

Ç ĩñãŨíùóç ôùí Âêäüóãùí ôĩõ FreeBSD

Murray Stokely

murray@FreeBSD.org

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Áðòù òĩ Ũñèñĩ ðãñéãñŨöáé ôçĩ áĩòéĩãððéóç éáé ĩñãŨíùóç ôçò ñŨãáð áĩŨððòĩçð òĩõ FreeBSD, ùóĩĩ áðĩñŨ óôçĩ ðñĩãðòĩéĩáóßá ðĩéĩðééðĩ äêäüóãùĩ òĩõ Êäéðĩðñäéçĩ Óðóðßĩáðĩð FreeBSD. Âĩçããß ĩã äãððñŨŨñáéá ôçĩ ĩäèĩäĩèĩãßá ðĩõ ÷ñçóéĩðĩèĩãßóáé äéá ðéð äðßóçĩãð äêäüóãéð òĩõ FreeBSD éáé ðãñéãñŨöáé óá ãñãáéãßá ðĩõ äßĩáé äéáéŸóéĩá óá ùóĩðð áĩáéáóŸñĩóáé ĩá ðãñŨãĩðĩ ðãñãĩãðñĩðĩéçĩŸĩãð äêäüóãéð òĩõ FreeBSD äéá áóùðãñééð ð äĩðĩñééð ÷ñðóç éáé áĩŨððòĩç ðñĩũĩũĩðùĩ.

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1 Áéóáãũãð

Ç áĩŨððòĩç òĩõ FreeBSD äßĩáé ĩéá ðĩéŸ áñé÷ðð äéãäééãóßá. Òĩ FreeBSD áðĩðãéãßóáé äðũ óóĩãéóóñŸð ÷éééŨãũĩ áĩèñðùĩ äðũ ùéĩ òĩĩ èũóĩĩ. Ç ñŨãá òĩõ FreeBSD ðãñŸ ÷äé ðñũóãáóç ĩŸóũ áĩðĩðĩð CVS[1] óá ùéĩðð, Ÿðóé þóðã ĩá ĩðĩñãß ùðĩéĩð èŸéäé ĩá ääé ĩçĩŸĩáðá log, äéãðñŸŸð (patches) ðĩõ Ÿ÷ĩðĩ óá äéŨðĩñã development branches, éáé Ũéëã ÷ãñãéðçñéóðééŨ ðĩõ äĩçéĩŸĩ ôçĩ áĩŨððòĩç, óá ĩðĩßá ðñĩéŸððĩðĩ äðũ ôçĩ ÷ñðóç áĩũð áððòçñĩŸ óðóðßĩáðĩð äéã÷ãßñéóçð èðäééá. Áðòù áðĩðŸéãóá éáé òĩĩ ðéĩ óçĩáĩóéèũ ðãñŨãĩðá Ÿéĩçð äéá Ÿĩá ĩããŨéĩ äñéèũ äðũ óáéáĩðĩŸ÷ĩð ðñĩãããĩãðéóðŸð äðũ ùéĩ òĩĩ èũóĩĩ óóĩ FreeBSD. Âßĩáé ðñĩðáĩŸð, äŸãáéá, ðùð ðĩéŸ óŸĩðñã éã äß÷ã äßĩáé áĩðãèð ÷ãĩðééð ç éãðŨóðáóç áĩ äß÷ãĩ ùéĩé, äðũ ùéĩ òĩĩ èũóĩĩ, ðñũóãáóç ĩá ãñŨðĩðĩ óóĩ èðäééá. Äé’ áðòù, ĩũĩ ĩéá “ãðééããĩŸĩç” ñŨãá äðũ ðãñßðĩð 300 Ũðñã Ÿ÷ĩðĩ ðñũóãáóç ĩá ãñŨðĩðĩ óóĩ CVS repository. Áðòĩß ĩé committers[6] äßĩáé ððãŸéðñĩé äéá òĩ ĩããáéŸðãñĩ ĩŸñĩð ôçò áĩŨððòĩçðð ðĩõ äßĩãðáé óóĩ FreeBSD. ĩéá

ēāiōñēēP-ñŪāā[7] (core team) āðū āēāēāēñēīYñiōð ðñiāñāiāōēōōYð āēēYāāōāē āēā íā ðāñY ÷ āē ēŪðēiō ãβāiōð ēāēiāPāçoç ēāē íēā ēāðāyðēiōç òōi óyñēi òuī committers.

Íē òā ÷ yōāōiē ñōēiīβ āíŪððōiçð òiō FreeBSD āāi āðPñiōi ēāē ðiēy ÷ ñūñi āēā òi íāēāēŪñēōiā òiō òðððPiāðið āíŪððōiçð òā íēā Yēāiōç íā ðiēiūðçðā ðiō íā āiβāēā íā ÷ ñçóēiñðēiāβōāē āññYñ. Āēā íā ēðēāβ āððū òi āβēēçíā, ç āíŪððōiç ãβiāðāē òāððū ÷ ññiā òā āōi ðāñŪēēçēā iññŪðēā. Ī ēyñēið ēiñiūð āíŪððōiçð āβiāē ī HEAD P trunk òōi CVS repository íāð, āñūðūð ēāē ùð “FreeBSD-CURRENT”, P “-CURRENT” āi òōiññā.

Íāð ðēi òðāēāñiūð ēiñiūð òōiðçñāβōāē, āñūðūð íā òi ūñiā “FreeBSD-STABLE” P ðēi óyíðñā “-STABLE”. Ēāē íē āōi ēiñiīβ āβiāē āðēçēāðōiYñē òōi ēyñēi CVS repository, òççí Ēāēēōññēiā, ēāē āiðēāñŪñiōāē iYóu CVSup[2] òā mirrors ðāiōiç òōi ēūōi. Ōi FreeBSD-CURRENT[8] āβiāē ç “ðñðç òāēñŪ” òçð āíŪððōiçð òiō FreeBSD ēāēðð òā āððū āβñiōāē ðñðā ūēāð íē ēāēññēāð āēēāYñ. Ōi FreeBSD-STABLE āβiāē ī ēiñiūð āíŪððōiçð āðū òiñ iðñi òðēŪ ÷ ññiōāē íē āēāūōāēð. Íē āēēāYñ ðēóYñ ÷ ññiōāē òā āððū, òiñ āāyðāñi ēiñiū āíŪððōiçð, íā ðēi āñāñ ñōēiñ, āōiç ðñðā (óyñiñiā íā òç ðiēēðēēP íāð) āñēiāðōiç òōi FreeBSD-CURRENT ēāē Y ÷ iōi āñāðāððāβ ðiēy ēāēŪ.

ĒāðŪ òççí ðāñβñā ðiō iāñēāāāβ āðū òç íēā Yēāiōç òççí āðñiāiç, òðēŪ ÷ ññiōāē ēāēçñāñēiŪ snapshots āðū òā iç ÷ āiPiāðā òçð ñŪāāð òiō FreeBSD ēāē āβiāē āēāēYōēiāð āðū òiñ āiððçñāðçðP ftp://stable.FreeBSD.org/. Ç iāāŪēç āēāēāðēiñiūðçð òuī āēðāēYōēiñ snapshots, ēāēðð ēāē ç òŪðç òçð ēiēñiūðçðð òuī ÷ ñçóðñi íāð íā āiçñāññiōi òā iç ÷ āiPiāðŪ òiðð íā òēð ðññiōāðð -STABLE āēāūōāēð iYóu CVSup ēāē “make world”[8] āiçēiçí íā ēñāðēYōāē òi FreeBSD-STABLE òā íēā ðiēy āiēñðēðç ēāðŪðāðç āēñiā ēāē ðñēi āñ ÷ βōāē ī ēyēēið òuī āēYā ÷ ññiōāēð òāēñāðð ðñēi āðū òççí āēŪēāðç íēāð Yēāiōçð òiō FreeBSD.

Ōñiā ÷ ðð òðYēññiōāē āðū òiðð ÷ ñPððāð íāð āíāññYð ðññāçñiŪðñi ēāē āēðPðāēð āēā ēāēññēiā ÷ āñāēðçñēðēēŪ, ēāðŪ òç āēŪñēāēā òiō ēyēēið òçð ēŪēā Yēāiōçð. Íē āíāññYð ðññāçñiŪðñi āēðŪññiōāē òççí āŪðç GNATS[9] iYóu e-mail, íā òççí āðāññiāP send-pr(1), P iYóu òiō web-interface ðið ðāñY ÷ āðāē òççí āēāyēðiōç http://www.FreeBSD.org/send-pr.html. Āēðūð āðū òēð āēŪññāð ēβððāð çēāēðññiēēiç òā ÷ ðāñññāβið íā ēYiā òā òā ÷ íēēŪ ÷ āñāēðçñēðēēŪ òiō FreeBSD òðŪñ ÷ āē ēāē ç ēβððā çēāēðññiēēP ēβððā ĀēYā ÷ iō ēāē ĀiāðŪēēðçð ðiēñiūðçðð òiō FreeBSD (http://lists.FreeBSD.org/mailman/listinfo/freebsd-qa), ç iðñiā ðāñY ÷ āē Yíā òññiōi āēā òðāçðððāēð ò ÷ āðēēŪ íā òēð ēāððñYñēāð òçð “ññāŪñiūçð òuī āēāūōāññ”.

Āēā íā āiððçñāðçēiçí íē ðēi òōiðçñçðēēiβ ÷ ñPððāð íāð, íā Yēāiōç òiō FreeBSD 4.3 āñ ÷ βōāiā íā ÷ ñçóēiñðēiçíiā íā ÷ ññēðōiçð ēiññiçð āēāūōāññ. Āðñiβ íē ēiññiβ āçñēññāññiōāē ēβñ ðñβi òðēā ÷ ðāβ ç òāēēēP Yēāiōç. ÍāðŪ òççí āíāēññiūðçð òçð Yēāiōçð, iññi ðiēy òçñiāðēēYð āēēāYñ ēāē ðññiðēñāð ò ÷ āðēēYð íā òççí āððŪēāēā āβññiōāē òññi ēiññi òçð Yēāiōçð. Āēðūð āðū òççí āññiñiūðçðā āíāñŪñēðçð iYóu CVS, āēðāēYōēiā patchkits òðēŪ ÷ ññiōāē āēā íā iðññiçí íā āíāññiññiōi òā òðððPiāðŪ òiðð ūñiē ÷ ñçóēiñðēiçíiç òēð āēāūōāēð RELENG_X_Y.

Ōi ŌiPiā 2 āiçāāβ íā ēāððñYñāēāð òā āēŪññā òðŪāēā òçð āēāēēāððāð ðið āñβðēāðāē ðβðū āðū ēŪēā Yēāiōç, iY ÷ ñē ēāē òā āPiāðā ðið ñāçñiçí òççí iāðāēñððēðçð ðið òðððPiāðið ēāē òi ŌiPiā 3 āiçāāβ òççí βāēā òç āēāēēāððā òçð iāðāēñððēðçð. Ōi ŌiPiā 5 ðāñēāñŪñāē ðñ òiññāβ íā āðāēðāēāβ òi āāðēēñ óyððçíā āðū ðñβñiðð ēāē òi ŌiPiā 6 ðāñēāñŪñāē ēŪñiēā āðū òā ðñŪñiāðā ðið iŪēāiā āðū òççí āēāēēāððā Yēāiōçð òið FreeBSD 4.4. ŌYēið, òi ŌiPiā 7 ðāññiðēēŪñāē ēŪñiēāð āðū òēð ēāðāðēyñāēð ðið ēYēiðñi íā ðŪñāē ç āíŪððōiç òōi iYēēñ.

2 Ç Āēāēēēāððā Āçñēiññāβāð íēāð ēāiōçð

Íē iYāð āēāūōāēð òið FreeBSD òðēŪ ÷ ññiōāē āðū òiñ -STABLE ēiñiū āíŪððōiçð ðāñβñið ēŪēā òYððāñāēð iPiāð. Ç āēāēēēāððā ðññiðēñiāððāð íēāð Yēāiōçð íāēññŪāē ò ÷ āññi 45 iYñāð ðñēi òççí āíāñññiāiç çñāññçíβā Yēāiōçð, ūðāi ī òðāyēññið āēāūōāññ òið FreeBSD òðYēñāē Yíā āñŪñiā òðēð ēβððāð òuī ðññāññiāðēððñi āēā íā òðāñēðñiðāē òññið ðññāññiāðēððYð ūðē Y ÷ iōi 15 iYñāð ēāēññi íā ēŪññi òññiēāð āēēāYñ ðēYēið, ðñēi òi ðŪññiā òið ēñāēēā. ĪYðā òā āððū òiñ ēāēññi, ðñēiñ ðññāññiāðēððYð ēŪññi òiñ òāēñŪ āðū āēēāYñ ðið Y ÷ iōi iāβñāē ðēYññ āññiññiāð ùð “ñāēāēñññiññiāð MFC”. Ī ūññið MFC òçñiāññāē “Merge From CURRENT” ēāē ðāñēāñŪñāē òççí āēāēēēāððā ðññiññiññiāðð

òĩō ēpāēēā iēāō āiēēiāōĩŸĩçò āēēāāpò āðũ òĩĩ -CURRENT ðāēñāiāōēēü ēĩñiũ āĩŪðòðĩçò òòĩĩ òóāēāñiũ -STABLE ēĩñiũ.

2.1 Ğāā÷iō Ēpāēēā

ŌñēŪiōā çĩŸñāð ðñēĩ òçĩ āiāiāĩuiāĩç çĩāññĩçĩā Ÿēāiōçò, ĩ ēpāēēāð òĩō repository āēóŸñ÷āðāē óā iēā ðāñbĩrāi “ēāēðóóŸñçòçò”. ĒāðŪ òç āēŪñēāēā āððò òçò ðāñēüāið, üēāð iē āēēāāŸò òòĩĩ -STABLE ēĩñiũ ðñŸðāē iā Ÿ÷iōĩ òçĩ Ÿāēñēóç òçò Release Engineering Team <re@FreeBSD.org>. Ĩē āēēāāŸò ðĩō āðēōñŸðĩiōāē óā āððp òçĩ ðāñbĩrāi ðĩō āēāñēāb 15 çĩŸñāð ābĩāē:

- Āēĩñēpóāēð āĩüóðĩ ðñiāēçĩŪðüĩ.
- Āĩçĩāñpóāēð òòçĩ ðāēiçñbùóç.
- ĀēēāāŸò ó÷āðēēŸò iā òçĩ áóðŪēāēā.
- ĨēēñŸò āēēāāŸò òòĩōð iāçĩāĩýð òóóēāðĩ, üðüð ð÷. ç ðñiōēðēç òüĩ IDs iŸüĩ òðóēāðĩ.
- Ĩðĩēāāðĩōā Ūēēç āēēāāp ðēóðāĩāē ç ñŪāā āĩŪðòðĩçò üðē ðñŸðāē iā ābĩāē, iā òĩ āiāiāĩuiāĩ ðŪiōā ñbóēĩ.

ĨāðŪ òēð ðñpóāð 15 ĩŸñāð ēāēðóóŸñçòçò, òðēŪ÷iāðāē iēā āiēēiāóóēēp Ÿēāiōç āēā iā ÷ñçóēĩðĩēçēāb óāĩ āiēēið òçò ðāēēēpð Ÿēāiōçò ēāē ĩ ēpāēēāð āēóŸñ÷āðāē óā iēā ðāñbĩrāi “ðāāpĩāðĩð”. ðēŸĩ ābĩāē ðĩēý ðēĩ āĩóēĩēĩ iā ābĩiōĩ iŸāð āēēāāŸò òòĩ óĩóóçĩā, āēðüð ēē āĩ āēĩñēpñĩĩ ēŪðĩēĩ ðĩēý òĩāāñi bugp ēŪðĩēĩ ðñüāēçĩā áóðŪēāēāð. ĒāðŪ òç āēŪñēāēā òĩō ðāāpĩāðĩð òĩō ēpāēēā, òĩōēŪ÷ēóðĩĩ ĩbā āiēēiāóóēēp Ÿēāiōç òðēŪ÷iāðāē ēŪēā āāāñŪāā, ĩŸ÷ñē iā ābĩāē Ÿòĩēĩç ç òāēēēp Ÿēāiōç. Ōēð çĩŸñāð āēñēāpð ðñēĩ òçĩ ðāēēēp Ÿēāiōç, ç ñŪāā ðĩō ābĩāē òðāĩēðĩç āēā òēð āēāüóāēð ābĩāē óā òòĩā÷p āðēēĩēĩñĩbā iā òçĩ ñŪāā áóðŪēāēāð, òçĩ ñŪāā òòĩðpñçòçò òçò ðāēiçñbùóçò, ēāē òçĩ ñŪāā òòĩðpñçòçò òüĩ ports, āēā iā āāāāēüēĩĩŸ ðüð üēā òā āðāñābðçòā ēĩñŪðēā āēā iēā ðēpñç Ÿēāiōç ābĩāē āēāēŸóēĩā.

2.2 Ēbóóā ĀēŸā÷iō òçò Ōāēēēpð ēāiōçò

Ÿðāĩ āñēāðŸò āiēēiāóóēēŸò āēāüóāēð Ÿ÷iōĩ ābĩāē āēāēŸóēĩāð, Ÿ÷iōĩ āiēēiāóóðāb āðũ āñēāðü ēüóĩĩ ēāē üēā òā òĩāāñŪ ēŸĩāóā Ÿ÷iōĩ āĩāēōēāb, ç ðāēēēp Ÿēāiōç ĩðĩñāb iā āñ÷bóāē.

2.2.1 Āçĩēĩñābā òĩō ēĩñiĩŸ ēāiōçò

Ÿðüð ðāñēāñŪøāiā òòçĩ āēóāāüāp, ĩē ēĩñiĩb RELENG_x_y ābĩāē iēā ó÷āðēēŪ iŸā ðñiōēðēç òòçĩ ĩāēĩrēĩrēābā òüĩ āēāüóāpĩ iāð. Ōĩ ðñpðĩ āpĩā òòçĩ āçĩēĩñābā āðòĩŸ òĩō ēĩñiĩŸ ābĩāē iā āāāāēüēābðā üðē āĩōēāĩāðā iā òçĩ òāēāðóābā Ÿēāiōç òĩō ðçāābĩð ēpāēēā āðũ òĩĩ RELENG_x ēĩñiũ āðũ òĩĩ iðĩbĩ ēā òðēŪiāðā òĩ iŸĩ ēĩñiũ.

```
/usr/src# cvs update -rRELENG_4 -P -d
```

Ōĩ āðüiāĩ āpĩā ābĩāē iā āçĩēĩñāpóāðā iēā āðēēŸðā (tag) òòĩ òçĩābĩ āēēbĩçòçò òĩō ēĩñiĩŸ, póðā iā ĩðĩñābðā iā āābðā òēð āēāöĩñŸò iā òçĩ āñ÷p òĩō ēĩñiĩŸ āĩēĩēā òòĩ ĩŸēēĩ iā òĩ CVS:

```
/usr/src# cvs rtag -rRELENG_4 RELENG_4_8_BP src
```

Ēāē òüðā ĩðĩñābðā iā āçĩēĩñāpóāðā òĩ iŸĩ ēĩñiũ iā:

```
/usr/src# cvs rtag -b -rRELENG_4_8_BP RELENG_4_8 src
```

ΌçιαΒυθός: *Íé āōééYōāō RELENG_* āβιάέ āāōíāōīYíāō āéá ÷ñΠόç āđū ōīōō CVS-meisters éáé ōçí ñŪāā ōūí āēāūōāūí.*

Ἰ uniõ “*ἀδελφὸς*” ἀβραάη ἡγερτάβῃ οἷο CVS. Ὁ γιάβραά Ἰά ὑμῖα οἷο ἐαείρηθᾶς ἰά ὁσᾶἐαῆναι Ἰγίς Ἰεαῖος οἷο ἐπαέα ὁοῖ ÷ nuũ. × ἡçοέῖῃδιερίοαδ ἀδελφὸς ὁοῖ δçαβῃ ἐπαέα ἀρçῃῤῃα ὑδιεῖῃ ὁοῖ Ἰεῖῃ ἀεαυοᾶδ οἷο FreeBSD ἰά ἡῃβῶεᾶ ἐά ἰά ÷ ἡçοέῖῃδιεῖᾶ ἀεῖᾶῃῃ οἷῃ βᾶεῖ ἐπαέα οἷο ÷ ἡçοέῖῃδιεῖᾶῃῃ ᾶᾶ ὁῃδ ἡῃβῶçῃᾶ ἀεαυοᾶδ ὁçῃ ἡῤῃᾶδ οἷο FreeBSD.

2.2.2 ÁóîÛííîáò ôíí Áñéèü êäïóçò

Ἐνῆι ἰθαῖ ἡ ἀοέεΥόα, ἰαοάαεουοοεοοάβ ἑαῖ ἀοιείαοοάβ ἡ οάεεῒβ Υέαιόρ, ὃνΥῒαῖ ἰά ἀβῖῖόῖ ἀεῖάαΥό οοά ὃαῖάεῒου
 ἂν÷ἂβἂ ἑάἂ ἰά ὃαῖεΥ÷ῖόῖ ὀῖῖ οὐοοῒ ἀῖεῖῒ Υέαιόρὃ ἑάἂ ὀῖ FreeBSD:

- doc/en_US.ISO8859-1/books/handbook/mirrors/chapter.sgml
- doc/en_US.ISO8859-1/books/porters-handbook/book.sgml
- doc/share/sgml/freebsd.ent
- src/Makefile.incl
- src/UPDATING
- src/gnu/usr.bin/groff/tmac/mdoc.local
- src/release/Makefile
- src/release/doc/en_US.ISO8859-1/share/sgml/release.dsl
- src/release/doc/share/examples/Makefile.relnotesng
- src/release/doc/share/sgml/release.ent
- src/share/examples/cvsup/standard-supfile
- src/sys/conf/newvers.sh
- src/sys/sys/param.h
- src/usr.sbin/pkg_install/add/main.c
- www/en/docs.sgml
- www/en/cgi/ports.cgi
- ports/Tools/scripts/release/config

[illegible]

- `src/release/doc/en_US.ISO8859-1/relnotes/common/new.sgml`
- `src/release/doc/en_US.ISO8859-1/errata/article.sgml`

Ç äòãññĭãP **sysinstall** ðñÝðáé äðßòçð íá áíçíãñùèãß íä òĭí òùòòù áñéèùĭ òùĭ ports éáé òĭ ÷pñĭ òĭō äßòéĭō ðĭō äðáéòäßòáé áéá òçĭ ÓòèèĭãP òùĭ Ports. ÁòðÝð íé ðèçñĭòĭñßàð òðŬñ÷ĭòĭ óòĭ äñ÷ãßĭ
src/release/sysinstall/dist.c.

Áōiŷ iēēēçñùēāß ç ðñiāōiēiāóáß òçð iŷáð āðßçìçð Ýēäiōçð, ðñÝðāē íá áíçìāñþóāðā iāñēēŪ āñ÷āß āēá íá áíçìāñþóāðā òiī ēüōiī āēá òç iŷá Ýēäiōç òiō FreeBSD.

- `www/en/includes.xml`
- `www/en/includes.sgml`
- `www/es/includes.sgml`
- `www/en/releases/*`
- `src/share/misc/bsd-family-tree`

2.2.3 Āçìēiōñāßá òuì Āōēēāði òçð ēäiōçð

¼ðāí ç òāēēēß Ýēäiōç āßiāē Ýōiēiç, ç ðāñāēŪðū āíōiēß ēā āçìēiōñāþóāē òçí āðēēÝðā `RELENG_4_8_0_RELEASE`.

```
/usr/src# cvs rtag -rRELENG_4_8 RELENG_4_8_0_RELEASE src
```

İē ððāŷēðñē òçð Ōāēiçñßùçð ēāē òuì Ports āßiāē āðōiß ðiō ðñÝðāē íá āçìēiōñāþóiōi òēð āðēēÝðāð `RELEASE_4_8_0` óðā ēāðŪēēçēā āŷiōñā ðçāāßiō ēþāēēā.

İāñēēÝð òiñÝð, iðñāß íá ÷ñāēáððāß íá āßiōi ēŪðñēāð āēēāāÝð òāēāððāßá óðēāiß *iāðŪ* òçí òiðñēÝðçç òuì āðēēāði. ĀāíēēŪ, āāi āßiāē āŷōēiēi íá āßiāē ēŪðē òÝōiēi āōiŷ òi CVS āðēōñÝðāē íá iāðāēēiþóāē ēŪðñēið òēð āðēēÝðāð iā āíōiēÝð ùðð ò `cvs tag -d tagname filename`. Āßiāē ðñēŷ óçìáíðēēü ùiðð āððÝð iē āēēāāÝð òçð òāēāððāßāð óðēāiþð íá óçìāēüēiŷi iā òēð óuóðÝð āðēēÝðāð āēá òçí óðāēāñēiŷiç Ýēäiōç. İē āðßçìāð āēäüóāēð òiō FreeBSD ðñÝðāē íá āßiāē ðŪíðā āŷēiēi íá áíáðāñā÷ēiŷi. ŌiðēēÝð āēēāāÝð óði ðāñēāŪēēiī òiō iç÷áíēiŷi òuì āēäüóäüi āāi āðēōñÝðñiðāē.

3 İāðāāēþððēóç òçð ēäiōçð

İē “āēäüóāēð” òiō FreeBSD iðñiŷi íá iāðāāēüððēóðiŷi āðü iðñēiñāþðiðā Ý÷āē Ýíá ó÷āðēēŪ āñþāñi iç÷Ūiçìā ēāē ðñüóāáç óði repository òiō ðçāāßiō ēþāēēā. (¼ēiē Ý÷iōi āððß òç āðñāðüðçðā, āōiŷ ðāñÝ÷iōiā ðñüóāáç iŷóü āiþiðñiō CVS! Āāßðā òi Āā÷āēñßāēi òiō FreeBSD āēá ðāñēóóüðāñāð ēāððñÝñāēāð.) Ç iüiç āēāēēß āðāßðççç āßiāē íá ððŪñ÷āē ððñiððñēiç óðñi ððñþíá óāð āēá òçí óððēāðß `vn(4)`. (Ōðñ `-CURRENT`, āððß ç óððēāðß Ý÷āē áíðēēāðāóðāēāß āðü òçí iŷá óððēāðß āßóēiō āáðēóŷiŷñ òā iñþiç `md(4)`.) Áí ç óððēāðß āāi āßiāē áíóñiāðüñÝiç óðñi ððñþíá óāð, òüðā i ēāðŪēēçēið iāçāüð ēā òñðñēāß āððñiāðā üðāí āēðāēāððāß ç áíðñēß `vnconfig(8)` ēāðŪ òç āēŪñēāēā òçð òŪççð òñēiñāððāð òiō iŷóñi āēēßiççð. ¼ēā ðā āñāāēāßá ðiō ÷ñāēŪæñiðāē āēá íá iāðāāēüððßóðāðā iēā Ýēäiōç āßiāē āēāēÝðēiā óā iññðß ðçāāßiō ēþāēēā óðñi ēāðŪēiñāi `src/release`. ĀððŪ ðā āñāāēāßá Ý÷iōi ùð óēiðñi íá ðāñÝ÷iōi üðē ÷ñāēŪæñiðāē āēá íá ÷ðæñiðāē iē āēäüóāēð òiō FreeBSD iā Ýíá óññāðß ēāē óðāēāñēiŷiñ òññðñi. İēā ðēþñçð Ýēäiōç iðñāß íá iāðāāēüððēóðāß ÷ñçōēiñðēñiðāð āððŪ ðā āñāāēāßá iā iēā ēāē iññi áíðñēß, óðñāñēēāiāññÝiçð ēāē òçð āçìēiōñāßāð āñüð ISO āñ÷āßiō ēāðŪēēçēi āēá íá ēāāß óā CDROM, iē āēóēÝððāð āēēßiççð, ēāēþð ēāē i ēāðŪēēçēið āāēāðŪóðāçð iŷóü FTP. Āððß ç áíðñēß āßiāē òððēēß ç `make release`.

3.1 Ç áíðñēß `make release`

Āēā íá iāðāāēüððßóðāð āðēð÷þð iēā Ýēäiōç, ðñÝðāē ðñþðā íá ððŪñ÷iōi ðā ēāðŪēēçēā āñ÷āß iŷóā óðñi ēāðŪēiñāi `/usr/obj`. İðñāßðā íá ðā āçìēiōñāþóāðā āßðā iā òçí áíðñēß `make world` þ āðēŪ `make buildworld`. Āēā íá

ðáðý÷-áé áðßóçð ç ìáðááëðððéóç òçð Ýêáîóçð ðñÝðáé íá äðáððá ðéð éáðÛëëçéäð ðéíÝð éáé ðá èÛðíéäð ìáðááëçðÝð:

- CHROOTDIR - Ì éáðÛëíáðð ðîõ èá ÷ ñçóéíðíéçéäð ðáí ðáñéáÛëëí chroot áéá üëç òçí ìáðááëðððéóç òçð Ýêáîóçð.
- BUILDNAME - Õî üñíá òçð Ýêáîóçð ðîõ èá ìáðááëüðððáððá.
- CVSROOT - Ì éáðÛëíáðð ðóñí ìðíßí áñßðéáðáé òí CVS repository.
- RELEASETAG - Ç áðééÝðá CVS ðîõ áíðéóðíé÷÷ áß ðóçí Ýêáîóç òçí ìðíßá èÝéäðá íá ìáðááëüðððáððá.

Áí ááí Ý÷-áðá ðáç ðñüóááóç ðá èÛðíéí ðíðéëü CVS repository ìá ðñí èðáééá ðîõ FreeBSD, ìðíáððá ðÛíðá íá ððéÛíáððá òí áéëü óáð ðíðéëü CVS mirror ìá òí CVSup (http://www.FreeBSD.org/doc/en_US.ISO8859-1/books/handbook/synching.html#CVSUP). ÕðÛñ÷-áé Ýíá supfile, ðóí áñ÷-áßí /usr/share/examples/cvsup/cvs-supfile, òí ìðíßí ìðíáððá íá ÷ ñçóéíðíéçéäð áéá íá áíðéáñÛððá òí CVS repository ðîõ FreeBSD ðóí áéëü óáð ðíðéëü mirror.

Áí ðáñáëáßðáððá òçí áðééÝðá RELEASETAG, ðüðá èá ìáðááëüðððéóðáß íéá ðëðñçð Ýêáîóç áðü òçí èíñðð ðîõ HEAD (áç. ðîõ -CURRENT) èíñíý. Ìé áêüüóáéð ðîõ ððéÛ÷ñíðáé áðü áððüí òñí èíñü, ðóíðëüð áíáðÝñíðáé ðáí “-CURRENT snapshots”.

ÕðÛñ÷-íðí éáé ðíéëÝð Ûëëäð ìáðááëçðÝð ðîõ ìðíñíý íá ÷ ñçóéíðíéçéçý íá íá ðáñáíáðñíðíéçéäðá òçí Ýêáîóç óáð. Ìé ðéí ðíéëÝð áðü áððÝð ðéð ìáðááëçðÝð ðáñéáñÛñíðáé ðóçí èíñðð ðîõ áñ÷-áßíð src/release/Makefile. Ç áêñéáðð áíðíë ðîõ ÷ ñçóéíðíéçéäð áéá íá ððéá÷-ðáß ç áðßóçð Ýêáîóç 4.7 ðîõ FreeBSD (x86 ðéáðüüñíá) ðóáí:

```
make release CHROOTDIR=/local3/release \
    BUILDNAME=4.7-RELEASE \
    CVSROOT=/host/cvs/usr/home/ncvs \
    RELEASETAG=RELENG_4_7_0_RELEASE
```

Õí Makefile ðîõ ÷ ñçóéíðíéçéäð áéá íá ìáðááëüðððáíðáé ìé áêüüóáéð ìðíáß íá ÷ ùñéóðáß ðá áñéäðÛ ìá÷-ùñéóðÛ ìáðáíý ðîõð áñíáðá.

- Äçíëíðñáß áñüð éáéáñíý ðáñéáÛëëíððð ðá íéá ìá÷-ùñéóðð éáñáñ÷-ßá éáðáëüüí ìá òçí áíðíëð “make installworld”.
- Áíáñüáß áðü òí CVS ìéáð éáéñýñéáð Ýêáîóçð ðîõ ðçááßíð èðáééá ðîõ ðððððíáððð, òçð ðáêñññüóçð éáé òñí ports ìÝðá ðóçí éáñáñ÷-ßá éáðáëüüí ìáðááëðððéóçð òçð Ýêáîóçð.
- Ñðéíðáéð ðñí áñ÷-áßí ðóñí éáðÛëíáðð /etc éáé /dev ìÝðá ðóí ðáñéáÛëëí chroot.
- ÁéðÝéáóç òçð áíðíëðð chroot ìÝðá ðóçí éáñáñ÷-ßá éáðáëüüí ðîõ áðíéíÛððçéá, áéá íá ìçí ìðíáß òí áñüðáñéëü ðáñéáÛëëí íá áðçñáÛðáé òç ìáðááëðððéóçð òçð Ýêáîóçð.
- ÁéðÝéáóç òçð áíðíëððð make world ìÝðá ðóí ðáñéáÛëëí chroot.
- Ìáðááëðððéóç ðñí áêðáëÝóéíð ðîõ áßíáé ð÷-áðééÛ ìá òí óýóçíá Kerberos.
- Ìáðááëðððéóç ðîõ ððñðíá GENERIC.
- Äçíëíðñáß áñüð ðáéééíý éáðáëüüíð ðóñí ìðíßí èá ìáðááëüðððéóðíý éáé èá áðíèçéáððéíý ìé áêðáëÝóéíðð ìñðÝð ðñí ðáéééðí ðáéÝðñí.
- Ìáðááëðððéóç éáé ááéáðÛððáóç ðñí áñááéáßíð ðîõ ÷ ñáéÛáñíðáé áéá òçí ðñíáðíéíáððá òçð Ýêáîóçð éáé òç ìáðáðñíðð òçð ðáêñññüóçð áðü òñí ðçááßíð èðáééá (SGML) ðá html éáé áñ÷-áßá éáéíÝñíð ðîõ èá ðóñíáñýíðí òçí Ýêáîóçð.
- Ìáðáðñíðð éáé ááéáðÛððáóç òçð ðáêñññüóçð (áá÷-áéñßáéá ÷ ñððóç, áéóáñüáééÛ éáßíáíá, óçíáéðáéð Ýêáîóçð, èßððáð ððíááðüðçðáðð ðéééíý, èèð.)

- Îāóāāēpôôéóc òuĩ “òõĩðēáõĩŸĩũĩ” (crunched) āēôāēŸóēĩũĩ ðĩō ēā ÷ ñçóēĩĩðĩēçēĩŸĩ óôēð āēóēŸôôāð āāēáðŪóóáócð.
- Āçĩēĩōñābā òuĩ ðāēŸôũĩ ôçð āāēáðŪóóáócð ēāē òuĩ ðāēŸôũĩ ðçāābĩō ēpāēēā.
- Āçĩēĩōñābā òuĩ ìŸóũĩ āēēbĩçóçð ēāē ôçð āēóēŸôôāð “fixit”.
- Āçĩēĩōñābā ôçð ēāñāñ÷bāð ēāóāēüũĩ āēā ôçĩ āāēáðŪóóáóc ìŸóũĩ FTP.
- (ðñĩíēñāôēēŸ) Āçĩēĩōñābā òuĩ ISO āñ÷ābũĩ āēā ìŸóā CDROM/DVD media.

Āēā ðāñēóóũðāñāð ðēçñĩōĩñbāð ó÷āôēēŸ ìā ôçĩ āēāēēāóbā āçĩēĩōñābāð ìēāð Ÿēāĩóçð, āābôā ôçĩ óāēbāā ôāēĩçñbũóçð release(7).

3.2 Îāóāāēpôôéóc òuĩ XFree86

Ōĩ āñāóēēũ ðāñēāŪēēĩ **XFree86** ābĩāē Ÿĩā óçĩāĩóēēũ ēñĩŪðē ēŪēā Ÿēāĩóçð āēā ðĩēēĩŸð ÷ ñpôóāð ðĩō ēŸēĩōĩ òĩ FreeBSD āēā óóāēĩŸð āñāóāð. ðñēĩ ôçĩ Ÿēāĩóç 4.6-RELEASE òĩ FreeBSD, ìē āðbóçĩāð āēüüóāēð òĩō FreeBSD ÷ ñçóēĩĩðĩēĩŸóāĩ ôçĩ Ÿēāĩóç 3.x òuĩ **XFree86**. Ĭ ðēĩ āŸēĩēĩð ðñũðĩð ìā ìāóāēũðôðóāðā āóðŸð óēð āēüüóāēð ābĩāē ìā ÷ ñçóēĩĩðĩēĩŸóāĩ òĩ ðñũāñāĩā `src/release/scripts/X11/build_x.sh`. Áðũũ òĩ ðñũāñāĩā āðāēðāb ìā ābĩāē pāç óççĩŸĩā óõĩ óŸóççĩŸ óāð òũũĩ òĩ ðāñēāŪēēĩ XFree86 Ÿũĩ ēāē ç āēpôóā Tcl/Tk. ÎāðŪ ôçĩ ìāóāāēpôôéóc òuĩ ēāðŪēēçēũ X servers, òĩ ðñũāñāĩā ēā ðāēāðŪñāē Ÿēā óā āñ÷ābā óā óðēēĩāŸð āñ÷ābũĩ ðĩō ðāñēĩŸĩāē ìā āñāē òĩ `sysinstall(8)` ìŸóā óõĩ ēāðŪēēĩā `XF86336` óõĩ ìŸóĩ āāēáðŪóóáócð.

Îāēēĩpĩóāð ìā ôçĩ Ÿēāĩóç 4.6-RELEASE òĩō FreeBSD, òĩ `sysinstall(8)` āāēāēéóðŪ ôçĩ Ÿēāĩóç 4.x òuĩ XFree86, óāĩ ēāñĩēēŪ ðāēŸóā. ÁððŪ ìðĩñāb ìā ābĩāē ābôā óā ðāēŸóā ðĩō āçĩēĩŸñāçóā òĩ cluster òuĩ ports p ìðĩēāāðĩðā Ūēēā ðāēŸóā ðĩō Ÿ÷ĩōĩ āçĩēĩōñāçēāb āðũ Ÿĩā ports tree ìā ôçĩ ēāðŪēēçç āðēēŸóā.

Óçĩābũóç: Ābĩāē ðĩēŸ óçĩāĩóēēũ ìā áðāēñŸóāðā āðũ òĩ āñ÷ābĩ `/etc/make.conf` ìðĩēāóāpðĩðā òĩðēēŸð ñòēĩbóāēð Ÿ÷āðā ēŪĩāē. Āēā ðāñŪāāēāĩā, āāĩ ābĩāē ēāēp ēāŸā ìā āēāĩŸĩāðā āēðāēŸóēĩā ðĩō Ÿ÷ĩōĩ ìāóāāēũðôéóðāb óā ēŪðĩēĩ óðāēāēñēĩŸĩĩ óŸóççĩā ìā ìñēóĩŸĩç ôçĩ óēĩp ôçð ìāóāāēçðpð `CPUTYPE` āēā āāēðēóõĩðĩbçóç òuĩ āēðāēŸóēĩũĩ āēā ēŪðĩēĩ óðāēāēñēĩŸĩĩ āðāĩāñāóðp.

3.3 ðñĩāñŪĩĩāðā Ōñbôũĩ (“ports”)

Ç Óðēēĩāp òuĩ Ports òĩō FreeBSD (<http://www.FreeBSD.org/ports>) ābĩāē ìēā óðēēĩāp ìā ðāñēóóũðāñā āðũ 20,000 ðñĩāñŪĩĩāðā āðũ òñbôĩðð, ðĩō ābĩāē āēāēŸóēĩā āēā FreeBSD. Ĭē Ports Management Team <portmgr@FreeBSD.org> ābĩāē òðāŸððĩēē āēā ôçĩ óõĩðpñçóç āĩũð āŸĩóñĩō āðũ ðçāābĩ ēpāēēā āēā óā ports, ðĩō ìðĩñāb ìā ÷ ñçóēĩĩðĩēçēāb āēā ìā āçĩēĩōñāçēĩŸĩ óā ðāēŸóā ìā óā ðñĩāñŪĩĩāðā ðĩō óðñāŸĩōĩ óēð āðbóçĩāð āēüüóāēð òĩō FreeBSD.

Ç āēāāēēāóbā óõĩðpñçóçð ôçð óðēēĩāpð òuĩ ports ābĩāē ēŪðē ðĩō āāĩ ìðĩñĩŸĩā ìā ēāēŸðĩðĩā āāp. ìā ìā÷ũñēóðũ Ūñēñĩ, ìā ðbôēĩ Ç ÎñāŪtūóc ēāĩóçð òuĩ ðāēŸôũĩ ĒĩāēóĩēēŸ āðũ Ōñbôĩðð ([./releng-packages/article.html](http://releng-packages/article.html)), ēāēŸððāē āðũ òĩ ēŸĩā.

3.4 Āñ÷ābā ISO ôçð ēāĩóçð

Îāēēĩpĩóāð ìā ôçĩ Ÿēāĩóç 4.4 òĩō FreeBSD, ç ñŪāā ĀĩŪðððĩçð òĩō FreeBSD āðĩōŪóēóā ìā āēāĩŸĩāē ēāē óā ôŸóóāñā ISO āñ÷ābā ðĩō ðñpôā ðĩōēĩŸóāĩ ìē āðāēñābāð *BSDi/Wind River Systems/FreeBSD Mall* óðēð “āðbóçĩāð” āēāmŸð CDROM ðĩō Ÿēāĩāĩ. ĒŪēā Ÿĩā āðũ óā ôŸóóāñā ISO āñ÷ābā ðñŸðāē ìā ðāñēŸ÷āē Ÿĩā āñ÷ābĩ `README.TXT` ðĩō

ðǻñéǻñÛöǻé óǻ ðǻñéǻ÷ùíǻíǻ òîõ ǻßóêîõ, êé Ýíǻ ǻñ÷ǻßí CDROM.INF ðîõ ðǻñéÝ÷ǻé ìǻðǻ-ðêçñîîññßǻð ǻéǻ íǻ ìðññǻß òî ðñüǻñǻìǻ sysinstall(8) íǻ ǻéÝǻñǻé éǻé íǻ ÷ñçóêîîðîéßóǻé ǻðòü òî ǻßóêî, éǻêð òé Ýíǻ ǻñ÷ǻßí filename.txt ðîõ ðǻñÝ÷ǻé ìéǻ êßóðǻ ǻñ÷ǻßüí òîõ CDROM. Áðòß ç êßóðǻ ìðññǻß íǻ ǻçîéîññǻçǻß ðîéý ǻðêÛ, ùð ǻíßð:

```
/stage/cdrom# find . -type f | sed -e 's/^\.\\/' | sort > filename.txt
```

Îé óðǻéǻêñéíÝíǻð ǻðǻéòßóǻéð ǻéǻ êÛéǻ Ýíǻ ǻðü ǻðòÛ óǻ CD ðǻñéǻñÛîîíóǻé ðǻñǻéÛòü:

3.4.1 ǻßóêîò 1

Î ðñðòîð ǻßóêîò ǻßíǻé ó÷ǻǻüí ǻðîééǻéóóééÛ ǻðîðÝéǻóíǻ òçð ǻíóîéßð make release. Îé ìüíǻð ǻééǻǻÝð ðîõ ðñÝðǻé íǻ ǻßíóîí óóîí éǻðÛéîǻí disc1 ǻßíǻé ç ðñîóèßê ðîõ éǻðÛéîǻí tools, òüí XFree86, éǻé üóî òî ǻóíǻóüí ðǻñéóóüðǻñüí ðǻéÝòüí ìðññíý íǻ ÷ñÝóîí óóî ǻßóêî. Î éǻðÛéîǻí tools ðǻñéÝ÷ǻé ǻñǻǻéǻßǻ ðîõ ǻðéòñÝðîí óǻ ÷ñßóðǻð Ûééüí éǻéòîññǻéêðí óðóðçîÛòüí íǻ óðéÛîóîí óéð ǻéóéÝððǻð ǻéêßíçóçð. Áðòüð ì ðñðòîð ǻßóêîò ðñÝðǻé íǻ óðéÛ÷ǻéǻé bootable Ýðóé ðóðǻ íǻ ìðññíý íé ÷ñßóðǻð òüí ìüðÝñüí ððîéíǻéóððí íǻ ǻðîǻýǻíóîí òî óðÛǻéí ǻçîéîññǻð òüí ǻéóéǻðððí ǻéêßíçóçð.

Áí ìéǻ ǻéǻóîñǻðéêß Ýéǻíóç òüí XFree86 éǻ ǻéǻíÝíǻðǻé ìǻ òçí Ýéǻíóç ǻðòß, ðñÝðǻé íǻ ǻçîññüéǻß òî ðñüǻñǻìǻ sysinstall(8) ǻéǻ òçí íÝǻ èÝóç éǻé íé ñǻçǻßǻð ǻǻéǻðÛóðǻóçð. Î ó÷ǻðééüð êðǻééǻð òðÛñ÷ǻé óóîí éǻðÛéîǻí src/release/sysinstall óóîí -STABLE êîñü ð óóîí éǻðÛéîǻí src/usr.sbin/sysinstall óóîí -CURRENT êîñü. ÓðǻéǻêñéíÝíǻ, óǻ ǻñ÷ǻßǻ dist.c, menus.c, éǻé config.c éǻ ÷ñǻéǻððǻß íǻ ǻçîññüéíýí.

3.4.2 ǻßóêîò 2

Î ǻǻýðǻñîð ǻßóêîò ǻßíǻé ǻðßóçð ǻðîðÝéǻóíǻ òçð ǻíóîéßð make release éǻðÛ Ýíǻ ìǻǻÛéí ìÝñîð. Áðòüð ì ǻßóêîò ðǻñéÝ÷ǻé Ýíǻ “live filesystem” ðîõ ìðññǻß íǻ ÷ñçóêîîðîéçéǻß ǻðü òî sysinstall(8) ǻéǻ íǻ ǻíǻðǻóóíýí ðñíǻéßíǻóǻ óǻ ìéǻ ǻǻéǻðÛóðǻóç òîõ FreeBSD. Êé ǻðòüð ì ǻßóêîò ðñÝðǻé íǻ ǻßíǻé bootable. Êǻ ðñÝðǻé ǻðßóçð íǻ ðǻñéÝ÷ǻé Ýíǻ óóîðéǻóîíÝíí ǻíðßññǻóîí òîõ CVS repository óóîí éǻðÛéîǻí CVSROOT éǻé ǻǻßǻìǻóǻ ǻðü ǻððñééÛ ðññǻñÛíǻóǻ óóîí éǻðÛéîǻí commerce.

3.4.3 ǻßóêîé 3 éǻé 4

Îé ððüéîéðîé ǻðí ǻßóêîé ðǻñéÝ÷ǻéí ǻðéðñüóéǻðǻ ðǻéÝóǻ êîǻéóîééíý ǻéǻ òî FreeBSD. Óǻ ðǻéÝóǻ éǻ ðñÝðǻé íǻ ǻßíǻé ñǻǻíðîéçíÝíǻ, Ýðóé ðóðǻ êÛéǻ ðǻéÝòî íǻ ǻßíǻé óóîí ðǻéí ǻßóêî ìǻ üéǻ óǻ ðǻéÝóǻ ǻðü óǻ ñðíßǻ ǻíǻñðÛóǻé ǻéǻ íǻ ǻǻéǻðǻóðǻéǻ éǻé íǻ òñÝíǻé. ðǻñéóóüðǻñǻð ðêçñîîññßǻð ǻéǻ òçí ǻçîéîññǻßǻ ǻðòðí òüí ǻßóêüí ǻíǻóÝñíóǻé óóî Ûñèñí Ç ÎñǻÛîùόç êǻíóçð òüí ðǻéÝòüí Êîǻéóîééíý ǻðü Òñßòîðð (../releng-packages/article.html).

4 ǻéǻíñß òüí Áêäüüóàùí

4.1 ǻíððçñǻðçðÝð FTP

¼ðǻí ç Ýéǻíóç ǻßíǻé Ýóîéíç, Ý÷ǻé ǻñééíǻóðǻß ǻéðǻíßð, éǻé Ý÷ǻé ðǻéǻðǻñéóðǻß ǻéǻ ǻéǻíñß, ì éýñéîð FTP ǻíððçñǻðçðð ðñÝðǻé íǻ ǻçîññüéǻß. Îé ǻðßóçíéé ǻíððçñǻðçðÝð FTP òîõ FreeBSD ǻßíǻé üéé mirrors ǻíüð éýñéîð ǻíððçñǻðçðð óóîí ñðíßí Ý÷ǻéí ðñüóǻǻóç ìüí Ûéééé FTP ǻíððçñǻðçðÝð. Áðòüð ì ǻíððçñǻðçðð ǻßíǻé ǻñüóüð ùð ftp-master. ¼ðǻí ç Ýéǻíóç ǻßíǻé Ýóîéíç, ðñÝðǻé íǻ ǻçîññüéíýí óǻ ðǻñǻéÛòü ǻñ÷ǻßǻ óóîí ftp-master:

[/pub/FreeBSD/index.html](#)

λέα ἀδῆP web οἰαῖβᾶᾶ ὄϊο ὀᾶῖῖÉY ÷ ᾶέ ᾶᾶβῆοᾶᾶ οᾶ ᾶέUοῖῖῖῖῖῖ οῖῖᾶῖᾶῖῖῖῖ FTP ῆᾶᾶῖῖῖῖῖῖ ᾶῆᾶ ὀῖῖ ὀῖῖY ÷ ῖῖᾶᾶ Yῆᾶῖᾶῖᾶ ὀῖῖ FreeBSD.

```
/pub/FreeBSD/releases/arch/X.Y-RELEASE/
```

I éadóUeräno ádu öiri rðirBi iðinryí íá abñröi äæéáoóóóÜöáéo ìYóù FTP, üðuò öiri Y÷æë ðnriáoieiÜöáé ç áfóieP make release.

/pub/FreeBSD/ports/arch/packages/packages-X.Y-release/

¼ëá ôá ðñĩĩãôããëùôêéóìÝíá ðáéÝôá ãéá ôçì ôñÝ÷ĩõóá Ýëäĩõç.

```
/pub/FreeBSD/releases/arch/X.Y-RELEASE/tools
```

Îéá óõïâîëëêÐ óõïôùîâõóç ãéá ôîí êáôÛëîäí .../.../.../tools.

/pub/FreeBSD/releases/arch/X.Y-RELEASE/packages

```

λέά όοίâîëëêP óóíôùîâóóç äéá ôíí éáoÜëîäî .../.../.../ports/i386/packages-X.Y-release.

```

```
/pub/FreeBSD/releases/arch/ISO-IMAGES/x.y/x.y-*.iso
```

Ôá áñ÷åßá ISO.

Άέά άάήέόούόάήάό άέçñĩōĩñßå ò÷âôéÛ ìà ôçĩ ìñãÛĩúôç òùì mirror áéáñĩðò FTP ôĩò FreeBSD, άάñáéáēρ ááßôå ôĩ Ûñēñĩ ÖôéÛ÷ĩĩôåò Ýía FreeBSD mirror (../hubs/).

Ιδιόηα ίά θΰηάε αηέαοΰο ηηαο αδϋ όςί όόέαηθ όηο έα αίςηάηηέαβ ί ftp-master ιΰ÷ηέ ίά αίςηάηηέηςί όόςί όεάέηςόβά όηοδ όά όηηόηο άδεθΰαηό FTP mirror ία όςί ιΰά Ύέαηός. Άόέαΰέαόάέ ηέ όδāγέοηέ Ύέαηόςδ ίά όόίάψηςέηςί ία όςί ςέαόόηηέβ έβόόά όϋι mirror sites όηο FreeBSD (http://lists.FreeBSD.org/mailman/listinfo/freebsd-hubs) όηέί αίάέηέηθόηο όςί αάηέβ άέαάόέϋηόςόά όςδ ιΰάό Ύέαηόςδ όόηοδ άηόδςηάόςόΰό FTP.

4.2 Àíáðáñáũùã CD-ROM

Ἐὰ σοὶ δὲ ἔχνη ἐὰν ὀγδοῖν: Ὅτι αὖτὲ ὅδε αἵ ἀπὸ τοῦ ISO ἀν-ἀβὺν οἷο FreeBSD ὁ ἀεὶ ὑπὸ τοῦ τοῦ ἰδιῶτα ἰὰ ἐὺ ἰαῖ ἐπὶ αἰσῶν ἀνὰ τὰ αἰῶνα, ἐὰν ἰὺ ὅδε αἵ ἀπὸ τοῦ τοῦ ἰδιῶτα ἰὰ ἐὺ ἰαῖ ἐπὶ αἰσῶν ἀνὰ τὰ αἰῶνα.

5 Åđăêôáóéìüôçôá

[illegible]

5.1 Äçĭēĩōñāßá ÐñĩóáñĩĩóĩŸĩũĩ Äéóēāōōpĩ Äēēßĩçóçð.

ÐĩēēŸð āēēāóáóōŨóāēð Ÿ÷ĩōĩ ðĩēŸðēĩēāð áðāēðPóāēð ðĩō ĩðĩñāß ĩā òç óāēñŨ òĩōð ĩá áðāēōĩŸĩ òçĩ ðñĩōēPēç ðñāēóóũðāñũĩ ĩāçāpĩ P āñāāēāßũĩ ÷ñPóðç òóēð āēóēŸððāð āāēāðŨóóáóçð. Ĩ “ĩðāēŨēēēĩō” òñũðĩō ĩá òĩ ēŨĩāðā áððũ āßĩāē ĩá ēŨĩāðā òēð āēēāŸð óāð óōĩĩ ēāðŨēĩāĩ ðĩō Ÿ÷āē āōĩēĩŨóāē ĩāðŨ òĩ òŸēĩð òçð ç āēāāēēāóßá make release:

- ÐāñŨóðā òā patches óāð P ðñĩōēŸóðā òā āðēðēŸĩĩ āñ÷āß ĩŸóā óōĩĩ ēāðŨēĩāĩ chroot òçð Ÿēāĩóçð.
- `rm ${CHROOTDIR}/usr/obj/usr/src/release/release.[59]`
- ĩāðāēũððóðā ðŨēē òĩ sysinstall(8), òĩĩ ðñPĩā, P ũðĩēā Ũēēā ðñĩāñŨĩāðā Ÿ÷ĩōĩ āðçñāāóðāß áðũ òēð āēēāŸð óāð.
- `chroot ${CHROOTDIR} ./mk floppies`

Ĩē ĩŸāð āēóēŸððāð āāēāðŨóóáóçð ēā äçĭēĩōñāçēĩŸĩ óōĩĩ ēāðŨēĩāĩ `${CHROOTDIR}/R/stage/floppies`.

ĀĩāēēāēðēēŨ, ĩðĩñāßðā ĩá ÷ñçóēĩĩðĩēPóāðā òĩ make target boot.flp, P ĩðĩñāßðā ĩá òñŸĩāðā áðāðēāßāð òĩ script ðĩō äçĭēĩōñāßá òā óðððPĩāðā āñ÷āßũĩ src/release/scripts/doFS.sh.

Ĩðĩñāßðā āðßóçð ĩá ēāñĩßóðāð þóðā āēēŸð óāð āēēāŸð ĩá ðñāāóóĩŸĩ ĩā ĩññōP patch óççĩ Ÿēāĩóç ũðũð ēā òōēŨ÷ĩāðāē, āßñĩðāð òēĩP óççĩ ĩāðāāēçðP LOCAL_PATCH ũðāĩ òñŸĩāðā òçĩ āĩðĩēP make release.

5.2 Ðñĩāñāĩĩāðßēĩĩóāð òĩ sysinstall

Ōĩ āñāāēāßĩ āāēāðŨóóáóçð ēāē ñŸēĩēóçð òĩō FreeBSD, òĩ sysinstall(8), ĩðĩñāß ĩá ðñĩāñāĩĩāðēóðāß āēā ĩá ēŨĩāē ðēĩ āŸēĩēāð òēð áððñĩāðĩðĩēçĩŸĩāð āāēāðáóðŨóāēð òā ðĩēēŨ ĩç÷āĩPĩāðā. Áððũ òĩ ÷āñāēðçñēóðēēũ òĩō ðñĩāñŨĩāðĩð ĩðĩñāß ĩá ÷ñçóēĩĩðĩēçēāß òā óōĩāðóāðũ ĩā òĩ PXE[13] òçð Intel āēā ĩá ĩāēēĩPóāē ç āāēāðŨóóáóçð áðũ òĩ āßēðōĩ, P òā óōĩāðóāðũ ĩā ðñĩóáñĩĩóĩŸĩāð āēóēŸððāð āēēßĩçóçð ēē Ÿĩā sysinstall script. ĩá ðāñŨāāēāĩā áðũ òŸðĩēĩ sysinstall script ĩðĩñāßðā ĩá āñāßðā òðĩ āñ÷āßĩ src/release/sysinstall/install.cfg.

6 ĩāēPĩāðā ðĩō ÐPñāĩā áðũ òçĩ êäĩóç 4.4 òĩō FreeBSD

Ç āēāāēēāóßá āðĩēĩāðāð òçð Ÿēāĩóçð 4.4 òĩō FreeBSD ĩāēßĩçóā āðßóçĩā òçĩ ĩç ÁðāĩŸóðĩō 2001. ĩāðŨ áðũ áððP òçĩ çĩāññĩçĩßā, ũēāð ĩē āēēāŸð óōĩĩ ēĩñĩũ RELENG_4 òĩō FreeBSD Ÿðñāðā ĩá Ÿ÷ĩōĩ Ÿāēñēóç áðũ òçĩ Release Engineering Team <re@FreeBSD.org>. Ç ðñþðç āĩēēĩāðóðēēP Ÿēāĩóç āēā òçĩ āñ÷ēðāēðĩēēP x86 Ÿāēĩā āēāēŸóēĩç óóēð 16 ÁðāĩŸóðĩō, ēē āēĩēĩðēPēçēā áðũ 4 āēũĩā āĩēēĩāðóðēēŸð āēāũóāēð ðĩō ĩāPāçóāĩ òçĩ òāēēēP Ÿēāĩóç óóēð 18 òĩō ÓāððŸĩāñç. Ĩ òðāŸēðñð áóðŨēāēāð Ÿðāēĩā òçĩāĩðēēũ ñũēĩ ēāðŨ òçĩ āēŨñēāēā òçð òāēāððāßāð āāāñŨāāð ēāēþð ēŨðĩēā ðñĩāēPĩāðā áóðŨēāēāð āñŸēçēāĩ òā ðñĩçāĩŸĩāĩāð, āĩēēĩāðóðēēŸð āēāũóāēð. ÓññēēēŨ, ðŨĩũ áðũ 500 email óðŨēēçēāĩ òçĩ Release Engineering Team <re@FreeBSD.org> òā āēŨóççĩā ĩēēñũðāñĩ áðũ Ÿĩā ĩPĩā.

Ç ēēĩēũðçðā òũĩ ÷ñçóðpĩ ĩāð Ÿēāĩā óāðŸð ũðē ç áóðŨēāēā ēāē ç óðāēāñũðçðā ĩēāð Ÿēāĩóçð āāĩ ēŨ 'ðñāðā ĩá ēððēŨæāðāē āēā ēāĩāũð āßāũð ðñĩēāóĩßāð P çĩāññĩçĩßāð ðĩō Ÿ÷ĩōĩ òāēāß óāĩ òðũ÷ĩē áðũ ðñēĩ. Ōĩ FreeBSD Ÿ÷āē ĩāāāēþóāē āñāĩāðēēŨ ēāðŨ òç āēŨñēāēā òçð æũþð òĩō óāĩ óŸóççĩā, ēāē ç āĩŨāēç āēā óðāēāñēēĩŸĩç ðĩēēðēēP ēāē ĩñāŨĩũðç āēā òçĩ äçĭēĩōñāßā ĩŸũĩ āēāũóāũĩ āßĩāē ðēŸĩĩ óāĩāñP ðñāēóóũðāñĩ áðũ ðĩōŸ. ÁððP ç āĩŨāēç ēā āßĩāē āēũĩā ðēĩ òçĩāĩðēēP ēāēþð òĩ FreeBSD ēā āñ÷āßāē ĩá ĩāðāŸŸñāðāē òā ĩŸāð ðēāððũñĩāð.

7 ÎäëïïôëéÝò Êáóãðëýíóáëò

Ãßíáë æüðëëðò óçíáóßáð ïë ðñáëðëéÝò éáë ç ïñÃÛîóç òçð ðëááëéáóßáð äçíëíðñáð òùí Æëüüóàùí íáð íá óðíááßæííí ïá òçí óðíá÷ð ðóíáíííáíç ÆÛóç òùí ÷ñçóðíí íáð. Ìá ÆÛóç áððð òç óëÝðç Æñááæííáóðá ðëëçñÛ Æéá íá ðáëíçñëðóíðíá òçí ðëááëéáóßá ðñáááñð òùí Æëüüóàùí òîõ FreeBSD.

- *ÐáñÛëëççç áëðÝéáóç* - ÌáñëéÛ ïÝñç òçð ïáðááëðððëóçð ïéáð ÆáëáðÛóðáóçð ïðñíýí íá Æñííí “ðñëý ðáñÛëëçççá”. Õá ðëí ðñëéÛ áðü ðá óðÛáéá Æßíáë I/O intensive, ïðüðá ç ýðáñíç ðñëëðí ððçëðð-ðá÷-ýðçðáð Æßóëíí Æßíáë ðëí óçíáíðëëð áðü òçíí ÷ñðç ðñëëðí Æðáíñááóðíí Æéá íá áðëóá÷ðíëáß ëÛðüð ç ðëááëéáóßá ðîð make release. Áí ðëáóñíáðëëëß Æßóëíë ÷ñçóëííðñëççýíí Æéá ðíðíáðá òçð éáñáñ÷ð ðîð chroot(2) ðñáëáÛëëíðð, ðüðá ðí CVS checkout òùí éáðáëüüáí ports éáë doc ïðñíáß íá Æßíáë ðáððü÷ñííá ïá òçí áñííëð make world ððñí Ûëëí Æßóëí. ×ñçóëííðñëðíáð ïéá RAID ëýóç (hardware ð software) ïðñíáß íá ïáëðóáë ÆñáóóëéÛ ðñí óðñëëëü ÷ññíí ðîð ÷ñáëÛæáðáë íá ïáðááëüððëóóáß ïéá ðëðñçð Ýëáñóç.
- *Ïáðááëðððëóç Æëüüóàùí Æéá ðëáóñíáðëëéÝò áñ÷éðáëðñíëéÝò* - ÈÝëáðá íá ïáðááëüððßóáðá ïéá Ýëáñóç Æéá IA-64 ð Alpha óá ëÛðñíí x86 áðáíñááóðð? make TARGET=ia64 release.
- *ÄñëéíÝð Æéá ëÛëç* - ×ñáëáæííáóðá éáëýðáñá Æñááëáßá Æéá áððüíáðí Ýëáñ÷í ïñëüðçðáð ððñí FreeBSD.
- *Ãñááëáßá ÆáëáðÛóðáóçð* - Õñ ðñüññáñÛ íáð Æéá òçí ÆáëáðÛóðáóç ðîð FreeBSD Ý÷áë ïáðáñÛóáë ðñí ðñëëý ðñí áñáíñáññí ÷ññíí æüðð ðîð. ÕðÛñ÷ííí ÆÛóñíáð ïñÛáð ðîð ÆñáÛëííóáë Æéá íá ðëíðñëðóííí ëÛðñíí Ûëëí, ðëí ïñóÝññí ïç÷áíëüí ÆáëáðÛóðáóçð. Ìéá áðü ðëð ðëí ððñí÷áíáð, Æßíáë ç ïñÛá libh[5] ðîð ððñí÷áíáë ðçí ðëíðñççç Æñüð Ýñðññó, ïÝñó ðññðñð ðáëáðáñßóíáðñð ëñáóíëëý éáë áñüð GUI ðññáñÛñáðñð ÆáëáðÛóðáóçð.

8 Æó÷áñéóóßáð

Èá ðëáéá íá áð÷áñéóóðóù ðñí Jordan Hubbard, ðîð ïñó Ýäüóá òçí ððëáëñßá íá ðÛññ ëÛðñéá áðü òçí áðëýíç òçð Ýëáñóçð 4.4 ðîð FreeBSD, éáëðð éáë Æéá ïëç òçí ÆñóëéÛ ðîð Ý÷áë ëÛñáë Æáë ÷ññíéá Æéá íá Æßíáë ðñí FreeBSD áððü ðîð Æßíáë óðñáñá. ÕóóëéÛ, ç Ýëáñóç Æáñ éá ðóáí ðñóÝ Æðñáðñí íá ïññëçññüëáß ÷ññßð ïëç òçí ó÷áðëëð ïá òçí Ýëáñóç ÆñóëéÛ ðîð Ýéáíáí ïë Satoshi Asami <asami@FreeBSD.org>, Steve Price <steve@FreeBSD.org>, Bruce A. Mah <bmah@FreeBSD.org>, Nik Clayton <nik@FreeBSD.org>, David O’Brien <obrien@FreeBSD.org>, Kris Kennaway <kris@FreeBSD.org>, John Baldwin <jhb@FreeBSD.org> éáë ïññé ïë ððññéðñé ðñó áð÷ññýíóáë ïá òçí áñÛððñíç ðîð FreeBSD. ÈÝëü Æðßóçð íá áð÷áñéóóðóù ðñóð Rodney Grimes <rgrimes@FreeBSD.org>, Poul-Henning Kamp <phk@FreeBSD.org>, éáë ïññóð ðñóð Ûëëíðð ðñó ÆñáÛóççáí Æéá íá ððëÛññíí ðá Æñááëáßá Æéá ðëð Æëüüóáëð ðóëð ðñðóáð ïÝñáð òçð äçíëíðñáð ðñó FreeBSD. Áððü ðñ Ûñëñí Ý÷áë áðçñááóðáß áðü éáßíáíá ó÷áðëëÛ ïá òçí ïñÃÛîóç òùí Æëüüóàùí áðü ðñ CSRG[14], òçí ïñÛá ðñó NetBSD[11], éáë òçí ðññóðáóç Æéá ïéá ðëááëéáóßá ïñÃÛîóçð òùí Æëüüóàùí ðñó John Baldwin[12].

9 ÁíáðññÝò

[1] CVS - Concurrent Versions System <http://www.cvshome.org>

[2] CVSup - The CVS-Optimized General Purpose Network File Distribution System
<http://www.polstra.com/projects/freeware/CVSup>

[3] <http://bento.FreeBSD.org>

[4] FreeBSD Ports Collection <http://www.FreeBSD.org/ports>

[5] The libh Project <http://www.FreeBSD.org/projects/libh.html>

- [6] FreeBSD Committers
http://www.FreeBSD.org/doc/en_US.ISO8859-1/articles/contributors/staff-committers.html
- [7] FreeBSD Core-Team http://www.FreeBSD.org/doc/en_US.ISO8859-1/articles/contributors/staff-core.html
- [8] FreeBSD Handbook http://www.FreeBSD.org/doc/en_US.ISO8859-1/books/handbook
- [9] GNATS: The GNU Bug Tracking System <http://www.gnu.org/software/gnats>
- [10] FreeBSD PR Statistics <http://www.FreeBSD.org/prstats/index.html>
- [11] NetBSD Developer Documentation: Release Engineering <http://www.NetBSD.org/developers/releng/index.html>
- [12] John Baldwin's FreeBSD Release Engineering Proposal <http://people.FreeBSD.org/~jhb/docs/releng.txt>
- [13] PXE Jumpstart Guide http://www.FreeBSD.org/doc/en_US.ISO8859-1/articles/pxe/index.html
- [14] Marshall Kirk McKusick, Michael J. Karels, and Keith Bostic: *The Release Engineering of 4.3BSD*
(<http://docs.FreeBSD.org/44doc/papers/releng.html>)