LINUX PLIP MINI-HOWTO

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Ayto to HOWTO 8a sas deijei pws na etoimasete kai na xrhsimopoihsete ena Parallel Line Interface Protocol (PLIP, prwtokollo epikoinwnias parallhlhs grammhs)

Contents

Shmeiwsh

Ayth einai h kainouria ekdosh. Yparxoyn polles allages kai pros8hkes.

Oi megaluteres allages einai:

- SGML format
- mia genikh apanthsh sto "PLIP me win95" (dystyxws arnhtikh)
- megalutero kai kalutero FAQ tmhma (na eyxaristhsw tis anafores anari8mhtwn xrhstwn: polloi 8a broyn ta sxolia toys edw, opws yposxe8hka!)
- afairesh twn arxeiwn grhgorhs egkatastashs PLIP, poy etsi ki alliws htan axrhsta.
- ananewmeno tmhma Dos-Linux PLIP link

Gia opoiadhpote sxolia, dior8wseis, klp sxetika me thn ellhnikh metafrash epikoinwnhste me ton Panagiwth Boydourh sth dieu8ynsh: `panos@veria1.freeserve.co.uk`

Gia opoiesdhpote erwthseis, dior8wseis, sxolia kai/h protaseis, h hlektronikh moy dieu8ynsh einai: controzz@cli.di.unipi.it. Mporeite na moy steilete email opotedhpote xreiazeste boh8eia. Mporei na mhn apanthsw amesws alla 8a apanthsw. An den labete tipota meta apo duo ebdomades mallon to susthma mas exei problhma: mh distasete na moy janasteilete mail, einai ka8hkon moy na sas boh8hsw. De 8a eggyh8w oti 8a lusw ta problhmata sas alla 8a prospa8hsw.

An meta apo polla mynhmata de labete apanthsh elegjte thn dieu8ynsh epistrofhs sas. Polles fores oi apanthseis moy de ftanoyn logw problhmatwn paradoshs, synh8ws epeidh h dieu8ynsh epistrofhs einai root@myhost.

Prin steilete email diabaste to FAQ, h apanthsh moy se mia erwthsh poy hdh exei apanth8ei de 8a einai kaluterh (alla mallon xeiroterh h atelhs) apo aythn poy 8a diabasete.

Gia erwthseis sxetika me to PLIP sto DOS kai Win95 steilte email stoys syggrafeis twn antistoixwn kefalaiwn, de mporw na sas boh8hsw.

Prwta apo ola, polles texnikes plhrofories einai apo to NET-2-HOWTO, apo ton Terry Dawson. To paron mini-HOWTO den kaluptei alles ptyxes h antika8ista to NET-2-HOWTO: skopos moy einai na sas deijw enan tropo na kanete mia monimh PLIP sundesh grhgora kai *MONO* ayto. Oles oi ypoloipes plhrofories proerxontai apo thn proswpikh moy empeiria kai th boh8eia pollwn xrhstwn poy moy esteilan ta sxolia toys kai plhrofories.

Diabaste to NET-2-HOWTO kai ta alla eggrafa me genikes plhrofories gia diktya kai ta arxeia ry8misewn poy proteinw na allajete.

1 Eisagwgh: ti einai to PLIP kai giati 8a eprepe na to xrhsimopoihsw

Yparxoyn polloi tropoi na dhmioyrgh8ei sundesh metaju ypologistwn. To PLIP, opws kai to SLIP, epitrepoyn topikh sundesh metaju dyo ypologistwn, alla xrhsimopoiei thn parallhlh 8ura.

Oi parallhles 8ures metaferoyn parapanw toy enos bit taytoxrono, opote einai dynaton na epiteyx8oun megaluteres taxuthtes apo mia seiriakh sundesh.

H taxuthta poy epitygxanetai ejartatai apolyta apo to yliko (CPU kai parallhlh 8ura) kai to forto toy systhmatos, se genikes grammes mporei na einai apo 5 Kb/deyterolepto mexri kai 40 Kb/deyterolepto.

H diasundesh PLIP einai arketa grhgorh gia na epitrecei merikes ajioprepeis tcp/ip leitoyrgies, opws to NFS. Etsi, an exete enan ypologisth me ola ta programmata toy Linux kai enan me mono ena elaxisto susthma, mporeite na prosarthsete ola ta ypoloipa apo to kentriko mhxanhma.

To meionekthma einai oti oi perissoteroi xrhstes exoyn mono mia parallhlh 8ura, opote de 8a mporeite na typwsete kai na xrhsimopoihsete to PLIP taytoxrona. Akomh kai me dyo parallhles 8ures einai adunato na typwsete kai na xrhsimopoihsete to PLIP xwris na xrhsimopoihsete modules (apospwmena tmhmata) toy pyrhna.

To meionekthma ayto mporei na ejaleif8ei, an exete duo h perissoteres parallhles 8ures, xrhsimopoiwntas to patch poy 8a breite parakatw se ayto to mini-HOWTO.

Teleiwnontas, mporw na deijw enan kalo tropo gia na epiteyx8ei PLIP sundesh metaju DOS kai Linux.

Den 8a to epishmanw jana: mexri stigmhs kanenas den exei anaferei epityxh sundesh metaju Linux kai Windows95.

2 Aparaithtos ejoplismos gia PLIP.

O aparaithtos ejoplismos gia mia PLIP diasundesh einai (profanws) mia eleu8erh parallhlh 8ura kai sta dyo mhxanhmata kai to kalwdio. Ean mporeite na ry8misete th 8ura mesw toy BIOS, ry8miste thn ws "bi-directional" kai an ginetai se ECP h EPP mode.

Sxetika me to kalwdio, ta parakatw briskontai sto plip.c, ston kwdika toy pyrhna 2.0.33:

```
The cable used is a de facto standard parallel null cable -- sold as
a "LapLink" cable by various places.  You'll need a 12-conductor cable to
make one yourself.  The wiring is:
  SLCTIN      17 - 17
  GROUND      25 - 25
  D0->ERROR   2 - 15          15 - 2
  D1->SLCT    3 - 13          13 - 3
  D2->PAPOUT  4 - 12          12 - 4
  D3->ACK     5 - 10          10 - 5
  D4->BUSY    6 - 11          11 - 6
Do not connect the other pins.  They are
  D5,D6,D7 are 7,8,9
  STROBE is 1, FEED is 14, INIT is 16
  extra grounds are 18,19,20,21,22,23,24
```

Sas proteinw na diabasete to /usr/src/linux/drivers/net/README1.PLIP kai to README2.PLIP gia perissoteres plhrofories sxetika me to kalwdio.

Kata th gnwmh moy na apofugete na kanete monoi sas to kalwdio. To na etoimasete eseis to kalwdio 8a sas glitwsei polu liga xrhmata alla 8a pros8esei polla problhmata. Ean akomh 8elete na to etoimasete eseis, 8ymh8eite oti to kanete me dikh sas ey8unh. Egraca akribws oti yparxei sto plip.c alla de dinw eggyhseis.

Kai mia teleytaia lejh gia to mhkos toy kalwdioy: makria kalwdia (anw twn triwn metrwn) mporei na exoyn problhmata logw parembolwn. Ean xreiazeste megalutero mhkos na xrhsimopoihsete kala 8wrakismena kalwdia. Pantws ta polu makria kalwdia de synistwntai: nomizw oti to megisto mhkos einai 15 metra.

Parola ayta, kapoios moy eipe oti to 30metro kalwdio poy xrhsimopoiei doyleuei mia xara; an kapoios 8elei na dokimasei PLIP sundesh metaju toy grafeioy kai toy spitiou toy (200 metra makria) kai exei ta xrhmata mporei na dokimasei, alla me dikh toy ey8unh.

3 Ru8mish toy pyrhna.

Ypo8etw oti jerete pws na ry8misete kai na metaglwttisete ton pyrhna, alliws na breite ta antistoixa eggrafa (kernel-howto h alloys odhgous). Xarh sthn kalh doyleia ths omadas toy pyrhna, h anametaglwttish twn teleytaiwn pyrhnwn einai arketa eukolh doyleia kai gia toys "aplous" an8rwpoys. Pantws, gia plhrothta, idou mia grhgorh perilhch toy ti prepei na kanete:

SHMEIWSH: Ypo8etw oti xrhsimopoieite pyrhna 2.0.xx. Den yparxei logos na kratate pyrhna 1.2.xx. Den yparxoyn odhgies gia pyrhnes 2.1.xx, efoson einai gia anaptyjh.

8a ypo8esw oti xrhsimopoieite to menuconfig gia na ry8misete ton pyrhna alla ta idia isxuoyn kai gia ta alla ergaleia. 8a sas deijw pws ginetai me to menuconfig:

```
#make menuconfig
```

Synistw anepifulakta na epilejete

```
Loadable module support  --->
```

kai na energopoihsete to

```
[*] Enable loadable module support
```

kai an ginetai (px, an exete modules 2.0.0) to

```
[*] Kernel daemon support (e.g. autoload of modules)
```

Meta phgainete pisw kai epilegete

```
Networking options  --->
```

opoy prepei na epilejete toylaxiston ta

```
[*] Network firewalls
[*] TCP/IP networking
[*] IP: forwarding/gatewaying
```

3ana pisw kai epilejte ta

```
[*] Network device support
<M> PLIP (parallel port) support
```

Ean xrhsimopoieite modules sas synistw na exete kai to PLIP ws module. Ean 8elete na xrhsimopoihsete kai ektypwth, phgainete sto

```
Character devices  --->
```

kai balte ws module to

```
<M> Parallel printer support
```

Etsi exete energopoihsei thn yposthrijh PLIP apo ton pyrhna. Ean einai h prwth fora poy metaglwttizete pyrhna, koitajte kai tis ypoloipes epiloges, swste kai bgeite apo to menuconfig.

Metaglwttiste me

```
# make dep ; make clean
# make zlilo
```

Kai an xrhsimopoieite moudles

```
# make modules
# make modules_install
```

Epanekkinhste to susthma.

4 Mynhmata toy pyrhna sxetika me th sundesh PLIP.

Afou diamorfwsate kai metaglwttisate ton pyrhna me yposthrijh PLIP, otan ekkinhsete to susthma, an o pyrhnas yposthrizei PLIP amesa, h otan fortwsete (argotera, deite parakatw) to PLIP module, 8a deite kati san to parakatw (ta noumera mporei na diaferoyn):

```
NET3 PLIP version 2.2 gniibe@mri.co.jp
plip1: Parallel port at 0x378, using assigned IRQ 7.
```

Analoga me thn diamorfwsh toy klogd kai syslogd to munhma toy plip mporei na exei apo8hkeytei sta log arxeia: mhn panikoballeste an den deite to parapanw munhma. An metaglwttisate to PLIP ws module kai to lsmod deixnei oti to plip module einai fortwmeno, tote ayto einai arketo.

Parakalw shmeiwste to onoma ths sundeshs. Synh8ws einai plip1, alla mporei na einai plip0 h akomh kai plip2, plip3 kok. Ejartatai apo tis IO diey8unseis.

5 Etoimazontas ta arxeia diamorfwshs.

SHMEIWSH: Orismenes dianomes, opws h Debian, xrhsimopoioun diaforetika arxeia diamorfwshs. Ean exete mia synh8ismenh egkatastash kai de briskete ta rc.inet* arxeia, koitajte gia (diaforetika) arxeia ston /etc/init.d katalogo.

Prwta apo ola 8ymh8eite na krathsete ena antigrafo olwn twn arxeiwn poy 8a allajete.

```
#cp rc.inet1 rc.inet1.BACKUP
```

Twra, efoson den to exete kanei hdh, prepei na dialejete IP diey8unseis gia ta dyo mhxanhmata. Sta paradeigmata moy 8a xrhsimopoihsw IP diey8unseis sthn kanonikh xxx.xxx.xxx.xxx morfh.

Sto arxeio /etc/rc.d/inet1.rc kai sta dyo mhxanhmata pros8este (kalutera sto telos toy arxeioy):

```
/sbin/route add -net ${NETWORK} netmask ${NETMASK}
```

Opoy ta NETWORK kai NETMASK 8a prepei na dhlw8oun nwritera. Ean den jerete pws na to kanete ayto, diabaste to NET-2-HOWTO.

Ean meta apo thn entolh route deite kati san:

```
SIOCADDRT: network unreachable
```

tote xrhsimopoihste to parakatw:

```
/sbin/route add -net ${NETWORK} netmask ${NETMASK} dev plip1
```

opoy, ws synh8ws, 8a prepei na xrhsimopoihsete to onoma poy anafer8hke sta mynhmata toy pyrhna (deite parapanw).

Mporeite na parablecete aytes tis metablhtes mono stis parakatw periptwseis:

Ean syndeete ta dyo mhxanhmata se apomonwmeno diktyo mporeite na xrhsimopoihsete opoiadhpote IP dieu8ynsh, px 200.0.0.1 kai 200.0.0.2 antistoixa. Se ayth thn periptwsh mporeite me asfaleia na balete NETWORK="200.0.0.0" kai NETMASK="255.255.255.0".

SHMEIWSH: 200.0.0.1 kai 200.0.0.2 einai mono gia paradeigma. De synistw na tis xrhsimopoihsete, afou mporei na einai diey8unseis pragmatikwn ypologistwn sto internet.

Sas synistw na xrhsimopoihsete diey8unseis metaju twn synolwn "idiwtikwn diey8unsewn":

```
10.0.0.0        -   10.255.255.255
172.16.0.0      -   172.31.255.255
192.168.0.0     -   192.168.255.255
```

Sto arxeio /etc/hosts kai sta dyo mhxanhmata prepei na pros8esete tis IP diey8unseis twn mhxanhmatwn poy 8a synde8oun mesw PLIP. Sto paradeigma moy pros8etw ta parakatw:

```
200.0.0.1       one             # this is the "one" IP address
200.0.0.2       two             # this is the "two" IP address
```

Opoy one kai two einai ta onomata poy exete epilejei gia toys dyo ypologistes.

Ean 8elete na energopoihsete to NFS, ektos apo to na to pros8esete kata th diamorfwsh toy pyrhna, prepei na pros8esete sto /etc/exports thn perigrafh twn katalogwn poy 8elete na ejagete. Sto paradeigma moy, gia na mporesw na prosarthsw ton katalogo /usr, prepei na proste8ei h parakatw grammh:

```
 /usr                           two (ro)
```

Gia perissoteres plhrofories sxetika me to NFS, diabaste ta sxetika eggrafa; mh moy anaferete problhmata me to NFS afou de 8a mporesw na boh8hsw.

Epanekkinhste to susthma.

6 Energopoiwntas thn sundesh.

Teleiwnontas, parakatw briskontai oi entoles, poy prepei na ektelestoun me dikaiwmata yperxrhsth, gia na energopoihsete th sundesh PLIP (fysika ta kalwdia prepei na einai syndemena swsta).

SHMEIWSH: Ean kati anapantexo symbei, diploelegjte to kalwdio kai thn or8ografia twn entolwn. Ean akoloy8hsate tis odhgies swsta alla yparxoyn akoma problhmata, diabaste thn paragrafo FAQ, opoy polles apanthseis einai dia8esimes.

Prwta apo ola bebaiw8eite oti den yparxei lp syskeyh:

```
# cat /proc/devices
```

Den prepei na deite anafores sto lp opws h parakatw:

```
 6 lp
```

Ean th deite, afaireste (proswrina) thn lp syskeyh prin synexisete. Ean to PLIP doyleuei mporeite na dokimasete kai me to lp argotera. Gia na afairesete thn lp syskeyh 8a xreiasteite thn rmmod entolh an einai module; an einai enswmatwmeno ston pyrhna 8a xreiastei na janametaglwttisete ton pyrhna me to lp ws module (mia polu kaluterh lush).

3ana xrhsimopoiw ta onomata one kai two ws paradeigma. Sto one 8a xreiastei na kanete ta parakatw.

Ean den xrhsimopoieite to kerneld kai exete to PLIP ws module, prepei na to fortwsete:

```
# insmod plip
```

SHMEIWSH: an h parallhlh 8ura sas einai se diaforetiko IRQ apo to 7 kai/h xrhsimopoiei diaforetikh IO dieu8ynsh apo thn 0x378, tote prepei na to peite sto insmod. Breite to IRQ kai IO dieu8ynsh (h DOS entolh MSD mallon 8a boh8hsei, an kai mhn thn empisteueste kai polu) kai gracte kati san ayto:

```
# insmod plip io=0x278 irq=5
```

Synh8ws to IRQ einai 7 h 5, me thn IO dieu8ynsh 0x378, 0x278 h 0x3bc. Einai shmantiko na elegjete oti h dieu8ynsh kai to IRQ sympiptoyn me tis ry8miseis ths mhtrikhs kartas sas (me braxykyklwthres stis palies, mesw toy BIOS stis kainouries)

An 8elete elegjte oti to module fortw8hke me:

```
  # lsmod

Module:        #pages:  Used by:
plip               3           0
```

Shmeiwste to onoma ths sundeshs (plip0, plip1, kok; gia perissoteres leptomereies diabaste to kefalaio me ta mynhmata toy pyrhna parapanw), kai ry8miste th sundesh:

```
# ifconfig plip1 one pointopoint two up
```

SHMEIWSH: an h parallhlh 8ura sas einai se diaforetiko IRQ apo to 7 kai/h xrhsimopoiei diaforetikh IO dieu8ynsh apo thn 0x378, tote prepei na to peite sto ifconfig. Xrhsimopoihste to idio IRQ kai IO dieu8ynsh poy anafer8hke apo ton pyrhna kai gracte ta parakatw:

```
# ifconfig plip1 irq 7
# ifconfig plip1 io_addr 0x3bc
```

Synh8ws to IRQ einai 7 h 5, me thn IO dieu8ynsh 0x378, 0x278 h 0x3bc.

Twra elegjte oti doulece...

```
# ifconfig
```

```
 .....
 .....
 plip1     Link encap:10Mbps Ethernet  HWaddr FC:FC:C8:00:00:01
           inet addr:200.0.0.1  P-t-P:200.0.0.2  Mask:255.255.255.0
           UP POINTOPOINT RUNNING NOARP  MTU:1500  Metric:1
           RX packets:0 errors:0 dropped:0 overruns:0
           TX packets:0 errors:0 dropped:0 overruns:0
           Interrupt:7 Base address:0x378
```

Pros8este th diodo sto two...

```
# route add two plip1
```

Kai an 8elete kai NFS gia to two:

```
# rpc.portmap
# rpc.mountd
# rpc.nfsd
```

Sto two oi entoles einai oi idies alla prepei na gracete one anti gia two kai antistrofa.

Ena apo ta mhxanhmata einai pi8anon na exei mono thn PLIP sundesh, opote an ayto alh8euei gia to two, mporeite na gracete:

```
# route add default gw one
```

sto mhxanhma. Sto paradeigma moy parapanw, to two einai enas forhtos me mono PLIP sundesh me to one, opote to parapanw to egraca sto two.

Telos elegjte me

```
# ping two
```

apo to one kai

```
# ping one
```

apo to two gia na deite oti ola doyleuoyn entajei.

Fysika mporeite na exete oles aytes tis entoles na ektelountai aytomata apo ena script kata thn ekkinhsh. Prepei na dhmioyrghsete ena script poy ektelei aytes mono tis entoles: etsi mporeite na to energopoieite ws yperxrhsths opote xreiazete, h mporeite na to pros8esete sto /etc/rc.d/rc.inet2 gia na kaleite kata thn ekkinhsh toy systhmatos.

Gia na ry8misete to PLIP, mporeite na xrhsimopoihsete thn entolh plipconfig, deite th man selida ths gia perissoteres odhgies.

Gia na diakocete th sundesh xreiazeste:

```
# ifconfig plip1 down
```

poy afairei kai tis eggrafes ths sundeshs. Ean den exete to kerneld afaireste kai to module:

```
# rmmod plip
```

7 FAQ.

Ayto to tmhma 8a prospa8hsei na lusei ta problhmata sas. Ean exete perissoteres erwthseis, niwste eleu8eroi na moy steilete email opotedhpote.

- Lambanw ta parakatw mynhmata kata thn ekkinhsh (h otan fortwnw to plip module):

  ```
  SIOCSIFADDR: No such device
  SIOCADDRT: Network is unreachable
  ```

  kai otan prospa8w na sthsw th sundesh opws grafetai parapanw, janapairnw mynhmata la8oys opws:

  ```
  SIOCSIFADDR: No such device
  SIOCSIFDSTADDR: No such device
  SIOCADDRT: Network is unreachable
  mount clntudp_create: RPC: Port Mapper failure - RPC: Unable to send
  ```

- O pyrhnas, gia kapoio logo, den exei energopoihmenh yposthrijh PLIP. Ayto 8a mporouse na ginetai logw:
  * Den apanthsate nai sto "PLIP support?" kata th ru8mish toy pyrhna.
  * Apanthsate nai sto "Printer support?" kata th ru8mish toy pyrhna.
  * Etoimasate to PLIP ws module, opote prepei na to fortwsete.
  * Xrhsimopoieite la8os 8ura, px gracate plip1 anti gia plip0.

- Yparxei tropos na yposthrix8oun ta PLIP kai LP, ektos apo modules, isws me duo parallhles 8ures;
  - Nai, mexri stigmhs duo tropoi, poy perigrafontai sto "Pros8hkes gia na exete PLIP kai LP mazi":
    * Mporeite na xrhsimopoihsete thn pros8hkh gia na exete yposthrijh toy pyrhna kai gia ta duo.
    * Mporeite na xrhsimopoihsete thn pros8hkh gia na exete yposthrijh toy pyrhna se mia parallhlh 8ura gia to PLIP kai se allh gia to LP.

- Dhmiourghsa ena script poy syndeei toys 2 ypologistes. H sundesh ginetai aytomata apo to rc.inet2, opoy kalw to script poy dhmioyrgei th sundesh kai jekina to NFS. O ypologisths "two" prosarta merikous apo toys katalogoys toy "one". Exw pros8esei tis swstes entoles sto /etc/fstab toy "two". Ean ekkinhsw to "two" otan to "one" einai kleisto, to "two" stamata gia merika lepta sto "mounting remote file systems...".
  - Ayto symbainei epeidh o "two" perimenei na prosarthsei ta arxeia toy "one", alla efoson o "one" de leitoyrgei prepei na perimenete mexri o "two" na bare8ei na perimenei. Gia na to apofugete prepei:
    * Afaireste thn entolh apo to rc.inet2 poy prosarta ta apomakrysmena arxeia
    * Afaireste apo to /etc/fstab toy two tis eggrafes twn apomakrysmenwn systhmatwn arxeiwn kai prosarthste ta xeirokinhta otan ta xreiasteite.
    * Mia kaluterh lush einai o two na briskei an o one leitoyrgei kai tote na prosarthsei toys katalogoys. Ayto mporei na ginei metatrepontas thn mount entolh sto rc.d (h opoy allou brisketai) me ta parakatw:

```
if ping -c 5 one ; then
  mount one:/.....
fi
```

- H sundesh moy doyleuei alla to ping apotygxanei. Lambanw to parakatw munhma apo ton pyrhna:

```
plip1: timed out (1, 89)
```

  h paromoia mynhmata.

  - Ayto shmainei oti "h dikh sas pleyra ths sundeshs" doyleuei, to mhxanhma sas stelnei to shma alla h "allh pleyra" den apanta h den perimenei sta swsta IRQ/IO dieu8ynsh. Ayto einai to pio koino problhma kai, etsi, exei polles aities, synh8ws kakh kalwdiwsh h la8os IRQ kai/h IO diey8unseis. Ta la8os IRQ einai h phgh anw twn 60% twn problhmatwn, opote einai polu pi8anon allazontas to na ly8ei kai to problhma. Mia leptomerhs lista pi8anwn problhmatwn:
    * To kalwdio den einai syndemeno swsta h einai xalasmeno h kakoftiagmeno. Elegjte to, an einai dynaton, metaju dyo Linux ypologistwn opoy hdh doyleuei to PLIP. Ean ayto den einai dynaton tote dokimaste to toylaxiston me ena tester. To gegonos oti to kalwdio doulece/den doulece sto DOS/Win95 einai enas kalos/kakos oiwnos alla den einai apodeijh.
    * Sthn "allh pleyra" de leitoyrgei to PLIP.
    * Eiste syndemenoi me ena forhto me mh kanonikh parallhlh 8ura, deite parakatw.

    * Exete mia polu fthnh parallhlh 8ura poy einai mia aplh 8ura ”ektypwth” opote den einai dynaton na stelnete kai na lambanete.
    * H parallhlh 8ura sas den einai ry8mismenh (toylaxiston) ws bi-directional. Dior8wste to sto BIOS. Proxwrhmenes epiloges opws EPP kai ECP einai katallhles.
    * Oi parallhles 8ures exoyn diaforetiko IRQ, opote 8a prepei na fortwsete to plip module (h to lp module) me diaforetiko IRQ. Phgainete pisw sto kefalaio ”Energopoiwntas thn sundesh” kai epilejte diaforetiko IRQ.
    * Kapoia allh syskeyh xrhsimopoiei to IRQ (poy synh8ws einai 7), mallon h karta hxoy. Mhn empisteueste programmata toy DOS opws to MSD, anti8eta prospa8hste na fortwsete to plip module me diaforetiko IRQ.

- Ebala to swsto IRQ kai IO dieu8ynsh alla pali de doyleuei. Pairnw tis diey8unseis apo to MSD.
  - Moy anafer8hke oti to MSD dinei la8os diey8unseis. Dokimaste ayto to programma: http://www.cs.caltech.edu/ huny/para13.zip.
- H sundesh moy doyleuei kai to ping epishs. Merikes fores pairnw to parakatw munhma apo ton pyrhna:

  ```
  plip1: timed out (1, 89)
  ```

  h paromoia mynhmata.

  - Ayto shmainei oti h allh pleyra den apanthse entos enos xronikou orioy. An ola doyleuoyn swsta mporeite na agnohsete tetoia mynhmata: synh8ws shmainei oti h allh pleyra einai polu pio argh apo th dikh sas, eite logw ejoplismou eite logw fortioy. Mporeite na ry8misete to PLIP me thn entolh plipconfig.
- Exw egkatasthsei to PLIP alla otan xrhsimopoiw to ping exw 100% apwleia dedomenwn. Exw syndesei ton ypologisth moy me ena forhto.
  - Oi parallhles 8ures merikwn forhtwn den kanoyn gia PLIP, epeidh einai aples 8ures ektypwth, dhladh mporoun mono na metadidoyn dedomena alla oxi kai na lambanoyn. Mexri stigmhs den jerw an kapoios katafere na tis kanei na doylecoyn. H monh elpida einai:
    * Koitajte tis ry8miseis toy forhtou, isws yparxei tropos na ry8misete th 8ura ws parallhlh anti gia 8ura ektypwth. Synh8ws ayto onomazetai ”parallel enhanced mode”.
    * Dokimaste plip mode 0. Den jerw pws na to kanete kai/h an doyleuei h an einai akoma dia8esimo stoys teleytaioys pyrhnes.
- Ti taxuthtes mporw na epituxw me to PLIP?
  - Ayth einai mia duskolh erwthsh gia na apanth8ei, afou ejartatai apo POLLOYS paragontes poy ephreazoyn drastika thn apodosh:
    * Thn taxuthta toy epejergasth kai apo tis dyo pleyres ths sundeshs.
    * Ton tupo ths parallhlhs 8uras kai tis ry8miseis.
    * To fortio toy ypologisth.
    * Gia ti xrhsimopoieitai to PLIP.

    Xontrika, 8a prepei na epituxete peripoy 40kbytes/deyterolepto, polu kalutera apo seiriakh sundesh kai konta se kartes ethernet xamhlhs apodoshs.
- Ti symbainei an xreiazomai na shkwnw kai na kleinw th sundesh plip1 polles fores me to ifconfig;
  - Moy fainetai oti prepei na pros8esete thn parametro -arp sto ifconfig, ektos apo thn prwth fora meta apo ka8e ekkinhsh. Egw den to xreiazomai alla kapoios mporei na to xreiastei.

- Diabasa tis IP diey8unseis poy anhkoyn se apomonwmena diktya kai ta 200.0.0.1 kai 200.0.0.2 poy xrhsimopoieis einai ejw apo aytes. De 8a eprepe na allajoyn;
  - Nai, prepei. Alla opws anefera sthn arxh, dialeja aytes tis diey8unseis gia thn aplothta toys. Eiste eleu8eroi na tis allajete opws 8elete. Ena apospasma apo to NET-2-HOWTO:

```
RFC1597 has specifically reserved some IP addresses for private
networks.  You should use these as they prevent anything nasty
happening if you accidentally get connected to the Internet. The
addresses reserved are:

  10.0.0.0        -   10.255.255.255
  172.16.0.0      -   172.31.255.255
  192.168.0.0     -   192.168.255.255
```

- Yparxei tropos na ry8misw tis parametroys toy PLIP xwris na peirajw ton phgaio kwdika;
  - Nai yparxei. Dokimaste thn entolh /sbin/plipconfig. Deite th man selida ths gia perissoteres plhrofories.
- Trexw Debian GNU/Linux kai, katw apo to Debian, ta arxeia /etc/rc.d/rc.inet1 kai 2 den yparxoyn. Poy 8a gracw tis entoles gia to plip.
  - Sto Debian GNU/Linux prepei na koitajete to /etc/init.d/network, opoy 8a balete oles tis entoles poy 8a phgainan kanonika sta rc.inet1 kai 2.
- Exw merika problhmata syndeontas dyo ypologistes me to PLIP. O prwtos exei thn teleytaia ekdosh toy pyrhna enw o deuteros exei PLIP ekdosh 1.0.x: yparxei problhma;
  - Nai, einai polu kalutera, an einai dynaton na yparxei h idia ekdosh PLIP kai stis dyo akres. Sto plip.c einai grammeno oti to PLIP de mporei na leitoyrghsei me 1.0.xx PLIP.
- Wraia, to PLIP doyleuei me 4 bits, ti ginetai me to PLIP twn 8 bits poy diabasa sthn tekmhriwsh toy pyrhna; Nomizw oti legetai Mode 1.
  - Ayto to mini-HOWTO einai gia tis ry8miseis. Gia texnikes plhrofories deite ta /usr/src/linux/drivers/net/README*.PLIP h epikoinwnhste me ton syggrafea. To mono poy jerw einai: to kanoniko PLIP xrhsimopoiei "null printer" kalwdia kai to Mode 0 (mhn to mperdeuete me to plip0, poy einai onoma sundeshs) xrhsimopoiei 4 bits. To Mode 1 xrhsimopoiei 8 bits kai 8a prepei na einai hdh dia8esimo alla 8a xreiastei ena eidika ftiagmeno kalwdio kai doyleuei mono metaju dyo ypologistwn Linux. Den jerw, efoson exete to kalwdio, pws na kanete sundesh PLIP se Mode 1. Ean kapoios jerei, parakalw na moy pei ki emena.

8 Pros8hkes gia na exete PLIP kai LP mazi.

O kaluteros tropos gia na exete ta PLIP kai LP mazi einai me th xrhsh modules: mporeite na fortwsete to plip.o kai na to jefortwsete otan 8elete na typwsete kai antistrofa. Ean 8elete na xrhsimopoihsete ta PLIP kai LP taytoxrono, dokimaste tis parakatw pros8hkes.

8.1 PLIP kai LP mazi sthn idia 8ura.

Ean gia kapoio logo 8elete ta PLIP kai LP na yposthrizontai apey8eias apo ton pyrhna, mporeite na dokimasete tis parakatw pros8hkes.

Prepei na peirajete ton parakatw kwdika, alla *krathste antigrafa* twn arxeiwn poy 8a allajete:

```
******** modifications to linux/drivers/char/lp.c **********************
struct lp_struct lp_table[] = {
        { 0x3bc, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL,
NULL, },
/*      { 0x378, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL,
NULL, },
        { 0x278, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL,
NULL, },
*/
};
#define LP_NO 1

******** modifications to linux/drivers/net/Space.c ********************
#if defined(PLIP) || defined(CONFIG_PLIP)
    extern int plip_init(struct device *);
    static struct device plip2_dev = {
        "plip2", 0, 0, 0, 0, 0x278, 2, 0, 0, 0, NEXT_DEV, plip_init, };
    static struct device plip1_dev = {
        "plip1", 0, 0, 0, 0, 0x378, 7, 0, 0, 0, &plip2_dev, plip_init, };
/*    static struct device plip0_dev = {
        "plip0", 0, 0, 0, 0, 0x3BC, 5, 0, 0, 0, &plip1_dev, plip_init, };
*/
#   undef NEXT_DEV
#   define NEXT_DEV     (&plip1_dev)
#endif  /* PLIP */
```

Fysika yparxei kai h synh8ismenh apokurhjh ey8ynwn: *elaba tis parapanw pros8hkes kai tis paroysiazw "opws tis phra". Ayto shmainei oti tis dokimazete me dikhs sas ey8unh.* Opws kai na exei, to mono problhma 8a einai h aplh epanafora twn arxeiwn kai h metaglwttish.

8.2 PLIP kai LP se diaforetikes 8ures.

Ean exete toylaxiston 2 parallhles 8ures mporeite na dokimasete aytes tis pros8hkes poy epitrepoyn thn xrhsh toy PLIP se mia 8ura kai toy LP se allh.

1. Metatrecte se sxolio thn parakatw grammh sto arxeio drivers/char/lp.c.

```
struct lp_struct lp_table[] = {
{ 0x3bc, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, },
{ 0x378, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, },
/* { 0x278, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, }, */
};
    3 -> 2
```

2. Diamorfwsh pyrhna.

```
PLIP (parallel port) support (CONFIG_PLIP) [n] y

Parallel Printer support [y] y
```

3. Mynhmata pyrhna kata thn ekkinhsh.

```
lp1 at 0x0378, using polling driver
.....
NET3 PLIP version 2.0 gniibe@mri.co.jp
plip2: Parallel port at 0x278, using assigned IRQ 5.
```

3ana apokurhjh ey8ynwn opws sto tmhma 8.1.

9 PLIP sundesh metaju DOS kai Linux

Meta thn prwth ekdosh aytou toy mini-HOWTO polloi me rwthsan pws mporei na ginei sundesh metaju Linux kai DOS (h Windows). To geniko endiaferon me w8hse se ayto to kefalaio poy elpizw na sas boh8hsei.

To tmhma ayto proerxetai apo ena ar8ro poy brhka sth Linux Gazzete toy James McDuffie <mcduffie@scsn.net> . Kaluptei th basikh egkatastash PLIP sundeshs metaju enos ypologisth Linux kai enos DOS, xrhsimopoiwntas Windows kai to Trumpet WinSock kai dinei th dieu8ynsh enos foberou programmatos poy sas epitrepei na trexete X-Windows sta Windows.

To teleytaio tmhma einai pros8hkh apo ton James Vahn *jvahn@short.circuit.com* `<mailto:jvahn@short.circuit.com>` opoy perigrafei se ba8os pws na sthsete th sundesh kai na lusete polla problhmata.

Gia opoiesdhpote erwthseis se ayto to kefalaio epikoinwnhste mazi toy, oxi me emena.

9.1 DOS-Linux sundesh.

Ypo8etw oti exete hdh ry8misei swsta to PLIP apo thn pleyra toy Linux kai exete to swsto kalwdio, alliws phgainete pisw sta prohgoumena kefalaia.

Apo thn pleyra toy DOS, 8a xreiasteite prwta apo ola enan odhgo. Mporeite na ton breite sto:

ftp://ftp.crynwr.com/drivers/plip.zip `<ftp://ftp.crynwr.com/drivers/plip.zip>`

To programma trexei katw apo DOS kai dra san Ethernet Packet driver. An 8elete na xrhsimopoihsete to PLIP me Windows 8a xreiasteite kai to Trumpet Winsock. Ayto leitoyrgei san TCP/IP diasundesh. Diaforetika, mallon mporeite na breite programmata TCP/IP gia DOS.

Twra, phgainete pisw sto ypologisth me to Linux kai dwste toy thn dieu8ynsh toy DOS ypologisth sto /etc/hosts. An o DOS ypologisths sas den exei dhlwmenh IP dieu8ynsh mporeite na dialejete mia opoiadhpote (alla 8ymh8eite thn proeidopoihsh toy kefalaioy 3 gia IP diey8unseis).

Ypo8etw oti dwsate to onoma linux ston Linux ypologisth kai dos ston DOS ypologisth. Prepei na gracete:

```
ifconfig plip1 linux pointopoint dos arp up
route add dos
```

Fysika an 8elete na to kanete ayto ka8e fora poy jekinate ton Linux ypologisth mporeite na pros8esete ta parakatw sto /etc/rc.d/rc.inet1:

```
/sbin/ifconfig plip1 linux pointopoint dos arp up
/sbin/route add dos
```

Ayto ry8mizei th sundesh kai pros8etei th diodo. Fysika an xrhsimopoieite th deuterh parallhlh 8ura prepei na gracete plip2.

Phgainete pisw ston DOS/Windows ypologisth kai anoijte to autoexec.bat, opoy 8a pros8esete tis grammes poy akoloy8oun:

```
c:\plip\plip.com 0x60
c:\tcpip\winsock\winpkt.com 0x60
```

Fysika ypo8etw oti balate to plip.com (ton packet driver) ston katalogo c:/plip kai to winpkt.com sto c:/tcpip, alliws 8a xreiastei na balete to swsto monopati.

Ayto ry8mizei to programma plip.com se dianysma 0x60 kai fortwnei to winpkt.com poy erxetai me to trumpet winsock sto idio dianysma. Ean to kalwdio den einai sthn lpt1 8a xreiastei na peite sto plip.com to swsto IRQ kai thn IO dieu8ynsh. Epishs, to winpkt.com xreiazetai na trexei gia na einai dia8esimo to dianysma sta Windows. Apo ekei kai pera phgainoyme sth ru8mish toy Trumpet Winsock. To mono poy xreiazetai einai na dialejete SLIP h PPP kai na balete 60 sto koyti Packet vector. Meta toy lete thn IP dieu8ynsh poy toy dwsate, thn IP dieu8ynsh toy Linux ypologisth ws thn pulh(gateway) kai ws diakomisth (Name server) to onoma toy ypologisth h toy ISP sas, ean prokeitai na synde8eite sto internet (perissotera gia ayto argotera). Kleiste tis ry8miseis kai janatrejte to Winsock kai eiste etoimoi!Balte to winsock sto startup group kai 8a ta exete ola etoima aytomata!

Ean 8elete na exete prosbash sto internet mesw toy Linux ypologisth apo ta Windows 8a xreiastei na xrhsimopoihsete IP Masquerading, gia plhrofories deite to NET-2-HOWTO. Ayto apla apokruptei ta Windows pisw apo thn IP dieu8ynsh toy Linux.

Epishs, brhka ena programma poy sas epitrepei na trexete X-Windows sta Windows!Brisketai sto:

http://www.tucows.com/ `<http://www.tucows.com/>`

Ry8miste to sumfwna me tis odhgies kai apla 8a kanete telnet apo ta Windows kai 8a ry8misete thn o8onh ws ayth twn Windows (px ‘DISPLAY=duncan:0.0‘) kai trexete ta programmata kanonika. Den yparxei tipota kalutero apo to na trexete xv sta Windows!Elpizw na sas boh8hsa.

9.2 Mia DOS-Linux PLIP empeiria.

SHMEIWSH: Ta parakatw ta elaba apo ton James Vahn *jvahn@short.circuit.com* `<mailto:jvahn@short.circuit.com>`. Ta ebala opws ta parelaba. Ayto shmainei oti **gia opoiesdhpote erwthseis sxetika me ayto to tmhma exei polu perissoterh empeiria apo emena, opote steilte email se ayton ki oxi emena**. H empeiria toy me mia sundesh PLIP enos DOS ypologisth me disketa mono me Linux einai ena teleio paradeigma gia to pws na lusete koina problhmata.

Teleytaia ananewsh 11 Ioylioy 1996

To DOS koyti moy (me odhgo disketas MONO) einai diktywmeno mesw PLIP apo th deuterh parallhlh 8ura sto Linux mhxanhma. H prwth 8ura toy Linux mhxanhmatos exei syndemeno ton ektypwth, kai ta dyo einai monima syndemena kai kanw telnet sto Linux. Edw einai oi shmeiwseis moy gia to pws ta katafera.

Otan o pyrhnas caxnei gia 8ures ektypwth, 8a tis parei oles ektos an tis afairesete xeirokinhta. Diaforetika to PLIP de 8a brei kamia. Mia me8odos einai na fortwnete toys odhgous ws modules otan toys xreiazeste...

O <gniibe@mri.co.jp> grafei:

Synexei synistw na exete ta PLIP/LP ws modules, efoson I keep recommending using PLIP/LP as kernel module, since

- Einai pio euxrhsta kata tis ry8miseis
- h (ana)metaglwttish toy pyrhna den einai eukolh gia arxarioys

- h synuparjh PLIP kai LP einai dynath mono me modules

Me ta PLIP/LP ws modules, mporeite na ry8misete poia 8ura 8a xrhsimopoiei to PLIP kai poia to LP. Ena paradeigma:

```
# insmod lp.o io=0x378
# insmod plip.o io=0x278 irq=2
```

H mporeite na xrhsimopoieite dyo parallhles 8ures:

```
# insmod plip.o io=0x278,0x3bc irq=2,5
```

Sto parapanw paradeigma

to plip0 ry8mizetai sto 0x278 kai to irq toy ws 2,

to plip1 ry8mizetai sto 0x3bc kai to irq toy ws 5, antistoixa.

H xrhsh modules einai mallon monodromos. H parakatw me8odos deixnei pws na "peirajete" ton pyrhna wste na exete ektypwth kai PLIP se diaforetikes 8ures xwris th xrhsh modules. Ean h xrhsh modules de sas einai eukolh mporei na breite ta parakatw pio grhgora.

8a xreiastei na allajete dyo arxeia sto kwdika toy pyrhna. Xrhsimopoiw pyrhna 1.2.13 kai brhka oti merikes allages xreiazontai sto ../linux/drivers/net/Space.c gia to susthma moy. Koitajte gurw apo th grammh 205 gia ton orismo toy PLIp gia na kanete thn 8ura kai to IRQ ths na tairiazoyn, kai shmeiwste poion odhgo xreiazeste (plip0, plip1, plip2). Sthn periptwsh moy h 8ura 0x278 xrhsimopoiei IRQ 5 (h karta einai ry8mismenh etsi) alla sto Space.c einai me IRQ 2. Ekana tis allages edw para na anoigw to mhxanhma kai na caxnw tis kartes. O allos tropos einai na dhlwsete to IRQ me to ifconfig argotera, alla o pyrhnas 8a jekinhsei me ta la8os IRQ gia to PLIP kai ayto na sas enoxlei. Einai mia aplh allagh (enos xarakthra).

To epomeno, kai dyskolotero, bhma:

Sto .../drivers/char/lp.c 8a breite ta parakatw peripoy sth grammh 38:

```
struct lp_struct lp_table[] = {
    { 0x3bc, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, },
    { 0x378, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, },
/*  { 0x278, 0, 0, LP_INIT_CHAR, LP_INIT_TIME, LP_INIT_WAIT, NULL, NULL, },
 * 0x278 reserved for plip1
 *
 * };
 * #define LP_NO 3
 */
};
#define LP_NO 2
```

Prosejte tis allages poy ginontai- h mia 8ura afaireitai, opote mono dyo 8ures dhlwnontai. H 8ura 0x3BC mallon de 8a doylecei gia to PLIP- h grammh me ta IRQ synh8ws spaei se aytes tis 8ures.

Phrate antigrafo prin allajete ta arxeia, swsta; Twra etoimaste ena neo pyrhna me yposthrijh ektypwth, diktuoy, dummy kai plip.

Ry8miste to susthma. To diko moy /etc/rc.d/rc.inet1:

```
#!/bin/bash
#
/sbin/ifconfig lo 127.0.0.1
/sbin/route add -net 127.0.0.0

/sbin/ifconfig dummy 200.0.0.1
/sbin/route add -net 200.0.0.0 netmask 255.255.255.0
/sbin/ifconfig plip1 arp 200.0.0.1 pointopoint 200.0.0.2 up
/sbin/route add 200.0.0.2
/sbin/ifconfig dummy down
```

Prosejte oti to arp xrhsimopoieitai se DOS-to-Linux syndeseis, oxi se Linux-to-Linux syndeseis.

Kai sto /etc/hosts pros8este ta parakatw, gia na dwsete apo ena onoma sta dyo mhxanhmata:

```
200.0.0.1       console1
200.0.0.2       console2
```

To DOS einai h console2. Prosejte thn proeidopoihsh toy Andrea, kalutera na xrhsimopoihsete tis epishmes diey8unseis.

Epanekkinhste wste oles oi allages kai o neos pyrhnas na energopoih8oun. Kata thn ekkinhsh (h me to dmesg) an balate tis pros8hkes, h alliws otan fortwsete ta modules 8a deite:

```
lp0 at 0x03bc, using polling driver
lp1 at 0x0378, using polling driver
[....]
NET3 PLIP version 2.0 gniibe@mri.co.jp
plip1: Parallel port at 0x278, using assigned IRQ 5.
```

H entolh ”route” deixnei:

```
Kernel routing table
Destination     Gateway         Genmask         Flags MSS    Window Use Iface
console2        *               255.255.255.255 UH    1436   0      136 plip1
loopback        *               255.0.0.0       U     1936   0      109 lo
```

Kai to ”ifconfig plip1” deixnei:

```
plip1     Link encap:10Mbps Ethernet  HWaddr FC:FC:C8:00:00:01
          inet addr:200.0.0.1  P-t-P:200.0.0.2  Mask:255.255.255.0
          UP POINTOPOINT RUNNING  MTU:1500  Metric:1
          RX packets:132 errors:0 dropped:0 overruns:0
          TX packets:136 errors:0 dropped:0 overruns:0
          Interrupt:5 Base address:0x278
```

Koitajte to /etc/inted.conf kai deite an to telnet einai energopoihmeno. Mporei na 8elete na diabasete to man toy tcpd, kai na xrhsimopoihsete to /etc/hosts.allow (ALL: LOCAL) kai /etc/hosts.deny (ALL: ALL). 8a prepei na mporeite na kanete ”telnet localhost”.

To Linux einai etoimo, pame sto DOS. 3ana na prosexete gia th 8ura 0x3BC ean yparxei.

Xrhsimopoiw to NCSA telnet kai ton odhgo PLIP ths Crynwr, poy briskontai stis parakatw diey8unseis:

ftp://ftp.ncsa.uiuc.edu/Telnet/DOS/ncsa/tel2308b.zip <ftp://ftp.ncsa.uiuc.edu/Telnet/DOS/ncsa/tel2308b.zip>

ftp://ftp.crynwr.com/drivers/plip.zip <ftp://ftp.crynwr.com/drivers/plip.zip>

Sigoyreyteite oti exete thn ekdosh 2.3.08 toy NCSA telnet kai thn ekdosh 11.1 toy Crynwr PLIP odhgou. Diabaste to Crynwr SUPPORT.DOC.

To CONFIG.TEL arxeio: Ta perissotera einai oi ej'orismou ry8miseis opote to ekoca gia na glitwsw ligo xwro bazontas mono tis plhrofories poy xreiazeste (elpizw). H deuterh 8ura toy mhxanhmatos einai sto 0x278, IRQ 5.

```
myip=200.0.0.2
netmask=255.255.255.0       # subnetting mask
hardware=packet             # network adapter board (packet driver interface)
interrupt=5                 # IRQ which adapter is set to
ioaddr=60                   # software interrupt vector driver is using
#
#[...lots unchanged...]
#
# at the end of the file, put this line:
name=console1 ; hostip=200.0.0.1 ; nameserver=1 ; gateway=1
```

(console1 einai to onoma toy Linux mhxanhmatos, xrhsimopoihste o,ti 8elete)

Ekana ena kalwdio 4 metrwn gia th sundesh kai (afou arxika brhka oti htan la8os ftiagmeno) den yphrje kanena problhma. Ena koino kalwdio ektypwtwn 11-syndesewn 8a doylecei kanonika. To Linux plip.c deixnei thn kalwdiwsh. An kai to diko moy exei syndeseis 17-17 de nomizw oti xreiazetai gia tipota kai den yparxei kai se etoima kalwdia.

```
@echo off
plip.com 0x60 5 0x278
telbin -s console1
```

Ayto 8a sas syndesei sto Linux sto /dev/ttyp. To telnet toy NCSA dinei 8 o8ones kai leitoyrgei kai san ftp server. To PLIP petyxainei mia metria apodosh, pianw 6.5K/deyterolepto gia metafores arxeiwn me tis antikes moy. Elpizw na petuxete perissotera. :-)

10 PLIP metaju Linux kai Windows 95.

Ayto to tmhma einai keno. Xrhsimopoiw windows 95 gia tipota ektos apo paixnidia, opote den prospa8w kai de me endiaferei mia PLIP sundesh me Linux. Oi erwthseis gia mia tetoia sundesh pairnoyn thn parakatw apolyth (gia thn wra) apanthsh.

Mexri stigmhs kanenas den exei anaferei epityxh sundesh metaju Linux kai Windows 95. Ean kapoios ta kataferei na moy to pei amesws: yparxoyn xiliades xrhstes PLIP poy perimenoyn thn apanthsh!

11 Erwthseis; Sxolia; Steilte ta...

Gia opoiesdhpote erwthseis kai sxolia mporeite na me breite mesw email sth dieu8ynsh *controzz@cli.di.unipi.it* <mailto:controzz@cli.di.unipi.it>

Ta sxolia einai eyprosdekta, oi anafores la8wn anektimhtes. H epomenh ekdosh 8a exei akoma megalutero tmhma FAQ, an steilete erwthseis kai, fysika, tis apanthseis an tis exete.

Mhn stelnete erwthseis poy hdh yparxoyn sto FAQ.

Ean 8elete na zhthsete th boh8eia moy, dwste moy oses perissoteres plhrofories mporoun na me boh8hsoyn, toylaxiston: ekdosh pyrhna, entoles poy xrhsimopoih8hkan, mynhmata la8oys, to kalwdio poy xrhsimopoihsate kai o,ti alla mynhmata phrate sxetika me to PLIP.

8ymh8eite na mhn moy steilete erwthseis sxetika me to PLIR kai DOS/Windows 3.1, de mporw na sas boh8hsw. Tetoies erwthseis na stelnontai ston James Vahn *jvahn@short.circuit.com* `<mailto:jvahn@short.circuit.com>`, poy esteile to tmhma gia to DOS. 3ana, einai askopo na ton rwthsete (h emena) gia to PLIP me Windows 95.

12 Poy na breite nees ekdoseis aytou toy mini-howto.

Ayto to mini-HOWTO diathreitai apo ton syntonisth twn HOWTO kai anartatai mhniaia sto *comp.os.linux.answers* `<news:comp.os.linux.answers>` kai mporei na bre8ei ston katalogo twn HOWTO toy sunsite h se antigrafa toy.

Allos enas tropos na to breite (kai na epikoinwnhsete mazi moy) einai sthn proswpikh moy selida,

http://www.cli.di.unipi.it/˜controzz/intro.html `<http://www.cli.di.unipi.it/˜controzz/intro.html>` (sta italika)

http://www.cli.di.unipi.it/˜controzz/intro_e.html `<http://www.cli.di.unipi.it/˜controzz/intro_e.html>` (sta agglika)

13 Credits.

Polles eyxaristies stoys:

- Rick Lim <ricklim@freenet.vancouver.bc.ca> gia tis pros8hkes gia na exoyme PLIP kai LP taytoxrona.
- Takeshi Okazaki <GBA03552@niftyserve.or.jp> gia tis pros8hkes gia na exoyme PLIP kai LP se diaforetikes 8ures.
- Jim Van Zandt <jrv@vanzandt.mv.com> gia symboyles sto "tutorial" tmhma toy HOWTO.
- Fernando Molina <fmolina@nexo.es> gia xrhsima sxolia gia ta IRQ kai IO.
- James Vahn <jvahn@short.circuit.com> gia thn pros8hkh sto kefalaio toy PLIP anamesa se DOS kai Linux.
- Oloys toys xrhstes poy esteilan ar8ra sxetika me to PLIP se omades syzhthsewn h se emena proswpika. H lista olwn oswn me boh8hsan me plhrofories kai sxolia mporei na einai megaluterh kai apo to idio to mini-HOWTO: sas eyxaristw oloys!

14 Adeia pneymatikhs idiokthsias.

Ektos an exei alliws dhlw8ei, ta Linux HOWTO eggrafa einai pneymatikh idiokthsia twn syggrafewn toys. Ta Linux HOWTO eggrafa mporoun na anaparax8oun h na dianemh8oun oloklhra h en merh, se opoiodhpote fysiko h hlektroniko meso, efoson h paron adeia diathreitai se ola ta antigrafa. H emporikh anadianomh epitrepetai kai en8arrunetai- parola ayta, o syggrafeas 8a protimouse na eidopoieitai gia tetoies dianomes.

Oles oi metafraseis, paragwges ergasies h aggregate ergasies poy periexoyn opoiodhpote Linux HOWTO eggrafa prepei na kaluptontai apo ayth thn adeia. Etsi, de mporeite na dhmioyrghsete paragwgh ergasia apo ena HOWTO kai na epiballete epipros8etoys periorismous sthn dianomh toy. Ejaireseis se aytous toys kanones mporei na do8oun katw apo sygkekrimenes syn8hkes- parakalw epikoinwnhste me ton syntonisth twn HOWTO sth dieu8ynsh poy dinetai parakatw.

En syntomia, epi8ymoume na prow8hsoyme th diadosh aytwn twn plhroforiwn mesa apo osa perissotera kanalia einai dynaton. Parola ayta, epi8ymoume na diathrhsoyme ta pneymatika dikaiwmata sta eggrafa HOWTO, kai 8a 8elame na eidopoih8oume gia opoiadhpote sxedia anadianomhs twn HOWTO.

Gia opoies erwthseis, parakalw epikoinwnhste me ton Greg Hankins, ton syntonisth twn HOWTO, sth dieu8ynsh linux-howto@sunsite.unc.edu mesw email.

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