo ena allo. Ayto poy mporw na kanw einai na sas dwsw mia lista aytwn poy nomizw oti kanoyn ta pontikia ayta, basismenh se empeiria kai oti exw akoysta. Akoma kai me aytes tis plhrofories 8a prepei na eiste ligo prosektikoi - eixame duo oloidia pontikia sto grafeio mas se duo ypologistes, merika pragmata doulecan ston ena kai oxi ston allo! Opoiesdhpote pros8hkes ston katalogo ayto einai eyprosdektes.

Optiko pontiki Mouse Systems, seiriakh ekdosh
Leitoyrgei kala (opws 8a perimenes apo to onoma!) xwris ClearDTR h ClearRTS sto config.

Pontiki WiN, opws poylietai apo to Office World gia oxtw lires.
Typopoihmeno diplhs-katastasews Microsoft/MouseSystems.

Pontiki Agiler 2900
Typopoihmeno diplhs-katastasews Microsoft/MouseSystems. To tsip SYSGRATION SYS2005 einai sygkollisimo.

Pontiki Sicos,
Leitoyrgei entajei, xreiazetai ClearDTR & Clear RTS sto config.

H Index poyla pontiki gia 10 lires,
Den doyleuei se katastash 3 koympiwn, alla exei wraies odhgies :-)

Pontiki Artec
Synh8ismeno pontiki diplou-prwtokolloy, xreiazetai ‘ClearDTR’ na ry8mistei sto config, OXI ‘ClearRTS’

Seiriako Pontiki 3 koympiwn DynaPoint.
Synh8ismeno pontiki diplou-prwtokolloy, xreiazetai ‘ClearDTR’ KAI ‘ClearRTS’ sto Xconfig.

Pontiki 3 koympiwn Genius Easymouse
Doyleuei kala me to prwtokollo Mouseman xwris thn ru8mish ths parametroy ChordMiddle. Apo ton Roderick Johnstone (`rmj@ast.cam.ac.uk`)

Truemouse, ftiagmeno sthn Taiwan
Doyleuei entajei, xreiazetai ‘ClearDTR’ sto config. (Apo `TimMacEachern`)

Pontiki markas Champ
Xreiazetai na exei ton diakopth sthn katastash PC, poy epitrepei to MouseSystems prwtokollo epishs. (Apo tnugent@gucis.cit.gu.edu.au)

Pontiki MicroSpeed
Synh8ismeno pontiki diplou-prwtokolloy.

Marka Venus ($7)
Exei jumper sto eswteriko gia na allazete metaju katastash 2 kai 3 koympiwn. (Apo `mhoward@mth.com`)

Saturn
Pontiki me diakopth, doyleuei entajei san MouseSystems sthn 8esh 3-koympiwn. (Apo `grant@oj.rsmas.miami.edu`.)

Pontiki Manhattan.
Diakopth gia katastaseis ‘MS AM’ / ‘PC AT’, katastash MS leitoyrgei kala me thn me8odo `gpm -R`. (Apo `komanec@umel.fee.vutbr.cz`).

Pontiki Inland.
Diakopth gia katastaseis ‘PC/MS’, doyleuei kala. (Apo `http://ptsg.eecs.berkeley.edu/\~{}venkates`).

qMouse (3-koympiwn), FCC ID E6qmouse X31.

Poylietai stis HPA gia peripoy $10. Doyleuei me ‘gpm -t msc -r 20’. Kanena jumper h diakopth gia katastash MouseSystems 3-koympiwn. Anajiopisto sth X. Den antapokrinetai sto `echo "*n" > /dev/mouse`.

Pontiki Mitsumi (2-koympiwn), FCC ID EW4ECM-S3101.

Poylietai stis HPA gia peripoy $12. Ajiopisto sthn X kai katw apo gpm, omalo diplo-koympi. (Ayta ta duo apo `gustafso@math.utah.edu`)

PC Pontiki Accessories poy phra apo thn CompUSA gia katw apo $10.

Exei diakopth PC/MS apo katw. Doyleuei entajei. (Apo `steveb@communique.net`)

Pontiki First - polu f8hno stis 7.79 lires sto Tempo.

Diplo Microsoft/MouseSystems, katastash orismenh me pathma koympiou sthn ekkinhsh. Kanenas diakopths, kamia sundesh. Tesseris syndeseis kalwdiwn, to echo ’*n’ den leitoyrgei. ‘gpm -R’ doyleuei wraia. (Apo `peterk@henhouse.demon.co.uk`)

Pontiki 3-koympiwn Trust.

Diplhs-katastasews me diakopth, leitoyrgei entajei ws MouseSystems se ‘PC’ katastash. Sto gpm den aresei h katastash Microsoft.

Chic 410

Doyleuei teleia otan einai se katastash ms kai xrhsimopoieitai me thn gpm -R entolh. Apo ton Stephen M. Weiss (`steve@esc.ie.lehigh.edu`)

Pontiki 3-koympiwn KeyMouse.

Doyleuei entajei me ClearDTR kai ClearRTS sto Xconfig; ‘-o dtr’ xreiazetai me gpm. (Apo `EZ4PHIL@aol.com`)

Qtronix keyboard ‘Scorpio 60’

Kai ta tria koympia doyleuoyn me to prwtokollo MouseSystems. (Apo `hwe@uebemc.siemens.de`)

Tecra 720 laptop

To glidepoint einai sto /dev/cua0; to stick einai sto /dev/psaux. (Apo `apollo@anl.gov`)

Pontiki Anubis

Doyleuei kala, xreiazetai na kratate to aristero koympi otan metabibazeste sthn X fantastikh konsola. (Apo `JoelCrisp`)

Pontiki Yakumo No.1900

Doyleuei me thn `gpm -R -t ms` ejagontas sth X. (Apo `OliverSchwank`)

Genius ‘Easy Trak’ Trackball

Den einai Microsoft symbato, xrhsimopoihse to `Mouseman` sthn Xconfig kai 8a leitoyrgei kala. (Apo `VTanger@aol.com`.)

Highscreen Mouse Pro

‘Doyleuei wraia’ leei `alfonso@univaq.it`.

Seira Logitech CA

Leitoyrgei sthn X xrhsimopoiwntas prwtokollo MMseries, stis 2400 Baud, 150 SampleRate. (8a prepei epishs na efarmozetai sto Logitech CC, CE, C7 & C9 mice). (Apo `vkochend@nyx.net`.)

Pontiki A4-Tech

Doyleuei entajei, xreiazetai thn grammh `DTR` katw apo thn X kai to gpm. (Apo `deane@gooroos.com`)

Pontiki Vertech

Kanonikh symperifora Microsoft/Mousesystems, mporei na sygkollh8ei gia monimh sundesh. (Apo `duncan@fs3.ph.man.ac.uk`.)

Boeder M-7 “Bit Star” (kai alla apo thn seira M ektos apo to M13)

Allazei sto prwtokollo Mousesystems kratwntas opoiodhpote koympi sthn ekkinhsh. (Apo `mailto:sjt@tappin.force9.co.uk`.)

Mouse Systems Pontiki “Kulishs” (tessara koympia kai ena kulishs/koympi)

Exei diakopth 2/3 - sthn katastash 3 leitoyrgei san pontiki MouseSystems triwn koympiwn, agnowntas to epipleon koympi & rodela. Den xreiazetai `ClearRTS/DTR`. (Apo `parker1@airmail.net`.)

Seiriako Pontiki Radio Shack 3-koympiwn

Montelo 26-8432, dia8esimo sto Tandy gia peripoy 20 lires. Doyleuei san Mousesystems me ClearDTR. (Apo `Sherilyn@sidaway.demon.co.uk`.)
Seiriako pontiki Dexxa
Doyleuei kala xrhsimopoiwntas prwtokollo Microsoft sth Xconfig, kanena ChordMiddle h otidhpote allo den xreiazetai. (Apo `mailto:slevy@ncsa.uiuc.edu`.)
Pontiki Belkin 3 koympiwn
Opws agorasthke apo to Sears (\$10), xreiazetai `-o rts` katw apo gpm (kai pi8anws `ClearRTS` katw apo thn X) otan einai sthn katastash PC. (Apo `mailto:mmicek@csz.com`.)

14 Peraiterw Plhrofories

- To Mouse Systems exei istoselida sto `http://www.mousesystems.com/`. Exoyn programma odhgou Windows an xreiazeste enan
- To Linux HOWTO Seiriakwn einai dia8esimo apo ka8reftes toy sunsite se olo to kosmo. An den gnwrizete poy einai o pio kontinos sas ka8repths, jekinhste sto `http://sunsite.unc.edu/mdw/linux.html`
- Yparxei mia polu kalh ejhghsh gia ton tropo poy leitoyrgoun na pontikia sto `http://www.4QD.co.uk/faq/meece.html`.
- Plhresteres leptomereies twn arxeiwn Xconfig kai XF86Config briskontai stis sxetikes man selides, kai sthn tekmhriwsh peri egkatastashs twn X windows opws to Xfree86 HOWTO. Epishs, blepete ta XFree86 FAQ ston ka8refth toy `http://www.XFree86.org/`.
- Plhrofories gia gpm briskontai sth man selida, epishs dokimaste thn istoselida toy Darin Ernst sto `http://www.castle.net/X-notebook/mouse.txt`.
- Polles plhrofories gia mhxanhmata kai logismiko pontikiwn mporei na bre8ei sto `http://www.hut.fi/Misc/Electronics/pc/interface.html\#mouse`

15 Oyra Pontikiou

Arketes apo tis plhrofories gia to eggrafo ayto exoyn careytei apo ta diafora linux newsgroups. Lypamai poy den krathsa arxeio olwn poy emmesa syneisferane me ton tropo ayto, sas eyxaristw oloys para polu.

Loipon, gia na anakefalaiwsoyme:

- Akoma kai fthna pontikia Microsoft 3 koympiwn mporei na ejanagkastoun na doylecoyn.
- Ry8misete to antigrafo sas toy X na anamenei ena pontiki Mouse Systems.
- Krathste pathmeno to aristero koympi sthn ekkinhsh gia na metabibasete to pontiki sthn katastash MouseSystems.
- Isws xreiastei na kratate pathmeno to aristero koympi otan jekinhsete thn X.
- Ta pontikia einai pio ejypna apo oti nomizeis.