ELLHNIKO Linux FAQ (Frequently Asked Questions with Answers)

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Ayto to keimeno (Linux-Hellenic-FAQ) einai h ellhnikh metafrash ths listas me tis pio syxnes erwthseis (Frequently Asked Questions - FAQ) sxetika me to Linux, ena tupoy Unix leitoyrgiko susthma gia 386/486/586/686, Pentium xxx, K5, K6, Alpha, MIPS, 680x0 kai alloys epejergastes. SHMEIWSH: Parallhla me ayto to keimeno yparxei to `Hellenic-HOWTO` poy periexei plhrofories gia thn ru8mish toy Linux, eidika gia yposthrijh ths ellhnikhs glwssas kai yposthrijhs twn Ellhnwn. WARNING: This document contains greek (ISO-8859-7). URL: <`http://students.ceid.upatras.gr/\~{}gef/linux/docs/FAQ/`>

Contents

1 Eisagwgh kai genikes plhrofories

1.1 Ti einai to Linux

To Linux einai o pyrhnas enos klwnoy toy Unix, grammenos apo to mhden apo ton Linus Torvalds, me boh8eia apo mia diasparth omada hackers apo to Internet. Shmera otan leme Linux, ennooume pleon olo to leitoyrgiko susthma. To Linux teinei na exei POSIX symbatothta, kai exei oles tis eykolies poy 8a perimene kaneis se ena monterno plhrws ejoplismeno Unix, symperilambanomenwn:

- pragmatikh proekxwrhtikh polyepejergasia (preemptitive multitasking),
- ideath mnhmh (virtual memory),
- diamoirazomenes biblio8hkes (shared libraries),
- fortwma kat' apaithsh (demand loading),
- diamoirazomena ektelesima (shared copy-on-write executables),
- apodotikh diaxeirish mnhmhs (proper memory management) kai
- diktuwsh TCP/IP

Epipros8eta, to Linux yposthrizei:

- polyepejergastika systhmata (SMP)
- polynhmatikh epejergasia (multithreading),
- ektelesh Java efarmogwn apo ton pyrhna
- diktuwsh IPX/SPX, bridging, routing, masquerading, tunneling

Trexei kyriws se 386/486/586/686, Pentium PCs, xrhsimopoiwntas tis eykolies poy parexei h oikogeneia toy 386 gia thn yposthrijh katastashs prostasias (protected mode). Metafores (ports) toy Linux ginontai gia olo kai pio pollous epejergastes.

(Bl. 1.4 ())

(Idiaiterothta toy Linux einai oti den einai emporiko proion kai mporei na dianemh8ei (antigrafei) eukola. To Linux dianemetai me bash thn adeia antigrafhs kata GNU (GPL, General Public License). (bl. 1.6 kai http://www.cs.pdx.edu/ trent/gnu/))

Gia perissoteres plhrofories genika gia to Linux (bl. 2.X)

1.2 Ti logismiko (software) yposthrizei;

To Linux exei GCC (metaglwttisths gia C++), Emacs (Epejergasths keimenoy), X-Windows (GUI), ola ta synh8ismena ergaleia toy Unix, TCP/IP (SLIP,PPP), kai ekatontades efarmoges gia UNIX poy exoyn metaglwttistei h metafer8ei.

Oi efarmoges poy yparxoyn kaluptoyn kai tis pio eidikes anagkes, opws:

- epejergastes keimenoy
- logistika fulla
- baseis dedomenwn
- BBS
- 3D renderers (pov)
- Ma8hmatika (px Octave)
- WinNT-like & Netware-like file/printer servers
- WWW, FTP, NEWS, SENDMAIL-POP,NFS servers einai aytonohta...

Omws oi dynatothtes den stamatoun edw. To Linux mporei na trexei efarmoges allwn leitoyrgikwn, kai malista me megalh ajiopistia:

Yparxei enas polu kalos ejomoiwths toy DOS, to DOSEMU (`tsx-11.mit.edu/pub/linux/ALPHA/dosemu`), poy mporei na trejei to DOS kai tis pio polles efarmoges toy. Mporei na trejei kai Windows 3.1 se enhanced mode.

Enas ejomoiwths iBCS2 (Intel Binary Compatibility Standard) gia SVR4 ELF kai SVR3.2 COFF ektelesima, brisketai sta teleytaia stadia anaptyjhs. (bl. `tsx-11.mit.edu/pub/linux/BETA/ibcs2/README`).

To WINE (WINdows Emulator) einai ejomoiwths gia Windows efarmoges. Einai freeware, alla den exei apodwsei akoma kapoio kalo apotelesma. To WABI ths SUN kanei akribws to idio, omws ta katafernei polu kalutera. Trexei sxedon oles tis efarmoges twn Windows, anamesa toys to MS-Office, CorelDraw, Video/Audio players, klp. Stoixizei omws 199$, giati einai emporiko proion.

Merika emporika proionta poy yparxoyn gia to Linux einai:

- Netscape Navigator Gold 3.01/Communicator (0$)
- Corel Draw
- Oracle Relational Database
- Motif Libraries 2.0 (100$)
- c-tree Plus
- Executor 2
- Mathematica 3.0

- Maple V Release 4
- Applixware Office Suite for Linux
- AcceleratedX CDE Business Desktop

1.3 Trexei ston ypologisth moy; Ti yliko (hardware) yposthrizei;

Xreiazetai toylaxiston 386 me 2MB RAM kai enan odhgo eukampths disketas, gia mia aplh dokimh. Gia mia kanonikh egkatastash xreiazontai 4MB RAM, enw gia na doylecei kaneis me Xwindows 8MB. Enas sklhros diskos me xwro 10MB/300MB/600MB (minimum/typical/enough) einai aparaithtos. Proteinetai ena susthma Pentium me 32mb, gia aproskopth apodosh.

Oi topikoi diayloi VESA kai PCI exoyn plhrh yposthrijh.

MCA (Diaylos ths IBM) kai oi ESDI sklhroi diskoi tis pio polles fores yposthrizontai. Gia perissoteres plhrofories deite: `http://glycerine.itsmm.uni.edu/mca`.

To Linux se syndyasmo me ta Xwindows, trexei sthn pleiochfia forhtwn ypologistwn. Deite sxetika: `http://www.cs.utexas.edu/users/kharker/linux-laptop/`.

Gia na deite analytika an to yliko sas (karta grafikwn, diktuoy, elegktes sklhrwn diskwn, karta hxoy) yposthrizetai, koitajte to `INFO-SHEET` kai to `Hardware-HOWTO` (Bl. 2.2 ())

Yparxei mia metafora toy leitoyrgikou ston 8086 me to onoma: Embeddable Linux Kernel Subset (ELKS). Ayto einai ena 16mpito yposunolo toy Linux, gia na xrhsimopoih8ei se eidikes efarmoges. Fysika ayth h ekdosh, pote den 8a yposthrijei prostateymenh mnhmh h preemptitive multitasking. Bl. `http://www.linux.org.uk/Linux8086.html`.

Nees ekdoseis toy Linux yposthrizoyn kai polyepejergastika systhmata (SMP). Gia perissoteres plhrofories deite to arxeio `Documentation/smp.tex`, ston phgaio kwdika toy pyrhna /usr/src/linux.

1.4 Ti eidoys metafores (ports) gia alloys epejergastes yparxoyn;

Yparxei port (beta) gia ton 68000 (xrhsimopoieitai apo Amiga, Atari), me Xserver. Yparxei sxetikh lista. To FAQ, ftp kai selida gia pio polles plhrofories einai: `ftp.uni-erlangen.de/pub/Linux/680x0/FAQ` `ftp.phil.uni-sb.de/pub/atari/linux-68k`

(http://pfah.informatik.uni-kl.de:8000/pers/jmayer/linux68k-faq http://www-users.informatik.rwth-aachen.de/ hn/linux68k.html)

To Linux se PowerPC, apekthse prosfata diko toy kombo sto Internet: `http://www.linuxppc.org` Otidhpote afora ton PowerPC 8a to breite sto ftp site: `ftp.linuxppc.org/linuxppc`.

H Apple kai to OSF synergazontai gia thn metafora toy Linux, basizomenoi sto OSF kai Mach microkernel. Bl. `http://www.mklinux.apple.com`.

O polla yposxomenos Alpha (64-bit DEC Alpha/AXP) exei hdh to Linux: `http://www.azstarnet.com/\~{}axplinux/`. Yparxei kai lista sto vger.rutgers.edu.

O Ralf Baechle ergazetai gia metafora se MIPS (R4600 se Deskstation Tyne). To FAQ einai sto `ftp.fnet.fr/linux-mips` kai `ftp://ftp.linux.sgi.com/pub/mips-linux`. Oi endiaferomenoi mporoun na epikoinwnhsoyn sto <`linux@waldorf-gmbh.de`>.

(There is also a MIPS channel on the Linux Activists mailserver and a linux-mips mailing list. (See "2.9 ()"))

H oikogeneia twn ARM (Acorn A5000, Acorn Risc PC) exei duo projects aythn thn stigmh se ejelijh, ena gia ARM3 (Acorn A5000, me yposthrijh odhgwn gia 82710/11) kai ena gia ARM610 (gia Acorn Risc PC). Osoi mporoun na syneisferoyn as epikoinwnhsoyn me ton Martin Ebourne <`mje@soton.ac.uk`>.

Yparxei san omada syzhthsewn to `comp.sys.acorn.misc`

FAQ: `ftp.ecs.soton.ac.uk/pub/armlinux/FAQs/general-faq`

kai homepage: `http://whirligig.ecs.soton.ac.uk/\~{}rmk92/armlinux.html`.

O David Miller asxoleitai me metafora se Sparc. Osoi endiaferontai kai mporoun na boh8hsoyn, as epikoinwnhsoyn me to <`davem@caip.rutgers.edu`>.

1.5 Poso xwro 8elei ston sklhro moy disko;

10Mb einai to katw fragma gia mia egkatastash, h opoia den perilambanei efarmoges. Se 80Mb mporei na xwresei isa-isa mia egkatastash me Xwindows. Se 250Mb einai mia kalh epilogh prwth fora. Perilambanei typikes efarmoges. 500Mb einai aparaithta gia ena kanoniko susthma me 1 xrhsth. Ean yparxoyn apo thn prwth stigmh, mhn lyph8eite na ta dia8esete.

1.6 Exei to Linux pneymatika dikaiwmata (Copyright); Epitrepetai h antigrafh;

Ta pneymatika dikaiwmata (copyright) gia ton pyrhna toy Linux, anhkoyn ston Linus Torvalds, poy ka8orise oti einai ypo to GPL. Ayto me apla logia shmainei oti einai eleu8erh h antigrafh, metatroph h dianomh toy kwdika, alla den einai dynath h pros8hkh allwn periorismwn dianomhs, kai einai ypoxrewtikh h paroxh toy neoy phgaioy kwdika. To Linux DEN EINAI public domain, EINAI GPLed. Bl. sxetika to Copyright FAQ, `ftp://rtfm.mit.edu/pub/usenet/news.answers/law/copyright`, for details.

Epakribeis leptomereies yparxoyn sto arxeio `COPYING` sta Linux kernel sources (/usr/src/linux).

H adeia xrhshs gia ta programmata poy yparxoyn stis egkatastaseis me Linux, mporei na einai diaforetikh. O perissoteros kwdikas omws, einai ypo to GNU Project ths Free Software Foundation, kai einai epishs me adeia GPL.

(Note that discussion about the merits or otherwise of the GPL should be posted to `gnu.misc.discuss` and not to the `comp.os.linux` groups.)

2 Phges kai poroi enhmerwshs sto diktyo (kai mh).

2.1 Ti keimena yparxoyn gia enhmerwsh;

Ta kyriotera eidh einai:

MANual pages

Ta synh8ismena online egxeiridia (manual) enos Unix. Sto Linux einai arketa plhrh kai exoyn polla 8emata. Des man man. (To man einai san help).

INFO

Oi INFO selides diabazontai me eidiko tropo. Den einai polu euxrhstes.

FAQ

Frequently Asked Questions. Ta FAQ einai syllogh apo synh8ismenes erwthseis gurw apo ena 8ema. Synh8ws yparxoyn sto /usr/doc/faq.

HOWTO

Ta HOWTO einai keimena poy perigrafoyn thn diadikasia gia na ftiaxtei kati. Einai kati san egxeiridia xrhshs toy Linux. /usr/doc/faq/howto

MINI-HOWTO

To idio me prin, mono poy ta keimena einai pio mikra.

LDP

Linux Documentation Project:Perilambanei sxedon ola ta parapanw. Einai mia prospa8eia na sygkentrw8ei olh h tekmhriwsh mazi. Deite sto `http://sunsite.unc.edu/LDP`

2.2 Apo poy mporw na parw ta HOWTO kai loiph tekmhriwsh

Oi parakatw komboi exoyn ola ta HOWTO:

- `ftp.funet.fi(128.214.6.100):/pub/OS/Linux/doc/HOWTO`
- `tsx-11.mit.edu(18.172.1.2):/pub/linux/docs/HOWTO`
- `sunsite.unc.edu(152.2.22.81):/pub/Linux/docs/HOWTO`

Gia plhrh lista kombwn, deite “2.6 ()”

Ean den exete prosbash se ftp, mporeite na xrhsimopoihsete toys <`ftpmail@decwrl.dec.com`>, <`ftpmail@doc.ic.ac.uk`> <`ftp-mailer@informatik.tu-muenchen.de.`>.

To arxeio ayto exei mia lista me ola ta yparxonta HOWTO: `http://sunsite.unc.edu/pub/Linux/HOWTO/HOWTO-INDEX.html`. Ayta einai merika:

AX25-HOWTO	Access-HOWTO
Assembly-HOWTO	Benchmarking-HOWTO
BootPrompt-HOWTO	Bootdisk-HOWTO
CD-Writing-HOWTO	CDROM-HOWTO
Chinese-HOWTO	Commercial-HOWTO
Consultants-HOWTO	Cyrillic-HOWTO
DNS-HOWTO	DOS-to-Linux-HOWTO
DOSEMU-HOWTO	Danish-HOWTO
Distribution-HOWTO	ELF-HOWTO
Emacspeak-HOWTO	Ethernet-HOWTO
Finnish-HOWTO	Firewall-HOWTO
Ftape-HOWTO	GCC-HOWTO
German-HOWTO	HAM-HOWTO
HOWTO-INDEX	Hardware-HOWTO
Hebrew-HOWTO	IPX-HOWTO
ISP-Hookup-HOWTO	Installation-HOWTO
Intranet-Server-HOWTO	Italian-HOWTO
Java-CGI-HOWTO	Kernel-HOWTO
Keyboard-and-Console-HOWTO	MGR-HOWTO
MILO-HOWTO	Mail-HOWTO
NET-3-HOWTO	NFS-HOWTO
NIS-HOWTO	News-HOWTO
Optical-Disk-HOWTO	PCI-HOWTO

`PCMCIA-HOWTO`	`PPP-HOWTO`
`Pilot-HOWTO`	`Polish-HOWTO`
`Printing-HOWTO`	`Printing-Usage-HOWTO`
`RPM-HOWTO`	`Reading-List-HOWTO`
`SCSI-HOWTO`	`SCSI-Programming-HOWTO`
`SMB-HOWTO`	`Serial-HOWTO`
`Serial-Programming-HOWTO`	`Shadow-Password-HOWTO`
`Slovenian-HOWTO`	`Sound-HOWTO`
`Sound-Playing-HOWTO`	`Spanish-HOWTO`
`TeTeX-HOWTO`	`Thai-HOWTO`
`Tips-HOWTO`	`UMSDOS-HOWTO`
`UPS-HOWTO`	`UUCP-HOWTO`
`User-Group-HOWTO`	`VAR-HOWTO`
`VMS-to-Linux-HOWTO`	`XFree86-HOWTO`
`XFree86-Video-Timings-HOWTO`	`3-Button-Mouse`

Ta akoloy8a Mini-HOWTO, kaluptoyn pio eidika 8emata kai yparxoyn sto `http://sunsite.unc.edu/pub/Linux/HOWTO/mini`:

`ADSM-Backup`	`AI-Alife`
`Advocacy`	`Backup-With-MSDOS`
`Battery-Powered`	`Boca`
`BogoMips`	`Bridge`
`Bridge+Firewall`	`Clock`
`Colour-ls`	`Comeau-C++`
`DHCPd`	`Dial-On-Demand`
`Diald`	`Dip+SLiRP+CSLIP`
`Diskless`	`Dynamic-IP-Hacks`
`Ext2fs-Undeletion`	`GTEK-BBS-550`
`HTML-Validation`	`IO-Port-Programming`
`IP-Alias`	`IP-Masquerade`
`IP-Subnetworking`	`JE`
`Jaz-Drive`	`Kerneld`
`Key-Setup`	`LBX`
`LILO`	`Large-Disk`
`Linux+DOS+Win95`	`Linux+DOS+Win95+OS2`
`Linux+NT-Loader`	`Linux+OS2+DOS`
`Linux+Win95`	`Loadlin+Win95`
`Locales`	`MIDI+SB`
`Mail-Queue`	`Mail2News`
`Man-Page`	`Multiple-Disks-Layout`
`Multiple-Ethernet`	`NFS-Root`
`NFS-Root-Client`	`Netscape+Proxy`
`Offline-Mailing`	`Online-Support`
`PLIP`	`PPP-over-minicom`
`Pager`	`Partition`
`Print2Win`	`Process-Accounting`
`Proxy-ARP`	`Public-Web-Browser`
`Qmail+MH`	`Quota`
`RCS`	`Remote-Boot`
`Remote-X-Apps`	`SLIP+proxyARP`

SLIP-PPP-Emulator	Sendmail+UUCP
Software-Building	Software-RAID
Soundblaster-16	Soundblaster-AWE64
StarOffice	Swap-Space
Term-Firewall	Tiny-News
Token-Ring	Upgrade
VPN	Virtual-wu-ftpd
Visual-Bell	Win95+Win+Linux
Windows-Modem-Sharing	WordPerfect
X-Big-Cursor	XFree86-XInside
Xterm-Title	Xterminal
ZIP-Drive	ZIP-Install

Epipros8eta, metafraseis twn HOWTO yparxoyn sto `sunsite.unc.edu/pub/Linux/docs/HOWTO/translations`. Oi metafraseis yparxoyn ayth thn stigmh stis ejhs glwsses:

Gallika (fr)	Germanika(de)
Italika (it)	Iapwnika (jp)
Polwnika (pl)	Ispanika (es)
Soyhdika (sv)	Toyrkika (tr)

Ta HOWTO's epishs yparxoyn sto Web, sthn selida toy Linux Documentation Project `http://sunsite.unc./edu/LDP`, kai stelnontai mhniaia sto Usenet newsgroup `comp.os.linux.answers`.

Ta pio polla apo ayta ta keimena einai ypo synexh ejelijh. Parakalw, elate se epafh me ton Greg Hankins, <`gregh@cc.gatech.edu`>, syntonisth twn HOWTO, ean endiafereste na gracete kapoio. To arxeio `sunsite.unc.edu/pub/Linux/HOWTO/HOWTO-INDEX` periexei odhgies gia to gracimo enos HOWTO.

H Seira Egxeiridiwn (Guide Series) poy paragetai apo to Linux Documentation Project einai dia8esimh apo to `http://sunsite.unc.edu/LDP`. Parakaloume diabaste ta ean eiste arxarios sto Unix kai sto Linux. Edw einai mia lista twn dia8esimwn:

- `TheLinuxDocumentationProjectManifesto`, apo ton Matt Welsh.
- `InstallationandGettingStartedGuide`, apo ton Matt Welsh.
- `TheLinuxKernel`, apo ton David Rusling.
- `TheNetworkAdministrator'sGuide`, apo ton Olaf Kirch.
- `TheLinuxProgrammer'sGuide`, apo ton Sven Goldt, Sven van der Meer, Scott Burkett, kai Matt Welsh.
- `TheLinuxSystemAdministrator'sGuide,Version0.5`, apo ton Lars Wirzenius.

2.3 Pou 8a prepei na cajw sto World Wide Web gia 8emata toy Linux;

O Greg Hankins, `gregh@cc.gatech.edu`, synthrei thn selida toy Linux Documentation Project, sto `http://sunsite.unc.edu/LDP`.

Ayth h selida einai anaferetai se ola ta FAQ kai HOWTO, kai se ayta poy einai se HTML (WWW) format, kai se ayta poy den einai.

2.4 Ti newsgroups yparxoyn gia to Linux;

Yparxoyn deka die8nh Usenet newsgroups (omades syzhthsewn) afierwmena sto Linux. Ta newsgroups einai polu xrhsima, giati opoiodhpote problhma prokuptei, mporei kaneis na rwthsei ekei, gia na brei thn apanthsh.

`comp.os.linux.announce` einai ena epopteyomeno (moderated) kanali anakoinwsewn, poy 8a prepei na parakoloy8eite ean skopeuete na xrhsimopoihsete to Linux. Mynhmata gia ayto to kanali 8a prepei na stelnontai sto <`linux-announce@news.ornl.gov`>.

`comp.os.linux.answers` periexei ola ta FAQs, HOWTOs kai alles shmantikes 123plhrofories. 8a prepei na grafteite kai edw.

Ajizei na diabasete kai ta alla groups sthn ierarxia `comp.os.linux.` mporei na breite polla koina problhmata poy einai polu prosfata gia na ta breite se ayto to FAQ, alla ekei apantwntai.Ayta ta newsgroups einai:

```
comp.os.linux.setup
comp.os.linux.hardware
comp.os.linux.networking
comp.os.linux.x
comp.os.linux.development.apps
comp.os.linux.development.system
comp.os.linux.advocacy
comp.os.linux.misc
```

Exete yp' ocin sas epishs, oti ka8ws to Linux einai Unix klwnos, sxedon olo to yliko sta `comp.unix.*` kai `comp.windows.x.*` groups 8a einai sxetiko.

Ektos apo 8emata hardware, kai kapoia ejwfrenika h polu texnika low-level shmeia, 8a anakalucete oti ayta ta kanalia einai to swsto meros na jekinhsete.

Please read "12.1 ()" before posting, and make sure you post to the right newsgroup – see 'Welcome to the `comp.os.linux.*` hierarchy' which is posted every two weeks to `comp.os.linux.announce`, `comp.os.linux.answers`, and other groups.

H pollaplh apostolh (Crossposting) metaju twn kanaliwn `comp.os.linux.*`, spania einai kalh idea.

Mporei na yparxoyn Linux groups, topika, sthn perioxh soy. – elegje prwta ayta. S.T.M. Kai ontws yparxoyn: `news://edessa.topo.auth.gr`

Ta `comp.os.linux.development`, `comp.os.linux.admin`, kai `comp.os.linux.help`, einai ypo aposyrsh... 8a prepei na mhn xrhsimopoiountai.

See also "2.8 ()"

Other regional and local newsgroups also exist – you may find the traffic more manageable there. The French Linux newsgroup is `fr.comp.os.linux`. The German one is `de.comp.os.linux`. In Australia, try `aus.computers.linux`. In Croatia there is the moderated group `hr.comp.linux.m`. In Italy, `it.comp.linux`.

2.5 Pws 8a egkatasthsw to Linux

Yparxoyn diafores proepilegmenes dianomes toy Linux, perilambanontas kyriws thn Debian, Red Hat kai Slackware. Ka8e mia periexei olo to logismiko poy xreiazetai gia na trejei kaneis to Linux, etoimo pros egkatastash kai xrhsh. Oi akribeis leptomereies toy ti logismiko perilambanetai kai pws na to egkatasthsei kaneis, diaferoyn apo ekdosh se ekdosh.

8a prepei na diabasete to Installation-HOWTO gia perissoteres leptomereies sxetika me thn egkatastash toy Slackware. Oi dianomes Red Hat kai Debian exoyn pio eukolh egkatastash, alla exoyn mikrotero ari8mo etoimwn gia egkatastash efarmogwn.

Oles aytes oi dianomes einai dia8esimes me anonymous FTP, apo diaforoys komboys. Blepe 2.6 () Yparxei akomh enas megalos ari8mos apo alles dianomes poy einai ligotero diadedomenes, poy diapragmateuontai eidikotera problhmata (gia paradeigma kaluterh yposthrijh glwssas)

2.6 Poy 8a brw yliko toy Linux me FTP;

Aytoi edw einai oi treis kurioi komboi gia to Linux:

- `ftp.funet.fi(Finland,128.214.6.100):/pub/OS/Linux`
- `sunsite.unc.edu(US,152.2.22.81):/pub/Linux`
- `tsx-11.mit.edu(US,18.172.1.2):/pub/linux`

To kalutero meros gia na parei kaneis ton pyrhna toy Linux einai: `ftp.cs.helsinki.fi/pub/Linux\_Kernel`. O Linus Torvalds stelnei tis pio teleytaies ekdoseis toy pyrhna ekei. (www.kernel.org)

H dianomh Debian yparxei edw: `ftp.debian.org/pub/debian`, kai h Red Hat sto `ftp.redhat.com`.

Ta periexomena aytwn twn kombwn ka8reptizontai (mirror, antigrafontai peripoy hmerhsia) apo ena ari8mo allwn kombwn. Parakaloume na xrhsimopoihsete kapoio poy brisketai konta se esas wste na einai pio grhgoro kai eukolo, alla kai mhn spatalate askopa toys poroys toy diktuoy.

- `ftp.sun.ac.za/pub/linux/sunsite/` (South Africa)
- `ftp.is.co.za/linux/sunsite/` (South Africa)
- `ftp.cs.cuhk.hk/pub/Linux/` (Hong Kong)
- `ftp.cs.cuhk.hk/pub/Linux/` (Hong Kong)
- `ftp.spin.ad.jp/pub/linux/sunsite.unc.edu/` (Japan)
- `ftp.nuri.net/pub/Linux/` (Korea)
- `ftp.jaring.my/pub/Linux/` (Malaysia)
- `ftp.nus.sg/pub/unix/Linux/` (Singapore)
- `ftp.nectec.or.th/pub/mirrors/linux/` (Thailand)
- `ftp.dstc.edu.au/pub/linux/` (Australia)
- `sunsite.anu.edu.au/pub/linux/` (Australia)
- `ftp.monash.edu.au/pub/linux/` (Australia)
- `ftp.sydutech.usyd.edu.au/pub/linux/` (Australia)
- `ftp.univie.ac.at/systems/linux/sunsite/` (Austria)
- `ftp.fi.muni.cz/pub/UNIX/linux/` (Czech Republic)
- `ftp.funet.fi/pub/Linux/sunsite/` (Finland)
- `ftp.univ-angers.fr/pub/Linux/` (France)

- ftp.iut-bm.univ-fcomte.fr (France)
- ftp.ibp.fr/pub/linux/sunsite/ (France)
- ftp.loria.fr/pub/linux/sunsite/ (France)
- ftp.dfv.rwth-aachen.de/pub/linux/sunsite/
- ftp.germany.eu.net/pub/os/Linux/Mirror.SunSITE/ (Germany)
- ftp.tu-dresden.de/pub/Linux/sunsite/ (Germany)
- ftp.uni-erlangen.de/pub/Linux/MIRROR.sunsite/ (Germany)
- ftp.gwdg.de/pub/linux/mirrors/sunsite/ (Germany)
- ftp.rz.uni-karlsruhe.de/pub/linux/mirror.sunsite/ (Germany)
- ftp.ba-mannheim.de/pub/linux/mirror.sunsite/ (Germany)
- ftp.uni-paderborn.de/pub/Mirrors/sunsite.unc.edu/ (Germany)
- ftp.uni-rostock.de/Linux/sunsite/ (Germany)
- tp.rus.uni-stuttgart.de/pub/unix/systems/linux/MIRROR.sunsite/ (Germany)
- ftp.uni-tuebingen.de/pub/linux/Mirror.sunsite/ (Germany)
- ftp.rz.uni-ulm.de/pub/mirrors/linux/sunsite/ (Germany)
- ftp.kfki.hu/pub/linux/ (Hungary)
- linux.italnet.it/pub/Linux/ (Italy)
- ftp.unina.it/pub/linux/sunsite/ (Italy)
- giotto.unipd.it/pub/unix/Linux/ (Italy)
- cnuce-arch.cnr.it/pub/Linux/ (Italy)
- ftp.flashnet.it/mirror2/sunsite.unc.edu/ (Italy)
- ftp.nijenrode.nl/pub/linux/sunsite.unc-mirror/ (Netherlands)
- ftp.LeidenUniv.nl/pub/linux/sunsite/ (Netherlands)
- ftp.nvg.unit.no/pub/linux/sunsite/ (Norway)
- ftp://sunsite.icm.edu.pl/pub/Linux/sunsite.unc.edu/ (Poland)
- ftp.rediris.es/software/os/linux/sunsite/ (Spain)
- sunsite.rediris.es/software/linux/ (Spain)
- ftp.cs.us.es/pub/Linux/sunsite-mirror/ (Spain)
- ftp.etse.urv.es/pub/mirror/linux/ (Spain)
- ftp.etsimo.uniovi.es/pub/linux/ (Spain)
- ftp.luna.gui.es/pub/linux.new/ (Spain)
- ftp.switch.ch/mirror/linux/ (Switzerland)

- `ftp.metu.edu.tr/pub/linux/sunsite/` (Turkey)
- `unix.hensa.ac.uk/mirrors/sunsite/pub/Linux/` (UK)
- `ftp.maths.warwick.ac.uk/mirrors/linux/sunsite.unc-mirror/` (UK)
- `ftp.idiscover.co.uk/pub/Linux/sunsite.unc-mirror/` (UK)
- `sunsite.doc.ic.ac.uk/packages/linux/sunsite.unc-mirror/` (UK)
- `ftp.dungeon.com/pub/linux/sunsite-mirror/` (UK)
- `ftp.io.org/pub/mirrors/linux/sunsite/` (Canada)
- `ftp.cc.gatech.edu/pub/linux/` (US)
- `ftp.cdrom.com/pub/linux/sunsite/` (US)
- `ftp.siriuscc.com/pub/Linux/Sunsite/` (US)
- `ftp.engr.uark.edu/pub/linux/sunsite/` (US)
- `ftp.infomagic.com/pub/mirrors/linux/sunsite/` (US)
- `linux.if.usp.br/pub/mirror/sunsite.unc.edu/pub/Linux/` (Brazil)
- `farofa.ime.usp.br/pub/linux/` (Brazil)

Merikoi komboi mporei na mhn exoyn to plhres periexomeno apo toys arxikous komboys, enw alloi mporei na exoyn epipros8eto yliko.

2.7 Den exw prosbash se FTP. Pws na parw to Linux

O pio aplos tropos einai na breite ena filo poy na exei to CDROM h prosbash FTP. Ean yparxei Linux User Group epishs konta sas, endexetai na mporoun na boh8hsoyn.

Ean exete polu kalh sundesh email, mporeite na dokimasete FTP-by-mail servers sto <`ftpmail@ftp.sunet.se`>, <`ftpmail@garbo.uwasa.fi`> or <`ftpmail@ftp.uni-stuttgart.de`>.

Epishs to Linux einai dia8esimo me paradosiako taxydromeio me disketa, se CDROM kai se kaseta (efedreias). To arxeio `sunsite.unc.edu/pub/Linux/docs/HOWTO/Installation-HOWTO`, kai to `sunsite.unc.edu/pub/Linux/docs/distributions/Distribution-HOWTO` periexoyn sxetikes plhrofories.

Pleon o pio diadedomenos alla kai o pio apodotikos tropos na egkatasthsei kaneis to Linux, einai na to promh8eytei se CDROM. Ayto na to exete yp' ocin sas ean bazete to Linux gia prwth fora.

2.8 Den exw prosbash stis omades syzhthsewn toy Usenet. Pws enhmerwnomai;

Ta digest (synoceis) toy comp.os.linux.announce einai dia8esima me hlektroniko taxydromeio stelnontas thn lejh subscribe sto swma toy mhnumatos sto <`mailto:linux-announce-REQUEST@news-digests.mit.edu`>. Sas symboyleuoyme na grafteite sthn lista ayth, ka8ws metaferei shmantika nea kai anakoinwseis gia to Linux.

Epishs na xrhsimopoieite thn dieu8ynsh -request gia thn eggrafh/apeggrafh apo thn lista.

2.9 Ti listes yparxoyn;

Aytoi poy anaptussoyn to Linux twra xrhsimopoioun ton ejyphreth Majordomo sto: <`majordomo@vger.rutgers.edu`>. Steilte mhnyma me th lejh lists sto swma toy mhnumatos gia na parete mia lista me tis listes ekei. Balete kai mia grammh me thn lejh help, gia na parete tis odhgies xrhshs toy Majordomo, gia eggrafh/apeggrafh kai alla.

Shmeiwste oti oi perissoteres apo aytes tis listes xrhsimopoiountai apo aytous poy anaptussoyn to Linux, gia na syzhtoun gia texnika 8emata kai mellontikes epektaseis. Den proorizontai gia erwthseis newn xrhstwn.

Yparxei mia lista poy "kamia erwthsh den einai polu xazh". Dystyxws ayth h lista den diabazetai apo empeiroys xrhstes kai h kinhsh einai xamhlh.

2.10 Arxeio8etountai oi omades syzhthsewn toy Usenet;

To sunsite.unc.edu periexei arxeio8ethmena ta mhnumata toy comp.os.linux.announce, sto /pub/Linux/docs/linux-announce.archive. Ayta ka8reptizontai apo to /usenet sto src.doc.ic.ac.uk.

Yparxei ena eukolo sth xrhsh arxeio twn mhnymatwn toy comp.os.linux.announce sto World Wide Web sto http://www.leo.org/archiv/linux/archiv/ann_index.html. Yposthrizei cajimo kai emfanish.

Oi ypoloipes omades syzhthsewn den einai gnwsto na exoyn arxeio8ethmena ta periexomena toys.

3 Symbatothta me alla leitoyrgika

3.1 Mporei to Linux na moirastei ton disko me DOS; OS/2; 386BSD; Win95; WinNT; Solaris;

NAI. To Linux xrhsimopoiei to typopoihmeno sxhma gia partitions twn PC, etsi mporei na moirastei ton disko me alla leitoyrgika systhmata. Shmeiwste par' ola ayta, oti ta alla leitoyrgika systhmata, merikes fores dhmioyrgoun problhmata, logw bugs. Eidika to FDISK kai to FORMAT toy DOS mporei merikes fores na gracoyn panw dedomena toy Linux, giati merikes fores xrhsimopoioun dedomena apo ton tomea ekkinhshs ths katatmhshs (partition boot sector), anti toy pinaka katatmhsewn (partition table), poy brisketai ston tomea ekkinhshs diskoy (Master Boot Record, MBR). Gia to logo ayto, einai asfales otan dhmioyrgeite partition apo to Linux, na mhdenizete thn arxh ths neas katatmhshs, prin to morfopoihsete apo to MSDOS h opoydhpote allou. Ayth entolh kanei akribws ayto: dd if=/dev/zero of=/dev/hdXY bs=512 count=1 opoy XY einai to sxetiko partition, px hda1=1os diskos, 1h katatmhsh.

To Linux, mporei na diabasei kai na gracei arxeia se susthma arxeiwn (filesystem) toso toy DOS (FAT), oso OS/2 (HPFS). Yposthrizei epishs filesystems poy xrhsimopoiountai apo ta Windows opws: VFAT (megala onomata), FAT32 (to neo protypo ths M$), alla kai NTFS (twn NT).

Alla leitoyrgika mporoun na diabasoyn arxeia apo to Linux (px OS/2). Gia perissoteres plhrofories deite: http://students.ceid.upatras.gr/ gef/fs

(See Q1.2 'What software does it support?' for details and status of the emulators for DOS, MS Windows and System V programs. See also Q3.5 'Can I access BSD FFS, SysV UFS, Mac, Amiga, etc filesystems?'.)

3.2 Pws prospelaunw ta arxeia moy se mia katatmhsh toy DOS;

To DOS (FAT) yposthrizetai apo to Linux, mesw toy MSDOS filesystem driver. Gracte apla: (Ypoti8etai oti to DOS einai sto trito partition toy prwtoy diskoy)

```
mkdir /dos
mount -t msdos -o conv=text,umask=022,uid=100,gid=100 /dev/hda3 /dos
```

h antistoixa:

```
mkdir /floppyA
mount -t msdos -o /dev/fd0 /floppyA
ls -als /floppyA
umount /dev/fd0
```

MHN 3EXNATE NA KANETE UMOUNT, OTAN BGAZETE THN DISKETA

Oi proairetikes parametroi conv=text/binary/auto, umask=nnn, uid=nnn and gid=nnn boh8oun wste na ginetai aytomata h metatroph arxeiwn keimenoy apo DOS morfh (CR/LF -> LF) kai gia apodosh taytothtas xrhsth kai omadas kai permissions sta arxeia toy DOS, otan fainontai katw apo Linux. To mount mporei na ginei pio eukolo ean yparxoyn hdh oi swstes parametroi sto arxeio /etc/fstab. Gia perissotera ekteleste man 8 mount, man fstab.

To paketo mtools mporei na xrhsimeusei epishs gia grhgorh prosbash: kanei kaneis px "mdir a:" kai diabazei thn prwth disketa, klp.

Ena kernel patch (gnwsto ws fd-patches) poy yparxei epitrepei thn anagnwsh disketwn me asynh8isth organwsh tracks kai/h sectors

3.3 Mporw na xrhsimopoihsw to sympiesmeno moy DOS drive;

Me dyskolia. An kai mesa apo ton DOS emulator (Q1.2 'What software does it support?') ginetai gia Stacked kai DBLSPC, einai polu pio duskolo na ginei mesa apo filesystem driver. Yparxei ena paketo poy yposthrizei read-only prospelash gia doublespaced volumes: Bl. sunsite.unc.edu/pub/Linux/system/Filesystems, gia to "ths".

3.4 Mporw na xrhsimopoihsw to partition toy OS/2 (HPFS);

Nai, alla mono anagnwsh einai dynath akoma. Gia na to xrhsimopoihseis, prepei na kaneis compile ton kernel (pyrhna) soy, afou energopoihseis thn antistoixh epilogh. Gia perissoteres plhrofories, des (Q7.6). Meta arkei na to prosarthseis sto root filesystem:

```
mkdir /hpfs
mount -t hpfs /dev/hda5 /hpfs
```

3.5 ***Can I access BSD FFS, SysV UFS, Mac, Amiga, etc filesystems?

I'm told that there is a primitive, alpha test read-only Amiga filesystem on sunsite.unc.edu in /pub/Linux/patches/amigaffs.tar.Z. More information is in affs-readme in the tarfile.

Recent kernels contain support for the UFS filesystem used by System V, Coherent and Xenix.

There is alpha kernel support, readonly for the moment, for the 4.2BSD UFS, on sunsite.unc.edu in /pub/Linux/ALPHA/ufs.

There is a set of user-level programs that provides read-only access to the Macintosh hierarchical filing system (HFS). It is available on sunsite.unc.edu in /pub/Linux/utils/disk-management/hfs0_36.tgz. This is being turned into a kernel module, which is available on sunsite.

A suite of programs called Samba provide support for Windows for Workgroups networked filesystems (provided it's configured to use TCP/IP). Information is available at http://lake.canberra.edu.au/samba/samba.html. There is alpha kernel support for mounting such filesystems, on sunsite.unc.edu in /pub/Linux/ALPHA/smbfs.

There is no support for the rest of those yet; I have not heard of any recent work on providing some.

3.6 Mporw na trejw efarmoges twn Windows katw apo Linux

Yparxei mia prospa8eia, poy omws den exei apodwsei akoma karpous, to WINE Kapoies (aples) efarmoges trexoyn, omws oxi oi pio polles. Gia perissoteres plhrofories deite comp.emulators.ms-windows.wine

Epishs, h Sun, poy edw kai kairo eixe bgalei to WABI gia alla Unices, prosfata to dia8etei kai gia to Linux mesw ths Caldera. To WABI einai enas polu kalos kai ajiologos ejomoiwths, poy trexei oles tis gnwstes soyites grafeioy, sxediastika klp.

Epeidh to WINE den doyleuei kala, kai to WABI den einai dwrean, h kaluterh lush einai na exete kai ta Windows kai to Linux kai na allazete analoga me thn periptwsh, kanontas reboot. Ayto mporei na ginei mesw toy LILO (LInux LOader), poy yposthrizei BOOT MENU.

3.7 Pws mporw na ekkinw to Linux apo ton Boot Manager toy OS/2;

To OS/2 apaitei eidikh diadikasia gia na synergastei.

1. Me to fdisk toy OS/2 (kai mono me ayto) dhmioyrgeiste mia katatmhsh gia to Linux. Ean xreiazeste, ftiajte kai to swap partition.
2. Formarete thn katatmhsh me HPFS h FAT. (Ayto den xreiazetai katw apo OS/2 WARP)
3. Pros8este to ston Boot Manager.
4. Me thn entolh mkfs -t ext2 h mke2fs formarete to neo partition me ext2 domh, poy einai katallhlh gia to Linux. Epishs me to fdisk toy Linux dwste ton swsto tupo sto ka8e partition (kanonika 83, h 82 gia swap).
5. Egkatesthse to Linux sth nea katatmhsh.
6. Egkatesthse to LILO ston BOOT SECTOR (Linux partition), OXI panw sto Master Boot Record (MBR), giati alliws 8a apenergopoihseis ton Boot Manager. Ayto kanei to LILO na einai enas fortwths B' epipedoy gia to leitoyrgiko, panw sthn idia thn katatmhsh me to susthma arxeiwn, poy ekkinei ton pyrhna poy orizetai sto /etc/lilo.conf me thn entolh `boot = /dev/hda2`
7. Epibebaiwste oti h katatmhsh toy Boot Manager einai energh (active), wste na xrhsimopoihsete ton Boot Manager gia na epilejete ti 8a ekkinhsete.

3.8 Pws mporw na moirastw ton idio xwro metaju toy Linux kai twn Windows gia swap;

Des to Mini-HOWTO apo ton H. Peter Anvin, `<hpa@yggdrasil.com>`: `ftp://sunsite.unc.edu/pub/Linux/docs/HOWTO/mini/Swap-Space`

4 Xeirismos twn systhmatwn arxeio8ethshs, sklhrwn diskwn kai disketwn apo to Linux

4.1 Pws mporw na kanw to Linux na doylecei sto megaloy mege8oys sklhro disko moy;

An o sklhros diskos sas einai tupoy IDE h EIDE 8a prepei na diabasete to arxeio /usr/src/linux/drivers/block/README.ide (einai meros toy phgaioy kwdika toy pyrhna toy Linux). Ayto to arxeio periexei polles xrhsimes symboyles sxetika me toys sklhrous diskoys tupoy IDE. Polloi sugxronoi elegktes IDE kanoyn th metatroph metaju 'fysikwn' kai 'logikwn' kylindrwn/kefalwn/tomewn.

Stoys sklhrous diskoys tupoy SCSI h prosbash ginetai me grammikous ari8mous enothtwn (linear block numbers). To BIOS dhmioyrgei kapoioys skiwdeis 'logikous' kylindroys/kefales/tomeis gia na yposthrijei to DOS.

Synh8ws to DOS den 8a mporei na exei prosbash se diaireseis toy diskoy (partitions) poy ekteinontai peran twn 1024 logikwn kylindrwn, kai sthn kaluterh periptwsh h enarjh toy pyrhna toy Linux apo tetoies diaireseis sklhrwn diskwn me xrhsh toy LILO 8a einai problhmatikh.

Par' ol' ayta mporeite na xrhsimopoieite tetoies diaireseis sklhrwn diskwn gia to Linux h alla leitoyrgika systhmata poy exoyn apey8eias prosbash ston elegkth.

8a synistousa na dhmioyrghsete toylaxiston mia diairesh sklhrou diskoy tupoy Linux ej oloklhroy katw apo to orio twn 1024 logikwn kylindrwn kai na kanete thn enarjh toy systhmatos apo ekei. Se ayth thn periptwsh oi ypoloipes diaireseis sklhrou diskoy den 8a exoyn problhma.

4.2 Pws mporw na epanaferw arxeia poy exw diagracei;

Genika, ayto einai polu duskolo na ginei se systhmata Unix ejaitias ths polydiergasiakhs (multitasking) fusews toys. H leitoyrgia epanaforas gia to ext2fs brisketai sta skaria, alla mhn perimenete na th deite suntoma ston ypologisth sas.

Yparxei enas ari8mos logismikwn paketwn poy einai dia8esima kai ekteloun thn ergasia ayth prosferontas nees entoles gia diagrafh kai, merikes fores, antigrafh oi opoies metaferoyn ta pros diagrafh arxeia se enan eidiko fakelo poy einai gnwstos ws 'kados axrhstwn'. Katopin einai epanakthsima mexri na diagrafoun aytomata apo deytereuoyses epejergasies.

Ws enallaktikh lush, mporeite na ereynhsete amesa ton idio to sklhro disko panw ston opoio brisketai to sxetiko susthma arxeio8ethshs. Ayto proupo8etei polu doyleia kai xreiazetai na eiste o diaxeirisths toy systhmatos (root) gia na thn kanete.

4.3 Yparxei anasygkrothths (defragmenter) gia to ext2fs klp;

Nai. Enas anasygkrothths toy systhmatos arxeio8ethshs Linux gia to ext2, to minix kai ta palaiou tupoy systhmata arxeio8ethshs ext einai dia8esimos sto sunsite.unc.edu ston fakelo system/Filesystems ws defrag-0.6.tar.gz.

Oi xrhstes toy systhmatos arxeiwn ext2 pi8anotata den xreiazontai anasygkroththa ka8ws to ext2 periexei enan epipleon kwdika gia na diathrei thn katatmhsh toy sklhrou diskoy (fragmentation) se xamhla epipeda akomh kai se ogkwdh systhmata arxeiwn.

4.4 Pws diamorfwnw kai dhmioyrgw ena susthma arxeio8ethshs se disketa;

Gia mia disketa pyknhs eggrafhs 3,5 intswn:

```
fdformat /dev/fd0H1440
mkfs -t ext2 -m 0 /dev/fd0H1440 1440
```

Gia mia disketa 5,25 intswn xrhsimopoihste fd0h1200 kai 1200 analoga me thn periptwsh. Gia ton odhgo disketwn 'B' xrhsimopoihste fd1 anti gia fd0. Plhreis odhgies sxetika me th xrhsh twn diaforwn syskeywn disketwn mporoun na bre8oun sth Lista Syskeywn toy Linux (Q2.1 'Pou mporw na brw ta HOWTO kai peraiterw bibliografikh enhmerwsh') . Isws xreiastei na trejete apey8eias to mke2fs anti gia to mkfs -t ext2. H epilogh -m 0 leei sto mkfs.ext2 na mhn krathsei ka8oloy xwro sth disketa gia ton diaxeiristh toy systhmatos. Synh8ws to teleytaio 10% ths disketas fylattetai pros xrhsh toy diaxeiristh systhmatos (root).

H prwth entolh kanei th basikh diamorfwsh ths disketas enw h deuterh dhmioyrgei ena adeio susthma arxeio8ethshs panw s' ayth. Katopin mporeite na fortwsete (mount) th disketa san na htan diairesh sklhrou diskoy (partition) kai apla na antigracete (cp) kai na metakinhsete (mv) arxeia, klp.

4.5 Lambanw perierga mhnumata sxetika me inodes, blocks, kai diafora tetoia.

Mallon exete ena alloiwmeno susthma arxeio8ethshs poy pi8anon ofeiletai sto gegonos oti to Linux den termatise th leitoyrgia toy kanonika prin na diakocete thn trofodosia h prin na epanaferete (reset) ton ypologisth sas. Xreiazetai na xrhsimopoihsete ena sugxrono programma termatismou leitoyrgias gia na dior8wsete to la8os. Gia paradeigma, to programma poy perilambanetai to logismiko paketo util-linux, to opoio einai dia8esimo sto sunsite kai sto tsx-11.

An eiste tyxeros to programma fsck (h e2fsck h xfsck kata periptwsh an den exete to aytomato empros8omeres toy fsck [automatic fsck front-end]) 8a mporesei na episkeyasei to susthma arxeio8ethshs sas. An eiste atyxos to susthma arxeio8ethshs exei katastrafei kai 8a prepei na to ftiajete apo thn arxh me mkfs (h mke2fs, mkxfs klp) kai na to epanaferete apo kapoio antigrafo asfaleias.

Shm.: Mhn prospa8hsete na elegjete ena susthma arxeio8ethshs to opoio exei fortw8ei (mount) ws anagnwsimo/eggracimo. Ayto perilambanei th diairesh sklhrou diskoy toy diaxeiristh systhmatos (root) an kata th diarkeia ths enarjhs toy pyrhna toy Linux den deite to mhnyma:

```
VFS: mounted root ... read-only
```

4.6 H perioxh proswrinhs apo8hkeyshs (swap area) den leitoyrgei.

Otan kanete enarjh (boot) toy pyrhna toy Linux (h otan me dikh sas entolh epitrepete thn proswrinh apo8hkeysh) 8a prepei na deite to mhnyma:

```
Adding Swap: NNNNk swap-space
```

An den deite kanena mhnyma pi8anotata h entolh swapon -av (h opoia epitrepei thn proswrinh apo8hkeysh) den yparxei sto arxeio /etc/rc.local h /etc/rc.d/* (ta sxedia enarjews systhmatos) h exete jexasei na kanete th swsth kataxwrhsh sto arxeio /etc/fstab, px:

```
/dev/hda2       none       swap       sw
```

An deite to mhnyma:

```
Unable to find swap-space signature
```

exete jexasei na trejete to mkswap. Deite tis selides egxeiridiwn gia leptomereies. Leitoyrgei omoia me to mkfs.

Elegjte to Installation-HOWTO (Egkatastashs) gia leptomereis odhgies sxetika me to pws na sthsete mia perioxh proswrinhs apo8hkeyshs.

4.7 Pws diagrafw to LILO etsi, wste to susthma moy na jekina kai pali me DOS;

Xrhsimopoiwntas DOS (MS-DOS 5.0 h metagenestero, h OS/2), plhktrologhste FDISK /MBR (den yparxei stis odhgies xrhsews). Ayth h entolh 8a epanaferei mia typikh kuria kataxwrhsh enarjhs (Master Boot Record) toy MS-DOS. An exete DR-DOS 6.0, phgainete sto FDISK kai epilejte "Re-write Master Boot Record".

An den exete DOS 5 h DR-DOS xreiazeste ton tomea enarjews (boot sector) poy to LILO eswse otan to prwtoegkatasthsate. Elpizw na krathsate ekeino to arxeio, etsi den einai; Kata pasa pi8anothta onomazetai boot.0301 h kati tetoio. Plhktrologhste:

```
dd if=boot.0301 of=/dev/hda bs=445 count=1
```

(h sda an xrhsimopoieite sklhro disko tupoy SCSI). Ayto mporei na sbhsei ton pinaka diairesewn (partition table) toy sklhrou sas diskoy, gi' ayto prosoxh! An exete ftasei se apognwsh, 8a prepei na xrhsimopoihsete thn entolh:

```
dd if=/dev/zero of=/dev/hda bs=512 count=1
```

h opoia 8a diagracei ton pinaka diairesewn opws kai ton tomea enarjews (boot sector) toy sklhrou sas diskoy. Katopin mporeite na epanadiomorfwsete (format) to sklhro sas disko me to logismiko ths protimhshs sas. Pantws, h entolh ayth 8a katasthsei ta periexomena toy sklhrou sas diskoy aprospelasta. 8a ta xasete gia panta ektos an eiste eidhmwn twn hlektronikwn ypologistwn.

Shmeiwste oti h kuria kataxwrhsh enarjhs (MBR) toy DOS jekina apo opoiadhpote diairesh diskoy exei proshman8ei ws 'energos' (alla mono apo mia). Mporei na xreiastei na xrhsimopoihsete to fdisk gia na 8esete kai na ka8arisete tis energeis proshmanseis apo tis diaireseis toy sklhrou sas diskoy kata periptwsh.

4.8 Giati den mporw na xrhsimopoihsw thn entolh fdformat para mono ws diaxeirisths systhmatos (root);

H entolh diamorfwshs mias disketas mporei na klh8ei mono apo to diaxeiristh systhmatos (root), anejarthta apo tis ejoysiodothseis (permissions) toy /dev/fd0*. An 8elete opoiosdhpote xrhsths na mporei na diamorfwnei (format) disketes prospa8eiste na breite to programma fdformat2 to opoio jeperna ta problhmata ayta allazontas to se setuid (chmod u+s fdformat2).

4.9 Yparxei kati san to Stacker h to Doublespace gia to Linux;

Shmera kanena apo ta systhmata arxeio8ethshs toy Linux den mporei na kanei sympiesh mesa sto susthma arxeio8ethshs.

Yparxei ena programma poy onomazetai Zlibc kai to opoio epitrepei stis yparxoyses efarmoges na diabazoyn sympiesmena (GNU zipped) arxeia san na mhn htan sympiesmena. Afou to egkatasthsete mporeite na sympiezete arxeia xrhsimopoiwntas to gzip kai oi efarmoges sas 8a ejakoloy8oun na ta briskoyn xwris na xreiazetai na allajete ta programmata sas. Koitajte sto sunsite.unc.edu ston fakelo /pub/Linux/libs. O dhmioyrgos toy einai o < `Alain.Knaff@imag.fr`>.

Yparxei enas odhgos syskeywn sympiesews enothtwn (compressing block device driver) poy mporei na parexei amesh sympiesh toy sklhrou diskoy mesa ston pyrhna anejarthtws systhmatos arxeio8ethshs. Onomazetai 'DouBle'. O phgaios kwdikas diati8etai sto sunsite.unc.edu ston fakelo /pub/Linux/kernel/patches/diskdrives. O dhmioyrgos toy einai o Jean-Marc Verbavatz <`jmv@receptor.mgh.harvard.edu`>. Shmeiwste oti, efoson o odhgos aytos sympiezei toys desmous plhroforiwn (inodes - plhrofories diaxeirishs) kai toys fakeloys opws epishs kai ta periexomena twn arxeiwn, h emfanish opoiasdhpote alloiwshs einai polu pi8anon na einai sobarh.

Yparxei epishs ena logismiko paketo gnwsto ws tcx (Transparently Compressed Executables - Diafanws Sympiesmena Ektelesima Arxeia) poy sas epitrepei na threite ektelesima arxeia ta opoia spania xreiazeste se sympiesmenh morfh kai na ta aposympiezete proswrina mono otan ta xrhsimopoieite. 8a to breite stis baseis dedomenwn tupoy FTP toy Linux (Q2.5 'Pou mporw na brw yliko gia to Linux me FTP;'). Sxetikes plhrofories eixan epishs anakoinw8ei sto comp.os.linux.announce. Shmeiwsh - den einai to idio pragma me to gzexe, to opoio einai katwterhs poiothtas efarmogh ths ayths ideas.

4.10 Oi diaireseis toy sklhrou moy diskoy tupoy ext2fs elegxontai ka8e fora poy epanekkinw ton ypologisth moy

Blepe Q9.12 'EXT2-fs: warning: mounting unchecked filesystem'.

4.11 To susthma arxeio8ethshs toy diaxeiristh diktuoy (root) einai mono anagnwsimo!

Fortwste to (mount) kai pali. An to arxeio /etc/fstab einai swsto mporeite apla na plhktrologhsete mount -n -o remount /. An to arxeio /etc/fstab exei la8h prepei na dwsete to onoma ths syskeyhs kai pi8anws kai ton tupo ths: p.x. mount -n -o remount -t ext2 /dev/hda2 /. Gia na katalabete pws ftasate se ayth thn katastash diabaste to Q9.12 'EXT2-fs: warning: mounting unchecked filesystem'.

4.12 Exw ena terastio arxeio /proc/kcore! Mporw na to diagracw;

Kanena apo ta arxeia ston fakelo /proc den einai sthn pragmatikothta ekei - einai ola 'plasta' arxeia poy dhmioyrgountai apo ton pyrhna (kernel) gia na sas dinoyn plhrofories sxetika me to susthma enw den katalambanoyn xwro sto sklhro disko.

To arxeio /proc/kcore einai san ena 'ceydwnymo' ths mnhmhs toy ypologisth sas. To mege8os toy einai to idio me to sunolo ths RAM poy exete kai, an zhthsete na to diabasete san arxeio, o pyrhnas diabazei th mnhmh.

4.13 H AHA1542C moy den leitoyrgei me to Linux.

H epilogh poy epitrepei th xrhsh sklhrwn diskwn me perissoteroys apo 1024 kylindroys apaiteitai mono ws tropos apofyghs mias parajenias toy DOS kai 8a eprepe na apenergopoieitai otan xrhsimopoieite to Linux. Gia palaioteroys pyrhnes toy Linux xreiazetai na apenergopoieite tis perissoteres apo tis epiloges 'advanced BIOS' (prohgmenoy BIOS) - oles ektos apo ekeinh poy afora thn ereyna toy agwgou (bus) gia syskeyes apo tis opoies mporei na ginei enarjh toy systhmatos.

5 Metafora kai metaglwttish programmatwn

Please see also the Linux GCC-FAQ, available in HTML format by FTP from www.mrc-apu.cam.ac.uk in /pub/linux/GCC-FAQ.html.

5.1 Pws mporw na metaferw ena programma sto linux apo alla leitoyrgika systhmata;

Genika ta programmata se ena unix susthma xreiazontai liges allages gia na metafer8oun se ena allo unix. Apla akoloy8hste tis odhgies egkatastashs. Ean den jerete pws na apanthsete se merikes erwthseis kata thn diadikasia ths egkatastashs mporeite na mantecete apla, alla ayth h antimetwpish mporei na odhghsei se programmata me bugs. Se aythn thn periptwsh to kalutero poy exete na kanete einai na balete kapoion allon na kanei to porting toy programmatos gia esas.

Ean exete programmata apo to bsd prepei na dokimasete na xrhsimopoihsete sta katallhla shmeia twn grammwn toy compile tis parametroys: -I/usr/include/bsd kai -lbsd

5.2 Ti einai to ld.so kai pou mporw na to brw;

To ld.so einai o dynamic libary loader. Ka8e dyadiko arxeio poy xrhsimopoiei shared libraries paliotera eixe peripoy 3K kwdika sthn arxh toy, poy to boh8ouse sthn aneuresh kai to fortwma twn shared libraries. Twra aytos o kwdikas exei topo8eth8ei se mia eidikh shared library, /lib/ld.so, opoy kai ola ta dyadika arxeia mporoun na ton broyn. Etsi ta binaries spataloun ligotero xwro ston disko kai mporoun na anaba8mistoun eykolotera.

Mporei kaneis na to katebasei apo to tsx-11.mit.edu apo to directory /pub/linux/packages/GCC kai sta mirror site toy. Th stigmh poy grafetai ayto to faq h teleytaia version toy ld.so einai h ld.so.1.7.11.tar.gz. Enw to /lib/ld-linux.so.1 einai to idio pragma gia ta ELF binaries kai phgainei me to idio paketo me ton a.out loader.

5.3 Exei kaneis metaferei / kanei compile / gracei kapoio XXX programma gia to linux;

Prwta ap'ola, koitajte sto Linux Software Map (LSM) – einai sto directory docs sto sunsite.unc.edu, kai se alla ftp sites. Mia mhxanh anazhthshs einai dia8esimh ston web server http://www.boutell.com/lsm.

Elegjte ta ftp sites (deite to Q2.5 'Pou mporw na brw programmata gia to linux mesw ftp ;') prwta – elegjte ta find-ls h index arxeia gia ta katallhla strings. Elegjte kai to Linux Projects Map (LPM), sto ftp.ix.de sto /pub/Linux/docs/Projects-Map.gz.

Ean den breite tipota, mporeite h na katebasete ton kwdika toy programmatos kai na ton kanete compile monoi sas – deite to Q5.1 'Pws mporw na metaferw ena programma sto Linux ;' – h, ean einai megalo paketo poy mporei na xreiazetai allages ston kwdika, steilte ena mhnyma sto newsgroup : comp.os.linux.development.apps.

Ean kanete compile ena megalo programma parakalw anebaste to se ena h kai perissotera ftp sites kai steilte ena mail sto comp.os.linux.announce (steilte to mhnyma sto linux-announce@news.ornl.gov).

Ean caxnete gia ena efarmoghs-tupoy programma tote polles pi8anothtes yparxoyn na exei gracei kapoios mia dwrean ekdosh. Dokimaste na diabasete to FAQ sto comp.sources.wanted gia odhgies sto pws 8a breite kwdikes programmatwn.

8a prepei epishs na elegjete to Projects-FAQ, poy brisketai sto directory /pub/Linux/docs/faqs/Projects-FAQ sto sunsite.unc.edu.

5.4 Mporw na xrhsimopoihsw se enan 386, kwdika h enan compiler poy exei ginei compile se enan 486;

Genika nai, ektos ean einai o kernel.

H epilogh -m486 toy GCC, h opoia xrhsimopoieitai gia na dhmioyrgh8oun dyadika arxeia gia 486 ypologistes odhgei sthn dhmioyrgia arxeiwn ligo megaluterwn poy ektelountai grhgorotera sta 486. Omws doyleuoyn kanonika kai se ena 386, me mia mikrh ptwsh ths apodoshs opws einai fysiko.

Omws apo thn ekdosh 1.3.35 o kernel xrhsimopoiei kwdika toy 486 h kai toy pentium ean einai ry8mismenos gia enan 486 h ena pentium antistoixa, etsi ginetai axrhstos gia ena 386.

To GCC mporei na ry8mistei gia enan 386 h 486. H monh diafora einai oti ean ry8mistei gia 386 h arxikh epilogh 8a einai to -m386 enw ean exei ry8mistei gia 486 8a einai to -m486. Se ka8e periptwsh ayto mporei na jeperastei me thn katallhlh parametro se ka8e compile h ean allax8ei katallhla to arxeio : /usr/lib/gcc-lib/i*-linux/n.n.n/specs.

Yparxei mia alpha ekdosh toy GCC h opoia gnwrizei pws 8a epitaxunei to binary gia ton pentium, alla einai ligo asta8hs, eidika ean dhlw8oun parametroi gia ychlh epitaxynsh. To pentium GCC mporei na bre8ei sto tsx-11.mit.edu sto directory /pub/linux/ALPHA/pentium-gcc. Systhnw thn xrhsh toy kanonikou 486 GCC sth 8esh toy. Einai protimotero na xrhsimopoieitai to -m386 sta pentium giati prokuptei kwdikas poy einai kaluteros, h to elaxisto ligo mikroteros.

5.5 Ti kanei to gcc -O6;

Ayth th stigmh einai to idio me to -O2 (GCC 2.5) h -O3 (GCC 2.6, 2.7) h me ka8e ari8mo megalutero apo aytous kanei to idio pragma. Ta Makefiles twn kainouriwn kernel xrhsimopoioun to -O2, eseis prepei na kanete to idio.

5.6 Pou einai ta linux/*.h kai ta asm/*.h;

Ayta ta arxeia einai sta directories /usr/include/linux kai /usr/include/asm.

Ta directories ayta prepei na einai symbolic links ston kwdika toy kernel sto /usr/src/linux kai oxi alh8ina directories.

An den exete ton kwdika toy kernel katebaste ton – deite thn (Erwthsh 7.6 ”Pws mporw na anaba8misw / kanw compile jana ton kernel moy ;”).

Xrhsimopoihste thn rm gia na apomakrunete peritta arxeia, kai ln gia na dhmioyrghsete ta links :

```
rm -rf /usr/include/linux /usr/include/asm
ln -sf /usr/src/linux/include/linux /usr/include/linux
ln -sf /usr/src/linux/include/asm /usr/include/asm
```

Stis meres mas to /usr/src/linux/include/asm einai ena symbolic link se ena sygkekrimeno asm-$ARCH directory - ean exete enan prosfata aposympiesmeno kwdika toy kernel prepei na xrhsimopoihsete thn entolh make symlinks. 8a breite epishs oti mporei na xreiastei na kanete ena make config se enan tetoio kernel, gia na dhmioyrgh8ei to <linux/autoconf.h>.

5.7 Yparxoyn la8h otan dokimazw na kanw compile ton kernel.

Sigoyreyteite oti ta /usr/include/linux kai /usr/include/asm den einai kanonika directories alla symbolic links sta /usr/src/linux/include/linux kai /usr/src/linux/include/asm antistoixa.

Ean xreiazetai, sbhste ta xrhsimopoiwntas thn rm kai meta thn ln -s gia na dhmioyrghsete ta links opws sthn Erwthsh 5.6 'Poy einai ta arxeia linux/*.h kai ta asm/*.h;'.

8ymh8eite oti otan xrhsimopoieite ena patch ston kernel prepei na xrhsimopoihsete thn parametro -p0 h thn -p1. Alliws to patch mporei na topo8eth8ei la8os. Deite thn selida toy man gia thn entolh patch gia perissoteres leptomereies.

Ean kanete patch gia enan kernel poio prosfato apo ton 1.1.44 prepei na breite oti yparxoyn nea directories /usr/src/linux/include/asm-i386. To directory asm ekei prepei na sbhstei. H entolh make symlinks 8a dhmioyrghsei ayta san symbolic links sta asm-i36 kai arch/i386/boot antistoixa. O poio eukolos tropos gia na eiste sigoyroi oti h diadikasia exei ginei swsta einai na mhn pate ston kernel 1.1.45 me patch apo ton 1.1.44, alla na katebasete ton linux-1.1.45.tar.gz.

To mhnyma ld: unrecognised option '-qmagic' shmainei oti prepei na parete enan kainourio linker, apo to tsx-11.mit.edu sto /pub/linux/packages/GCC, sto arxeio binutils-2.6.0.2.bin.tar.gz.

5.8 Pws mporw na dhmioyrghsw mia shared library;

Gia ta ELF executables :

```
gcc -fPIC -c *.c
gcc -shared -Wl,-soname,libfoo.so.1 -o libfoo.so.1.0 *.o
```

Gia ta a.out, parte to paketo tools-n.nn.tar.gz apo to tsx-11.mit.edu, sto /pub/linux/packages/GCC/src. Erxetai mazi me odhgies oi opoies 8a sas poyn ti na kanete. Prosejte oti oi koines biblio8hkes gia a.out einai mia mallon duskolh ypo8esh.

5.9 Ta ektelesima moy einai (polu) megala.

Me ena metaglwttisth gia ELF (see Q8.2 'What's all this about ELF ?') h syxnoterh aitia megalwn ektelesimwn einai h elleich enos katallhloy syndesmoy se .so library gia mia apo tis biblio8hkes poy xrhsimopoieite. Prepei na yparxoyn sundesmoi opws to libc.so gia ka8e biblio8hkh opws h libc.so.5.2.18. Me enan metaglwttisth gia a.out (see Q8.2 'What's all this about ELF ?') h syxnoterh aitia megalwn ektelesimwn einai o orismos toy metaglwttisth -g. Ayto paragei (ektos apo mhnumata la8oys sto arxeio ejodoy) ena programma statika syndedemeno, dhladh ena to opoio symperilambanei ena antigrafo ths biblio8hkes ths C anti na xrhsimopoiei ena dynamika syndedemeno antigrafo. Alla pragmata ta opoia ajizei ton kopo na ereynhsete einai ta -O kai -O2 ta opoia energopoioun thn beltistopoihsh (elegjte tis odhgies toy GCC) kai to -s (h thn entolh strip) h opoia bgazei oles tis plhrofories symbolwn apo to ektelesimo (kanontas ton elegxo la8wn - debugging - entelws adunato). Mporei na 8elete na xrhsimopoihsete to -N se polu mikra ektelesima (mikrotera apo 8K me to -N), alla den 8a eprepe na to kanete ayto ektos ean katalabainete ta 8emata apodoshs, kai pote me daemons.

5.10 Yposthrizei to Linux nhmatikes (threads) h lightweight epejergasies;

Opws to polyepejergastiko montelo toy Unix symperilambanei baries epejergasies, to opoio einai fysika meros toy stantart pyrhna toy Linux, yparxoyn diafores ylopoihseis elafriwn epejergasiwn h nhmatikwn, oi perissoteres ek twn opoiwn einai genika paketa gia Unix:

- Sto sipb.mit.edu:/pub/pthread h ftp.ibp.fr:/pub/unix/threads/pthreads. H tekmhriwsh den symperilambanetai sto paketo alla einai dia8esimh sto World Wide Web sth dieu8ynsh http://www.mit.edu:8001/people/proven/home_page.html. Oi newteres biblio8hkes Linux libcs periexoyn ton kwdika pthreads source; o GNU Ada metaglwttisths sto sunsite.unc.edu ston katalogo /pub/Linux/devel/lang/ada/gnat-3.01-linux+elf.tar.gz periexei ektelesima poy ftiaxthkan apo ayton ton kwdika.
- Sto ftp.cs.washington.edu:/pub/qt-001.tar.Z einai to QuickThreads. Perissoteres plhrofories mporoun na bre8oun sthn texnikh anafora, dia8esimh sto idio site ws /tr/1993/05/UW-CSE-93-05-06.PS.Z.
- Sto gummo.doc.ic.ac.uk:/rex einai to lwp, mia polu periorismenh ylopoihsh.
- Sto ftp.cs.fsu.edu:/pub/PART, mia ylopoihsh Ada. Ayto einai xrhsimo, kyriws epeidh exei polla PostScript eggrafa ta opoia 8a breite xrhsima gia na ma8ete perissotera sxetika me ta nhmata. Ayto den einai amesa xrhsimopoihsimo katw apo Linux.

Parakalw epikoinwnhste me toys dhmioyrgous twn paketwn gia plhrofories.

H ekdosh 1.3.35 toy pyrhna periexei kapoia yposthrijh gia nhmata toy pyrhna, alla o kwdikas den exei elegx8ei kala.

S.t.M.: Me ton oro nhmata ypo8etw oti o syggrafes ennoei nhmatikh epejergasia. H metafrash egine me ayto san bash.

5.11 Poy mporw na brw to 'lint' gia Linux

Peripoy idia leitoyrgikothta symperilambanetai sto GNU C metaglwttisth (gcc) o opoios xrhsimopoieitai apo ta systhmata Linux. Xrhsimopoieiste thn epilogh -Wall gia na energopoihsete tis perissoteres apo tis xrhsimes ejtra proeidopoihseis. Elegjte tis odhgies xrhshs gia to GCC gia perissoteres plhrofories. (pathste control-h akoloy8oumeno apo i sto Emacs kai epilejte thn kataxwrish gia to GCC).

Yparxei ena eleu8era dia8esimo programma poy legetai 'lclint' poy kanei peripoy ta idia pragmata opws to paradosiako lint. H anakoinwsh kai o phgaios kwdikas einai dia8esima sto larch.lcs.mit.edu in /pub/Larch/lclint sto World Wide Web koitajte sto http://larch-www.lcs.mit.edu:8001/larch/lclint.html.

5.12 Poy mporw na brw to 'kermit' gia Linux

To aysthro copyright toy Kermit exei anagkasei toys perissoteroys dianomeis na to afairesoyn apo tis typikes Linux dianomes. O kwdikas kai merika ektelesima einai dia8esima sto kermit.columbia.edu ws

```
kermit/archives/ckermit-6.0.192-7.i386.rpm          # RedHat
kermit/archives/ckermit-6.0.192-7.sparc.rpm
kermit/archives/ckermit-6.0.192-7.alpha.rpm
kermit/archives/ckermit-6.0.192-7.src.rpm
kermit/archives/cku192.debian.tar                   # Debian
kermit/archives/cku192.slackware-i386.tgz                    # Slackware
```

Ektelesima gia alla Linux einai dia8esima sta

```
kermit/bin/ckuker.linux-2.0-alpha
kermit/bin/ckuker.linux-2.0.27-sparc
kermit/bin/ckuker.linux-2.0.28-mklinux-mach3.0-ppc
kermit/bin/ckuker.linux-1.2.13-i386-elf
kermit/bin/ckuker.linux-2.1.13-i386-elf
```

Ta arxeia /kermit/bin/READ.ME kai /kermit/archive/READ.ME exoyn peraiterw plhrofories.

6 Luseis se diafora koina problhmata.

6.1 To free dinei sfalmata leitoyrgikou (core).

Sto Linux 1.3.57 kai metepeita h morfh toy /proc/meminfo exei allajei kata enan tropo poy h ylopoihsh toy free den katalabainei.

Parte thn teleytaia ekdosh, apo to sunsite.unc.edu sto /pub/Linux/system/Status/ps/procps-0.99.tgz.

6.2 To roloi moy einai polu la8os.

Yparxoyn duo rologia sto computer sas. To mhxaniko (CMOS) roloi doyleuei panta, akoma kai otan to computer einai sbhsto, kai xrhsimopoieitai otan to susthma jekinaei, kai apo to DOS (an to xrhsimopoieite). H synh8hs wra systhmatos, poy fainetai kai ry8mizetai apo thn entolh date, diathreitai apo ton pyrhna oso to Linux trexei.

Mporeite na deite thn wra toy rologiou toy CMOS, h na 8esete kapoio roloi apo to allo, me to programma /sbin/clock deite to man 8 clock.

Yparxoyn diafora alla programmata ta opoia mporoun na dior8wsoyn ena h kai ta duo rologia gia systhmatikh poreia h metafora ths wras mesa sto susthma.Merika apo ayta mporei na einai hdh egkatesthmena sto susthma sas. Yajte gia ta adjtimex (dior8wnei poreia), netdate kai getdate (apla pairnei thn wra apo to diktyo) h xntp (akribhs plhrhs leitoyrgiwn daemon gia wra diktuoy).

6.3 Ta setuid scripts den fainontai na doyleuoyn.

Swsta. Ayth h dynatothta exei epithdes apenergopoih8ei ston pyrhna toy Linux epeidh ta setuid scripts einai sxedon panta mia trupa asfaleias. An 8elete na ma8ete giati, diabaste to FAQ gia to comp.unix.questions.

6.4 H eleu8erh mnhmh opws thn anaferei to free synexws meiwnetai.

To noumero 'free' poy dinetai apo thn entolh free den symperilambanei th mnhmh poy xrhsimopoieitai ws disk buffer cache - h opoia fainetai sth sthlh 'buffers'. An 8elete na jerete posh mnhmh einai pragmati eleu8erh, pros8este to poso toy 'buffers' se ayto toy 'free' - newteres ekdoseis toy free deixnoyn mia akoma grammh me ayth thn plhroforia.

To disk buffer cache teinei na ayjanetai amesws meta thn ekkinhsh toy Linux, ka8ws fortwnete perissotera programmata kai xrhsimopoieite perissotera arxeia, kai ta periexomena mpainoyn sthn cache. Ayto sta8eropoieitai meta apo ena diasthma.

6.5 Otan pros8etw mnhmh, argoporei, ews kai sernetai.

Ayto einai ena koino sumptwma apotyxias na xrhsimopoih8ei lan8anoysa gia thn parapanw mnhmh. To akribes problhma ejartatai apo th mhtrikh plaketa (motherboard) poy exete.

Merikes fores prepei na energopoihsete to caching sygkekrimenwn tmhmatwn sto BIOS setup. Deite sto CMOS setup kai elegjte an yparxei epilogh na xrhsimopoih8ei lan8anoysa gia th nea mnhmh h opoia einai apenergopoihmenh (S.t.M. h epilogh). Ayto einai pio synh8ismeno se 486.

Merikes fores h mnhmh prepei na einai se sygkekrimenes 8ures gia na xrhsimopoih8ei lan8anoysa.

Merikes fores prepei na ry8misete braxykyklwthres (jumpers) gia na energopoihsete th xrhsh lan8anoysas.

Merikes mhtrikes plaketes den xrhsimopoioun lan8anoysa gia olh thn RAM an exete perissoterh RAM ana lan8anoysa apo oti perimenoyn. Synh8ws mia lan8anoysa ths tajhs twn 256K 8a lusei ayto to problhma.

An exete amfibolia, elegjte to biblio odhgiwn xrhshs ths mhtrikhs plaketas. An akoma den mporeite na to ftiajete epeidh h tekmhriwsh einai aneparkhs, isws prepei na steilete ena mhnyma sto comp.os.linux.hardware dinontas *oles* tis plhrofories - marka, ari8mos monteloy kwdikos hmeromhnias klp. etsi wste alloi xrhstes Linux na mporoun na thn apofugoyn.

6.6 Orismena programmata (p.x. xdm) den me afhnoyn na kanw login.

Mallon xrhsimopoieite non-shadow-password programmata, alla xrhsimopoieite shadow passwords.

An einai etsi, prepei na parete h na metaglwttisete mia shadow-password ekdosh twn en logw programmatwn. To paketo shadow password brisketai sto (metaju allwn): tsx-11.mit.edu:/pub/linux/sources/usr.bin/shadow-* Ayto einai o kwdikas. Mallon 8a breite ektelesima sto .../linux/binaries/usr.bin.

6.7 Orismena programmata me afhnoyn na kanw log in xwris password.

Mallon exete to idio problhma opws sto " Orismena programmata (p.x. xdm) den me afhnoyn na kanw login.", se mia akoma ptyxh:

An xrhsimopoieite shadow passords prepei na balete ena gramma x h enan asterisko sto pedio toy password toy arxeioy /etc/passwd gia ka8e logariasmo, etsi wste an ena programma den gnwrizei gia ta shadow passwords na mhn afhnei ton ka8ena na kanei login nomizontas oti einai enas logariasmos xwris password.

6.8 To mhxanhma moy paei polu arga otan trexw to GCC / ta X / ...

Mallon den exete xwro antallaghs dedomenwn (swap) energopoihmeno. Prepei na energopoihsete thn antallagh dedomenwn gia na epitrecete sto Linux na topo8ethsei kommatia dedomenwn - programmatwn poy den xrhsimopoiei ayth th stigmh sto disko, gia na exei pio polu xwro gia alla programmata kai dedomena. An den to kanete, to Linux prepei na krataei ta dedomena sth mnhmh kai na exei oloklhra antigrafa twn programmatwn sth mnhmh (ta opoia topo8etountai ekei ap' ey8eias apo to susthma arxeiwn) kai etsi olo kai perissotera programmata briskontai sth mnhmh kai ta panta pane pio arga.

Deite to Installation HOWTO kai to Installation and Getting Started Guide (Apo poy mporw na parw ta HOWTO kai loiph tekmhriwsh;) gia plhrofories sto pws 8a sthsete mia katatmhsh antallaghs dedomenwn (swap partition) h ena arxeio antallaghs dedomenwn (swapfile) deite epishs to " H perioxh moy antallaghs dedomenwn den leitoyrgei.".

Epishs, mporei na exete polu ligh pragmatikh mnhmh. An exete ligoterh RAM ap' oti ola ta programmata poy trexete taytoxrona, to Linux 8a xrhsimopoiei to sklhro disko ant' ayths kai 8a einai tromero. H lush se ayth thn periptwsh einai na mhn trexete tosa programmata taytoxrona h na agorasete perissoterh mnhmh. Mporeite epishs na apokthsete ligh parapanw mnhmh metaglwttizontas kai xrhsimopoiwntas enan pyrhna me ligoteres epiloges energopoihmenes. Deite to " Pws anaba8mizw/anametaglwttizw ton pyrhna moy;".

Mporeite na jerete posh mnhmh kai / h xwro antallaghs xrhsimopoieite, me thn entolh free h plhktrologwntas

```
cat /proc/meminfo
```

An o pyrhnas sas exei dhmioyrgh8ei me epilogh gia disko mnhmhs (ramdisk) ayto mallon einai xamenos xwros kai 8a prokalei mia ka8ysterhsh. Xrhsimopoihste to LILO h to rdev gia na enhmerwsete ton pyrhna na mhn xrhsimopoihsei disko mnhmhs (deite thn tekmhriwsh toy LILO h plhktrologhste man rdev).

6.9 Mporw na kanw login mono ws root.

Mallon exete kapoia problhmata egkrishs prosbashs h exete ena arxeio /etc/nologin.

An einai to teleytaio, topo8ethste th grammh rm -f /etc/nologin sto /etc/rc.local h to /etc/rc.d/* arxeio.

Alliws, elegjte tis egkriseis sto kelyfos sas, kai ta onomata twn arxeiwn poy emfanizontai sta mhnumata la8oys, kai epishs toys ypokatalogoys poy periexoyn ayta ta arxeia, mexri thn koryfh, mexri kai to root katalogo.

6.10 H o8onh moy einai gemath parajenoys xarakthres anti gia grammata.

Mallon steilate kapoia dyadika dedomena sthn o8onh kata la8os. Plhktrologhste echo '\033c' gia na to dior8wsete. Polles dianomes Linux exoyn mia entolh reset poy kanei ayto to pragma.

6.11 Exw kanei xalia to susthma moy kai den mporw na kanw login gia na to ftiajw.

Ekkinhste ton ypologisth apo mia disketa anagkhs (h apo zeugos disketwn, p.x. Slackware boot- kai root- disketes) (ston ypokatalogo install twn Slackware mirrors) h to MCC boot floppy egkatastashs. Yparxoyn epishs duo kane-to-monos-soy paketa dhmioyrgias disketwn anagkhs sto sunsite.unc.edu/pub/Linux/system/Recovery. Ayta einai kalutera ka8ws exoyn ton diko sas pyrhna, kai etsi den diakindyneuete na "mhn exete" syskeyes, systhmata arxeiwn k.o.k.

Sto kelyfos, kante mount to disko sas me kati san

```
>   mount -t ext2 /dev/hda1 /mnt
```

Tote to susthma arxeiwn sas einai dia8esimo katw apo ton katalogo /mnt kai mporeite na dior8wsete to problhma. 8ymh8eite na kanete unmount to disko sas prin epanekkinhsete (allajte katalogo sto / prwta, alliws 8a leei oti einai apasxolhmeno).

6.12 Anakalyca ena terastio keno asfaleias (trupa) sthn rm!

Oxi, den anakalucate. Eiste profanws neos sto Unix kai prepei na diabasete ena kalo biblio gia na ma8ete pws leitoyrgoun orismena pragmata. Stoixeio: h dynatothta na sbhsete arxeia katw apo to Unix ejartatai apo to an exete thn egkrish na gracete ston katalogo ston opoio ayta briskontai.

6.13 To lpr(1) h to lpd(8) den doyleuoyn.

Elegjte to Printing-HOWTO

6.14 H wra se arxeia se katatmhseis msdos den einai swsth.

Yparxei ena sfalma (bug) sto programma clock(8) (to opoio syxna brisketai sto /sbin) – metraei la8os to peri8wrio, mperdeuontas ta deyterolepta me ta lepta. Parte mia newterh ekdosh toy programmatos aytou.

6.15 Pws mporw na kanw to LILO na diabasei to vmlinux arxeio;

Se pyrhnes ekdoshs 1.1.80 kai metagenesteroys, to sympiesmeno antigrafo toy pyrhna, to opoio to LILO caxnei na brei, exei metafer8ei sto arch/i386/boot/zImage. To vmlinux arxeio ston root katalogo einai o asympiestos pyrhnas, kai den 8a eprepe na dokimasete na jekinhsete me ayto.

Ayth h allagh exei ginei gia na einai eykolotero na ftiajete ekdoseis gia diaforoys epejergastes, katw ap' ton idio phgaio kwdika.

7 Pws kanw ayto h ma8ainw pws...

7.1 Pws mporw na exw kulish pros ta pisw se mh grafiko periballon;

Me thn ej' orismou Amerikanikh (US) diatajh plhktrologioy mporeite na xrhsimopoihsete to Shift me ta PageUp kai PageDown plhktra. (Shm: Ayta prepei na einai ta gkri, oxi ayta toy ari8mhtikou plhktrologioy). Me alles diatajeis plhktrologioy, elegjte tis antistoixies sto /usr/lib/keytables mporeite na epanaprosdiorisete ta plhktra "kulish epanw" kai "kulish katw" na einai opoia 8elete, gia paradeigma, wste na ta epanaprosdiorisete se plhktra ta opoia yparxoyn se ena plhktrologio AT 84 plhktrwn. * Den mporeite na ayjhsete to poso keimeno 8a krateitai gia thn kulish ej aitias toy tropoy ylopoihshs, xrhsimopoiwntas thn mnhmh o8onhs gia na apo8hkey8ei perasmeno keimeno, wstoso isws na mporeite na exete perissoterh apo8hkeysh se ka8e eikoniko termatiko meiwnontas ton oliko ari8mo twn eikonikwn termatikwn, deite to <linux/tty.h>.

7.2 Pws enallassw eikonika termatika ; Pws ta energopoiw;

Se mh grafiko periballon, pieste Aristero Alt-F1 ews Alt-F12 gia na epilejete ta eikonika termatika (E.T.) tty1 ews tty12, Deji Alt-F1 dinei to tty13 kai outw ka8' ejhs. Gia thn enallagh sta X windows prepei na piesete Ctrl-Alt-F1 k.o.k. Alt-F5 h o,tidhpote allo 8a sas gyrisei pisw. An 8elete na xrhsimopoihsete ena E.T. gia kanonikh prosbash prepei na to symperilabete sto /etc/inittab, to opoio elegxei poia termatika kai E.T. exoyn dynatothta prosbashs. Shm: Ta X xreiazontai toylaxiston ena E.T. gia na jekinhsoyn. Pyrhnes (kernels) prin ton 1.1.59 exoyn ena enswmatwmeno orio ston ari8mo twn E.T., to opoio ej' orismou einai 8. Deite to NR_CONSOLES sto linux/include/linux/tty.h. Newteroi pyrhnes toys energopoioun dynamika, ews 63 poy einai kai o megistos ari8mos.

7.3 Pws orizw thn zwnh wras;

Phgainete ston katalogo (directory) /usr/lib/zoneinfo an den exete ayton ton katalogo 8a xreiasteite to timezone. O kwdikas brisketai sto sunsite.unc.edu sto /pub/Linux/system/Admin/timesrc-1.2.tar.gz. Kante mia symbolikh sundesh (symbolic link) me onoma localtime se ena apo ta arxeia se ayton ton katalogo (h ypokatalogo), kai allh mia me onoma posixrules sto arxeio localtime. Gia paradeigma:

```
ln -sf US/Mountain localtime
ln -sf localtime posixrules
```

Ayth h allagh 8a energopoih8ei amesa - dokimaste thn entolh date. Mhn dokimasete na xrhsimopoihsete thn metablhth TZ - afhste thn kenh (unset) Prepei epishs na sigoyreyteite oti to roloi toy pyrhna toy Linux einai orismeno sthn swsth wra GMT - plhktrologhste date -u kai bebaiw8eite oti emfanizetai h swsth wra.

7.4 Ti ekdosh (version) toy Linux kai ti onoma mhxanhmatos xrhsimopoiw;

Plhktrologhste:

```
uname -a
```

7.5 Pws mporw na energopoihsw h na apenergopoihsw ta mhnumata sfalmatos toy leitoyrgikou; (core dumps)

To Linux twra exei ej' orismou apenergopoihmena ta corefiles gia oles tis ergasies (processes). Mporeite na ta energopoihsete h na ta apenergopoihsete xrhsimopoiwntas thn entolh ulimit sto bash, thn limit sto tcsh, h thn rlimit sto ksh. Deite tis selides boh8eias gia to kelyfos (shell) gia perissoteres plhrofories. H entolh ephreazei mono ola ta programmata poy ektelountai apo ayto to kelyfos (amesa h emmesa), oxi olo to susthma. An 8elete na energopoihsete h na apenergopoihsete to coredumping gia oles tis ergasies ej' orismou, mporeite na allajete thn proepilegmenh ru8mish (default setting) sto <linux/sched.h> - deite ton orismo toy INIT_TASK, kai epishs deite sto <linux/resource.h>. O pyrhnas 1.2.13 8a paragei a.out core dumps [E8.2 'Ti einai ayta gia to ELF ;'].

7.6 Pws anaba8mizw /anametaglwttizw ton pyrhna;

Deite to Kernel HOWTO h to arxeio README to opoio anaferetai sthn ekdosh toy pyrhna sto ftp.cs.helsinki.fi, in /pub/Software/Linux/Kernel kai sta and mirrors [E2.5 'Where can I get Linux material by FTP ?']. Mporei na exete hdh mia ekdosh toy kwdika toy pyrhna egkatesthmenh sto susthma sas, alla an ton phrate ws meros mias dianomhs (standard distribution) einai pi8ano na einai ligo aparxaiwmenos. (Ayto den einai problhma an 8elete mono ena pyrhna ry8mismeno gia tis anagkes sas (custom-configured), alla isws na einai an 8elete na ton anaba8misete.) 8ymh8eite oti gia na anagkasete ton neo pyrhna na jekinhsei prepei na trejete to LILO meta poy 8a antigracete ton pyrhna sto root partition – to Makefile se prosfatoys pyrhnes exei ena eidiko zlilo stoxo (target) gi' ayto plhktrologhste make zlilo. Ekdoseis pyrhna me monh ypoekdosh (minor version) (p.x., 1.1.x, 1.3.x) einai oi dokimastikes ekdoseis oi sta8eroi pyrhnes paragwghs exoyn zygh ypoekdosh (1.0.x, 1.2.x). An 8elete na dokimasete toys dokimastikous pyrhnes, 8a prepei mallon na eggrafeite sthn linux-kernel lista (mailing list) [E2.8 'What mailing lists are there ?']. O Russel Nelson stelnei perilhceis apo to ti allages se prosfatoys pyrhnes exoyn ginei sto comp.os.linux.development, kai aytes einai sygkentrwmenes sto ftp.emlist.com in /pub/kchanges.

7.7 Mporw na exw panw apo 3 seiriakes 8ures, me diamoirazomenes aithseis diakopwn;

Nai, alla mallon den 8a mporeite na xrhsimopoihsete taytoxronws duo synh8ismenes 8ures oi opoies moirazontai mia aithsh diakophs (xwris kapoia kolpa). Aytos einai enas periorismos ths arxitektonikhs diauloy ISA. Deite to Serial HOWTO gia plhrofories sxetika me pi8anes luseis kai tropoys parakamchs toy problhmatos aytou.

7.8 Pws dhmioyrgw mia disketa ekkinhshs;

Ftiajte ena susthma arxeiwn (filesystem) se ayth me toys katalogoys bin, etc, lib kai dev – ola osa xreiazeste. Egkatasthste ena pyrhna se aythn kai kanoniste na balete to LILO na ton jekinhsei apo th disketa. (deite thn tekmhriwsh (dosumentation) toy LILO, sto lilo.u.*.ps). An ftiajete ton pyrhna (h peite sto LILO na pei ston pyrhna) na exei ena disko sth mnhmh (ramdisk) toy idioy mege8oys opws h disketa, o diskos mnhmhs 8a fortw8ei kata thn ekkinhsh kai 8a xrhsimopoih8ei (mounted ??) ** ws root anti gia th disketa. Deite to Bootdisk HOWTO.

7.9 Pws epanaprosdiorizw to plhktrologio moy se Aggliko, Galliko klp.;

Gia prosfatoys pyrhnes, parte to /pub/Linux/system/Keyboards/kbd-0.90.tar.gz apo to sunsite.unc.edu. Sigoyreyteite oti phrate thn swsth ekdosh prepei na xrhsimopoihsete thn swsth diatajh plhktrologioy poy na tairiazei me ton pyrhna sas. H ekdosh 0.90 prepei na doyleuei me pyrhnes apo 1.0 kai panw. Gia palaioteroys pyrhnes prepei na epejergasteite to panw-panw Makefile gia ton pyrhna (top-level kernel Makefile), sto /usr/src/linux. Mporeite na breite perissoteres plhrofories sto Keystroke HOWTO, sto sunsite.unc.edu to /pub/Linux/docs/HOWTO/Keystroke-HOWTO.

7.10 Pws mporw na exw to lampaki NUM LOCK na einai anammeno ej' orismou ;

Xrhsimopoihste to programma setleds, gia paradeigma (sto /etc/rc.local h ena ap' ta /etc/rc.d/* arxeia):

```
for t in 1 2 3 4 5 6 7 8
do
     setleds +num < /dev/tty$t > /dev/null
done
```

To setleds einai meros toy kbd (deite E7.9 'Pws epanaprosdiorizw (remap) to plhktrologio moy se Aggliko, Galliko klp ;'). Enallaktika, tropopoihste (patch) ton pyrhna. Prepei na orisete to KBD_DEFLEDS na orizetai se (1 << VC_NUMLOCK) otan metaglwttizete to drivers/char/keyboard.c.

7.11 Pws mporw na exw panw apo 128Mb proswrinou xwroy enallaghs (swap);

Xrhsimopoihste polles swap partitions ws arxeia enallaghs (swapfiles) - To Linux yposthrizei mexri 16 perioxes enallaghs, h ka8e mia mexri 128Mb. Polu palioi pyrhnes yposthrizan mono perioxes *** antallaghs mexri 16Mb.

8 Diafores plhrofories kai apanthseis

8.1 Pws programmatizw to XYZ sto Linux

Diabaste ta biblia odhgiwn xrhshs (manuals), h ena kalo biblio gia to Unix. Oi selides boh8eias (manpages) (plhktrologhste man man) einai synh8ws mia kalh phgh anaforas plhroforiwn gia ton akribh tropo xrhshs mias sygkekrimenhs entolhs h mias synarthshs Yparxei epishs kai pollh enhmerwtikh bibliografia GNU h opoia einai syxna pio xrhsimh ws ekpaideysh-ejaskhsh (tutorial). Trejte ton Emacs kai plhktrologhste C-h i, h plhktrologhste info info an den exete h den sas aresei o Emacs. Shmeiwste oti oi plhrofories toy Emacs gia ton libc (Emacs libc node) den perigrafoyn akribws thn libc toy Linux (h opoia einai perissotero san mia libc paradosiakou Unix , xwris na exei kapoies apo tis idiaiterothtes toy GNU), alla einai arketa kalh gia mia ekpaideysh sto programmatismo ths C gia Unix. H teleytaia ekdosh twn selidwn boh8eias (manpages) gia to Linux kai mia syllogh xrhsimhs bibliografias GNU kai diafores alles plhrofories sxetikes me ton programmatismo se Linux mporoun na bre8oun sto sunsite.unc.edu sto /pub/Linux/docs/man-pages.

8.2 Ti einai ayta gia to ELF;

Deite to ELF HOWTO apo ton Daniel Barlow - shmeiwsh, ayto den einai to arxeio allajte se elf, to opoio einai ena bhma pros bhma ma8hma gia to pws na anaba8misete se ELF monoi sas. To Linux allazei se diaforetikh morfh gia ta ektelesima, ta antikeimena kai tis biblio8hkes antikeimenwn, gnwsth ws 'ELF' (h palia morfh legetai 'a.out'). Ayth h morfh 8a exei polla pleonekthmata, symperilambanomenhs kaluterhs yposthrijhs gia diamoirazomenes biblio8hkes (shared libraries) kai dynamikh sundesh (dynamic linking). Kai oi duo morfes dyadikwn, h a.out kai h ELF mporoun na synyparxoyn se ena susthma. Wstoso, xrhsimopoioun diaforetikes diamoirazomenes biblio8hkes C, poy 8a prepei na einai kai oi duo egkatesthmenes. An 8elete na ma8ete an ton susthma sas mporei na ektelesei dyadika arxeia ELF, koitajte sto /lib gia ena arxeio me onoma libc.so.5. An ayto yparxei, pi8anotata mporei. An 8elete na ma8ete an h egkatastash sas einai ELF mporeite na dialejete ena antiproswpeytiko programma, san to ls, kai na trejte to file se ayto:

```
-chiark:~> file /bin/ls
/bin/ls: Linux/i386 impure executable (OMAGIC) - stripped

valour:~> file /bin/ls
/bin/ls: ELF 32-bit LSB executable, Intel 80386, version 1, stripped
```

Yparxei ena dior8wtiko (patch) gia na kanete ton pyrhna 1.2.x na metaglwttizei xrhsimopoiwntas toys metaglwttistes (compilers) ELF kai na paragei ELF coredumps, sto tsx-11.mit.edu sto /pub/packages/GCC. Den xreiazeste ayto to dior8wtiko gia na trexete ELF ektelesima. O pyrhnas 1.3.x kai metagenesteroi den xreiazontai ka8oloy dior8wtiko.

8.3 Ti einai ena arxeio .gz ; Kai ena .tgz ; Kai ... ;

Ta .gz (kai .z) arxeia exoyn sympiestei xrhsimopoiwntas to GNU gzip. Prepei na xrhsimopoihsete sto gunzip (to opoio einai enas symbolikos sundesmos sthn entolh gzip poy symperilambanetai me tis perissoteres egkatastaseis Linux) gia na aposympiesete to arxeio. Ta .taz kai .tz einai arxeia kasetas (poy ftiaxthkan me to Unix tar) sympiesmena xrhsimopoiwntas thn entolh toy Unix compress. Ta .tgz (h .tpz) einai arxeia kasetas sympiesmena me to gzip. To .lsm einai ena stoixeio Xarth Logismikou Linux (Linux Software Map entry), se morfh enos syntomoy arxeioy keimenoy. Plhrofories gia ta LSM kai o idios o xarths einai dia8esima ston ypokatalogo docs sto sunsite.unc.edu. To .deb einai ena dyadiko paketo Debian - h morfh dyadikwn paketwn poy xrhsimopoieitai apo th dianomh Debian GNU/Linux. Xrhsimopoieitai me to dpkg kai to dpkg-deb (dia8esima sta systhmata Debian kai apo to ftp.debian.org). To .rpm einai ena paketo Red Hat, to opoio xrhsimopoieitai apo tis dianomes Red Hat. Ayta briskontai sto ftp.redhat.com. H entolh file mporei syxna na sas pei ti einai ena arxeio An blepete oti to gzip paraponietai otan prospa8eite na aposympiesete ena gzipped arxeio, mallon to katebasate (downloaded) se morfh ASCII kata la8os. Prepei na katebazete ta perissotera arxeia se dyadikh morfh (binary) - na 8ymaste na plhktrologeite thn entolh binary sto FTP prin xrhsimopoieite to get gia na katebasete to arxeio.

8.4 Ti shmainoyn ta arxika VFS;

Eikoniko susthma arxeiwn (Virtual File System). Einai to afairetiko epipedo anamesa sto xrhsth kai to pragmatiko susthma arxeiwn opws ta ext2, minix kai msdos. Metaju allwn h doyleia toy einai na adeiazei thn proswrinh endiamesh mnhmh (buffer) anagnwshs otan antilambanetai allagh diskoy se ena odhgo eukampths disketas:

```
VFS: Disk change detected on device 2/0
```

8.5 Ti einai to BogoMip;

To 'BogoMips' einai mia parafrash toy 'Bogus MIPS'. MIPS shmainei (analoga me ton poion akoute) Ekatommuria Entolwn ana Deyterolepto -Millions of Instructions per Second-, h Anousia Endeijh Taxuthtas toy

Epejergasth -Meaningless Indication of Processor Speed-. O ari8mos poy emfanizetai kata thn ekkinhsh einai to apotelesma mias ba8monomishs sygxronismou toy pyrhna, poy xrhsimopoieitai gia polu suntomoys brogxoys ka8ysterhshs apo orismenoys odhgous syskeywn. Xontrika to BogoMips 8a einai peripoy:

```
386SX              clock * 0.14
386DX              clock * 0.18
486Cyrix/IBM       clock * 0.33
486SX/DX/DX2       clock * 0.50
586                clock * 0.39
```

An o ari8mos poy blepete einai polu xamhloteros apo ayton, isws exete piesei to koympi Turbo h exete ry8misei thn taxuthta ths CPU la8os, h exete kapoio problhma lan8anoysas mnhmhs [opws perigrafetai sto Q6.5 'When I add more memory it slows to a crawl.'.]

Gia times poy exoyn dei an8rwpoi me alloys, spanioteroys epejergastes deite to BogoMips Mini-HOWTO, sto sunsite.unc.edu sto /pub/Linux/docs/howto/mini/BogoMips.

8.6 Ti einai to Linux Journal kai poy mporw na to brw

To Linux Journal einai ena mhniaio periodiko (entypo) poy diati8etai sta periptera (!) (newsstands) kai mesw syndromwn se olo ton kosmo. Steilte ena e-mail sto linux@ssc.com gia leptomereies.

8.7 Posoi an8rwpoi xrhsimopoioun Linux

To Linux diati8etai dwrean kai kaneis den einai ypoxrewmenos na katagracei ta antigrafa poy katexei se kapoia kentrikh yphresia, etsi einai duskolo na jeroyme. Polles epixeirhseis epibiwnoyn apokleistika apo pwlhsh kai yposthrijh Linux, kai polu ligoi xrhstes toys Linux xrhsimopoioun aytes tis epixeirhseis, kat' analogia. Ta newsgroups gia to Linux einai apo ta pio polydiabasmena sto diktyo, etsi o ari8mos einai mallon stis ekatontades xiliadwn, alla swsta stoixeia einai duskolo na bre8oun. Wstoso, enas gennaios tupos, o Harald T. Alvestrand Harald.T.Alvestrand@uninett.no, apofasise na prospa8hsei, kai zhtaei na toy steilete ena mhnyma sto linux-counter@uninett.no an xrhsimopoieite Linux, me ena apo ta akoloy8a 8emata: 'I use Linux at home' (xrhsimopoiw to Linux sto spiti), 'I use Linux at work' (xrhsimopoiw to Linux sth doyleia), h 'I use Linux at home and at work' (xrhsimopoiw to Linux sto spiti kai sth doyleia). Epishs dexetai kataxwrhseis apo alloys - rwthste ton gia plhrofories. ask him for details. Enallaktika mporeite na kataxwrh8eite xrhsimopoiwntas tis formes WWW sto http://domen.uninett.no/ hta/linux/counter.html. Stelnei tis metrhseis toy sto comp.os.linux.misc ka8e mhna, enallaktika koitajte sto aun.uninett.no sto /pub/misc/linux-counter h sthn proanafer8eisa web selida.

8.8 Pws 8a eprepe na proferw to Linux

Ayto sigoyra einai ena 8ema "8rhskeytikou polemoy"! An 8elete na akousete ton Linus na leei pws to proferei katebaste to english.au h to swedish.au apo ftp.funet.fi (sto /pub/OS/Linux/PEOPLE/Linus/SillySounds). An exete karta hxoy h ton odhgo gia to megafwnaki toy PC mporeite na toys akousete plhktrologwntas:

```
cat english.au >/dev/audio
```

H diafora den einai sthn profora toy Linux alla sthn glwssa sthn opoia o Linus leei hello. H agglikh ekdosh exei diakwmwdh8ei polu kala apo ton Jin Choi ws "Hi, my name is Leenoos Torvahlds and I pronounce Leenooks as Leenooks." Gia esas poy den exete ta aparaithta gia na to akousete: O Linus proferei to Linux sxedon san Leenus, opoy to ee einai opws sto feet alla mallon braxutero kai to u einai mia polu braxuterh ekdosh toy eu sto peur (an to proferete opws to u sto put mallon pernaei). 1/4tan o Ian Jackson milaei agglika to proferei Lie-nucks (u opws sto bucket) – ayth einai mia agglopoihmenh profora poy basizetai sthn analogia me to onoma toy Linus, to opoio sta agglika proferetai ws Lie-nus (u opws sto put). Einai fysika paradekto kai synh8ismeno na metatrepetai h profora kapoias lejhs otan allazei glwsses. O Ian Jackson nomizei oti h profora Linnucks (braxu i opws sto pit, braxu u opws sto bucket) einai la8os sta agglika, ka8ws den einai h prwtotyph soyhdikh profora, den einai mia logikh agglikopoihshs ayths kai den sthrizetai sthn agglopoihmenh morfh toy onomatos toy Linus.

9 Frequently encountered error messages.

9.1 Unknown terminal type linux and similar.

In an early 1.3.x kernel the default console terminal type has changed from console to linux. You must edit /etc/termcap to change the line reading:

```
console|con80x25:\
```

to

```
linux|console|con80x25:\
```

(there may be an additional dumb in there – if so it should be removed.)

In order to get the editor to work you may need say TERM=console (for bash and ksh) or setenv TERM console (csh, tcsh) first.

Some programs use /usr/lib/terminfo instead of /etc/termcap. For these programs you should upgrade your terminfo, which is part of ncurses.

9.2 During linking I get Undefined symbol _mcount

This is usually due to a bad interaction between a brokenness in SLS and the C library release notes. Your libc.a has been replaced by the profiling library. You should remove libc.a, libg.a and libc_p.a and once again install the new libraries (following the release notes, of course).

9.3 lp1 on fire

This is a joke/traditional error message indicating that some sort of error is being reported by your printer, but that the error status isn't a valid one. It may be that you have some kind of I/O or IRQ conflict - check your cards' settings. Some people report that they get this message when their printer is switched off. Hopefully it isn't really on fire ...

In newer kernels this message reads lp1 reported invalid error status (on fire, eh?).

9.4 INET: Warning: old style ioctl(IP_SET_DEV) called!

You are trying to use the old network configuration utilities; the new ones can be found on ftp.linux.org.uk in /pub/linux/Networking/PROGRAMS/NetTools (source only, I'm afraid).

Note that they cannot be used just like the old-style programs; see the NET-2 HOWTO for instructions on how to set up networking correctly.

9.5 ld: unrecognized option '-m486'

You have an old version of ld. Install a newer binutils package – this will contain an updated ld. Look on tsx-11.mit.edu in /pub/linux/packages/GCC for binutils-2.6.0.2.bin.tar.gz.

9.6 GCC says Internal compiler error.

If the fault is repeatable (ie, it always happens at the same place in the same file – even after rebooting and trying again, using a stable kernel) you have discovered a bug in GCC. See the GCC Info documentation (type Control-h i in Emacs, and select GCC from the menu) for details on how to report this – make sure you have the latest version though.

Note that this is probably not a Linux-specific problem; unless you were compiling a program many other Linux users also compile you should not post your bug report to any of the comp.os.linux groups.

If the problem is not repeatable you are very probably experiencing memory corruption – see Q9.7 'make says Error 139'.

9.7 make says Error 139

Your compiler driver (gcc) dumped core. You probably have a corrupted, buggy or old version of GCC – get the latest release. Alternatively you may be running out of swap space – see Q6.8 'My machine runs very slowly when I run GCC / X / ...' for more info.

If this doesn't fix the problem you are probably having problems with memory or disk corruption. Check that the clock rate, wait states and refresh timing for your SIMMs and cache are correct (hardware manuals are sometimes wrong, too). If so you may have some dodgy SIMMs or a faulty motherboard or hard disk or controller.

Linux, like any Unix, is a very good memory tester – much better than DOS-based memory test programs.

Reportedly some clone x87 maths coprocessors can cause problems; try compiling a kernel with maths emulation [Q7.6 'How do I upgrade/recompile my kernel ?']; you may need to use the no387 kernel command line flag on the LILO prompt to force the kernel to use it, or it may be able to work and still use the 387, with the maths emulation compiled in but mainly unused.

Much more information about this problem is available on the WWW at *http://einstein.et.tudelft.nl/~wolff/sig11* `<http://einstein.et.tudelft.nl/~wolff/sig11>`

9.8 shell-init: permission denied when I log in.

Your root directory and all the directories up to your home directory must be readable and executable by everybody. See the manpage for chmod or a book on Unix for how to fix the problem.

9.9 No utmp entry. You must exec ... when I log in.

Your /var/run/utmp is screwed up. You should have

```
> /var/run/utmp
```

in your /etc/rc.local or /etc/rc.d/*. See Q6.11 'I have screwed up my system and can't log in to fix it.' for how to be able to do this. Note that utmp may also be found in /var/adm/utmp or /etc/utmp on some older systems.

9.10 Warning – bdflush not running.

Modern kernels use a better strategy for writing cached disk blocks. In addition to the kernel changes, this involves replacing the old update program which used to write everything every 30 seconds with a more subtle daemon (actually a pair), known as bdflush.

Get bdflush-n.n.tar.gz from the same place as the kernel source code (Q7.6 'How do I upgrade/recompile my kernel ?') and compile and install it; it should be started before the usual boot-time filesystem checks. It will work fine with older kernels as well, so there's no need to keep the old update around.

9.11 Warning: obsolete routing request made.

This is nothing to worry about; it just means that the version of route you have is a little out of date compared to the kernel. You can make the message go away by getting a new version of route from the same place as the kernel source code (Q7.6 'How do I upgrade/recompile my kernel ?').

9.12 EXT2-fs: warning: mounting unchecked filesystem.

You need to run e2fsck (or fsck -t ext2 if you have the fsck front-end program) with the -a option to get it to clear the 'dirty' flag, and then cleanly unmount the partition during each shutdown.

The easiest way to do this is to get the latest fsck, umount and shutdown commands, available in Rik Faith's util-linux package (Q2.5 'Where can I get Linux material by FTP?'). You have to make sure that your /etc/rc* scripts use them correctly.

NB: don't try to check a filesystem that's mounted read-write – this includes the root partition if you don't see

```
VFS: mounted root ... read-only
```

at boot time. You must arrange to mount the root filesystem readonly to start with, check it if necessary, and then remount it read-write. Read the documentation that comes with util-linux to find out how to do this.

Note that you need to specify the -n option to mount to get it not to try to update /etc/mtab, since the root filesystem is still read-only and this will otherwise cause it to fail!

9.13 EXT2-fs warning: maximal count reached.

This message is issued by the kernel when it mounts a filesystem that's marked as clean, but whose 'number of mounts since check' counter has reached the predefined value. The solution is to get the latest version of the ext2fs utilities (e2fsprogs-0.5b.tar.gz at the time of writing) from the usual sites (Q2.5 'Where can I get Linux material by FTP ?').

The maximal number of mounts value can be examined and changed using the tune2fs program from this package.

9.14 EXT2-fs warning: checktime reached.

Kernels from 1.0 onwards support checking a filesystem based on the elapsed time since the last check as well as by the number of mounts. Get the latest version of the ext2fs utilities (see Q9.13 'EXT2-fs warning: maximal count reached').

9.15 df says Cannot read table of mounted filesystems.

There is probably something wrong with your /etc/mtab or /etc/fstab files. If you have a reasonably new version of mount, /etc/mtab should be emptied or deleted at boot time (in /etc/rc.local or /etc/rc.d/*), using something like

```
rm -f /etc/mtab*
```

Some versions of SLS have an entry for the root partition in /etc/mtab made in /etc/rc* by using rdev. This is incorrect – the newer versions of mount do this automatically.

Other versions of SLS have a line in /etc/fstab that looks like:

```
/dev/sdb1   /root   ext2   defaults
```

This is wrong. /root should read simply /.

9.16 fdisk says Partition X has different physical/logical ...

If the partition number (X, above) is 1 this is the same problem as Q9.17 'fdisk: Partition 1 does not start on cylinder boundary'.

If the partition begins or ends on a cylinder numbered beyond 1024 this is because standard DOS disk geometry information format in the partition table can't cope with cylinder numbers with more than 10 bits. You should see Q4.1 'How can I get Linux to work with my large disk ?'.

9.17 fdisk: Partition 1 does not start on cylinder boundary

The version of fdisk that comes with many Linux systems creates partitions that fail its own validity checking. Unfortunately if you've already installed your system there's not much you can do about this, apart from copying the data off the partition, deleting and remaking it, and copying the data back.

You can avoid the problem by getting the latest version of fdisk, from Rik Faith's util-linux package (available on all good FTP sites). Alternatively, if you are creating a new partition 1 that starts in the first cylinder, you can do the following to get a partition that fdisk likes.

1. Create partition 1 in the normal way. A p listing will produce the mismatch complaint.

2. Type u to set sector mode and do p again. Copy down the number from the "End" column.

3. Delete partition 1.

4. While still in sector mode recreate partition 1. Set the first sector to match the number of sectors per track. This is the sector number in the first line of the p output. Set the last sector to the value noted in 2. above.

5. Type u to reset cylinder mode and continue with other partitions.

Ignore the message about unallocated sectors - they refer to the sectors on the first track apart from the Master Boot Record, which are not used if you start the first partition in track 2.

9.18 fdisk says partition n has an odd number of sectors.

The PC disk partitioning scheme works in 512-byte sectors, but Linux uses 1K blocks. If you have a partition with an odd number of sectors the last sector is wasted. Ignore the message.

9.19 mtools says cannot initialise drive XYZ

This means that mtools is having trouble accessing the drive. This can be due to several things.

Often this is due to the permissions on floppy drive devices (/dev/fd0* and /dev/fd1*) being incorrect – the user running mtools must have the appropriate access. See the manpage for chmod for details.

Most versions of mtools distributed with Linux systems (not the standard GNU version) use the contents of a file /etc/mtools to discover which devices and densities to use, in place of having this information compiled into the binary. Mistakes in this file often cause problems. There is often no documentation about this – distribution packagers please note that this is *evil*.

For the easiest way to access your DOS files (especially those on a hard disk partition) see Q3.2 'How do I access files on my DOS partition or floppy ?'. Note – you should never use mtools to access files on an msdosfs mounted partition or disk !

9.20 At the start of booting: Memory tight

This means that you have an extra large kernel that means that Linux has to do some special memory-management magic to be able to boot itself from the BIOS. It isn't related to the amount of physical memory in your machine. Ignore the message, or compile a kernel containing only the drivers and features you need (Q7.6 'How do I upgrade/recompile my kernel ?').

9.21 You don't exist. Go away.

This is not a viral infection :-). It comes from various programs such as write, talk and wall, if your invoking uid doesn't correspond to a valid user (probably due to /etc/passwd being corrupted), or if the session (pseudoterminal, specifically) you're using isn't properly registered in the utmp file (probably because you invoked it in a funny way).

10 X Windows

10.1 Yposthrizei to Linux X Windows?

Nai.To Linux xrhsimopoiei ta XFree86 (h trexoysa ekdosh einai 3.3.1 h opoia einai basismenh sta X11R6). Prepei na exeis mia karta o8onhs poy na yposthrizetai apo ta XFree86. Des to Linux XFree86 HOWTO gia perissoteres leptomereies.

Oi perissoteres ekdoseis toy Linux shmera synodeuontai me egkatastash twn X.

Wstoso, mporeis na ta egkatasthseis h na ta anaba8miseis monos soy, apo to /pub/Linux/X11/Xfree86-* sto sunsite.unc.edu kai sta mirror sites.Diabase to XFree86 HOWTO gia odhgies egkatastashs.

10.2 Pws mporw na brw ena XF86Config arxeio gia to susthma moy;

Des to Linux XFree86 HOWTO.

8a xreiastei na diamorfwseis to diko soy XF86Config arxeio,giati ejartatai apo ton akribh syndyasmo ths kartas o8onhs kai ths o8onhs poy exeis. Den einai toso duskolo na to kaneis – diabase tis odhgies poy einai mazi me ta XFree, sto /usr/X11R6/lib/X11/etc. To arxeio poy mallon xreiazetai na koitajeis einai to README.Config.

Gia grhgoro ru8misma mporeis na trejeis to programma xf86config. Prosexe oti to ConfigXF86 einai jeperasmenoo kai den einai kalo na to xrhsimopoieis.

Parakalw mhn stelnete erwthseis sth lista comp.os.linux.x sxetika me arxeia XF86Config, kai mhn apantate se tetoies erwthseis.

10.3 xterm logins show up strangely in who, finger.

To xterm poy erxetai mazi me ta XFree86 2.1 kai metepeita ekdoseis den katalabainei swsta th domh poy xrhsimopoiei to Linux gia to /var/adm/utmp arxeio, sto opoio to susthma katagrafei poios einai syndedemenos. Etsi den deixnei swsta oles tis plhrofories.

Me thn ekdosh twn XFree86 3.1 kai meta den yparxei ayto to problhma.

10.4 Den mporw na ry8misw ta X Windows na doylecoyn swsta.

Diabase to XFree86 HOWTO – proseje ton tomea erwthsewn kai apanthsewn.

Prospa8hse na diabaseis th lista comp.windows.x.i386unix – eidika to FAQ gia th sygkekrimenh lista.

Parakalw mhn stelnete erwthseis sxetika me X Windows h XFree86 sth lista comp.os.linux.x ektos an einai Linux-specific.

11 Erwthseis gia polu palia programmata.

Oi erwthseis se ayto ton tomea einai xrhsimo se xrhstes poy exoyn logismiko treis mhnes palio.

Please let me know if you find the answer to a problem you had here, as unused questions in this section will eventually disappear (Q13.1 ‘Feedback is invited’).

11.1 To Emacs petaei core.

Pi8anon exeis ekdosh toy Emacs h opoia eixe metaglwttistei etsi wste na doyleuei me ta X11; ayto apaitei tis biblio8hkes gia na doylecei. An xrhsimopoieis to Slackware mporeis na allajeis to /usr/bin/emacs symbolic link na deixnei sto emacs-19.29-no-x11 (des man ln).Ayto einai sto arxeio Slackware 3.0’s E6 disk.

11.2 To fdisk leei oti den mporei na xrhsimopoihsei nnn sectors apo ayto to partition.

Arxika to Linux yposthrize mono to Minix filesystem, to opoio den mporei na xrhsimopoihsei perissotera apo 64Mb se ena partition. Aytos o periorismos den yparxei sta poio aneptygmena filesystems poy yparxoyn ayth th stigmh, opws to ext2fs (h deuterh ekdosh toy Extended Filesystem, to stantar filesystem toy Linux).

An sxediazeis na xrhsimopoihseis to ext2fs agnohse to mhnyma.

11.3 O GCC merikes fores xrhsimopoiei terastia posa eikonikhs mnhmhs kai kremaei.

Palioteres ekdoseis toy GCC eixan ena problhma to opoio tis ekane na xrhsimopoioun pollh mnhmh an prospa8ouses na metaglwttiseis ena programma poy eixe polla dedomena tupoy static.

Mporeis na anaba8miseis thn ekdosh toy GCC sthn teleytaia 2.7.X, h na pros8eseis perissoterh swap mnhmh.

11.4 To plhktrologio moy trelainetai otan allazw Virtual Consoles.

Ayto einai ena la8os toy Kernel prin apo to 0.99pl14-alpha-n. Merikes fores to Linux mperdeuei poia modifier plhktra (Shift, Alt, Control ktl.) einai pathmena h oxi kai pisteuei oti ena h perissotera einai pathmena enw den einai. H lush einai na pathseis kai na eley8erwseis ka8e ena apo ayta ta plhktra (xwris na patas ta alla) – ayto 8a bebaiwsei oti to Linux jerei se poia katastash brisketai to plhktrologio.

Ayto to problhma symbainei syxna otan allazoyme konsola apo ta X Windows. Merikes fores mporei na apofeyx8ei afhnontas Ctrl kai Alt polu grhgora molis piesoyme to F-key ths VC poy 8eloyme na allajoyme.

12 Pws mporw na exw epipros8eth boh8eia;

12.1 H erwthsh moy den exei akoma apanth8ei.

Parakalw diabase olh ayth thn apanthsh prin steileis erwthsh. 3erw oti einai ligo megalh,alla mporei na geloiopoih8eis se polu kosmo kai 8a toys kaneis na jodecoyn polutimh wra. Den nomizeis oti ajizei na jodeceis ligh apo thn wra soy gia na diabaseis kai na akoloy8hseis aytes tis odhgies ;

An nomizeis oti mia erwthsh den einai oloklhrwmenh h einai anakribhs, steile mail If you think an answer is incomplete or inaccurate, please mail Robert Kiesling at <kiesling@terracom.net.

Diabaste tis katallhles anafores gia to Linux – deite Q2.1 Read the appropriate Linux Documentation Project books – see Q2.1 'Where can I get the HOWTOs and other documentation ?'.

An eiste kainourgioi sto Unix diabaste to FAQ gia to comp.unix.questions, kai apo ka8e allh omada comp.unix.* to opoio mporei na einai sxetiko.

To Linux einai enas klonos toy Unix, opote otidhpote diabaste ekei 8a isxuei kai gia to Linux. Ayta ta FAQs mporoun, opws kai alla FAQs mporoun na bre8oun sto rtfm.mit.edu sto /pub/usenet/news.answers (to <mail-server@rtfm.mit.edu> mporei na sas steilei ayta ta arxeia, gi' aytous poy den exoyn FTP prosbash). Yparxoyn mirrors twn rtfm's FAQ archives se diafora sites-deite thn Eisagwgh sto *.answers posting,posted, h koitajte sto news-answers/introduction ston parapanw katalogo.

Koitajte ta sxetika HOWTO me to antikeimeno ths erwthshs Check the relevant HOWTO for the subject in question, if there is one, or an appropriate old-style sub-FAQ document. Check the FTP sites.

Prospa8eiste na peiramatisteite – Aytos einai o kaluteros tropos na gnwrisete to Unix kai to Linux.

Diabaste tis anafores. Deite tis manpages (gracte man man an den jerete gia tis manpages. Dokimaste man -k <subject>– syxna dinei mia lista apo xrhsimes kai sxetikes manpages.

Deite tis anafores se Info morfh (gracte C-h i, p.x. Control H poy akoloy8eite apo I ston Emacs) – NB: ayto den isxuei mono gia ton Emacs; gia paradeigma oi anafores gia ton GCC yparxei epishs se ayth thn morfh.

Synh8ws ena paketo synodeuetai apo ena README arxeio, to opoio periexei odhgies egkatastashs kai xrhshs.

Sigoyreyteite oti den exete ena xalasmeno h palio programma. An einai dynato katebaste to kai janaegkatasthste to – pi8anon na exete kanei thn prwth fora.

Diabaste to comp.os.linux.announce – ayto syxna periexei polu shmantikes plhrofories gia oloys toys xrhstes toy Linux.

Genika oi erwthseis sxetika me to linux anhkoyn sto comp.windows.x.i386unix, kai oxi sto comp.os.linux.x. Alla diabaste ayth th lista prwta (kai to FAQ), prin steilete thn anakoinwsh sas.

Mono an exete kanei ola ayta kai eiste akoma kollhmenoi steilte anakoinwsh sto katallhlo comp.os.linux.* newsgroup. Sigoyreyteite oti exete diabasei thn epomenh erwthsh, Q12.2 'Ti na pw otan zhtaw boh8eia',prwta.

12.2 Ti na pw otan zhtaw boh8eia.

Diabase prosektika thn parakatw symboylh sxetika me to pws na grafeis anakoinwseis h email. Exontas ayto ypocin soy ayjanontai oi pi8anothtes kapoios allos xrhsths poy to diabazei na exei arketes plhrofories kai kinhtro na apanthsei.

Ayth h symboylh isxuei kai gia anakoinwseis zhtwntas gia boh8eia kai gia proswpika mynhmata se alloys xrhstes.

Na eisai sigoyros oti dineis oles tis leptomereies toy problhmatos, symperibalomenoy :

- Me poio programma akribws exeis problhmata. Dwse ton ari8mo ekdoshs an ton jereis kai pes poy to brhkes. Polles standard entoles mporoun na soy deijoyn ton ari8mo ekdoshs an dwseis thn parametro –version.
- Poia release toy Linux xrhsimopoieis (MCC, Slackware, Debian h otidhpote) kai poia ekdosh.
- To akribes kai oloklhro keimeno apo opoiodhpote munhma la8oys.
- Poia akribws symperifora perimenes, kai ti akribws symperifora parathreis. A transcript of an example session is a good way of showing this.
- To periexomeno ka8e configuration arxeio poy xrhsimopoieitai apo to programma kai ka8e allo sxetiko programma.
- Poia ekdosh toy kernel kai ths biblio8hkhs poy xrhsimopoieis. H ekdosh toy kernel mporei na bre8ei grafontas uname -a kai h biblio8hkh grafontas ls -l /lib/libc.so.4.
- Leptomereies gia to hardware poy exete, an einai katallhlo.

Mpaineis se ligo kindyno na graceis megalo mail ektos kai an perilambaneis megala kommatia phgaioy kwdika, opote prosoxh wste na mhn dineis parapanhsies leptomereies.

Na xrhsimopoieis ena jeka8aro kai leptomeres titlo. Mhn bazete pragmata opws 'Den doyleuei' 'Linux', 'boh8eia' h 'erwthsh' –ayto to jeroyme hdh. Krata xwro gia to onoma toy programmatos, ena kommati apo to munhma la8oys, perigrafh ths asynh8isths symperiforas, ktl.

An anaferete ena mhnyma toy tupoy 'unable to handle kernel paging request' akoloy8hste tis odhgies poy briskontai sto Linux kernel sources README gia thn metatroph twn ari8mwn se kati poy einai pio katanohto.An den to kanete ayto kaneis den 8a mporei na to kanei gia sena mia poy h antistoixia twn ari8mwn me ta onomata synarthsewn poikilei apo ena kernel se allo.

Topo8ethste mia perilhptikh paragrafo sthn koryfh ths anakoinwshs.

Sto telos, zhthste gia antapokriseis mesw mail kai peite oti 8a anakoinwsete mia perilhch. Parte ena anti-grafo aytou xrhsimopoiwntas Followup-To: apostolea. Epeita steilte mia perilhch se liges meres h mia bdomada.Mhn enwnetai aplws ta mail–kante perilhch.To na balete thn lejh PERILHYH(perilhchs einai mia kalh idea.Skefteite na steilete thn perilhch sth comp.os.linux.announce.

Prosexete oti to mail sas exei swsth epikefalida. Ayto kathgoriopoiei to ar8ro soy san meros ar8roy to opoio anaferetai, gegonos to opoio exei apotelesma na 8ewrh8ei axrhsto apo toys anagnwstes me to ypoloipo enos baretou kommatiou.

Mporeite na anaferete oti exete diabasei ayto to FAQ kai ta katallhla HOWTOs– ayto dinei stoys alloys enaysma na mhn aporricoyn to mail sas.

8ymh8eite oti den prepei na koinopoieite email ta opoia stal8hkan proswpika se esas xwris thn adeia toy apostolea.

12.3 8elw na steilw mail se kapoion sxetika me to problhma moy.

Prospa8hse na breis ton syggrafea h ton programmatisth opoioydhpote programmatos h meros toy se dyskoleuei. An exeis kapoio shmeio epafhs gia to Linux distribution poy xrhsimopoieis, 8a prepei na to xrhsimopoihseis.

Parakalw bale otidhpote sto mail soy poy 8a ebazes se anakoinwsh zhtwntas boh8eia.

Telika, 8ymhsoy oti para to gegonos oti oi perissoteroi sthn koinothta toy Linux einai pro8ymoi na boh8hsoyn,8a zhtas boh8eia apo kapoion poy to kanei oikeio8elws, wste den prepei na perimeneis opwsdhpote apanthsh.

13 Plhrofories gia to FAQ, adeia xrhshs kai ypomnhseis.

13.1 Ta sxolia einai eyprosdekta

Steilte moy ta sxolia gia ayto to FAQ.

Dexomai ka8e syneisfora gia to FAQ se opoiodhpote morfh. Ola ta sxolia kai oi dior8wseis einai dektes.

Please send them to <kiesling@terracom.net>.

An epi8ymeite na anafer8eite se erwthsh(eis) gia to FAQ einai pio boliko gia mena an anafereste ston titlo ths erwthshs para ston ari8mo, mia poy oi ari8moi dhmioyrgountai aytomata kai den toys blepw sto phgaio arxeio to opoio doyleuw.

I prefer comments in English to patchfiles – I write the FAQ in a different internal format anyway, so I can't use a patchfile.

13.2 Morfes poy to FAQ einai dia8esimo.

Ayto to keimeno (to aggliko) einai dia8esimo se arxeio keimenoy ASCII,se arxeio tupoy Emacs Info, se HTML World Wide Web selida, PostScript kai san USENET news posting.

To ASCII,Emacs Info, HTML kai posted ekdoseis kai ena Lout typesetter arxeio (apo to opoio prohl8e to PostScript) prohl8an aytomata apo ena programma se Perl to opoio pairnei san eisodo arxeia se morfh Bizarre with No Name.

Ta arxeia ejodoy linux-faq.ascii, .info kai .ps kai ena arxeio tupoy tar linux-faq.source.tar.gz, ta opoia periexoyn ta BFNN phgaia arxeia kai to programma metatrophs grammeno se Perl, einai dia8esima se katalogoys sxetika me anafores,se megala Linux FTP sites.

The HTML version of this FAQ is available as http://www.cl.cam.ac.uk/users/iwj10/linux-faq/index.html and is mirrored at www.li.org and other sites.

H USENET ekdosh anakoinwnetai taktika sto comp.linux.announce, comp.os.linux.answers, comp.answers kai news.answers.

13.3 Authorship and acknowledgements.

This FAQ is compiled by Robert Kiesling <kiesling@terracom.net>, with assistance and comments from others too numerous to mention.

Special thanks are due to Matt Welsh, who moderated comp.os.linux.announce and comp.os.linux.answers, used to coordinate the HOWTOs and has written substantial portions of many of them, to Greg Hankins, who

currently coordinates the HOWTOS, to Lars Wirzenius, who currently moderates comp.os.linux.announce, to Marc-Michel Corsini, who wrote the original Linux FAQ, and to Ian Jackson, the previous FAQ-maintainer.

Thanks also to the many people who have sent comments and suggestions; they are too numerous to list here, but their input has been invaluable.

Last but not least, thanks to Linus Torvalds and the other contributors to Linux for giving us something to write about !

13.4 ***Disclaimer and Copyright.

14 Gia thn Ellhnikh metafrash

H Ellhnikh metafrash einai basismenh sto Linux-FAQ, toy Robert Kiesling. To Linux-Hellenic-FAQ 8a prepei na diabazetai se syndyasmo me to Hellenic-HOWTO, poy epiluei leptomerws problhmata Ellhnwn xrhstwn.

To aggliko keimeno den einai oti kalutero yparxei, giati exei meinei gia megalo kairo ejw apo tis ejelijeis, alla kai giati den mporei na dwsei logikes apanthseis se Ellhnes xrhstes. Ayto symbainei idiaitera se 8emata me FTP sites, listes klp. Gia ayto to logo, se polla shmeia yparxei to "S.t.M." dhladh sxolia toy metafrasth poy exoyn skopo na ypodeijoyn thn swsth apanthsh/ermhneia.

Gia to keimeno ayto synergasthkan oi:

- 1,2,3 gef@hellug.gr, Ekkinhsh toy FAQ kai synthrhsh.
- 4 emav@
- 5 louther@/mike@
- 6,7,8 mike@
- 10,11,12,13 sakalis@
- 14 gef@

14.1 TODO

Aytes einai oi doyleies poy menoyn na ginoyn:

- 3.6 Metafrash (gef)
- 9 louther@
- 13.3, 13.4 (gef)
- 14 +credits (gef)
- Elegxos or8ografias (munhma, syndyasmos?), tonismos klp.
- Diabasma oloy toy FAQ, euresh anakribeiwn/problhmatwn.
- Ka8ierwsh orologias.
- Sygxronismos me to Aggliko keimeno.

14.2 Ta sxolia einai eyprosdekta

Parakalw steilte ta sxolia sas gia thn metafrash toy FAQ.

Oles oi syndromes, sxolia, parathrhseis kai dior8wseis einai dektes. Parakalw steilte tis sto `<gef@hellug.gr>`.

Ean 8elete na anafer8eite se kapoia erwthsh toy keimenoy, einai pio xrhsimh h anafora toys me bash ton titlo kai oxi me bash to noumero, giati ta noumera paragontai aytomata kai den fainontai kan sto arxiko keimeno.

Mhn stelnete patchfiles, HTML h allo formarismeno keimeno, giati to FAQ grafetai etsi kai alliws se SGML.

14.3 Morfes stis opoies diati8etai ayto to keimeno

Ayto to keimeno einai dia8esimo san arxeio ASCII, Emacs Info arxeio, HTML selida, Postscript kai san news sto USENET (comp.os.linux.answers)

Oi ASCII, Emacs Info, HTML ekdoseis dhmioyrgountai aytomata me xrhsh toy paketoy SGMLTOOLS, kai enos Makefile poy 8a breite mazi me ton phgaio SGML kwdika toy FAQ.

To FAQ ayto yparxei stis ejhs morfes:

- `Linux-Hellenic-FAQ.html` html me Ellhnika 928 (moiazoyn me ta windows-1253)
- `Linux-Hellenic-FAQ\_greeklish.html` html, alla einai greeklish kai einai xrhsimo prin sth8oun ta ellhnika
- `Linux-Hellenic-FAQ\_greeklish.txt` txt, greeklish Ayto einai epishs greeklish, kai einai ena arxeio 70Kb.
- `Linux-Hellenic-FAQ\_greeklish.sgml` sgml, Einai o phgaios kwdikas toy FAQ, poy se syndyasmo me to `Makefile` kai ta `sgml-tools` paragei ola ta ypoloipa.