

Ç ĩñãŨíùóç ôùí Âêäüóãùí ôĩõ FreeBSD

Murray Stokely

murray@FreeBSD.org

\$FreeBSD: doc/el_GR.ISO8859-7/articles/releng/article.sgml,v 1.8 2008/12/08
03:10:52 keramida Exp \$

Άδου οĩ Ũñēñĩ δāñēāñŨōāē ôçĩ áíôēíāôþðēóç ēāē ĩñãŨíùóç ôçð ñŨāāð áíŨððôĩçð ôĩõ FreeBSD, ũóĩí áôĩñŨ óôçĩ ðñĩāôĩēíāóßā ðĩēĩôēēþĩ āēäüóãùí ôĩõ ÊāēôĩõñāēēĩŨ Óðóðßĩāôĩõ FreeBSD. Âĩçāāß ĩā ēāððñŨŨñāēā ôçĩ ĩāēĩāĩēĩāßā ðĩõ ÷ñçóēĩĩðĩēāßōāē āēā ôēð āðßôçĩāð āēäüóãēð ôĩõ FreeBSD ēāē δāñēāñŨōāē óā āñāāēāßā ðĩõ āßĩāē āēāēŨóēĩā óā ũóĩõð āĩāēāōŨñĩôāē ĩā ðāñŨāĩôĩ ðāñāĩāðñĩðĩēçĩŨĩāð āēäüóãēð ôĩõ FreeBSD āēā āóũðāñēēþ ð āĩðĩñēēþ ÷ñþôç ēāē áíŨððôĩç ðñĩũĩĩôũĩ.

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1 Άέόάãũāþ

Ç áíŨððôĩç ôĩõ FreeBSD āßĩāē ĩēā ðĩēŨ āñē÷ðþ āēāāēēāóßā. Ôĩ FreeBSD áðĩôāēāßōāē áðũ óôĩāēóôĩñŨð ÷ēēēŨāũĩ áĩēñþðũĩ áðũ ũēĩ ôĩĩ ēũóĩĩ. Ç ñŨāā ôĩõ FreeBSD ðāñŨŨ ÷āē ðñũóāāóç ĩŨóũ áĩþĩôĩĩõ CVS[1] óā ũēĩõð, Ũóóē þóðā ĩā ĩðĩñāß ũðĩēĩõ ēŨēāē ĩā āāē ĩçĩŨĩāóā log, āēāōĩñŨŨð (patches) ðĩõ ŨŨ ÷ĩôĩ óā āēŨōĩñā development branches, ēāē Ũēēā ÷āñāēðçñēóðēēŨ ðĩõ āĩçēĩŨŨĩ ôçĩ áíŨððôĩç, óā ĩðĩßā ðñĩēŨððĩôĩ áðũ ôçĩ ÷ñþôç āĩũð áððôçñĩŨ óðóðßĩāôĩõ āēā÷āßñēóðð ēþāēēā. Áðũ āðĩôŨēāōā ēāē ôĩĩ ðēĩ ôçĩāĩôēēũ ðāñŨāĩĩôā Ũēĩçð āēā Ũĩā ĩāāŨēĩ āñēēũ áðũ ôāēāĩôĩŨŨ ÷ĩõ ðñĩāñāĩāðēóðŨð áðũ ũēĩ ôĩĩ ēũóĩĩ óôĩ FreeBSD. Áßĩāē ðñĩôāĩŨð, āŨāāēā, ðũð ðĩēŨ óŨĩôñā ēā āß÷ā āßĩāē áĩôāēþð ÷āĩôēēþ ç ēāðŨóðāóç áĩ āß÷āĩ ũēĩē, áðũ ũēĩ ôĩĩ ēũóĩĩ, ðñũóāāóç ĩā āñŨøĩôĩ óôĩ ēþāēēā. Äē’ áðũ, ĩũĩ ĩēā “āðēēāñŨŨŨŨŨ” ñŨāā áðũ ðāñßðĩõ 300 Ũōñā ŨŨ ÷ĩôĩ ðñũóāāóç ĩā āñŨøĩôĩ óôĩ CVS repository. Áðôĩß ĩē committers[6] āßĩāē ððāŨēðñēē āēā ôĩ ĩāāāēŨōāñĩ ĩŨñĩô ôçð áíŨððôĩçðð ðĩõ āßĩāôāē óôĩ FreeBSD. ĩēā

òtō ēpāēēā iēāō āiēēiāōiŸiç ðēēāāpð ððū òiī -CURRENT ðāēñāiāōēēü ēiñiū áfŪððōiç ððiī ððāēāñi -STABLE ēiñiū.

2.1 Ğāā÷iō Ēpāēēā

ŌñēŪiōā çŸiñāð ðñēi ðçŸi áíāiāfuiāiç çìāññçŸiā Ÿēāiōçð, i ēpāēēāð òiō repository áēóŸñ÷āðāē óā iēā ðāñβŸiāi “ēāēðóðŸñçóçð”. ĒāðŪ ðç āēŪñēāēā āððð ðçð ðāñēüāið, üēāð iē āēēāāŸð ððiī -STABLE ēiñiū ðñŸðāē iā Ÿ÷iōi ðçŸi Ÿāēñēóç ðçð Release Engineering Team <re@FreeBSD.org>. Īē āēēāāŸð ðiō āðēōñŸðñiōāē óā āððð ðçŸi ðāñβŸiāi ðiō āēāñēāβ 15 çŸiñāð āβiāē:

- Āēiñēpðāēð āfūððŸŸi ðñiāēçŸiŪðuī.
- Āiçìāñpðāēð ððçŸi ðāēiçñβùóç.
- ĀēēāāŸð ó÷āðēēŸð iā ðçŸi áóðŪēāēā.
- ĪēēñŸð āēēāāŸð ððiōð iāçāiŸð ððóēēāðŸŸi, üðuð ð÷. ç ðñiōēðēç ðuī IDs iŸŸiī ððóēēāðŸŸi.
- ĪðŸēāāððiōā Ūēēç āēēāāβ ðēóðāŸāē ç ñŪāā áfŪðððōiçð üðē ðñŸðāē iā āβiāē, iā òi áíāiāfuiāiñ ðŪiōā ñβōēi.

ĪāðŪ ðēð ðñpðāð 15 iŸñāð ēāēðóðŸñçóçð, ððēŪ÷iāðāē iēā *āiēēiāóðēēp Ÿēāiōç* āēā iā ÷ñçóēiñðŸēçēāβ óāi āiēēiβ ðçð ðāēēēpð Ÿēāiōçð ēāē i ēpāēēāð áēóŸñ÷āðāē óā iēā ðāñβŸiāi “ðāāpŸiāðtð”. ðēŸiī āβiāē ðŸēŸ ðēi āŸóēŸēi iā āβŸiōi iŸāð āēēāāŸð ðði ŸóŸóçŸiā, āēðuð ēē áf āēiñēpñŸi ēŪðŸŸēi ðŸēŸ ðiāāñi bugp ēŪðŸŸēi ðñuāēçŸiā áóðŪēāēāð. ĒāðŪ ðç āēŪñēāēā òiō ðāāpŸiāðtð òiō ēpāēēā, ðiðēŪ÷ēóðŸi iβā āiēēiāóðēēp Ÿēāiōç ððēŪ÷iāðāē ēŪēā āāāñŪāā, iŸ÷ñē iā āβiāē ŸðŸēiç ç ðāēēēp Ÿēāiōç. Ōēð çŸiñāð āēñēāpð ðñēi ðçŸi ðāēēēp Ÿēāiōç, ç ñŪāā ðiō āβiāē ððāŸēðŸç āēā ðēð āēāuðāēð āβiāē óā ððŸiā÷p āðēēŸēŸiŸiā iā ðçŸi ñŪāā áóðŪēāēāð, ðçŸi ñŪāā ððŸðpñçóçð ðçð ðāēiçñβùóçð, ēāē ðçŸi ñŪāā ððŸðpñçóçð ðuī ports, āēā iā āāāāēüēŸŸŸi ðuð üēā óā āðāñāβðçðā ēñŪðēā āēā iēā ðēpñç Ÿēāiōç āβiāē āēāēŸóēiā.

2.2 Ēβóóā ĀēŸā÷iō ðçð Ōāēēēpð ēāiōçð

¼ðuāi āñēāðŸð āiēēiāóðēēŸð āēāuðāēð Ÿ÷iōi āβiāē āēāēŸóēiāð, Ÿ÷iōi āiēēiāóðāβ āðū āñēāðu ēüðŸi ēāē üēā óā ðiāāñŪ ēŸŸiāóā Ÿ÷iōi áíāēðēāβ, ç ðāēēēp Ÿēāiōç iðññāβ iā āñ÷βóāē.

2.2.1 ĀçŸēiōñāβā òiō ĒiñiŸŸ ēāiōçð

¼ðuð ðāñēāñŪðāiā ððçŸi áēóāāuāp, iē ēiñiñβ RELENG_x_y āβiāē iēā ó÷āðēēŪ iŸŸiā ðñiōēðēç ððçŸi iāēŸŸēŸiāβā ðuī āēāuðāŸŸi iāð. Ōi ðñpðŸi āpŸiā ððçŸi āçŸēiōñāβā āððŸŸ òiō ēiñiŸŸ āβiāē iā āāāāēüēāβðā üðē āiðēāŸāðā iā ðçŸi ðāēāððāβā Ÿēāiōç òiō ðçāāβið ēpāēēā āðū òiī RELENG_x ēiñiū *āðū òiī iðŸŸi* ēā ððēŪiāðā òi iŸŸi ēiñiū.

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

Ōi āðūiāñi āpŸiā āβiāē iā āçŸēiōñāβāðāðā iēā *āðēēŸðā* (tag) ððŸi ðçŸiāβi āēēβŸiçóçð òiō ēiñiŸŸŸ, pððā iā iðññāβðā iā āāβðā ðēð āēāðŸñŸð iā ðçŸi āñ÷p òiō ēiñiŸŸ āŸēŸēā ððŸi iŸēēŸi iā òi CVS:

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

Ēāē ðuðā iðññāβðā iā āçŸēiōñāβāðāðā òi iŸŸi ēiñiū iā:

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

Όχιὰβὺός: *Ἰέ ἀθεέῃ Ὑδαῶ RELENG_* ἀβιάε ἀἀόιἀδὶ Ὑῖἀδ ἀέά ÷ ἡΠόϋ ἀδῦ οἶῖδὸ CVS-meisters ἐάέ ὄϋι ἡῪἀά οὐῖ ἀἔᾶῶόᾶῖ.*

Ἰ uniõ “*ἀδελφὸς*” ἀβιάς ι̃νι̃ε̃ρ̃α̃β̃α̃ ο̃ιο̃ CVS. Ὁ̃για̃βιάς Ἰ̃ιά ũm̃ã ο̃ιο̃ ἐ̃α̃ε̃ι̃ν̃β̃α̃ε̃ ι̃ε̃α̃ ο̃ο̃α̃ε̃ãẽñẽι̃ Ἰ̃ύ̃ς Ἰ̃ε̃ãĩõς ο̃ιο̃ ἐ̃p̃ãẽẽã ο̃ο̃ι̃ ÷ nũĩ. × ñç̃õẽĩũd̃ĩẽp̃ĩõãõ ἀδελφὸς ο̃ο̃ι̃ δ̃ç̃ããb̃ĩ ἐ̃p̃ãẽẽã ãr̃ç̃ẽŨĩã ũd̃ĩẽĩ õõẽŨĩãẽ ο̃ο̃ι̃ Ἰ̃Ỹẽẽĩ ãẽãũõãẽd̃ ο̃ιο̃ FreeBSD ἰ̃ã ãñb̃õẽãẽ ἐ̃ãẽ ἰ̃ã ÷ ñç̃õẽĩũd̃ĩẽãb̃ ãẽñẽãp̃õ ο̃ĩĩ B̃ãẽĩ ἐ̃p̃ãẽẽã ο̃ιο̃ ÷ ñç̃õẽĩũd̃ĩẽp̃ẽç̃ẽã ãẽã ο̃ẽd̃ ãδ̃b̃õç̃ĩãd̃ ãẽãũõãẽd̃ ο̃ç̃õ ἡ̃Ũããd̃ ο̃ĩõ FreeBSD.

2.2.2 ÁóîÛííîáò ôíí Áñéèü êäïóçò

Ἐνῆι ἰθαῖ ἡ ἀοέεΥόα, ἰαοάαεουοοεοοάβ ἑαῖ ἀοιείαοοάβ ἡ οάεεῆβ Υέαιόρ, ὃνΥθαῖ ἰά αῆῖῖόῖ αέεάαΥό οοά ὃαῖαεῆου
 ἁῖ÷άβ ἁῖ ἰά ὃαῖεΥ÷ῖόῖ ὀῖῖ οουοου ἁῖεῆῖ Υέαιόρὃ ἁῖ 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 äöäññīāP **sysinstall** ðñÝðäē äðßöçð íá áíçíāññēāß íā òñí òùòóù āñēēìù òùì ports éáē òī ÷pñī òīō āßöēīō ðīō äðäēòāßöáē áēá òçí ÓöēēīāP òùì Ports. ÁöðÝð íē ðēçñīññīñßāð òðŰñ÷īōí òóī āñ÷āßī
src/release/sysinstall/dist.c.

Áōīŷ iēēēçñùēāß ç ðñīāōīēīāóāß òçð íŷáð āðßóçīçð Ýēāīócð, ðñŷðāē íá áīçīāñþóāðā ìāñēēŨ āñ÷āßā āēá íá áīçīāñþóāðā òīī ēüōīī āēá òç íŷá Ýēāīóc 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 Āçīēīōñāßā òuì Āōēēāðī òçð ēāīōçð

¼ðāí ç òāēēēþ Ýēāīóc āßīāē ŷōīēīç, ç ðāñāēŨðū āīōīēþ ēā āçīēīōñāþóāē òçī āðēēŷðā `RELENG_4_8_0_RELEASE`.

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

İē ððāŷēðñē òçð Ōāēīçñßùòçð ēāē òuì Ports āßīāē āðōīß ðiō ðñŷðāē íá āçīēīōñāþóīōī òēð āðēēŷðāð `RELEASE_4_8_0` óðā ēāðŨēēçēā āŷīōñā ðçāāßiō ēþāēēā.

İāñēēŷð òīñŷð, ìðñāß íá ÷ñāēáóðāß íá āßīōī ēŨðīēāð āēēāāŷð òāēāðōāßā óðēāīþ *ìāðŨ* òçī òiðīēŷðçðç òuì āðēēāðī. ĀāīēēŨ, āāī āßīāē āŷōēīēī íá āßīāē ēŨðē òŷōīēī āōīŷ òī CVS āðēōñŷðāē íá ìāðāēēīþóāē ēŨðīēiō òēð āðēēŷðāð ìā āīōīēŷð ùððð `cvs tag -d tagname filename`. Āßīāē ðīēŷ óçīāíðēēü ùìðð āððŷð ïē āēēāāŷð òçð òāēāðōāßāð óðēāīþð íá óçīāēüēīŷ ìā òēð òuóðŷð āðēēŷðāð āēá òçī óðāēāēñēīŷīç Ýēāīóc. İē āðßóçīāð āēāüóāēð òiō FreeBSD ðñŷðāē íá āßīāē ðŨíðā āŷēīēī íá āíāðāñā÷ēīŷī. Ōiðēēŷð āēēāāŷð òōī ðāñēāŨēēīī òiō ìç÷āīēīŷ òuì āēāüóäüì āāī āðēōñŷðīðāē.

3 İāðāāēþðōēóç òçð ēāīōçð

İē “āēāüóāēð” òiō FreeBSD ìðñīŷī íá ìāðāāēüððēóðīŷī āðü ïðīēīāþðīðā ŷ÷āē ŷīá ó÷āðēēŨ āñþāñī ìç÷ŷīçīā ēāē ðñüóāáóç òōī repository òiō ðçāāßiō ēþāēēā. (¼ēīē ŷ÷iōī āððþ òç āðīāðüðçðā, āōīŷ ðāñŷ÷iōīā ðñüóāáóç ìŷðü āīþiðīiō CVS! Āāßðā òī Āā÷āēñßāēī òiō FreeBSD āēā ðāñēóóüðāñāð ēāððñŷñāēāð.) Ç ìüīç āēāēēþ āðāßðççç āßīāē íá ððŨñ÷āē ððīððþñēīç òōīī ððñþīā óāð āēá òçī óððēāðþ `vn(4)`. (Ōðī `-CURRENT`, āððþ ç óððēāðþ ŷ÷āē āíðēēāðāóðāēāß āðü òçī íŷá óððēāðþ āßóēiō āāóēōīŷñō óā ìþīç `md(4)`.) Áí ç óððēāðþ āāī āßīāē āíòüìāðüŷīç òðīī ððñþīā óāð, òüðā ì ēāðŨēēçēið ïāçāüð ēā òñðüñēāß āððüìāðā üðāí āēðāēāððāß ç āíðīēþ `vnconfig(8)` ēāðŨ òç āēŨñēāēā òçð òŨòçð òðīēīāóßāð òiō ìŷōiō āēēßīççð. ¼ēā ðā āñāāēāßā ðiō ÷ñāēŨæīiðāē āēá íá ìāðāāēüððßóāðā ìēā Ýēāīóc āßīāē āēāēŷðēīā óā ìññþþ ðçāāßiō ēþāēēā òðīī ēāðŨēēīāī `src/release`. ĀððŨ ðā āñāāēāßā ŷ÷iōī ùð óēīðü íá ðāñŷ÷iōī üðē ÷ñāēŨæīiðāē āēá íá ÷ðæīiðāē ïē āēāüóāēð òiō FreeBSD ìā ŷīá óōīāðþ ēāē óðāēāēñēīŷñ òñüðī. İēā ðēþñçð Ýēāīóc ìðñāß íá ìāðāāēüððēóðāß ÷ñçōēīīðīēþiðāð āððŨ ðā āñāāēāßā ìā ìēā ēāē ìüñ āíðīēþ, òðīðāñēēāìāññŷīçð ēāē òçð āçīēīōñāßāð āñüð ISO āñ÷āßiō ēāðŨēēçēī āēá íá ēāāß óā CDROM, ïē āēóēŷððāð āēēßīççð, ēāēþð ēāē ì ēāðŨēēçēið āāēāðŨóðāóçð ìŷðü FTP. Āððþ ç āíðīēþ āßīāē òððēēþ ç `make release`.

3.1 Ç āíðīēþ `make release`

Āēā íá ìāðāāēüððßóāðā āðēðð÷þð ìēā Ýēāīóc, ðñŷðāē ðñþðā íá ððŨñ÷iōī ðā ēāðŨēēçēā āñ÷āßā ìŷðā óðīī ēāðŨēēīāī `/usr/obj`. İðñāßðā íá ðā āçīēīōñāþóāðā āßðā ìā òçī āíðīēþ `make world` þ āðēŨ `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 ÷ ñçóéíðíéçéáß 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 èÝéáðá íá ìáðááëüðððáððá.

Áí ááí Ý÷-áðá ðáç ðñüóááóç ðá èÛðíéí ðíðéëü CVS repository ìá ðñí èðáééá ðîõ FreeBSD, ìðíáßðá ðÛíðá íá ððéÛíáðá 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 ìðíáßðá íá ÷ ñçóéíðíéçéáßðá áéá íá áíðéáñÛðáðá òí CVS repository ðîõ FreeBSD ðóí áéëü óáð ðíðéëü mirror.

Áí ðáñáëáßðáðá 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 ðíééÝð Ûëëáð ìáðááëçðÝð ðîõ ìðíñíý íá ÷ ñçóéíðíéçééý íá íá ðáñáíáðñíðíéçéáßðá òçí Ýêáîóç ðáð. Ìé ðéí ðíééÝð áðü áððÝð ðéð ìáðááëçðÝð ðáñéáñÛñíðáé ðóçí èíñðð ðîõ áñ÷-áßíð src/release/Makefile. Ç áêñéáðð áíðíë ðîõ ÷ ñçóéíðíéçéáß áéá íá ððéá÷-ðáß ç áðßóçç Ýêáîóç 4.7 ðîõ FreeBSD (x86 ðéáððüñíá) 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 ÷ ñçóéíðíéçéáßðáé áéá íá ìáðááëüðððáíðáé ìé áêüüóáéð ìðíáß íá ÷ ùñéóðáß ðá áñéáðÛ ìá÷-ùñéóðÛ ìáðáíý ðîõð áðíáðá.

- Äçíëíðñáß áñüð éáéáñíý ðáñéáÛëëíððð ðá íéá ìá÷-ùñéóðð éáñáñ÷-ßá éáðáëüüí ìá òçí áíðíëð “make installworld”.
- Áíáñüá ððü 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 éáðÛëíá /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 áêðáëÝóéñí ðîõ áßíáé ð÷-áðééÛ ìá òí óýóççíá Kerberos.
- Ìáðááëðððéóç ðîõ ððñðíá GENERIC.
- Äçíëíðñáß áñüð ðáéééñý éáðáëüüíð ðóñí ìðíßí èá ìáðááëüðððéóðíý éáé èá áðíèçéáððéñý ìé áêðáëÝóéñáð ìñðÝð ðñí ðáéééðí ðáéÝðñí.
- Ìáðááëðððéóç éáé ááéáðÛððáóç ðñí áñááéáßí ðîõ ÷ ñáéÛáñíðáé áéá òçí ðñíáðíéíáðá òçð Ýêáîóçð éáé òç ìáðáðñíðð òçð ðáêñññüóçð áðü òñí ðçááßíð èðáééá (SGML) ðá html éáé áñ÷-áßá éáéíÝñð ðîõ èá ðóñíáñýíðí òçí Ýêáîóçð.
- Ìáðáðñíðð éáé ááéáðÛððáóç òçð ðáêñññüóçð (áá÷-áéñßáéá ÷ ñððóç, áéóáñüáééÛ éáßíáíá, óçíáéðáéð Ýêáîóçð, èßðáð ððíááðððçðáðð ðéééñý, èèð.)

- ĩāóāāēpôôéoc òuĩ “òõĩðéáõĩŸĩũĩ” (crunched) āēôāēŸóēĩũĩ ðĩō éā ÷ ñçóēĩĩðĩēçēĩŸĩ óóēð āéóēŸôôāð āāēáðŨóóáocð.
- Āçĩēĩōñābā òuĩ ðāēŸôũĩ ôçð āāēáðŨóóáocð éāē òuĩ ðāēŸôũĩ ðçāābĩō ēpāēēā.
- Āçĩēĩōñābā òuĩ ĩŸôũĩ āēēbĩçóçð éāē ôçð āéóēŸôôāð “fixit”.
- Āçĩēĩōñābā ôçð éāñāñ÷bāð éāóāēüũĩ āēā ôçĩ āāēáðŨóóáoc ĩŸôũĩ FTP.
- (ðñĩíēñāôēēŸ) Āçĩēĩōñābā òuĩ ISO āñ÷ābũĩ āēā ĩŸóā CDROM/DVD media.

Āēā ðāñéóóũðāñāð ðēçñĩōĩñbāð ó÷āôēēŨ ĩā ôçĩ āēāēēāóbā āçĩēĩōñābāð ĩēāð Ÿēāĩôçð, āābôā ôçĩ óāēbāā ôāēĩçñbũôçð release(7).

3.2 ĩāóāāēpôôéoc òuĩ XFree86

Ōĩ āñāóēēũ ðāñēāŨēēĩ **XFree86** ābĩāē Ÿĩā ôçĩāĩóēēũ ēñĩŨóē ēŨēā Ÿēāĩôçð āēā ðĩēēĩŸð ÷ ñpôóāð ðĩō ēŸēĩōĩ òĩ FreeBSD āēā óóāēĩŸð āñāóáð. ðñēĩ ôçĩ Ÿēāĩôç 4.6-RELEASE òĩō FreeBSD, ĩē āðbôçĩāð āēüüóāēð òĩō FreeBSD ÷ ñçóēĩĩðĩēĩŸóāĩ ôçĩ Ÿēāĩôç 3.x òuĩ **XFree86**. Ĩ ðēĩ āŸēĩēĩð ðñũðĩð ĩā ĩāóāāēũðôôbôāð āóðŸð óēð āēüüóāēð ābĩāē ĩā ÷ ñçóēĩĩðĩēĩŸóāĩ òĩ ðñũāñāĩā `src/release/scripts/X11/build_x.sh`. Áðũũ òĩ ðñũāñāĩā āðāēðāb ĩā ābĩāē pāç óççĩŸĩā óõĩ óŸóççĩŨ óāð òũũĩ òĩ ðāñēāŨēēĩ XFree86 ũũĩ éāē ç āēpôóā Tcl/Tk. ĩāðŨ ôçĩ ĩāóāāēpôôéoc òuĩ éāðŨēēçēũĩ X servers, òĩ ðñũāñāĩā éā ðāēāðŨñāē ũēā óā āñ÷ābā óā óðēēĩāŸð āñ÷ābũĩ ðĩō ðāñēĩŸĩāē ĩā āñāē òĩ `sysinstall(8)` ĩŸóā óõĩ ēāðŨēēĩāĩ `XF86336` óõĩ ĩŸóĩ āāēáðŨóóáocð.

ĩāēēĩpĩóāð ĩā ôçĩ Ÿēāĩôç 4.6-RELEASE òĩō FreeBSD, òĩ `sysinstall(8)` āāēāēéóðŨ ôçĩ Ÿēāĩôç 4.x òuĩ XFree86, óāĩ ēāñĩēēŨ ðāēŸóā. ÁððŨ ĩðĩñāb ĩā ābĩāē ābôā óā ðāēŸóā ðĩō āçĩēĩŸñāçõā òĩ cluster òuĩ ports p ĩðĩēāāðĩðā Ũēēā ðāēŸóā ðĩō Ÿ÷ĩōĩ āçĩēĩōñāçēāb āðũ Ÿĩā ports tree ĩā ôçĩ ēāðŨēēçç āðēēŸóā.

Ōçĩābũôç: Ābĩāē ðĩēŸ ôçĩāĩóēēũ ĩā áðāēñŸóāðā āðũ òĩ āñ÷ābĩ `/etc/make.conf` ĩðĩēāóāpðĩðā òĩðēēŸð ñòēĩbôāēð Ÿ÷āðā ēŨĩāē. Āēā ðāñŨāāēāĩā, āāĩ ābĩāē ēāēp ēāŸā ĩā āēāĩŸĩāðā āēðāēŸóēĩā ðĩō Ÿ÷ĩōĩ ĩāóāāēũðôôéóðāb óā ēŨðĩēĩ óðāēāēñēĩŸĩĩ óŸóðçĩā ĩā ĩñēóĩŸĩç ôçĩ óēĩp ôçð ĩāóāāēçðpð `CPUTYPE` āēā āāēðēóõĩðĩbçç òuĩ āēðāēŸóēĩũĩ āēā ēŨðĩēĩ óðāēāēñēĩŸĩĩ āðāĩāñāóðp.

3.3 ðñĩāñŨĩĩāóā Ōñbôũĩ (“ports”)

Ç Óðēēĩāp òuĩ Ports òĩō FreeBSD (<http://www.FreeBSD.org/ports>) ābĩāē ĩēā óðēēĩāp ĩā ðāñéóóũðāñā āðũ 23,000 ðñĩāñŨĩĩāóā āðũ òñbôĩðð, ðĩō ābĩāē āēāēŸóēĩā āēā FreeBSD. ĩē Ports Management Team <portmgr@FreeBSD.org> ābĩāē òðāŸððĩē āēā ôçĩ óõĩðpñççç āĩũð āŸĩóñĩō āðũ ðçāābĩ ēpāēēā āēā óā ports, ðĩō ĩðĩñāb ĩā ÷ ñçóēĩĩðĩēçēāb āēā ĩā āçĩēĩōñāçēĩŸĩĩ óā ðāēŸóā ĩā óā ðñĩāñŨĩĩāóā ðĩō óðñāŸĩōĩ óēð āðbôçĩāð āēüüóāēð òĩō FreeBSD.

Ç āēāāēēāóbā óõĩðpñçççð ôçð óðēēĩāpð òuĩ ports ābĩāē ēŨóē ðĩō āāĩ ĩðĩñĩŸĩā ĩā ēāēŸðĩðĩā āāp. ĩā ĩā÷ũñēóðũ Ũñēñĩ, ĩā ðbôēĩ Ç ĨñāŨtúoc ēāĩôçð òuĩ ðāēŸôũĩ ĒĩāēóĩēēŸ āðũ Ōñbôĩðð ([./releng-packages/article.html](http://releng-packages/article.html)), ēāēŸðāē āðũ òĩ ēŸĩā.

3.4 Āñ÷ābā ISO ôçð ēāĩôçð

ĩāēēĩpĩóāð ĩā ôçĩ Ÿēāĩôç 4.4 òĩō FreeBSD, ç ĨŨāā ĀĩŨððõĩçð òĩō FreeBSD āðĩōŨóēóā ĩā āēāĩŸĩāē ēāē óā ôŸóóāñā ISO āñ÷ābā ðĩō ðñpôā ðĩōēĩŸóāĩ ĩē āðāēñābāð *BSDi/Wind River Systems/FreeBSD Mall* óðēð “āðbôçĩāð” āēāmŸð CDROM ðĩō Ÿēāĩāĩ. ēŨēā Ÿĩā āðũ óā ôŸóóāñā ISO āñ÷ābā ðñŸðāē ĩā ðāñēŸ÷āē Ÿĩā āñ÷ābĩ `README.TXT` ðĩō

ðǎñéǎñÛöǎé óǎ ðǎñéǎ÷ìíǎíǎ òîõ ǎßóêîõ, êé Ýíǎ ǎñ÷ǎßí CDROM.INF ðîõ ðǎñéÝ÷ǎé ìǎðǎ-ðêçñîîññßǎð ǎéǎ íǎ ìðññǎß òî ðñüǎñǎìǎ sysinstall(8) íǎ ǎéÝǎñǎé êǎé íǎ ÷ñçóêîîðîéßóǎé áðòü òî ǎßóêî, êǎêð òé Ýíǎ ǎñ÷ǎßí filename.txt ðîõ ðǎñÝ÷ǎé ìéǎ êßóðǎ ǎñ÷ǎßüí òîõ CDROM. Áðòß ç êßóðǎ ìðññǎß íǎ ǎçìéîñǎçêǎß ðîéý áðêÛ, ùð ǎñßð:

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

Ìé óðǎéǎêñéíÝíǎð áðǎéòßóǎéð ǎéǎ êÛèǎ Ýíǎ áðü áðòÛ òǎ CD ðǎñéǎñÛîîíóǎé ðǎñǎéÛòü:

3.4.1 Áßóêîõ 1

Ì ðñðòîð ǎßóêîõ ǎßíǎé ó÷ǎǎüí áðîééǎéóóééÛ áðîðÝéǎóíǎ òçð ǎíóîéßð make release. Ìé ìüíǎð ǎééǎǎÝð ðîõ ðñÝðǎé íǎ ǎßñîí óóñí êǎðÛéñǎñ disc1 ǎßíǎé ç ðññíóèßê ðîõ êǎðÛéñǎñ tools, òüí XFree86, êǎé üóí òî ǎóíǎóüí ðǎñéóóüðǎññí ðǎéÝòüí ìðññíý íǎ ÷ñÝóíóí óóí ǎßóêî. Ì êǎðÛéñǎñ tools ðǎñéÝ÷ǎé ǎñǎǎéǎßǎ ðîõ áðéòñÝðîí óǎ ÷ñßóðǎð Ûéèüí êǎéðîñǎéêñí óðóðçíÛòüí íǎ òðéÛñîí òéð ǎéóéÝððǎð ǎéêßíçóçð. Áðòüð ì ðñðòîð ǎßóêîõ ðñÝðǎé íǎ òðéÛ÷ǎðǎé bootable Ýðóé ðóðǎ íǎ ìðññíý ìé ÷ñßóðǎð òüí ìüðÝññüí ððîéñǎéóðñí íǎ áðîðǎýǎñîí òî óðÛǎéí ǎçìéîñǎßǎð òüí ǎéóéǎððñí ǎéêßíçóçð.

Áí ìéǎ ǎéǎóñǎðéêß Ýéǎñóç òüí XFree86 éǎ ǎéǎíÝíǎðǎé ìǎ òçí Ýéǎñóç áðòß, ðñÝðǎé íǎ ǎçìǎññèǎß òî ðñüǎñǎìǎ sysinstall(8) ǎéǎ òçí íÝǎ òÝóç êǎé ìé ñǎçǎßǎð ǎǎéǎðÛóðǎóçð. Ì ó÷ǎðéèüð êñǎééǎð òðÛñ÷ǎé óóñí êǎðÛéñǎñ src/release/sysinstall óóñí -STABLE èññü ð óóñí êǎðÛéñǎñ src/usr.sbin/sysinstall óóñí -CURRENT èññü. ÓðǎéǎêñéíÝíǎ, òǎ ǎñ÷ǎßǎ dist.c, menus.c, êǎé config.c éǎ ÷ñǎéǎóðǎß íǎ ǎçìǎññèýíý.

3.4.2 Áßóêîõ 2

Ì ǎǎýðǎññð ǎßóêîõ ǎßíǎé áðßóçð áðîðÝéǎóíǎ òçð ǎíóîéßð make release êǎðÛ Ýíǎ ìǎǎÛéí ìÝññð. Áðòüð ì ǎßóêîõ ðǎñéÝ÷ǎé Ýíǎ “live filesystem” ðîõ ìðññǎß íǎ ÷ñçóêîîðîéçêǎß áðü òî sysinstall(8) ǎéǎ íǎ ǎñǎðǎóóíýí ðññǎéßíǎðǎ óǎ ìéǎ ǎǎéǎðÛóðǎóç òîõ FreeBSD. Èé áðòüð ì ǎßóêîõ ðñÝðǎé íǎ ǎßíǎé bootable. Èǎ ðñÝðǎé áðßóçð íǎ ðǎñéÝ÷ǎé Ýíǎ óóíðéǎóíÝñí ǎíóßǎñǎóñ òîõ CVS repository óóñí êǎðÛéñǎñ CVSROOT êǎé ǎßǎìǎðǎ áðü ǎðññééÛ ðññǎñÛñǎðǎ óóñí êǎðÛéñǎñ commerce.

3.4.3 Áßóêîõ 3 êǎé 4

Ìé òðüéñéðîé ǎðí ǎßóêîõ ðǎñéÝ÷ǎéí ððéðññüéǎðǎ ðǎéÝóǎ éñǎéóíééý ǎéǎ òî FreeBSD. Óǎ ðǎéÝóǎ éǎ ðñÝðǎé íǎ ǎßíǎé ñǎǎñðîéçíÝíǎ, Ýðóé ðóðǎ êÛèǎ ðǎéÝðîí íǎ ǎßíǎé óóñí ðǎéí ǎßóêî ìǎ üéǎ óǎ ðǎéÝóǎ áðü óǎ ñðíßǎ ǎñǎñðÛóǎé ǎéǎ íǎ ǎǎéǎðǎóðǎéǎß êǎé íǎ òñÝíǎé. ðǎñéóóüðǎññð ðêçñîîññßǎð ǎéǎ òçí ǎçìéîñǎßǎ áðòñí òüí ǎßóêüí ǎíǎóÝññíóǎé óóñí Ûñèññ Ç ÎñãÛîùόç êǎñóçð òüí ðǎéÝòüí Éñǎéóíééý áðü Òñßðîðð (../releng-packages/article.html).

4 Áéǎíñß òüí Áêäüüóàùí

4.1 ÁñðççñǎðçðÝð FTP

¼ðǎí ç Ýéǎñóç ǎßíǎé Ýóíéíç, Ý÷ǎé ǎñééíǎóðǎß ǎéðǎñðð, êǎé Ý÷ǎé ðǎéǎðǎñéóðǎß ǎéǎ ǎéǎíñß, ì éýñéñð FTP ǎñðççñǎðçðð ðñÝðǎé íǎ ǎçìǎññèǎß. Ìé áðßóçñéé ǎñðççñǎðçðÝð FTP òîõ FreeBSD ǎßíǎé üéñé mirrors ǎñüð éýñéñð ǎñðççñǎðçðð óóñí ñðíßí Ý÷ǎéí ðññóǎǎóç ìüñ Ûééñé FTP ǎñðççñǎðçðÝð. Áðòüð ì ǎñðççñǎðçðð ǎßíǎé ǎñüóüð ùð ftp-master. ¼ðǎí ç Ýéǎñóç ǎßíǎé Ýóíéíç, ðñÝðǎé íǎ ǎçìǎññèýíý òǎ ðǎñǎéÛòü ǎñ÷ǎßǎ óóñí ftp-master:

5.1 ĀçîēîōñāāĀ ĐñîóáñîîóíŸíuî ĀéóēāôôĀ ĀēēĬîççò.

ĐîēēŸ ãāēāóáóôŨóāēò Ÿ÷îîí đîēýđēîēāò áđāēôĀóāēò đîō ìđîñāĬ íā ôç óāēñŨ òîō ñā áđāēôîŸí ôçî đñîóēĬēç đāñéóóúôāñuî ñāçāĬ Ā āñāāēāĬuî ÷ñĀóôç óôēò āéóēŸôôāò āāēāôŨóóáóçò. Ĭ “ñāēŨēēēîō” òñuđîō íā òî ēŨíāôā áôôü āĬíāē íā ēŨíāôā ôēò āēēāŸô óāò óôñî ēāôŨēîāî đîō Ÿ÷āē āôîēîŨóāē ñāôŨ òî ôŸēîō ôçò ç āēāāēēāóĀā make release:

- ĐāñŨóôā óā patches óāò Ā đñîóēŸóôā óā āđēđēŸíí āñ÷āĀ íŸóā óôñî ēāôŨēîāî chroot ôçò Ÿēāîçò.
- `rm ${CHROOTDIR}/usr/obj/usr/src/release/release.[59]`
- ñāóāēüôôĀóôā đŨēē òî sysinstall(8), òñ đôñĬíā, Ā üđîēā Ũēēā đñîāñŨñāóā Ÿ÷îîí āđçñāāóôāĬ áđü ôēò āēēāŸô óāò.
- `chroot ${CHROOTDIR} ./mk floppies`

Ĭē íŸāò āéóēŸôôāò āāēāôŨóóáóçò ēā āçîēîōñāçēîŸí óôñî ēāôŨēîāî \${CHROOTDIR}/R/stage/floppies.

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

ĬđîñāĬôā āđĬóçò íā ēāñîĬóāôā Ĭóôā āēēŸô óāò āēēāŸô íā đāñāóôîŸí ñā ññôĀ patch óôçî Ÿēāîç üđüò ēā ôôēŨ÷íāóāē, āĬñîíóāò ôēĬĀ óôçî ñāôāāēçôĀ LOCAL_PATCH üôāí òñŸíāôā ôçî āîôîēĀ make release.

5.2 ĐñîāñāîîāôĬæîîóāò òî sysinstall

Ōî āñāāēāĬî āāēāôŨóóáóçò ēāē ñŸēîéóçò òîō FreeBSD, òî sysinstall(8), ìđîñāĬ íā đñîāñāîîāôēóôāĬ āēā íā ēŨíāē đēî āŸēîēāò ôēò áôôñîāôîđîēçîŸíāò āāēāóáóôŨóāēò óā đîēēŨ ñç÷āĬíāóā. Áôôü òî ÷āñāēôçñēóôēēü òîō đñîāñŨñāôîō ìđîñāĬ íā ÷ñçóēîîđîēçēāĬ óā óôñîāóáóî ñā òî PXE[13] ôçò Intel āēā íā ñāēēĬóāē ç āāēāôŨóóáóçò áđü òî āĬēôôî, Ā óā óôñîāóáóî ñā đñîóáñîîóíŸíāò āéóēŸôôāò āēēĬîççò ēē Ÿíā sysinstall script. íā đāñŨāāēāîā áđü ôŸôîēî sysinstall script ìđîñāĬôā íā āñāĬôā óôî āñ÷āĬî src/release/sysinstall/install.cfg.

6 ÌāēĬíāóā òîō ĐĬñāîā áđü ôçî êäîîç 4.4 òîō FreeBSD

Ç āēāāēēāóĀā āôîēîāóĬāò ôçò Ÿēāîçò 4.4 òîō FreeBSD ñāēĬîçā āđĬóçîā ôçî Ĭç ÁôāîŸóôîō 2001. ÌāôŨ áđü áôôĀ ôçî çîāññîçîā, üēāò ñē āēēāŸô óôñî ēîñîü RELENG_4 òîō FreeBSD Ÿđñāđā íā Ÿ÷îîí Ÿāēñēóç áđü ôçî Release Engineering Team <re@FreeBSD.org>. Ç đñĬôç āîēēîāóôēēĀ Ÿēāîç āēā ôçî āñ÷ēôāēôñîēēĀ x86 Ÿāēíā āēāēŸóēîç óôēò 16 ÁôāîŸóôîō, ēē āēîēîōēĬēēā áđü 4 āēüîā āîēēîāóôēēŸô āēāüóāēò đîō ñāĬāçóāí ôçî òāēēēĀ Ÿēāîç óôēò 18 òîō ÓāđôŸíāñç. Ĭ òđāŸēôñîō áóôŨēāēāò Ÿđāēíā ôçîāíóēēü ñuēî ēāôŨ ôçî āēŨñēāēā ôçò òāēāôôāĬāò āāāñŨāāò ēāēĬò ēŨđîēā đñîāēĬíāóā áóôŨēāēāò āñŸēçēāí óā đñîçāîŸíāîāò, āîēēîāóôēēŸô āēāüóāēò. ÓôñîēēŨ, đŨîü áđü 500 email óôŨēēçēāí ôçî Release Engineering Team <re@FreeBSD.org> óā āēŨóôçîā ñēēñüôāñî áđü Ÿíā ñĬíā.

Ç ēîēîüôçôā òùí ÷ñçóĬĬ ñāò Ÿēāíā óāôŸô üôē ç áóôŨēāēā ēāē ç óôāēāñüôçôā ñēāò Ÿēāîçò āāí ēŨ 'đñāđā íā ēôôēŨāôāē āēā ēāíāüò āĬāüôò đñîēāóîĬāò Ā çîāññîçîāò đîō Ÿ÷îîí òāēāĬ óāí óôü÷îē áđü đñēí. Ōî FreeBSD Ÿ÷āē ñāāēĬóāē āñāîāôēēŨ ēāôŨ ôçî āēŨñēāēā ôçò æüĬò òîō óāí óŸóóçîā, ēāē ç áíŨāēç āēā óôāēāēñēîŸîç đîēēôēēĀ ēāē ññāŸüôç āēā ôçî āçîēîōñāā íŸüí āēāüóāüí āĬíāē đēŸíí óāíāñĀ đāñéóóúôāñî áđü đîōŸ. ÁôôĀ ç áíŨāēç ēā āĬíāē āēüîā đēî ôçîāíóēēĀ ēāēĬò òî FreeBSD ēā āñ÷āôāē íā ñāóāŸŸñāóāē óā íŸāò đēāóôñîāò.

7 ÎáëííîééÝò Êáóãðëýíóáèò

Ãßíáé æüðéèðò óçíáóßáð ïé ðñáéðééÝò éáé ç ïñÃÛîóç òçð ðéááééáóßáð äçíëíðñáð òùí Æêüüóàùí íáð íá óðíááßæíðí íá òçí óðíá÷ð ðóíáíùíáíç ÆÛóç òùí ÷ñçóðíí íáð. Ìá ÆÛóç áððð òç óéÝðç Æñááæüíáóðá ðéèçñÛ áéá íá ðáèíçñéðóíðíá òçí ðéááééáóßá ðáñááüðò òùí Æêüüóàùí òîõ FreeBSD.

- *ÐáñÛëèççç áèðÝéáóç* - ÌáñéèÛ ïÝñç òçð ïáðáæðððéóçð ïéáð ÆáéáðÛóðáóçð ïðñíýí íá Æñíðí “ðñéý ðáñÛëèçççá”. Õá ðéí ðñéèÛ áðü ðá óðÛáéá Æßíáé I/O intensive, ïðüðá ç ýðáñíç ðñéèðí ððçèðð-ðá÷-ýðçðáð Æßóèùí Æßíáé ðéí óçíáíðéèð áðü òçíí ÷ñðç ðñéèðí Æðáíñááóðíí áéá íá áðéðá÷ðíèáß èÛðüð ç ðéááééáóßá ðîð make release. Áí ðéáóñíáðéèèß Æßóèíé ÷ñçóèíðñéççýíí áéá ðíðíáðá òçð éáñáñ÷ð ðîð chroot(2) ðáñéáÛëèíððò, ðüðá ðí CVS checkout òùí éáðáæüíáí ports éáé doc ïðñíáß íá Æßíáé ðáððü÷ñííá íá òçí Æñðíèð make world óðíí Ûëèí Æßóèí. ×ñçóèíðñéèðíáð ïéá RAID éýóç (hardware ð software) ïðñíáß íá ïáèðóáé ÆñáóðéèÛ ðñí óðñéèè ÷ññí ðîð ÷ñáèÛæáðáé íá ïáðáæüðððéóçð ïéá ðèðñçð Ýéáñóç.
- *Ïáðáæðððéóç Æêüüóàùí áéá ðéáóñíáðééÝò áñ÷éðáèðñééÝò* - ÈÝéáðá íá ïáðáæüðððóáðá ïéá Ýéáñóç áéá IA-64 ð Alpha óá èÛðñíí x86 áðáíñááóðð? make TARGET=ia64 release.
- *ÃñéèÝð áéá èÛèç* - ×ñáéáæüíáóðá éáéýðáñá Æñááéáßá áéá áððüíáðí Ýéáñ÷í ïñèüðçðáð óðí FreeBSD.
- *Ãñááéáßá ÆáéáðÛóðáóçð* - Õñ ðñüñáñíÛ íáð áéá òçí ÆáéáðÛóðáóç ðîð FreeBSD Ý÷áé ïáðáñÛóáé ðñí ðñéèýí ðñí áíáíáíùí ÷ññí æüðð ðîð. ÕðÛñ÷í ÆÛóñíáð ïñÛáð ðîð ÆñáÛéíðáé áéá íá ðéíðñéðóíðí èÛðñíí Ûëèí, ðéí ïñðÝñí ïç÷áíéðü ÆáéáðÛóðáóçð. Ìéá áðü ðéð ðéí ððíó÷íáíð, Æßíáé ç ïñÛá libh[5] ðîð óðí÷áéáé òçí ðéíðñéççç Æñüð Ýñðñíð, ïÝñ ðñüððð ðáéáðáñðóíáððð éñáéóíééý éáé Æñüð GUI ðññáñÛñáððð ÆáéáðÛóðáóçð.

8 Æð÷áñéóðßáð

Èá ðéáéá íá Æð÷áñéóðßáð ðñí Jordan Hubbard, ðîð ïñ Ýäüóá òçí ððéáéñßá íá ðÛñü èÛðñéá áðü òçí Æðéýíç òçð Ýéáñóçð 4.4 ðîð FreeBSD, éáèðð éáé áéá ïèç òçí ÆñðéáèÛ ðîð Ý÷áé èÛñáé Æáð éáé ÷ññíéá áéá íá Æßíáé ðí FreeBSD áððü ðîð Æßíáé óðñáñá. ÕðéèèÛ, ç Ýéáñóç Æáí éá ðóáí ðñðÝ Æðñáðüí íá ïñèèçññèáß ÷ññðð ïèç òçí ó÷áðéèð ïá òçí Ýéáñóç ÆñðéáèÛ 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 ïèíé ïé ððñéíéðñé ðîð áð÷ñéýíðáé ïá òçí Æñðððñí ðîð FreeBSD. ÈÝèü Æðßóçð íá Æð÷áñéóðßáð ðñðð Rodney Grimes <rgrimes@FreeBSD.org>, Poul-Henning Kamp <phk@FreeBSD.org>, éáé ïèñðð ðñðð Ûëèíðð ðñð ÆñáÛóççáí áéá íá ððéÛñíðí ðá Æñááéáßá áéá ðéð Æêüüóáèð óðéð ðñððáð ïÝñáð òçð äçíëíðñáð ðñð FreeBSD. Áððü ðñ Ûñèñí Ý÷áé Æðçñááóðáß áðü èáßíáíá ó÷áðéèèÛ ïá òçí ïñÃÛîóç òùí Æêüüóàùí áðü ðñ CSRG[14], òçí ïñÛá ðñð NetBSD[11], éáé òçí ðñüðáóç áéá ïéá 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
- [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>)