

# 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 áĩŨððõĩçò òĩõ FreeBSD, ùóĩĩ áõĩñŨ óôçĩ ðñĩãðõĩéĩáóßá ðĩéĩðééðĩ äêäüóãùĩ òĩõ Êäéõĩðñäéçĩ Óðóðßĩáòĩõ FreeBSD. Âĩçããß ĩã äãððñŨñäéá ôçĩ ĩãèĩäĩèĩãßá ðĩõ ÷ñçóéĩðĩéĩãßóáé äéá ðéð äðßóçĩãð äêäüóãùĩ òĩõ FreeBSD éáé ðãñéãñŨöáé óã ãñãäéãßá ðĩõ äßĩáé äéáéŸóéĩá óã ùóĩõð ãĩáéáóŸñĩóáé ĩá ðãñŨãĩõĩ ðãñãĩãðñĩðĩéçĩŸĩãð äêäüóãùĩ òĩõ FreeBSD äéá áóùðãñééð ð ãĩðĩñééð ÷ñðóç éáé áĩŨððõĩçò ðñĩũĩĩòùĩ.

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## 1 Áéóáãũãð

Ç áĩŨððõĩçò òĩõ FreeBSD äßĩáé ĩéá ðĩéŸĩ áñé÷ðð äéãäééãóßá. Õĩ FreeBSD áðĩðãéãßóáé äðũ óõĩãéóõĩñŸò ÷éééŨãũĩ áĩèñðũĩ äðũ ùéĩ òĩĩ èũóĩĩ. Ç ñŨãá òĩõ FreeBSD ðãñŸ ÷äé ðñũóãáóç ĩŸóũ áĩðĩòĩõ CVS[1] óã ùéĩòð, Ÿðóé þóðã ĩá ĩðĩñãß ùðĩéĩò èŸéãé ĩá äãé ĩçĩŸĩáóã log, äéãõĩñŸò (patches) ðĩõ Ÿ÷ĩõĩ óã äéŨõĩñã development branches, éáé Ũëëã ÷ãñãäðçñéóóééŨ ðĩõ äĩçéŸĩŸĩ ôçĩ áĩŨððõĩçò, óã ĩðĩßá ðñĩéŸððĩõĩ äðũ ôçĩ ÷ñðóç áĩũð áðððçñĩŸĩ óðóðßĩáòĩõ äéã÷ãßñéóçò èðãééã. Áðòù áðĩðŸéãóã éáé òĩĩ ðéĩ óçĩáĩóéèũ ðãñŨãĩõã Ÿéĩçò äéá Ÿĩã ĩããŨéĩ äñéèũ äðũ óäéáĩõŸĩ÷ĩò ðñĩãããĩãóéóðŸò äðũ ùéĩ òĩĩ èũóĩĩ óõĩ FreeBSD. Âßĩáé ðñĩóãĩŸò, äŸããéã, ðùð ðĩéŸĩ óŸĩðñã éã äß÷ã äßĩáé áĩðãèð ÷ãĩðééð ç éãðŨóóáóç áĩ äß÷ãĩ ùéĩé, äðũ ùéĩ òĩĩ èũóĩĩ, ðñũóãáóç ĩá ãñŨðĩõĩ óõĩ èðãééã. Äé’ áðòù, ĩũĩ ĩéã “ãðééããĩŸĩç” ñŨãá äðũ ðãñßðĩõ 300 Ũõñã Ÿ÷ĩõĩ ðñũóãáóç ĩá ãñŨðĩõĩ óõĩ CVS repository. Áðòĩß ĩé committers[6] äßĩáé ððãŸéðñĩé äéã òĩ ĩãããéŸóãñĩ ĩŸñĩò ôçò áĩŨððõĩçòð ðĩõ äßĩãðáé óõĩ FreeBSD. ĩéã

[illegible]

Ίε οά÷ýðάοίε ηόειηβ άίΰδδοίγφ οίο FreeBSD άάί άόβήοί έάέ θίεý ÷ ηύή άέα οί ίάέάέΰήέοίά οίο όόόόβίάοίό άίΰδδοίγφ όά ίέα Ύέαιόγ ίά θίέυόόά θή ίά άίβέάέ ίά ÷ ηέόέήθίέάβόάέ άόηΎύό. Άέα ίά έόέάβ άόόυ όί άέέέέίά, ç άίΰδδοίγ άβίάόάέ όάόόυ÷ ηήίά όά άοί όάνΰέέέέά ίήήδΰόέα. Ί έýήείό έίήήυό άίΰδδοίγφ άβίάέ ι **HEAD** þ *trunk* όόι CVS repository ίάό, άήυόόύό έάέ ύό “FreeBSD-CURRENT”, þ “-CURRENT” άί όόίόήβά.

Για όποιον θέλει να ελέγξει το FreeBSD-STABLE, ο καλύτερος τρόπος είναι να χρησιμοποιήσει το CVS repository, όπως και να είναι. Το FreeBSD-CURRENT [8] είναι η τελευταία έκδοση του FreeBSD, ενώ το FreeBSD-STABLE είναι η τελευταία έκδοση που είναι σταθερή. Το FreeBSD-STABLE είναι η καλύτερη επιλογή για την εγκατάσταση του FreeBSD, καθώς είναι η πιο σταθερή έκδοση. Το FreeBSD-CURRENT είναι η καλύτερη επιλογή για την εγκατάσταση του FreeBSD, καθώς είναι η πιο πρόσφατη έκδοση. Το FreeBSD-STABLE είναι η καλύτερη επιλογή για την εγκατάσταση του FreeBSD, καθώς είναι η πιο σταθερή έκδοση.

[illegible][illegible]

Ἀέά ίά ἀτῶδῆῆᾶῶεῖρῖ ἰέ δέῖ ὀῶῶῆῆῆῶεῖῖῖ ÷ ῆῖῖῶῶᾶ ἰᾶῶ, ἰᾶ ῖῖᾶῖῶῶ ὀῖῖ FreeBSD 4.3 ᾶῆ÷ῖῶᾶᾶ ἰᾶ ÷ ῆῆῶῖῖῖῖῖῖῖῖῖ ἰᾶ÷ῖῆῶῶῶῶῶ ἑῖῆῖῖῶῶ ᾶᾶῶῶᾶῖ. Ἀῶῶῖῖ ἰῖ ἑῖῆῖῖῖ ᾶῖῖῖῖῆῖῖῖῖῖᾶῖ ἑῖῖῖ ῏ῆῖῖ ὀῶᾶ÷ῶᾶῖ ῆ ὀᾶῖῖῖῖ ῖῖᾶῖῶῶ. ἰᾶῶ ὀῆῖ ᾶῖᾶῖῖῖῖῖῖ ὀῆῶ ῖᾶῖῶῶῶ, ἰῖῖ ῏ῖῖῖ ὀῖῖῖῖῖῖῖῖ ὀᾶῖῖῖῖ ἑᾶῖ ῏ῖῖῖῖῖῖ ὀ÷ᾶῖῖῖῖῖ ἰᾶ ὀῖῖ ᾶῶῖῖᾶᾶ ᾶῖῖῖῖᾶ ὀῶῖ ἑῖῆῖῖ ὀῆῶ ῖᾶῖῶῶῶ. Ἀᾶῶῶ ᾶ῏ῖ ὀῖῖ ᾶῖῖᾶῶῖῖῖᾶ ᾶῖᾶῖῖῖῖῖ ἰῖῖῖ CVS, ᾶᾶᾶῖῖῖῖᾶ patchkits ὀῶῖῖ ÷ῖῖῖᾶ ᾶᾶ ἰᾶ ἰ῏ῖῖῖῖ ἰᾶ ᾶῖᾶᾶᾶῖῖῖῖῖ ὀᾶ ὀῶῶῖᾶῖῖ ὀῖῖῶ ὀῖῖῖ ÷ῖῆῶῖῖῖῖῖῖῖ ὀῶῖ ᾶᾶῶᾶῶᾶ *RELENG\_X\_Y*.

Οι ΟιΠια 2 αιçããß ìá εãððñÝííæãð ðá æÛöïííá ððÛæá ðçð æéáæéæáðßáð ðï ãííßéæãðáé ðßóó ãðu èÛεá Ýεãïðç, ìÝ ÷ ñé éáé ðá áΠιαðá ðï ðãçãýí ðçðí ìãðáæððóðéóç ðï ððððΠιαðïð éáé ðï ΟιΠια 3 αιçããß ðçí Βáεá ðç æéáæéæáðßá ðçð ìãðáæððóðéóçð. Οι ΟιΠια 5 ðãíεãñÛðáé ðυð ðïííßß ìá áðæéðæáß ðï ááóéευ óýððçìá ãðu ðííßòïð éáé ðï ΟιΠια 6 ðãíεãñÛðáé εÛðíεá ãðu ðá ðíÛáìáðá ðï ìÛεáìá ãðu ðçí æéáæéæáðßá Ýεãïðçð ðï FreeBSD 4.4. ÓÝεïð, ðï ΟιΠια 7 ðãíïðóεÛæáé εÛðíεãð ãðu ðεð éãðãéýíóáéð ðï εÝεíðìá ìá ðÛíæ ç áíÛððòïç ððï ìÝéεíí.

2 Ç Äéääéêáóßá Äçïéïõñãßàò ìéàò êäïóçò

Ié rYáo àèauóáèð òìð FreeBSD óðeÜ ÷ ðíðáè áðu òíí -STABLE èíñíù áíÜððòíçð ðáñððìð eÜèà òÝóóáñáèð íðíáð. Ç áèáèèèáóðá ðñíàðòíèáóðáð íèáð Ýèáíòçð íàèèíÜè à ÷ àáúí 45 íÝñáð ðñèí òçí áíáíáíáíç çíàññçíðá Ýèáíòçð, ùðáí í òðáyèèðð àèauóáí òìð FreeBSD óðÝèíáè Ýíá àñÜíá óðèð èðóðáð òúí ðñíàñíáíáèèèèðí áèá íá òðáíèèòíðáè óðíðð ðñíàñíáíáèèèèèÝð ùèè Ý ÷ íòí 15 íÝñáð èáèñí íá eÜííòí ùðíèáð áèèááÝð eÝèíòí, ðñèí òí ðÜáúíá òìð èðáèèá. ÍÝóá óá áòòú òíí èáèñí, ðíèèíð ðñíàñíáíáèèèèèèè eÜííòí íèá óáèñÜ áðu áèèááÝð ðìð Ý ÷ íòí íáðíáè ðèÝíí áíúóóÝð ùò “íáèáèèáñðíáðá MFC”. Í ùíðí MFC óçíáðíáè “Merge From CURRENT” èáè ðáñèáñÜðáè òçí áèáèèèáóðá ðñíòáñííáðð

òĩō ēpāēēā iēāō āiēēiāōĩŸĩçò äēēāāpò áðũ òĩĩ -CURRENT ðāēñāiāóēēü ēĩñiũ áĩŪðòðĩçò òòĩĩ óóāēāñiũ -STABLE ēĩñiũ.

## 2.1 Ğāā÷iō Ēpāēēā

ŌñēŪiōā çĩŸñāð ðñēĩ òçĩ áĩáĩāĩüĩāĩç çĩāññĩçĩā Ÿēāiōçò, ĩ ēpāēēāð òĩō repository áēóŸñ÷āóāē óā iēā ðāñbĩrāi “ēāēðóóŸñçòçò”. ĒāðŪ òç äēŪñēāēā áððò òçò ðāñēüāið, üēāð iē äēēāāŸò òòĩĩ -STABLE ēĩñiũ ðñŸðāē iā Ÿ÷iōĩ òçĩ Ÿāēñēóç òçò Release Engineering Team <re@FreeBSD.org>. Ĩē äēēāāŸò ðĩō āðēōñŸðĩiōāē óā áððò òçĩ ðāñbĩrāi ðĩō āēāñēāb 15 çĩŸñāð ābĩāē:

- Äēĩñēpóāēð āĩüóðĩ ðñĩāēçĩŪðüĩ.
- Äĩçĩāñpóāēð òòçĩ ðāēiçñbùóç.
- ÄēēāāŸò ó÷āóēēŸò iā òçĩ áóðŪēāēā.
- ĨēēñŸò äēēāāŸò òòĩið ïāçāĩŸò òóóēāðĩ, üðüð ð÷. ç ðñiōēðēç òüĩ IDs iŸüĩ óðóēāðĩ.
- Ĩðēāābðĩōā Ūēēç äēēāāb ðēóóāŸāē ç ñŪāā áĩŪðòðĩçò üðē ðñŸðāē iā ābĩāē, iā òĩ áĩáĩāĩüĩāĩ ðŪiōā ñbóēĩ.

ĨāðŪ òēð ðñpóāð 15 ĩŸñāð ēāēðóóŸñçòçò, òðēŪ÷iāóāē iēā āiēēiāóóēēp Ÿēāiōç āēā iā ÷ñçóēĩðĩēçēāb óāĩ āiēēið òçò ðāēēēðò Ÿēāiōçò ēāē ĩ ēpāēēāð áēóŸñ÷āóāē óā iēā ðāñbĩrāi “ðāāpĩāðĩð”. ðēŸĩ ābĩāē ðĩēŸ ðēĩ āŸóēĩēĩ iā ābĩiōĩ iŸāð äēēāāŸò òòĩ óŸóóçĩā, āēðüð ēē áĩ äēĩñēpñiōĩ ēŪðĩēĩ ðĩēŸ òĩāāñi bugp ēŪðĩēĩ ðñüāēçĩā áóðŪēāēāð. ĒāðŪ òç äēŪñēāēā òĩō ðāāpĩāðĩð òĩō ēpāēēā, òĩðēŪ÷ēóðĩĩ ĩbā āiēēiāóóēēp Ÿēāiōç òðēŪ÷iāóāē ēŪēā āāāñŪāā, ĩŸ÷ñē iā ābĩāē Ÿòĩēiç ç òāēēēp Ÿēāiōç. Ōēð çĩŸñāð āēñēāpð ðñēĩ òçĩ ðāēēēp Ÿēāiōç, ç ñŪāā ðĩō ābĩāē òðāŸēðĩç āēā òēð āēāüóāēð ābĩāē óā óðĩā÷p āðēēĩēĩüĩbā ĩā òçĩ ñŪāā áóðŪēāēāð, òçĩ ñŪāā óðĩðpñçòçò òçò ðāēiçñbùóçò, ēāē òçĩ ñŪāā óðĩðpñçòçò òüĩ ports, āēā iā āāāāēüēĩŸĩ ðüð üēā óā āðāñābðçóā ēĩñŪðēā āēā iēā ðēpñç Ÿēāiōç ābĩāē āēāēŸóēĩā.

## 2.2 Ēbóóā ĀēŸā÷iō òçò Ōāēēēpð ēāiōçò

Ÿðóāĩ āñēāðŸò āiēēiāóóēēŸò āēāüóāēð Ÿ÷iōĩ ābĩāē āēāēŸóēĩāð, Ÿ÷iōĩ āiēēiāóóāb áðũ āñēāðü ēüóĩĩ ēāē üēā óā òĩāāñŪ ēŸĩāóā Ÿ÷iōĩ áĩāēōēāb, ç ðāēēēp Ÿēāiōç ĩðĩñāb iā āñ÷bóāē.

### 2.2.1 Äçĩēĩñābā òĩō ēĩñiŸ ēāiōçò

Ÿðüð ðāñēāñŪøāĩ òòçĩ áēóāāüāp, ĩē ēĩñiñb RELENG\_x\_y ābĩāē iēā ó÷āóēēŪ iŸā ðñiōēðēç òòçĩ ĩāēĩāēĩābā òüĩ āēāüóāpĩ ĩāð. Ōĩ ðñpðĩ āpĩā òòçĩ äçĩēĩñābā áððĩŸ òĩō ēĩñiŸ ābĩāē iā āāāāēüēābðā üðē āĩōēāŸāðā ĩā òçĩ ðāēāðóābā Ÿēāiōç òĩō ðçāābĩð ēpāēēā áðũ òĩĩ RELENG\_x ēĩñiũ áðũ òĩĩ iðĩbĩ ēā òðēŪiāðā òĩ iŸĩ ēĩñiũ.

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

Ōĩ āðüiāĩ āpĩā ābĩāē iā äçĩēĩñābāðāðā iēā āðēēŸðā (tag) òòĩ òçĩābĩ āēēbĩçòçò òĩō ēĩñiŸ, pððā iā ĩðĩñābðā iā āābðā òēð āēāöĩñŸò ĩā òçĩ āñ÷p òĩō ēĩñiŸ āŸēĩēā òòĩ ĩŸēēĩ ĩā òĩ CVS:

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

Ēāē òüðā ĩðĩñābðā iā äçĩēĩñābāðāðā òĩ iŸĩ ēĩñiũ ĩā:

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

**Όχιὰβὺός:** *Ἰέ ἀθεέῃ Ὑδαῶ RELENG\_\* ἀβιάε ἀἀόιἀδὶ Ὑῖἀδ ἀέά ÷ ἡΠόϋ ἀδῦ οἶῶδ CVS-meisters ἐάέ ὄϋι ἡῪἀά οὐῖ ἀἔᾶῶόᾶῖ.*

Ἰ uniõ “*ἀόεεΥόα*” ἀβίαέ ι̃ι̃ι̃ι̃ε̃α̃β̃α̃ ο̃ι̃ο̃ CVS. Ὁ̃ϋ̃α̃β̃ι̃α̃έ̃ Ὑ̃ι̃α̃ ũm̃ã ο̃ι̃ο̃ ε̃α̃ε̃ι̃ñβ̃α̃ε̃ ι̃ε̃α̃ ο̃α̃ε̃α̃ε̃ñε̃ι̃Υ̃ι̃ϋ̃ Ὑ̃ε̃ãĩõς ο̃ι̃ο̃ ε̃p̃ãε̃ε̃ã ο̃õĩ ÷ ñũĩĩ. × ñϋ̃õẽĩĩõĩẽp̃ĩõãõ ἀõẽẽΥ̃õãõ ο̃õĩĩ δ̃ϋ̃ããb̃ĩ ε̃p̃ãε̃ε̃ã ãr̃ϋ̃ẽŨĩã ũõĩẽĩĩ õõẽŨĩãẽ ο̃õĩ ĩΥ̃ẽẽĩĩ ãẽãũõãẽd ο̃ĩõ FreeBSD ĩã ãñβ̃õẽãẽ ε̃ãẽ ĩã ÷ ñϋ̃õẽĩĩõĩẽãb̃ ãẽñẽãp̃õ õĩĩ β̃ãẽĩ ε̃p̃ãε̃ε̃ã ο̃ĩõ ÷ ñϋ̃õẽĩĩõĩẽp̃ẽϋ̃ẽã ãẽã õẽd ãδ̃β̃õϋ̃ĩãd ãẽãũõãẽd ο̃ϋ̃õ ḥ̃Ũããd ο̃ĩõ FreeBSD.

### 2.2.2 ÁóïÛííîáò ôíí Áñéèü êäïóçò

Ἐνῆι ἰθαῖ ἡ ἀοέεΥόα, ἰαοάαεουοοεοοάβ ἑαῖ ἀοιείαοοάβ ἡ οάεεῒβ Υέαιόρ, ὃνΥθαῖ ἰά ἀβῖῖό ἡεῖάαΥό οοά ὃαῖάεῒου  
 ἀῖ÷άβ ἡεῖ ἰά ὃαῖεΥ÷ῖό ὃῖ ὅουοῒ ἀῖεῒι Υέαιόρὃ ἡεῖ ὃῖ 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

Ἰε οὐκ ἰαεῖ πόαεὸ Ἰέαιουὸς ἐάε ὁά ἀν÷αβὰ ἰα ὀέο ἀεῖνῆε πόαεὸ ὀοὸ ὁἀεᾶὸ ὁἀβᾶὸ ὀόεαιᾶ ὁñ ὸδᾶε ἀδβᾶὸ ἰά ὁñ ἰόανῖ ἰοίῳ ἰῖ ὀόῖ ῖ ῖ Ἰέαιουὸς (ὀῖνῖ ἔνῖνῖ ὀοὸ Ἰέαιουὸς) ἐάε ἰά ἀδᾶἰαἰαᾶ ὀόῖ ἔᾶ ὀῖεῖᾶ (ὀῖῖ ὀῖ ἔνῖνῖ ὀῖ stable ἐάε current):

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

Ç äöäññīāP **sysinstall** ðñÝðäē äðßöçð íá áíçíāññēāß íā òñí òùòóù āñēēìù òùì ports éáē òī ÷pñī òīō āßöēīō ðīō äðäēòāßöáē äēá òçí ÓöēēīāP òùì Ports. ÁöðÝð íē ðēçñīññīñßāð òðŨñ÷īōí òóī āñ÷āßī  
src/release/sysinstall/dist.c.

Άσπυ ιεῖεεεεεεεεεε ε δνιιαιεεεεεεε εδε ιΥάδ αδΒοεεεε Υεεεεεε, δνΥδεε ιά αιεεεεεεεεεε ιεεεεεΥ αη÷αΒ εεε ιά αιεεεεεεεεεε οιι εεεεε εε ε ε ιΥά Υεεεεε εεε FreeBsd.

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

### 2.2.3 Äçìéĩõñãßá ôùí Âôéêâôþí ôçò êäïóçò

1/40áí ç ôãëêêP Ýêäiöç åßiáé Ýôieîç, ç ðãñáéÛòù áíôieîP èá äçieiññãPóáé ôçí âôêêÝôá RELENG\_4\_8\_0\_RELEASE.

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

RELEASE\_4\_8\_0 óóá éáóÜëëçä äÝíóñá ðçāāβíø ēpāëéá.

ΙαάεεΥδ οινΥδ, ιδῖαβ ίά ÷ ααεάοαβ ίά αβῖοῖ εὔδῖεαδ αεεάαΥδ οαεάαδαβ αόεαῖῖ *ιαδῖ* ογῖ οῖδῖεΥδ ογος οῖ αόεεαοῖ. Ἀαῖεῖῖ, ααῖ αβῖαε αῖοεῖῖ ίά αβῖαε εὔοε οΥοῖῖ αοῖῖ οῖ CVS αδεονΥδαε ίά ιααεεῖῖῖαε εὔδῖεῖδ οεο αόεεΥδαο ίά αῖοῖεΥδ ὑδῖο `cvs tag -d tagname filename`. Ἀβῖαε δῖεῖ ογῖαῖοεῖῖ ὑδῖο αδῖοῖ ῖε αεεάαΥδ ογος οαεάαδαβαδ αόεαῖῖδ ίά ογῖαεῖῖῖ ίά οεο οῖοῖοῖ αόεεΥδαο αεά ογῖ οαεαεῖῖῖΥγῖ ἢεαῖος. Ἰε αδβοςῖαδ αεαῖοαεο οῖο FreeBSD δῖνΥδαε ίά αβῖαε δῖῖῖα αῖεῖῖ ίά αῖαδαῖα ÷ εῖῖῖ. ΟῖδεεΥδ αεεάαΥδ οοῖ δῖαεῖῖεῖῖ οῖο ιγ ÷ αῖεεῖῖ οῖῖ αεαῖοαῖῖ ααῖ αδεονΥδῖῖαε.

### 3 ðàáãëþôôéóç ôçò ëäïóçò

Ιε "aeauaaeo" oio FreeBSD ioiniia ia iaadaaeuooeooiia adu ioieiaaBpiao Y ÷ ae Yia o ÷ aeaeU anPaiin ic ÷ Uicia eae  
 dnuoaaoc ooi repository oio dcaabio epaeaa. (4eie Y ÷ ioi aooP oc aioiaouocoa, aoiy danY ÷ ioia dnuoaaoc iYou  
 alpioio CVS! AaBoa oi Aa ÷ aenbaei oio FreeBSD aea daneaouoanao eadonYnaeo.) C iuic aeaeep adabococ abiaa  
 ia odu ÷ ae oiooPneic ooi ddnPia oao aea oc ooeaop vn(4). (Ooi -CURRENT, aooP c ooeaop Y ÷ ae  
 aioeaaaoaoaeb adu oc iYia ooeaop aboeio aaoeoiYio oa iBic md(4). Ai c ooeaop aai abiaa aioiaouuYic ooi  
 ddnPia oao, ouoa i eaoUeeceio iacaud ea oionueab adouiaoa uoa aeaaeaoaB c aioieP vnconfig(8) eaoU oc  
 aeUnea ea oc oUocd aioiaaoba oio iYio aeabocod. 4ea oa anaeeaba oio ÷ naeUaioae aea ia iaadaaeuooBaoa iea  
 Yeaoc abiaa aeaeYoeia oa iioP dcaabio epaeaa ooi eaoUeia src/release. AooU oa anaeeaba Y ÷ ioi uo oeidu ia  
 danY ÷ ioi uoe ÷ naeUaioae aea ia ÷ obaioae ie aeauaaeo oio FreeBSD ia Yia oiaop eae oaeaeeneiYi onudi. Iea  
 dePncd Yeaoc ioina ia iaadaaeuooeooa ÷ nceioiepioao aooU oa anaeeaba ia iea eae iui aioieP,  
 oioaneaiaaiaYic eae oc aeleioaba adu ISO an ÷ abio eaoUeecei aea ia eaaB oa CDROM, ie aeoeYoaB  
 aeabocod, eaeB eae i eaoUeeceio aaeadUoaoc iYou FTP. AooP c aioieP abiaa ooeep c make release.

### 3.1 Ç áíôïëþ make release

[illegible]

ᾄδου÷ἀε ἀδβόχοις ς ιαῶαἄεῖρὸὐέοις ὀχοὶ Ὑεἰῖοχοὶ ὃνὙᾄαιε ἰά ἀπόαῶα ὀεὸ ἐάὸὔεεççᾷὸ ὀεὶὙὸ ἐαίε ὀά ἐὔῖεᾷὸ ιαῶαἄεççὀὙὸ:

- CHROOTDIR - Ἡ ἐὰὸὐεῖαῖρὸ δῖο ἐὰ ð-ñçóεῖῖθῖεçæß óáf ðññéáὐῖεῖῖ chroot æéá üeç ðçῖ ἰὰðáæῖῖðòðéóç ðçð Ἰéαῖρçð.
- BUILDNAME - Ὀῖ ὑῖῖά ðçð Ἰéαῖρçð δῖο ἐὰ ἰὰðáæῖῖðòðßóáðá.
- CVSROOT - Ἡ ἐὰὸὐεῖαῖρὸ óóῖῖ ἰῖῖῖῖ ἁñßóéæðáé ðῖ CVS repository.
- RELEASETAG - Ç áðééἸóá CVS δῖο αῖðéóóῖῖ÷÷÷ß óççῖ Ἰéαῖρç ðçῖ ἰῖῖῖῖ èἸéæðá ἰά ἰὰðáæῖῖðòðßóáðá.

Άí αάí Υ÷άάά Παç ðñúάάάçά όά εÛðείí ðíðéêú CVS repository íά ðíí êπαέέα ðíð FreeBSD, ðíññáßόά ðÛíόά íά  
 ððéÛíάάά ðí áέêú óάð ðíðéêú CVS mirror íά ðí CVSup  
 ([http://www.FreeBSD.org/doc/en\\_US.ISO8859-1/books/handbook/synching.html#CVSUP](http://www.FreeBSD.org/doc/en_US.ISO8859-1/books/handbook/synching.html#CVSUP)). ÕðÛñ÷άέ Υíá supfile,  
 óðí áñ÷άßí /usr/share/examples/cvsup/cvs-supfile, ðí ðíðíßí ðíññáßόά íά ÷ñçόéíðíéΠάάάά áέα íά  
 áíðéáñÛøάά ðí CVS repository ðíð FreeBSD óðí áέêú óάð ðíðéêú mirror.

Áí ðáñáëäþøðå ðçí áðéëÝóå RELEASETAG, öüðå åå íaðåääèùððéóðåß íéå ðëÞñçð Ýéäíöç äðu ðçí èíñòð òìð HEAD  
 (äçë. òìð -CURRENT) èíñíý. Íë äêäüóåðð ðìð öðëÛ÷íííðåé äðu äððúí òíí èíñìù, öðíÞèùð áíáoÝíííðåé áái  
 “-CURRENT snapshots”.

ÖðÜñ÷röi éáé ðreeÝð Üeeáð iáðááæçðÝð ðiö iðiniýi íá ÷ñçóéiiðieçeiýi áéá íá ðañáiaðñiiðieÞóáðá öçí ÝéäiöÞ óáo. Íé ðei ðreeÝð áðu áðöÝð öeð iáðááæçðÝð ðañéañÜöiriðáé óçí eiñöðÞ öiö áñ÷áñrö src/release/Makefile. Ç áéñéáÞð áíöieÞ öiö ÷ñçóéiiðieÞeçêá áéá íá ööéá÷ðáñ ç áðßóçí Ýéäiöç 4.7 öiö FreeBSD (x86 ðéáðöüüniá) Þái:

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

Ὅτι Makefile δῖο ÷ η̣ς ὁ εἰς δῖε ἀβδαε̣ ἀεά ἰά ἰαδᾶα̣εὺ ὁ δὲ αἰῖοδᾶε̣ ἰε̣ ἀε̣αὺ ο̣αδ̣ ἰδῖ η̣β̣ ἰά ÷ ὑ̣η̣ε̣ ὁ δὲ α̣β̣ ὁ α̣ ἠ̣ε̣ α̣ο̣ Ὑ ἰὰ ÷ ὑ̣η̣ε̣ ὁ δὲ Ὑ ἰαδᾶῖ ὁ ῖο δ̣ Ἀβῖαδᾶ.

- Ἀγείριοναβὰ ἀφὺδ ἐἀεάνιγ δᾶνέαῤῗεῖριτὸ οᾶ ἰέα ἰᾶ÷ῤῗεὸδP εᾶñāñ÷βὰ ἐἀὸἀεῦαῦἰ ἰᾶ ὀγί ἀίῶῖεP “make installworld”.
- ἈἰᾶαῦᾶP ἀδῦ οἱ CVS ἰεᾶὸ ἐἀεῖνῖνέαὸ ῤῗεῖριτὸ οἷῶ δῗᾶᾶβῖῶ ἐpᾶέέα οἷῶ ὀῶῶῶPἰᾶῶῖῶ, ὀῗῶ δᾶῖῖῗñβῦῶῗῶ ἐἀέ οῦἰ ports ἰῤῥᾶ ὀῗῖ εᾶñāñ÷βὰ ἐἀὸἀεῦαῦἰ ἰᾶὀᾶᾶεpῶῶεὸῗῶ ὀῗῶ ῤῗεῖριτὸ.
- Ἴῶεἰβῶᾶεὸ οῦἰ ᾶñ÷ᾶβῦ ὀῶἱ ἐᾶὸῤῗεἱᾶ /etc ἐᾶέ /dev ἰῤῥᾶ οἷᾶ δᾶνέαῤῗεῖρι chroot.
- Ἄεὸῤῗεᾶῗ ὀῗῶ ἀίῶῖεPδ chroot ἰῤῥᾶ ὀῗῖ εᾶñāñ÷βὰ ἐἀὸἀεῦαῦἰ δῖῶ ᾶῶἰεἰῤῥῶῗᾶ, ᾶέα ἰᾶ ἰῗἱñᾶ οἱ ᾶἰῶᾶñέεῦ δᾶνέαῤῗεῖρι ἰᾶ ᾶδῗñᾶῤῥᾶε ὀῗ ἰᾶὀᾶᾶεpῶῶεὸῗῶ ὀῗῶ ῤῗεῖριτὸ.
- Ἄεὸῤῗεᾶῗ ὀῗῶ ἀίῶῖεPδ make world ἰῤῥᾶ οἷᾶ δᾶνέαῤῗεῖρι chroot.
- ἰᾶὀᾶᾶεpῶῶεὸῗῶ οῦἰ ᾶεὸᾶῖῤῥῶἰ δῖῶ ᾶβῖᾶε ὀ÷ᾶὀέέῤ ἰᾶ οἱ ὀῤῥῶῗῖᾶ Kerberos.
- ἰᾶὀᾶᾶεpῶῶεὸῗῶ οἷῶ δῶñPἰᾶ GENERIC.
- Ἀῗῖεἰῶñᾶβὰ ᾶἰῦδ ὀᾶέεῖῤ ἑᾶὸἀεῦαῖῶ ὀῶἱ ἰῶἱβῖ ἐᾶ ἰᾶὀᾶᾶεῦὀῶεὸῗῖᾶ ἐᾶέ ἐᾶ ᾶῶῖῗῗᾶὀῶῖᾶ ἰέ ᾶεὸᾶῖῤῥῶἰ ἰñῶῤῥῶ οῦἰ ὀᾶέέeῖῖ δᾶῖῤῥῶἰ.
- ἰᾶὀᾶᾶεpῶῶεὸῗῶ ἐᾶέ ᾶᾶῖᾶῤῥῶᾶῗ οῦἰ ᾶñᾶᾶῖᾶβῦ δῖῶ ÷ñᾶῖῤῗῖᾶᾶῖ ᾶέα ὀῗῖ δñᾶῶἰῖῖᾶᾶῖ ὀῗῶ ῤῗεῖριτὸ ἐᾶέ ὀῗ ἰᾶὀᾶᾶñῖῶP ὀῗῶ δᾶῖῖῗñβῦῶῗῶ ἀδῦ οἱ δῗᾶᾶβῖ ἐpᾶέέα (SGML) οᾶ html ἐᾶέ ᾶñ÷ᾶᾶ ἐᾶῖῤῥῶ δῖῶ ἐᾶ ὀῶἱᾶῖῥῖῶ ὀῗῖ ῤῗεῖριτὸ.
- ἰᾶὀᾶᾶñῖῶP ἐᾶέ ᾶᾶῖᾶῤῥῶᾶῗ ὀῗῶ δᾶῖῖῗñβῦῶῗῶ (ᾶᾶ÷ᾶῖñβᾶέα ÷ñPῶῗῶ, ᾶῖῶᾶᾶᾶῖᾶῖῤ ῗᾶβἰᾶἰᾶ, ὀῗᾶῖpῶᾶὸ ῤῗεῖριτὸ, ῖPῶᾶὀ ὀῶἰᾶὀῦῗῶὀᾶὀ δῖῖῖῖῖ. ῗῖῖ.)

- Îāôāāēpôôéôç òùí “ôôîðēāôîŸîŭ” (crunched) āēôāēŸôēîŭî ðîō ēā ÷ ñçôēîîðîēçēîŷî óôēð āēôēŸôôāð āāēāôŪôôáôçð.
- Āçîēîññāā òùí ðāēŸôŭî ôçð āāēāôŪôôáôçð ēāē òùí ðāēŸôŭî ðçāāîō ēpāēēā.
- Āçîēîññāā òùí îŸôŭî āēēîçôçð ēāē ôçð āēôēŸôôāð “fixit”.
- Āçîēîññāā ôçð ēāñāñ÷âāð ēāôāēüāŭî āēā ôçî āāēāôŪôôáôç îŸôŭî FTP.
- (ðñîîēñāôēēŪ) Āçîēîññāā òùí ISO āñ÷āâŭî āēā îŸôā CDROM/DVD media.

Āēā ðāñēóóüðāñāð ðēçñîîññāð ó÷āôēēŪ îā ôçî āēāēēāôāā āçîēîññāāð îēāð Ÿēāîôçð, āāðā ôçî óāēâāā ôāēîçññâôçð release(7).

### 3.2 Îāôāāēpôôéôç òùí XFree86

Ôî āñāôēēü ðāñēāŪēēîŷ **XFree86** āñîāē Ÿîā ôçîāîôēēü ēñîŪôē ēŪēā Ÿēāîôçð āēā ðîēēîŷð ÷ ñpôôāð ðîō ēŸēîŷî ôî FreeBSD āēā ôôāēîŷð āñāôāð. Ðñēî ôçî Ÿēāîôç 4.6-RELEASE ôîō FreeBSD, îē āðâôçîāð āēāüôāēð ôîō FreeBSD ÷ ñçôēîîðîēîŷîāî ôçî Ÿēāîôç 3.x òùí **XFree86**. Ī ðēî āŷēîēîð ðñŭðîð îā îāôāēüðôôâôāð āôðŸð ôēð āēāüôāēð āñîāē îā ÷ ñçôēîîðîēîŷîāî ôî ðñŭāñāîîā `src/release/scripts/X11/build_x.sh`. Áôôü ôî ðñŭāñāîîā āðāēðāñ îā āñîāē ðāç ôôçîŸîā ôôî óŷôôçîŪ óāð ôüôî ôî ðāñēāŪēēîŷ XFree86 üôî ēāē ç āēpôôā Tcl/Tk. ÎāôŪ ôçî îāôāāēpôôéôç òùí ēāðŪēēçēŭî X servers, ôî ðñŭāñāîîā ēā ðāēāðŪñāē üēā ôā āñ÷āâā ôā ôðēēîāŸð āñ÷āâŭî ðîō ðāñēîŸîāē îā āñāē ôî `sysinstall(8)` îŸôā ôôîŷ ēāðŪēîāîŷ XF86336 ôôî îŸôî āāēāôŪôôáôçð.

Îāēēîŷîāð îā ôçî Ÿēāîôç 4.6-RELEASE ôîō FreeBSD, ôî `sysinstall(8)` āāēāēôôŪ ôçî Ÿēāîôç 4.x òùí XFree86, óāî ēāñîēēŪ ðāēŸôā. ÁôðŪ îðîñāñ îā āñîāē āðā ôā ðāēŸôā ðîō āçîēîŷñāçôā ôî cluster òùí ports ð îðîēāāðîôā Ūēēā ðāēŸôā ðîō Ÿ÷îî āçîēîññāçēāñ āðŭ Ÿîā ports tree îā ôçî ēāðŪēēçç āôēēŸôā.

**Ôçîāâüôç:** Āñîāē ðîēŷ ôçîāîôēēü îā āôāēñŸôôāð āðŭ ôî āñ÷āâî /etc/make.conf îðîēāôāððîôā ôîðēēŸô ñôēîðôāēð Ÿ÷āôā ēŪîāē. Āēā ðāñŪāāēāîā, āāî āñîāē ēāēp ēāŸā îā āēāîŸîāðā āēôāēŸôēîā ðîō Ÿ÷îî îāôāāēüðôôēôāñ ôā ēŪðîēî ôôāēāēñēîŸîŷ óŷôôçîā îā îñēôîŸîç ôçî ôēîp ôçð îāôāāēçððð CPUTYPE āēā āāēôēôîðîðçôç òùí āēôāēŸôēîŷî āēā ēŪðîēî ôôāēāēñēîŸîŷ āðāîñāāôð.

### 3.3 ÐñîññŪîîāôā Ōñâôŭî (“ports”)

Ç Óôēēîāp òùí Ports ôîō FreeBSD (<http://www.FreeBSD.org/ports>) āñîāē îēā ôôēēîāp îā ðāñēóóüðāñā āðŭ 23,000 ðñîññŪîîāôā āðŭ ðñâðîðð, ðîō āñîāē āēāēŸôēîā āēā FreeBSD. Īē Ports Management Team <[portmgr@FreeBSD.org](mailto:portmgr@FreeBSD.org)> āñîāē ôðāŷððîēē āēā ôçî óôîðpñçôç āñŭð āŸîôñîō āðŭ ðçāāîî ēpāēēā āēā ôā ports, ðîō îðîñāñ îā ÷ ñçôēîîðîēçēāñ āēā îā āçîēîññāçēîŷîā ðāēŸôā îā ôā ðñîññŪîîāôā ðîō óðñāŷîŷî ôēð āðâôçîāð āēāüôāēð ôîō FreeBSD.

Ç āēāāēēāôāā ôôîðpñçôçð ôçð ôðēēîāpð òùí ports āñîāē ēŪôē ðîō āāî îðîñîŷîā îā ēāēŷðîðîā āāp. îā îā÷ññēóðŭ Ūñēñî, îā ôðôēî Ç ÎñāŪîúôç ēāîôçð òùí ÐāēŸôŭî Ēîāēôîēēŷ āðŭ Ōñâðîðð (./releng-packages/article.html), ēāēŷððāē āôðŭ ôî ēŸîā.

### 3.4 Āñ÷āâā ISO ôçð ēāîôçð

Îāēēîŷîāð îā ôçî Ÿēāîôç 4.4 ôîō FreeBSD, ç ñŪāā ÁîŪðððîçð ôîō FreeBSD āðîŷôēôā îā āēāîŸîāē ēāē ôā ôŸôôāñā ISO āñ÷āâā ðîō ðñpôā ðîōēîŷîāî îē āôāēñāñāð *BSDi/Wind River Systems/FreeBSD Mall* ôôēð “āðâôçîāð” āēāmŸð CDROM ðîō Ÿēāîāî. ĒŪēā Ÿîā āðŭ ôā ôŸôôāñā ISO āñ÷āâā ðñŸðāē îā ðāñēŸ÷āē Ÿîā āñ÷āâî README.TXT ðîō

ðǻñéǻñŨóǻé óǻ ðǻñéǻ ÷ ùǻǻǻ òĩō ǻßóèĩō, êé Ýǻǻ ǻñ ÷ ǻßĩ CDROM. INF ðĩō ðǻñéÝ ÷ ǻé ïǻóǻ-ðéçñĩōĩñßǻð ǻéǻ íǻ ïðĩñǻß òĩ ðñüǻñǻǻĩǻ sysinstall(8) íǻ ǻéÝǻñǻé êǻé íǻ ÷ ñçóéĩðĩéßóǻé ǻóòü òĩ ǻßóèĩ, êǻèß òé Ýǻǻ ǻñ ÷ ǻßĩ filename.txt ðĩō ðǻñÝ ÷ ǻé íéǻ èßóóǻ ǻñ ÷ ǻßüĩ òĩō CDROM. Áóðß ç èßóóǻ ïðĩñǻß íǻ ǻçĩéĩñǻçèǻß ðĩéý ǻðéŨ, ùò ǻĩßð:

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

Íé óðǻéǻèñéĩÝǻð ǻðǻéóßóǻéð ǻéǻ èŨèǻ Ýǻǻ ǻðü ǻóòŨ óǻ CD ðǻñéǻñŨóĩíóǻé ðǻñǻéŨòü:

### 3.4.1 Ǻßóèĩò 1

Í ðñßòĩð ǻßóèĩð ǻßǻéé ó ÷ ǻǻüĩ ǻðĩééǻéóóééŨ ǻðĩðÝéǻóĩǻ òçð ǻĩóĩéßð make release. Íé ïüǻð ǻééǻǻÝð ðĩō ðñÝðǻé íǻ ǻßĩĩĩ òóĩĩ éǻòŨéĩǻĩ disc1 ǻßǻéé ç ðñĩóèßéç òĩō éǻòŨéĩǻĩò tools, òüĩ XFree86, êǻé üóĩ òĩ ǻóĩǻóüĩ ðǻñéóóüðǻñüĩ ðǻéÝòüĩ ïðĩñĩý íǻ ÷ ùñÝóĩĩ òóĩ ǻßóèĩ. Í éǻòŨéĩǻĩò tools ðǻñéÝ ÷ ǻé ǻñǻǻéǻǻá ðĩō ǻðéòñÝðĩĩ óǻ ÷ ñßóóǻð Ũéèüĩ éǻéòĩñǻéèßĩ óóóççĩŨòüĩ íǻ òóéŨĩĩĩ òéð ǻéóéÝóóǻð ǻéèßĩçóçð. Áóòüð ï ðñßòĩð ǻßóèĩð ðñÝðǻé íǻ òóéŨ ÷ íǻóǻé bootable Ýóóé ðóóǻ íǻ ïðĩñĩý íé ÷ ñßóóǻð òüĩ ïüðÝñüĩ òðĩéĩǻéóóßĩ íǻ ǻðĩòǻýǻĩ òĩ óòŨǻéĩ ǻçĩéĩñǻßǻð òüĩ ǻéóéǻóóßĩ ǻéèßĩçóçð.

Ǻĩ íéǻ ǻéǻóĩñǻðéèß Ýéǻĩóç òüĩ XFree86 éǻ ǻéǻĩÝǻóǻé ïǻ òçĩ Ýéǻĩóç ǻóòß, ðñÝðǻé íǻ ǻçĩǻñüèǻß òĩ ðñüǻñǻǻĩǻ sysinstall(8) ǻéǻ òçĩ íÝǻ èÝóç êǻé íé ïǻçǻßǻð ǻǻéǻòŨóóǻóçð. Í ó ÷ ǻðéèüð èßǻééǻð òðŨñ ÷ ǻé óóĩĩ éǻòŨéĩǻĩ src/release/sysinstall òóĩĩ -STABLE èĩñü ð óóĩĩ éǻòŨéĩǻĩ src/usr.sbin/sysinstall òóĩĩ -CURRENT èĩñü. ÓðǻéǻèñéĩÝǻǻ, óǻ ǻñ ÷ ǻßǻ dist.c, menus.c, êǻé config.c éǻ ÷ ñǻéǻóóǻß íǻ ǻçĩǻñüèĩýĩ.

### 3.4.2 Ǻßóèĩò 2

Í ǻǻýðǻñĩð ǻßóèĩð ǻßǻéé ǻðßóçð ǻðĩðÝéǻóĩǻ òçð ǻĩóĩéßð make release éǻòŨ Ýǻǻ ïǻǻŨéĩ ïÝñĩð. Áóòüð ï ǻßóèĩð ðǻñéÝ ÷ ǻé Ýǻǻ “live filesystem” ðĩō ïðĩñǻß íǻ ÷ ñçóéĩĩðĩéçèǻß ǻðü òĩ sysinstall(8) ǻéǻ íǻ ǻĩǻóǻóóĩýĩ ðñĩǻéßĩǻóǻ óǻ íéǻ ǻǻéǻòŨóóǻóç òĩō FreeBSD. Èé ǻóòüð ï ǻßóèĩð ðñÝðǻé íǻ ǻßǻéé bootable. Èǻ ðñÝðǻé ǻðßóçð íǻ ðǻñéÝ ÷ ǻé Ýǻǻ óóĩðéǻóĩÝĩĩ ǻĩóßǻñǻóĩ òĩō CVS repository óóĩĩ éǻòŨéĩǻĩ CVSROOT êǻé ǻǻßǻĩǻóǻ ǻðü ǻĩðĩñééŨ ðñĩǻñŨĩǻóǻ óóĩĩ éǻòŨéĩǻĩ commerce.

### 3.4.3 Ǻßóèĩé 3 êǻé 4

Íé òðüéĩéðĩé ǻòĩ ǻßóèĩé ðǻñéÝ ÷ ïĩĩ ǻðéðñüóéǻóǻ ðǻéÝóǻ éĩǻéóĩééĩý ǻéǻ òĩ FreeBSD. Óǻ ðǻéÝóǻ éǻ ðñÝðǻé íǻ ǻßǻé ñǻǻĩðĩéçĩÝǻǻ, Ýóóé ðóóǻ èŨèǻ ðǻéÝòĩ íǻ ǻßǻéé óóĩĩ ðǻéĩ ǻßóèĩ ïǻ üéǻ óǻ ðǻéÝóǻ ǻðü óǻ ïðĩßǻ ǻĩǻñòŨóǻé ǻéǻ íǻ ǻǻéǻóóóǻéǻ êǻé íǻ òñÝĩǻé. ðǻñéóóüðǻñǻð ðéçñĩōĩñßǻð ǻéǻ òçĩ ǻçĩéĩñǻßǻ ǻóòßĩ òüĩ ǻßóèüĩ ǻĩǻóÝñĩĩóǻé óóĩĩ Ũñèñĩ Ç ÎñǻŨñóç éǻĩóçð òüĩ ðǻéÝòüĩ Éĩǻéóĩééĩý ǻðü Òñßòĩòð (../releng-packages/article.html).

## 4 Ǻéǻĩñß òüĩ Áêüüóǻùĩ

### 4.1 ǺĩððçñǻðçðÝð FTP

¼óǻĩ ç Ýéǻĩóç ǻßǻéé Ýóĩéĩç, Ý ÷ ǻé ǻĩééĩǻóóǻß ǻéòǻĩßð, êǻé Ý ÷ ǻé ðǻéǻóǻñéóóǻß ǻéǻ ǻéǻĩñß, ï éýñéĩð FTP ǻĩððçñǻðçðð ðñÝðǻé íǻ ǻçĩǻñüèǻß. Íé ǻðßóçĩé ǻĩððçñǻðçðÝð FTP òĩō FreeBSD ǻßǻéé üéé mirrors ǻĩüð éýñéĩð ǻĩððçñǻðçðß óóĩĩ ïðĩßĩ Ý ÷ ïĩĩ ðñüóǻǻóç ïüĩ Ũééé FTP ǻĩððçñǻðçðÝð. Áóòüð ï ǻĩððçñǻðçðð ǻßǻéé ǻĩüóòüð ùò ftp-master. ¼óǻĩ ç Ýéǻĩóç ǻßǻéé Ýóĩéĩç, ðñÝðǻé íǻ ǻçĩǻñüèĩýĩ óǻ ðǻñǻéŨòü ǻñ ÷ ǻßǻ óóĩĩ ftp-master:





## 5.1 ĀçîēîōñāāĀ ĐñîóáñîîóíŸíuî ĀéóēāôôĀ ĀēēĬîççò.

ĐîēēŸò āāēāóáóôŪóāēò Ÿ÷îōî đîēýđēîēāò áđāēôĀóāēò đîō îđîñāĬ íā ôç óāēñŪ òîōđ íā áđāēôîŸí ôçî đñîóēĬēç đāñéóóúôāñuî îāçāĬ Ā āñāāēāĬuî ÷ñĀóôç óóēò āéóēŸôôāđ āāēāôŪóóáóçò. Ĭ “îđāēŪēēēîō” òñuđîō íā òî ēŪíāôā áôôu āĬíāē íā ēŪíāôā ôēò āēēāāŸò óāò óôîî ēāôŪēîāî đîō Ÿ÷āē āôîēîŪóāē îāôŪ òî ôŸēîō ôçò ç āēāāēēāóĀā make release:

- ĐāñŪóôā óā patches óāò Ā đñîóēŸóôā óā āđēđēŸîî āñ÷āĬ íŸóā óôîî ēāôŪēîāî chroot ôçò Ÿēāîôçò.
- `rm ${CHROOTDIR}/usr/obj/usr/src/release/release.[59]`
- Îāôāēüôôđóôā đŪēē òî sysinstall(8), òîî đôñĬíā, Ā üđîēā Ūēēā đñîāñŪîāóā Ÿ÷îōî āđçñāāóóāā áđü ôēò āēēāāŸò óāò.
- `chroot ${CHROOTDIR} ./mk floppies`

Ĭē îŸāò āéóēŸôôāđ āāēāôŪóóáóçò ēā āçîēîōñāçēîŸí óôîî ēāôŪēîāî \${CHROOTDIR}/R/stage/floppies.

ĀíāēēāēôēēŪ, îđîñāĬôā íā ÷ñçóēîîđîēĬóāôā òî make target boot.flp, Ā îđîñāĬôā íā òñŸíāôā áđāôēāĬāò òî script òî āçîēîōñāāĬ óā óôôôĬíāóā āñ÷āĬuî src/release/scripts/doFS.sh.

ÎđîñāĬôā āđĬóçò íā ēāñîĬóāôā Ĭóôā āēēŸò óāò āēēāāŸò íā đāñāóôîŸí îā îñôĀ patch óôçî Ÿēāîôç üđüò ēā ôôēŪ÷îāóāē, āĬñîîóāò ôēĬĀ óôçî îāôāāēçôĀ LOCAL\_PATCH üôāî òñŸíāôā ôçî āîôîēĀ make release.

## 5.2 ĐñîāñāîîāôĬæîîóāò òî sysinstall

Ōî āñāāēāĬî āāēāôŪóóáóçò ēāē ñŸēîôçò òîō FreeBSD, òî sysinstall(8), îđîñāĬ íā đñîāñāîîāôēóôāā āēā íā ēŪíāē đēî āŸēîēāò ôēò áôôñîāôîđîēçîŸíāò āāēāóáóôŪóāēò óā đîēēŪ ìç÷āĬíāóā. Áôôu òî ÷āñāēôçñēóóôēu òîō đñîāñŪîîāôîō îđîñāĬ íā ÷ñçóēîîđîēçēāĬ óā óôîāôáóîu îā òî PXE[13] ôçò Intel āēā íā îāēēîĬóāē ç āāēāôŪóóáóçò áđü òî āĬēôôî, Ā óā óôîāôáóîu îā đñîóáñîîóíŸíāò āéóēŸôôāđ āēēĬîççò ēē Ÿíā sysinstall script. Íā đāñŪāāēāîā áđü ôŸôîēî sysinstall script îđîñāĬôā íā āñāĬôā óôî āñ÷āĬî src/release/sysinstall/install.cfg.

## 6 ÎāēĬíāóā òîō ĐĬñāîā áđü ôçî êäîôç 4.4 òîō FreeBSD

Ç āēāāēēāóĀā āôîēîāóĬāò ôçò Ÿēāîôçò 4.4 òîō FreeBSD îāēĬîçóā āđĬóçîā ôçî Ĭç ÁôāîŸóôîō 2001. ÎāôŪ áđü áôôĀ ôçî çîāññîçîĬā, üēāò îē āēēāāŸò óôîî ēîñîü RELENG\_4 òîō FreeBSD Ÿđñāđā íā Ÿ÷îōî Ÿāēñēóç áđü ôçî Release Engineering Team <re@FreeBSD.org>. Ç đñĬôç āîēēîāóôēēĀ Ÿēāîôç āēā ôçî āñ÷ēôāēôîîēēĀ x86 Ÿāēîā āēāēŸóēîç óóēò 16 ÁôāîŸóôîō, ēē āēîēîōēĬēēā áđü 4 āēüîā āîēēîāóôēēŸò āēāüóāēò đîō îāĬāçóāî óôçî ôāēēēĀ Ÿēāîôç óóēò 18 òîō ÓāđôŸîāñç. Ĭ ôđāŸēôñô áóôŪēāēāò Ÿđāēîā ôçîāîôēēü ñüēî ēāôŪ ôçî āēŪñēāēā ôçò ôāēāôôāĬāò āāāñŪāāò ēāēĬò ēŪđîēā đñîāēĬíāóā áóôŪēāēāò āñŸēçēāî óā đñîçāîŸîāîāò, āîēēîāóôēēŸò āēāüóāēò. ÓôñîēēēŪ, đŪîü áđü 500 email óôŪēēçēāî ôçî Release Engineering Team <re@FreeBSD.org> óā āēŪóôçîā îēēñüôāñî áđü Ÿíā îĬíā.

Ç ēîēîüôçôā òùî ÷ñçóôĬ íāò Ÿēāîā óāôŸò üôē ç áóôŪēāēā ēāē ç óôāēāñüôçôā îēāò Ÿēāîôçò āāî ēŪ 'đñāđā íā ēôôēŪæāóāē āēā ēāíāüò āĬāüôð đñîēāóîĬāò Ā çîāññîçîĬāò đîō Ÿ÷îōî ôāēāĬ óāî óôü÷îē áđü đñēî. Ōî FreeBSD Ÿ÷āē îāāāēĬóāē āñāîāôēēŪ ēāôŪ ôç āēŪñēāēā ôçò æüĬð òîō óāî óŸóóçîā, ēāē ç áíŪāēç āēā óôāēāēñēîŸîç đîēēôēēĀ ēāē îñāŪîüôç āēā ôçî āçîēîōñāāā îŸüî āēāüóāüî āĬíāē đēŸîî óāíāñĀ đāñéóóúôāñî áđü đîōŸ. ÁôôĀ ç áíŪāēç ēā āĬíāē āēüîā đēî ôçîāîôēēĀ ēāēĬò òî FreeBSD ēā āñ÷āĬāē íā îāóāŸŸñāóāē óā îŸāò đēāóôüñîāò.

## 7 ÎáëïïôééÝò Êáôáðëýíóáèò

Ãßíáé æüðééðò óçíáóßáð ïé ðñáéðééÝò éáé ç ïñÃÛîóç òçð ðéááééáóßáð äçíéíðñáð òùí Æêüüóàùí íáð íá óðíááßæíðí íá òçí óðíá÷ð ðóíáíùíáíç áÛóç òùí ÷ñçóðíí íáð. Ìá áÛóç áððð òç óéÝðç ðñááæííáóðá ðéççñÛ áéá íá ðáèíçñéðóíðíá òçí ðéááééáóßá ðáñááùðò òùí Æêüüóàùí òîõ FreeBSD.

- *ÐáñÛëçççç áððÝéáðç* - ÌáñééÛ ïÝñç òçð ïáðáæððððéóçð ïéáð ðáéáðÛððáóçð ïðñíýí íá ðñíðí “ðñéý ðáñÛëçççá”. Õá ðéí ðñééÛ áðü ðá óðÛáéá áßíáé I/O intensive, ïðüðá ç ýðáñíç ðñééðí ððçððð-ðá÷ýðçðáð ðßðéùí áßíáé ðéí óçíáíðééð áðü òçíí ÷ñðç ðñééðí áðáíáñááóðíí áéá íá áðéðá÷ðíéáß éÛðüð ç ðéááééáóßá ðîð make release. Áí ðéáóñíáðééß ðßðéíé ÷ñçóéíðñéççýíí áéá ðíðíáðá òçð éáñáñ÷ðð ðîð chroot(2) ðáñéáÛëçíððò, ðüðá ðí CVS checkout òùí éáðáéüüí ports éáé doc ïðñáß íá áßíáé ðáððü÷ñííá íá òçí áñðíðð make world ððíÛ Ûëéí ðßðéí. ×ñçóéíðñéçççç ïéá RAID éýóç (hardware ð software) ïðñáß íá ïáéðóáé ðñáóðééÛ ðñí óðñééü ÷ññí ðîð ÷ñáéÛáðáé íá ïáðáæüðððéóçð ïéá ðéðñçð Ýéáðç.
- *Ïáðáæððððéóç ðéüüóàùí áéá ðéáóñíáðééÝò áñ÷éðáðñééÝò* - ÈÝéáðá íá ïáðáæüðððáðá ïéá Ýéáðç áéá IA-64 ð Alpha ðá éÛðéíí x86 áðáíáñááðð? make TARGET=ia64 release.
- *ÃñééíÝð áéá éÛç* - ×ñáéáæííáóðá éáéýðáñá ðñááéáßá áéá áððüíáðí Ýéáá÷ñ ïñëüðçðáð ððí FreeBSD.
- *Ãñááéáßá ÆáéáðÛððáóçð* - Õñ ðñüáñáñÛ íáð áéá òçí ðáéáðÛððáóç ðîð FreeBSD Ý÷áé ïáðáñÛðáé ðñí ðñéçý ðñí áíáíáñíáñ ÷ññí æüðò ðîð. ÕðÛñ÷ðíí áéÛðñáð ïñÛáð ðîð ðñáÛéíðáé áéá íá ðéíðñéðóíðí éÛðéíí Ûëéí, ðéí ïñðÝññí ïç÷áíéðü ðáéáðÛððáóçð. Ìéá áðü ðéð ðéí ððíð÷áíáð, áßíáé ç ïñáá libh[5] ðîð ððí÷áéáé òçí ðéíðñççççç áñüð Ýñðññò, ïÝò ðñüððò ðáéáðáñðóíáððò éñáéóíéçý éáé áñüð GUI ðññáñÛñáððò ðáéáðÛððáóçð.

## 8 Æð÷áñéóðßáð

Èá ðéáéá íá áð÷áñéóððóù ðñí Jordan Hubbard, ðîð ïñ Ýäüóá òçí ððéáéñßá íá ðÛñü éÛðéíá áðü òçí áðéýíç òçð Ýéáðçð 4.4 ðîð FreeBSD, éáðð éáé áéá ïéç òçí ðñééáéÛ ðîð Ý÷áé éÛíáé áðð éáé ÷ññéá áéá íá áßíáé ðí FreeBSD áððü ðîð áßíáé óðíáñá. ÕðéééÛ, ç Ýéáðçç ááí éá ðáíí ðñðÝ äðíáðüí íá ïéíéççñüéáß ÷ññð ïéç òçí ó÷áðééð ïá òçí Ýéáðçç ðñééáéÛ ðîð Ýéáíáí ïé 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> éáé ïéíé ïé ððüéíéðñé ðîð áð÷áñéýíðáé ïá òçí áñÛðððíç ðîð FreeBSD. ÈÝëü áðßçðð íá áð÷áñéóððóù ðñðð Rodney Grimes <rgrimes@FreeBSD.org>, Poul-Henning Kamp <phk@FreeBSD.org>, éáé ïéíðð ðñðð Ûëéíðð ðñð ðñáÛðççáí áéá íá ððéÛññí ðá ðñááéáßá áéá ðéð ðéüüóáéð ððéð ðñððáð ïÝñáð òçð äçíéíðñáð ðñð FreeBSD. Áððü ðñ Ûñéñí Ý÷áé áðçñááóðáß áðü éáßíáíá ó÷áðééÛ ïá òçí ïñÃÛîóç òùí Æêüüóàùí áðü ðñ CSRG[14], òçí ïñáá ðñ NetBSD[11], éáé òçí ðñüðáóç áéá íéá ðéááééáóßá ïñÃÛîóçð òùí Æêüüóàùí ðñð John Baldwin[12].

## 9 ÁíáðñÝò

[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](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](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](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](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>)