

# Ç ĩñãŨíùóç ôùí Âêäüóãùí ôĩõ FreeBSD

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\$FreeBSD: release/8.4.0/el\_GR.ISO8859-7/articles/releng/article.xml 39632

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Άδου οĩ Ũñēñĩ ðāñēāñŨōāē ôçĩ áíôēíāðþðēóç ēāē ĩñãŨíùóç ôçð ñŨāāð áíŨððôĩçð ôĩõ FreeBSD, ũôĩí áöĩñŨ óôçĩ ðñĩāðĩēíāóßā ðĩēĩðēēþĩ āēäüóãùĩ ôĩõ Êāēðĩõñāēēĩý Óðóðßíāðĩõ FreeBSD. Âĩçāāß ĩā ēāððñŨñāēā ôçĩ ĩāēĩāĩēĩāßā ðĩõ ÷ñçóēĩĩðĩēāßðāē āēā ðēð āðßóçĩāð āēäüóāēð ôĩõ FreeBSD ēāē ðāñēāñŨōāē óā āñāāēāßā ðĩõ āßíāē āēāēÝóēíā óā ũôĩõð āíāēāóŨñĩíóāē ĩā ðāñŨāĩĩĩ ðāñāĩāðñĩðĩēçĩÝĩāð āēäüóāēð ôĩõ FreeBSD āēā āóùðāñēēß ð āĩðĩñēēß ÷ñßóç ēāē áíŨððôĩç ðñĩũĩĩôũĩ.

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## 1 Âēóāāũāß

Ç áíŨððôĩç ôĩõ FreeBSD āßíāē ĩēā ðĩēý āĩē÷ðß āēāāēēāóßā. Ôĩ FreeBSD áðĩðāēāßðāē áðũ óðĩāēóũĩñÝð ÷ēēēŨāũĩ āĩēñþðũĩ áðũ ũēĩ ôĩĩ ēũóĩĩ. Ç ñŨāā ôĩõ FreeBSD ðāñŨŨ÷āē ðñũóāāóç ĩÝóũ āĩþĩðĩĩõ CVS[1] óā ũēĩõð, Ýðóē þóðā ĩā ĩðĩñāß ũðĩēĩð ēÝēāē ĩā āāē ĩçýĩāóā log, āēāōĩñŨð (patches) ðĩõ Ý÷ĩĩĩ óā āēŨōĩñā development branches, ēāē Ũēēā ÷āñāēðçñēóðēēŨ ðĩõ āĩçēĩýĩ ôçĩ áíŨððôĩç, óā ĩðĩßā ðñĩēýððĩĩĩ áðũ ôçĩ ÷ñßóç āĩũð áððóçñĩý óðóðßíāðĩõ āēā÷āßñēóçð ēþāēēā. Áðũ ðñĩõÝēāóā ēāē ôĩĩ ðēĩ ôçĩāíóēēũ ðāñŨāĩĩĩā Ýēĩçð āēā Ýĩā ĩāāŨēĩ āñēēĩũ áðũ óāēāĩôĩý÷ĩõð ðñĩāñāĩĩāóēóðÝð áðũ ũēĩ ôĩĩ ēũóĩĩ óôĩ FreeBSD. Âßíāē ðñĩóāĩŨð, āÝāāēā, ðũð ðĩēý óýĩðñā ēā āß÷ā āßíāē āĩóāēþð ÷āĩðēēß ç ēāðŨóðāóç āĩ āß÷āĩ ũēĩē, áðũ ũēĩ ôĩĩ ēũóĩĩ, ðñũóāāóç ĩā āñŨøĩĩĩ óôĩĩ ēþāēēā. Âē' áððũ, ĩũĩĩ

ιέα “Ἀδέεᾶᾶᾦᾦᾦ” ñŨᾶᾶ ᾶδὺ δᾶñβδῖο 300 Ũòñᾶ ᾦ÷ῖοῖ δñüóᾶᾶóç ιᾶ ᾠŨøῖοῖ óοῖ CVS repository. Ἀδòῖβ ἱέ *committers*[6] ᾶβῖᾶέ òðᾶῖèðῖῖῖ ᾶέᾶ òῖ ἰᾶᾶᾶῖóᾶñῖ ἰᾦñῖò óçð ᾠŨððòῖçðð ðῖò ᾶβῖᾶóᾶέ óοῖ FreeBSD. ἱέα *εᾶῖòñῖῖῖῖῖ-ñŨᾶᾶ*[7] (core team) ᾶδὺ ᾶέᾶᾶᾶñῖῖῖῖῖ ᾦñῖòð ðñῖᾶñᾶἰᾶóéóóᾦᾦ ᾶῖῖᾦᾦᾶᾶᾶ ᾶέᾶ ιᾶ δᾶñᾦ÷ᾶῖ εŨðῖῖῖò ᾶβῖῖòð εᾶῖῖᾶᾦᾦᾦᾦᾦ ῖᾶῖ ἱέα ῖᾶðᾶῖῖῖῖῖῖ óοῖ óῖῖῖῖ òùῖ committers.

ἱέ òᾶ÷ῖᾶᾶῖῖ ñḡῖῖβ ᾠŨððòῖçð òῖò FreeBSD ᾶᾶῖ ᾶðᾦῖῖ ῖᾶῖ ðῖῖῖ ÷ññῖ ᾶῖᾶ òῖ ἰᾶῖᾶῖŨῖῖῖῖᾶ òῖò óðððᾦᾶðῖò ᾠŨððòῖçð òᾶ ἱέα ᾦῖᾶῖῖῖ ἰᾶ ðῖῖῖῖῖῖᾶ ðῖò ιᾶ ᾠῖᾶῖῖ ιᾶ ÷ñçóῖῖῖῖῖᾶᾶᾶ ᾶðñᾦᾦð. Ἀῖᾶ ιᾶ ῖḡῖᾶᾶ ᾶððῖ òῖ ᾶḡῖῖῖᾶ, ç ᾠŨððòῖç ᾶβῖᾶóᾶέ óᾶððῖ÷ñῖᾶ òᾶ ᾶῖῖ ḡᾶñŨῖῖῖῖᾶ ἰñῖðŨḡῖᾶ. ἱ ῖῖñῖῖῖ ÿῖñῖῖð ᾠŨððòῖçð ᾶβῖᾶῖ ἰ *HEAD* ᾦ *trunk* óοῖ CVS repository ιᾶð, ᾠñḡóῖῖð ῖᾶῖ ùð “FreeBSD-CURRENT”, ᾦ “-CURRENT” ᾠῖ óḡῖῖñᾦᾦ.

ἰᾶð ðῖῖ óḡᾶῖᾶñῖð ῖῖñῖῖð óḡῖḡçñᾶᾦᾦᾦᾦ, ᾠñḡóῖῖð ιᾶ òῖ ῖῖñᾶ “FreeBSD-STABLE” ᾦ ðῖῖ óῖῖῖñᾶ “-STABLE”. ῖᾶῖ ἱῖ ᾶῖῖ ῖῖñῖῖᾦ ᾶβῖᾶῖ ᾶðῖῖῖῖῖῖῖῖ ῖῖῖ ῖῖñῖῖ CVS repository, óçῖ ῖᾶῖῖῖñῖᾶ, ῖᾶῖ ᾠḡῖᾶñŨῖῖῖῖᾶῖ ἰᾦḡῖ *CVSup*[2] òᾶ mirrors δᾶῖῖῖῖ óḡῖῖ ῖῖḡῖῖ. Òῖ FreeBSD-CURRENT[8] ᾶβῖᾶῖ ç “ðñḡḡç óᾶῖñŨ” óçð ᾠŨððòῖçð òῖò FreeBSD ῖᾶḡḡ òᾶ ᾶððῖ ᾶβῖῖῖᾶῖ ðñḡᾶ ῖῖᾶð ἱῖ ῖᾶῖῖῖñῖᾶð ᾶῖῖᾶᾦᾦᾦ. Òῖ FreeBSD-STABLE ᾶβῖᾶῖ ἰ ῖῖñῖῖð ᾠŨððòῖçð ᾶδὺ ḡῖῖ ἰðῖῖῖ ḡðῖŨ÷ñῖᾶῖ ἱῖ ᾶῖᾶῖᾦᾦᾦ. ἱῖ ᾶῖῖᾶᾦᾦ ᾶῖḡᾦñ÷ñῖᾶῖ òᾶ ᾶððῖῖ, ḡῖῖ ᾶᾶῖᾶñῖ ῖῖñῖῖ ᾠŨððòῖçð, ιᾶ ðῖῖ ᾠñᾶῖ ñḡῖῖῖ, ᾶḡῖῖ ðñḡᾶᾶ (óῖῖḡῖῖᾶ ιᾶ óçῖ ðῖῖῖḡῖῖῖ ἱᾶð) ᾠῖῖῖᾶḡḡῖῖῖ óοῖ FreeBSD-CURRENT ῖᾶῖ ᾦ÷ῖῖ ᾠᾶḡᾶḡᾶḡᾶᾦᾦ ðῖῖῖ ῖᾶῖŨ.

ῖᾶðŨ óçῖ δᾶñḡῖᾶῖ ðῖò ἰᾶḡῖῖᾶᾶᾦ ᾶδὺ óç ἱῖᾶ ᾦῖᾶῖῖῖ óçῖ ᾶðῖῖᾶῖç, ḡðῖŨ÷ñῖᾶῖ ῖᾶῖῖᾶῖῖῖῖ snapshots ᾶδὺ òᾶ ἰç÷ᾠᾦᾶḡᾶ óçð ñŨᾶᾶð òῖò FreeBSD ῖᾶῖ ᾶβῖᾶῖ ᾶῖᾶῖᾦῖᾶḡᾶ ᾶδὺ ḡῖῖ ᾠῖðçñᾶḡçðᾦ <ftp://stable.FreeBSD.org/>. Ç ἰᾶᾦῖῖ ᾶῖᾶῖᾶḡῖῖῖῖῖῖ òùῖ ᾶῖðᾶῖᾦῖῖῖῖ snapshots, ῖᾶḡḡ ῖᾶῖ ç òŨḡç óçð ῖῖῖῖῖḡçðᾶð òùῖ ÷ñçóḡᾦῖ ἰᾶð ιᾶ ᾠῖῖᾶñḡῖῖῖῖ òᾶ ἰç÷ᾠᾦᾶḡŨ òῖòð ιᾶ òῖð ðñῖḡḡᾶḡᾶð -STABLE ᾶῖᾶῖᾦᾦᾦ ἰᾦḡῖ *CVSup* ῖᾶῖ “make world”[8] ᾠῖῖῖῖ ιᾶ ῖñᾶḡῖᾦᾦᾦ ḡῖ FreeBSD-STABLE òᾶ ἱῖᾶ ðῖῖῖ ᾠῖῖḡḡḡçð ῖᾶðŨḡᾶḡç ᾶῖῖᾶ ῖᾶῖ ðñῖῖ ᾠñ÷ᾦᾶῖ ἰ ῖῖῖῖð òùῖ ᾶῖᾦᾦ÷ñῖᾶῖ ḡῖῖῖῖḡᾶð ḡñῖῖ ᾶδὺ óçῖ ῖᾦῖᾦᾡç ἱᾶðᾶ ᾦῖᾶῖῖῖ òῖò FreeBSD.

Óḡῖᾶ÷ḡð óðᾦῖñῖᾶῖ ᾶδὺ òῖòð ÷ñḡḡᾶð ἰᾶð ᾠᾶḡῖñᾦᾦ ðñῖᾶῖῖῖῖῖ ῖᾶῖ ᾶῖðḡᾶḡᾶ ᾶῖᾶ ῖᾶῖῖῖῖῖᾶ ÷ᾠᾶῖḡçñῖḡḡῖῖῖ, ῖᾶðŨ óç ῖᾦῖῖᾶῖᾶ òῖò ῖῖῖῖῖð óçð εŨῖᾶ ᾦῖᾶῖῖῖ. ἱῖ ᾠᾶḡῖñᾦᾦ ðñῖᾶῖῖῖῖῖ ᾶῖḡŨᾠῖᾶῖ óçῖ ᾠŨḡç *GNATS*[9] ἰᾦḡῖ e-mail, ιᾶ óçῖ ᾶḡᾠῖῖᾦᾦ send-pr(1), ᾦ ἰᾦḡῖ òῖò web-interface ðῖò δᾶñᾦ÷ᾶῖᾶ óçῖ ᾶῖᾦῖῖῖῖ <http://www.FreeBSD.org/send-pr.html>. Ἀῖðῖð ᾶδὺ òῖð ῖᾦῖῖῖᾦð ῖḡḡᾶð çῖᾶḡῖῖῖῖῖῖ òᾶ÷ᾠᾠῖᾦᾦῖῖ ιᾶ εᾦᾦᾶ òᾶ òᾶ÷ῖῖῖ ÷ᾠᾶῖḡçñῖḡḡῖῖῖ òῖò FreeBSD ððŨñ÷ᾶῖ ῖᾶῖ ç ῖḡḡᾶ FreeBSD Quality Assurance mailing list (<http://lists.FreeBSD.org/mailman/listinfo/freebsd-qa>), ç ῖḡῖᾦᾦ δᾶñᾦ÷ᾶῖ ᾦᾦ ᾦᾦᾦῖ ñῖᾶ ḡḡᾶçðḡḡᾶḡᾶ ò÷ᾶḡῖῖῖ ιᾶ òῖð ῖᾶððñᾦᾦᾶῖᾶð óçð “ññᾦŨῖḡçð òùῖ ᾠῖᾦῖᾦῖ”.

Ἀῖᾶ ιᾶ ᾠῖðçñᾶḡῖῖῖῖ ἱῖ ðῖῖ óḡῖḡçñῖḡῖῖῖ ÷ñḡḡᾶð ἰᾶð, ιᾶ ᾦῖᾶῖῖ òῖò FreeBSD 4.3 ᾠñ÷ᾦᾶᾶ ιᾶ ÷ñçóῖῖῖῖῖῖῖῖ ἰᾶ÷ᾠῖḡḡῖḡð ῖῖñῖῖḡ ᾠῖᾦῖᾦῖ. Ἀðῖῖᾦ ἱῖ ῖῖñῖῖ ᾠῖῖῖῖᾠῖῖῖῖῖῖ ῖḡᾦ ðñḡῖ ḡðῖᾶ÷ᾶᾦ ç ḡᾶῖῖῖ ᾦῖᾶῖῖ. ἱᾶðŨ óçῖ ᾠᾶῖῖῖῖῖῖ óçð ᾦῖᾶῖῖῖῖ, ἰñῖῖ ðῖῖῖ çῖᾶῖḡῖῖῖῖ ᾶῖῖᾶᾦᾦ ῖᾶῖ ðñῖḡῖῖᾶð ò÷ᾶḡῖῖῖ ἰᾶ óçῖ ᾶḡḡῖῖᾶῖ ᾶβῖῖῖᾶῖ óḡῖῖ ῖῖñῖῖ óçð ᾦῖᾶῖῖῖῖ. Ἀῖðῖð ᾶδὺ óçῖ ᾠḡᾶḡῖῖῖῖᾶ ᾠᾶᾦᾦῖῖῖῖ ἰᾦḡῖ *CVS*, ᾶῖðᾶῖᾦῖᾶ patchkits ḡðῖŨ÷ñῖᾶῖ ᾶῖᾶ ιᾶ ἰðῖῖῖῖῖ ιᾶ ᾠᾶᾦᾦῖḡῖῖῖ òᾶ óðððᾦᾶðŨ òῖòð ῖḡῖῖ ÷ñçóῖῖῖῖῖῖῖ òῖð ᾠῖᾦῖᾦᾦᾦ *RELENG\_X\_Y*.

Òῖ Òῖᾦᾦᾶ 2 ᾠῖᾶᾦᾦ ιᾶ ῖᾶððñᾦᾦᾶῖᾶð òᾶ ῖᾦῖῖᾦᾦ óðŨᾶῖᾶ óçð ᾶῖᾶῖῖᾶḡᾶð ðῖò ᾠñḡḡᾶḡᾶῖ ḡḡḡ ᾶδὺ εŨῖᾶ ᾦῖᾶῖῖ, ἰᾦ÷ñῖ ῖᾶῖ òᾶ ᾦᾦᾦᾶ ðῖò ἰᾶçᾶῖῖῖ óçῖῖ ἰᾶðᾶῖḡḡḡḡḡç òῖò óðððᾦᾶðῖð ῖᾶῖ òῖ Òῖᾦᾦᾶ 3 ᾠῖᾶᾦᾦ óçῖῖ ḡᾶῖᾶ óç ᾶῖᾶῖῖᾶḡᾶ òçð ἰᾶðᾶῖḡḡḡḡḡçð. Òῖ Òῖᾦᾦᾶ 5 δᾶñῖᾦñŨḡᾶῖ ðῖð ἰðῖᾦᾦᾦ ιᾶ ᾶðᾶῖḡᾶῖᾦ ḡῖ ᾠᾶḡῖῖ ḡῖḡḡῖᾶ ᾶδὺ ðñḡḡῖðð ῖᾶῖ òῖ Òῖᾦᾦᾶ 6 δᾶñῖᾦñŨḡᾶῖ εŨðῖῖᾶ ᾶδὺ òᾶ ðñŨᾠᾶḡᾶ ðῖò ἰᾦῖᾶᾦ ᾶδὺ óçῖ ᾶῖᾶῖῖᾶḡᾶ ᾦῖᾶῖῖ òῖò FreeBSD 4.4. Óᾦῖῖð, òῖ Òῖᾦᾦᾶ 7 δᾶñῖḡῖᾦᾦᾦᾦ εŨðῖῖᾶð ᾶδὺ òῖð ῖᾶðᾶðῖῖῖᾶð ðῖò εᾦῖῖῖᾦᾦ ιᾶ ðŨñᾶῖ ç ᾠŨððòῖç óοῖ ἰᾦῖῖῖ.

## 2 Ç Ἀῖᾶῖῖῖᾶḡᾶ Ἀῖῖῖῖῖᾦᾦᾦᾦ ἱᾶðᾶ ῖᾶῖḡçð

ἱῖ ἰᾦᾦ ᾠῖᾦῖᾦᾦð òῖò FreeBSD ḡðῖŨ÷ñῖᾶῖ ᾶδὺ ḡῖῖ -STABLE ῖῖñῖῖ ᾠŨððòῖçð δᾶñḡῖῖ εŨῖᾶ ḡᾦḡᾶñᾶḡᾶð ἰᾦᾦᾶð. Ç ᾶῖᾶῖῖᾶḡᾶ ðñᾶḡῖῖᾦᾦᾦᾦ ἱᾶðᾶ ᾦῖᾶῖῖῖ ἰᾶῖῖᾦᾦ ò÷ᾶῖ 45 ἰᾦñᾶð ðñῖῖ óçῖ ᾠᾶᾦᾦῖᾦᾦᾦ çᾠᾠñῖᾦᾦᾦ ᾦῖᾶῖῖῖ, ῖḡᾦᾦ ἰ òðᾶῖḡḡῖð ᾠῖᾦῖᾦῖ òῖò FreeBSD óðᾦῖᾦᾦ ᾦᾦ ᾠñŨᾦᾦ ḡḡḡᾶ ῖḡḡᾶð òùῖ ðñῖᾦᾦᾦᾦᾦḡᾦῖ ᾶῖᾶ ιᾶ ððᾶῖḡḡᾦᾦᾦ ḡḡῖðð ðñῖᾦᾦᾦᾦᾦᾦᾦ ῖḡῖ ᾦ÷ῖῖ 15 ἰᾦñᾶð ῖᾶῖñῖ ιᾶ εŨñῖῖ ῖḡῖᾶð ᾶῖῖᾶᾦᾦ εᾦῖῖῖ, ðñῖῖ òῖ ðŨᾠᾦᾦ òῖò ῖḡᾶῖᾶ. ἱᾦḡᾶ òᾶ

áòòü òĩĩ éáénü, ðĩēēĩß ðñĩāñāñĩáòéóóŸò ēŪñĩōĩ ĩéá óáénŪ áðü áēēááŸò ðĩō Ÿ ÷ ĩōĩ ĩāßĩáē ðēŸĩĩ āñüóóŸò ùò “ĩāēáēāñßōĩáóá MFC”. Ī ũñĩō MFC óçĩāßĩáē “Merge From CURRENT” éáē ðāñēāñŪōāē óçĩ áēááēēáóßā ðñĩóāñĩĩāßò òĩō ēßāēēá ĩéáò āĩēēĩáóĩŸĩçò áēēáāßò áðü òĩĩ -CURRENT ðāñēāñĩáóēēü ēĩñĩü áñŪðòōĩçò óòĩĩ óóāēāñü -STABLE ēĩñĩü.

## 2.1 ĩēāā ÷ ĩō ēßāēēá

ÔñēŪĩóá çĩŸñāð ðñēĩ óçĩ áĩāĩāñĩāĩç çĩāññĩçĩßā Ÿēāĩōçò, ĩ ēßāēēáð òĩō repository áéóŸñ ÷ āðáē óā ĩéá ðāñßĩāĩ “ēáēóóóŸñçòçò”. ÉáòŪ óç āēŪñēāēá áòðßò òçò ðāñēüāĩō, ũēāð ĩē áēēááŸò óòĩĩ -STABLE ēĩñĩü ðñŸðāē ĩá Ÿ ÷ ĩōĩ óçĩ Ÿāēñēóç òçò ĩñŪāā ĪñāŪtūoçò òuĩ Āēäüoäüĩ <re@FreeBSD.org>. Īē áēēááŸò ðĩō āðēóñŸðĩĩóáē óā áòðß òçĩ ðāñßĩāĩ ðĩō áēāñēāß 15 çĩŸñāð āßĩáē:

- Āēĩñēßóāēð āñüóóßĩ ðñĩāēçĩŪðuĩ.
- Āĩçĩāñßóāēð óóçĩ ðāēĩçñßüóç.
- ĀēēááŸò ó ÷ āðēēŸò ĩā óçĩ áóóŪēāēá.
- ĪēēñŸò áēēááŸò óòĩōð ĩāçāĩŸò ðóóēāðßĩ, ũðüð ð. ÷. ç ðñĩōēßēç òuĩ IDs ĩŸüĩ óóóēāðßĩ.
- Īðĩēāāßðĩōā Ūēēç áēēáāß ðēóóāŸāē ç ĩñŪāā áñŪðòōĩçò ũóē ðñŸðāē ĩá āßĩáē, ĩā òĩ áĩāĩāñĩāñĩ ðŪĩóā ñßóēĩ.

ĪāòŪ ðēò ðñßóāð 15 ĩŸñāð ēáēóóóŸñçòçò, òðēŪ ÷ ĩāðáē ĩéá āĩēēĩáóóēēß Ÿēāĩōç áēá ĩá ÷ ñçóēĩĩðĩēçēāß óāĩ āĩēēĩß òçò ðāēēēßò Ÿēāĩōçò éáē ĩ ēßāēēáð áéóŸñ ÷ āðáē óā ĩéá ðāñßĩāĩ “ðāāßĩāĩōĩō”. ðēŸĩĩ āßĩáē ðĩēŸ ðēĩ āŸóēĩēĩ ĩá āßĩōĩ ĩŸāð áēēááŸò óòĩ āŸóóçĩā, āēóüð ēē áĩ āēĩñēßñĩōĩ ēŪðĩēĩ ðĩēŸ óĩāāñü bugß ēŪðĩēĩ ðñüāēçĩā áóóŪēāēáð. ÉáòŪ óç āēŪñēāēá òĩō ðāāßĩāĩð òĩō ēßāēēá, òĩōēŪ ÷ éóòĩĩ ĩßā āĩēēĩáóóēēß Ÿēāĩōç òðēŪ ÷ ĩāðáē ēŪēā āāāñŪāā, ĩŸ ÷ ñē ĩá āßĩáē Ÿóĩēĩç ç ðāēēēß Ÿēāĩōç. Ôēð çĩŸñāð áēñēāðð ðñēĩ óçĩ ðāēēēß Ÿēāĩōç, ç ĩñŪāā ðĩō āßĩáē òðāŸēōĩç áēá ðēð āēäüóāēð āßĩáē óā óòĩā ÷ ð āðēēĩēñĩßā ĩā óçĩ ĩñŪāā áóóŪēāēáð, óçĩ ĩñŪāā óòĩōßñçòçò òçò ðāēĩçñßüóçò, éáē óçĩ ĩñŪāā óòĩōßñçòçò òuĩ ports, áēá ĩá āāāāēüēĩŸĩ ðüð ũēā óā áðāñāßòçòā ēñĩŪðēá áēá ĩéá ðēßñç Ÿēāĩōç āßĩáē áēáēŸóēĩā.

## 2.2 Ēßóóā ĀēŸā ÷ ĩō òçò Ôāēēēßò ēāĩōçò

¼óāĩ āñēāðŸò āĩēēĩáóóēēŸò āēäüóāēð Ÿ ÷ ĩōĩ āßĩáē áēáēŸóēĩāð, Ÿ ÷ ĩōĩ āĩēēĩáóóāß áðü āñēāðü ēüóĩĩ éáē ũēá óā óĩāāñŪ ēŸĩāóā Ÿ ÷ ĩōĩ áĩāēðēāß, ç ðāēēēß Ÿēāĩōç ĩðñāß ĩá āñ ÷ ðóāē.

### 2.2.1 Āçĩēĩōñāßā òĩō ēĩñĩŸ ēāĩōçò

¼ðüð ðāñēāñŪøāĩā óóçĩ áéóáāñāß, ĩē ēĩñĩĩß RELENG\_X\_Y āßĩáē ĩéá ó ÷ āðēēŪ ĩŸā ðñĩōēßēç óóçĩ ĩāēĩāĩēĩāßā òuĩ āēäüóāßĩ ĩāð. Ôĩ ðñßōĩ āßĩā óóçĩ āçĩēĩōñāßā áóòĩŸ òĩō ēĩñĩŸ āßĩáē ĩá āāāāēüēāßòā ũóē āĩōēāŸāðā ĩā óçĩ ðāēāðóāßā Ÿēāĩōç òĩō ðçāāßĩō ēßāēēá áðü òĩĩ RELENG\_X ēĩñĩü áðü òĩĩ ĩðĩßĩ ēā òðēŪĩāðā òĩ ĩŸĩ ēĩñĩü.

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

Ôĩ áðüñāñ āßĩā āßĩáē ĩá āçĩēĩōñāßóāðā ĩéá āðēēŸðā (tag) óòĩ óçĩāßĩ āēēßĩçòçò òĩō ēĩñĩŸ, ðóóā ĩá ĩðñāßòā ĩá āāßòā ðēð áēáóĩñŸò ĩā óçĩ āñ ÷ ð òĩō ēĩñĩŸ āŸēĩēā óòĩ ĩŸēēĩ ĩā òĩ CVS:

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

Éáē òüðā ĩðñāßòā ĩá āçĩēĩōñāßóāðā òĩ ĩŸĩ ēĩñĩü ĩā:

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

**Όçìáβùòç:** *Íē ādōēēÝōāð <sup>RELENG\_</sup> \* āβíáē āāóíāðīÝíāð āēá ÷ ñΠόç áðũ ôĩðð CVS-meisters ēáē ôçí ñŪāā ôũí āēāũðāũí.*

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

### 2.2.2 ÁõîÛííîáò ôíí Áñéeìü êäíóçò

Ἐνεί ἰθαί ϣ ἀοέεΥόα, ἰαοάαεουοέοοάβ εάε ἀοίεἰαοόαβ ϣ οάεεβ Υέαιόρ, ὃνΥθαί ἰά αβἰἰόρ αέεαΥό οόα ὀαἡεἰἰόου  
 ἁἡ÷ἁβἁ ἁεἁ ἰά ὀἡἡΥ÷ἰόἰ ὀἡἡ οουόου ἁἡεἡἡ Υέαιόρὀ ἁεἁ ὀἡ FreeBSD:

- doc/en\_US.ISO8859-1/books/handbook/mirrors/chapter.xml
- doc/en\_US.ISO8859-1/books/porters-handbook/book.xml
- doc/share/xml/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/xml/release.dsl
- src/release/doc/share/examples/Makefile.relnotesng
- src/release/doc/share/xml/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.xml
- www/en/cgi/ports.cgi
- ports/Tools/scripts/release/config

Ἰε οὐκ ἐπορεύετο Ἰεαὶοὺς ἐὰς τὰ ἀν-ᾠβὰ τὰ δευτεῖν ἐπορεύετο οὐκ ἀεὶ ἀδοαβαδ οὐκ ἐπὶ δὲ τῷ θεῷ ἀδβοὺς τὰ θηϊοάνηϊοδὺϊ  
 οὐκ ἰγὰ Ἰεαὶοὺς (οὐκ ἐπὶ τῷ οὐκ Ἰεαὶοὺς) ἐὰς τὰ ἀδᾠαῖα ἀδοδὺϊ ἐὰ οὐκ ἐὰ (οὐκ ἐπὶ τῷ ἐπὶ τῷ stable ἐὰς current):

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

Ç äöäññīāP **sysinstall** ðñÝðäē äðßöçð íá áíçíāññēāß íā öñí öùöóü āñēēüü öñí ports éáē öī ÷pñī öīō āßöēīō ðīō äðäēöāßöáē áēá öçí ÖöēēīāP öñí Ports. ÁöðÝð íē ðēçñíöíñßāð öðÜñ÷íöí öóí āñ÷āßí  
src/release/sysinstall/dist.c.

Άσπυ ιεῖρεεçñδεάß ç ðñιαιοίειαóΒά öçð íΥÁö äðΒöçìðç Ýεäíοçð, ðñÝðäέ ίá áíçìañþóàòå ìãñέΕÜ åñ÷-άΒά äέα ίá áíçìañþóàòå öιι έüöιι äέα öç íΥÁ Ýέäíοç öιï FreeBSD.

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

### 2.2.3 Äçìéĩõñãßá ôùí Âôéêâôþí ôçò êäïóçò

1/40áí ç ôãëëêP Ýêäiöç åßiáé Ýôieìç, ç ðãñáéÜòù áíôieìP èá äçieiõñãPóáé ôçí åôéêÝóá 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 αόεαἶβ *ιαδῶ* οῖ οῖδῖεΥδ οῖ οῖ αόεεαοῖ. Ἀαῖεεῦ, ααῖ αβῖαε αῖοεῖῖ ίά αβῖαε εὔοε οῖοῖ αοῖ οῖ CVS αδεονΥδαε ίά ιααεεῖβ οαε εὔδῖεῖδ οεο αόεεΥδαο ίά αῖοῖεΥδ ὑδῶδ `cvs tag -d tagname filename`. Ἀβῖαε δῖεῖ οῖαῖοεεῖ ὑδῶδ αδῶΥδ ῖε αεεάαΥδ οῖ οῖ οαεάαδαβ αόεαἶβ ίά οῖαῖεῖῖῖ ίά οεο οῖοῖΥδ αόεεΥδαο αεα οῖ οῖαεαεῖῖΥῖ ῖεαῖοῖ. Ἰε αδβοῖαδ αεαῖοαεο οῖο FreeBSD δῖῖδαε ίά αβῖαε δῖῖα αῖεῖῖ ίά αῖαδαῖα ÷ εῖῖῖ. ΟῖδεεΥδ αεεάαΥδ οῖ δῖαεῖῖεῖ οῖο ῖϕ ÷ αῖεεῖ οῖ αεαῖοαῖ ααῖ αδεονΥδῖαε.

### 3 ðàáãëþôôéóç ôçò ëäïóçò

Ιε "aeauaaeo" oio FreeBSD idiniyi ia laaauuouoeooyi adu idieiaaBpiao Y ÷ ae Yia o ÷ aoeU anPaini ic ÷ Uicia eae dnuuaaooc ooi repository oio dcaabio epaeaa. (4eie Y ÷ ioi aooP oc aoiaduocda, aoiy danY ÷ ioia dnuuaaooc iYou aipioio CVS! AaBoa oi Aa ÷ aenbaei oio FreeBSD aea daneouoanao eadonYnaeo.) C iuic aeaeep adabococ abiae ia oou ÷ ae oiooPneic ooi dnoPia oao aea oci ooeaop vn(4). (Ooi -CURRENT, aooP c ooeaop Y ÷ ae afoeaaaoadaeab adu oci iYia ooeaop aboeio aaoeoiYio oa iipic md(4).) Ai c ooeaop aai abiae afoiaouuYic ooi dnoPia oao, ouoa i eaoUeeceio iacaouo ea oionueab adouiaoa uoi aeoaeeoaa c afoieP vnconfig(8) eaoU oc aeUnea ea oc oUocd aoietaoba oio iYio aeebicocd. 4ea oa anaeeaba oio ÷ naeUaeioae aea ia laaauuouoboa ia Yeaoc abiae aeaeYoeia oa iioP dcaabio epaeaa ooi eaoUeia src/release. AooU oa anaeeaba Y ÷ ioi uo oeidu ia danY ÷ ioi uoe ÷ naeUaeioae aea ia ÷ obaeioae ie aeauaaeo oio FreeBSD ia Yia oiaop eae oaeaeeneiyi onui. Iea dePncd Yeaoc idina ia laaauuouoeoaa ÷ ncroeiepioao aooU oa anaeeaba ia iea eae iui afoieP, ooi dneeaiamYicd eae oc aieioaba auu ISO an ÷ abio eaoUeecei aea ia eaaB oa CDROM, ie aeoeYooao aeebicocd, eaep eae i eaoUeeceio aaeeaoUoaooc iYou FTP. AooP c afoieP abiae ooeep c make release.

### 3.1 Ç áíôïëþ make release

Ἄέα ἰά ἱὰόἀα̣εὐὸδβόἀὸἀ ἀδέοð÷þò ἱέα Ῥέαιός, ðñÝðáε ðñþὸά ἰά ὀðŨñ÷τῶί ὁά ἐáoÜēęçéá áñ÷âßá ἰÝὸά ὀῶίí ἐáoUειταῖ  
/usr/obj. Ἰðññâðὸά ἰά ὁά æçìεῖῶñâðὸάὸἀ âßὸά ἰæ ὀçí αἰῶίεÞ make world Þ aðëŨ make buildworld. Ἄέα ἰά

[illegible]

- CHROOTDIR - Ἡ ἐὰὸὔετάρω διὼ ἐὰ ð-ñçόειρδιθιέçæß óáf ðãñéáṲēēir chroot æéá üëç ôçí îåðåäēþòðóéç ôçð Ýēāiðçð.
- BUILDNAME - Ôî ûmía ôçð Ýēāiðçð διὼ ἐὰ îåðåäēüððßðåðå.
- CVSROOT - Ἡ ἐὰὸὔετάρω óúti iðiBi åñßóéåðåé õi CVS repository.
- RELEASETAG - Ç åðééÝðå CVS διὼ áíðéóõitē÷â ðôçí Ýēāiðçð ôçí iðiBå èÝēåðå íå îåðåäēüððßðåðå.

Άí αάí Υ÷άάά Παç ðñúάάάç άά έÛðέíí ðíðέúí CVS repository íά ðíí έπαέέα ðíð FreeBSD, ðíññáßάά ðÛíάά íά  
 ððέÛíάάά ðí áέέú άάά ðíðέúí 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 Υíά supfile,  
 ðáí άñ÷άßí /usr/share/examples/cvsup/cvs-supfile, ðí ðíðíßí ðíññáßάά íά ÷ñçόέííðíέΠάάάά άέα íά  
 άíðέάñÛάάά ðí CVS repository ðíð FreeBSD ðáí áέέú άάά ðíðέúí mirror.

Áí ðáñáëäþøðå ðçí áðéëÝóå RELEASETAG, öüðå åå íaðåääèùððéóðåß íéå ðêÞñð Ýéäíðç äðu ðçí èíñòð òìð HEAD  
 (äçë. òìð -CURRENT) èíñíý. Íë äëäüóåð ðìð öðëÛ÷ííðåé äðu äððúí òíí èíñìù, öðíÞèù áíáoÝíííðåé áái  
 “-CURRENT snapshots”.

ÖðÚñ÷íōī ēāē ðīēēÝð Üēēāð īāðāāēçðÝð ðīō īðīñīýī íā ÷ñçōēīñīēçēīýī āēā íā ðāñāīāðñīðīēÞōāðā ðçī ÝēāīōÞ ōāð. Īē ðēī ðīēēÝð āðū āōðÝð ōēð īāðāāēçðÝð ðāñēāñÜōīīōāē ōççī ēīñōðÞ ðīō āñ÷āñīō [src/release/Makefile](#). Ç āēñēāÞð āīōīēÞ ðīō ÷ñçōēīñīēÞēçēā āēā íā ōōēā÷ōāñ ç āðßōçīç Ýēāīōç 4.7 ðīō FreeBSD (x86 ðēāðōüñīā) Þāáf:

```
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.

- Ἀξιέτιοναβὰ ἀφὺδ ἐαέανιγ δᾶνεάῤῥεῖριὸτὸ οἶά ιέα ιᾶ ÷ ἡνέοὸP εᾶνᾶν ÷ βὰ ἐάοᾶεῦᾶι ιᾶ ὁçí ἀíðῖεP “make installworld”.
- ἈίαῖᾶᾶP ᾶδῦ οἱ CVS ιέαὸ ἐαέῖριγνέαὸ Ἰέᾶῖρὸçð ðῖò ðçᾶᾶβῖò ἐpᾶέέα ðῖò ὀὸὸὸPῖᾶῖòτὸ, ὁçð ðᾶèῖçñβῦòçð ἐαέ ὀῦι ports ἰῚὸᾶ ὁççí εᾶνᾶν ÷ βὰ ἐάοᾶεῦᾶι ιᾶὸᾶᾶεpὸðέόçð ὁçð Ἰέᾶῖρὸçð.
- Ἴνὀεῖβὸᾶέὸ ὀῦι ᾶñ ÷ ᾶβῦι ὀὀῖι ἐάὸῤῥεῖᾶι /etc ἐαέ /dev ἰῚὸᾶ ὀὀῖ δᾶνεάῤῥεῖῖ chroot.
- ἌέὸἸέᾶὸç ὁçð ἀíðῖεPð chroot ἰῚὸᾶ ὁççí εᾶνᾶν ÷ βὰ ἐάοᾶεῦᾶι ḡῖ ᾶὀῖεῖῤῖὸðçᾶ, ᾶέα ιᾶ ιçῖ ἰðῖᾶβ ὀῖ ᾶῖῦðᾶᾶééῦ δᾶνεάῤῥεῖῖ ιᾶ ᾶðçñᾶῤῖᾶέ ὁç ἰᾶὸᾶᾶεpὸðέόç ὁçð Ἰέᾶῖρὸçð.
- ἌέὸἸέᾶὸç ὁçð ἀíðῖεPð make world ἰῚὸᾶ ὀὀῖ δᾶνεάῤῥεῖῖ chroot.
- Ἰᾶὸᾶᾶεpὸðέόç ὀῦι ᾶέðᾶῖῤῖὀῖῖ ḡῖ ᾶβῖᾶέ ὀ ÷ ᾶðééῤ ἰᾶ ὀῖ ὀγὸçῖᾶ Kerberos.
- Ἰᾶὸᾶᾶεpὸðέόç ὀῖò ððñPῖᾶ GENERIC.
- Ἀçῖεῖριὸναβὰ ᾶφῦδ ὀᾶééῖγ ἐάοᾶεῦᾶῖò ὀῖῖι ἰðῖῖ ἐᾶ ἰᾶὸᾶᾶεῦððéóὀῖγῖ ἐαé ἐᾶ ᾶðῖççᾶᾶðῖγῖ ιé ᾶéðᾶῖῤῖᾶð ἰñòῚ ὀῦι ὀᾶééῖpῖ ðᾶῖῚὀῦι.
- Ἰᾶὸᾶᾶεpὸðέόç ἐαé ᾶᾶᾶðῤῖðᾶόç ὀῦι ᾶñᾶᾶᾶβῦῖ ḡῖ ÷ ñᾶῖῤᾶῖῖðᾶᾶ ᾶέα ὁçῖ ðñῖᾶðῖεῖᾶᾶᾶ ὁçð Ἰέᾶῖρὸçð ἐαé ὁç ἰᾶὸᾶᾶñῖðP ὁçð ὀᾶèῖçñβῦòçð ᾶδῦ ὀῖῖ ðçᾶᾶβῖ ἐpᾶέέα (SGML) ὀᾶ html ἐαé ᾶñ ÷ ᾶᾶ ᾶᾶῖῚῖò ḡῖ ἐᾶ ὀῖñᾶᾶῖγῖòῖ ὁçῖ Ἰέᾶῖρὸçð.
- ἸᾶὸᾶᾶñῖðP ἐαé ᾶᾶᾶðῤῖðᾶόç ὁçð ὀᾶèῖçñβῦòçð (ᾶᾶ ÷ ᾶῇñβᾶέα ÷ ñPðόç, ᾶéᾶᾶᾶᾶᾶῖῤ ἑᾶβῖᾶῖᾶ, ὁçῖᾶῖpᾶᾶð Ἰέᾶῖρὸçð, ῖβððᾶð ὀῖᾶᾶðῦòçðᾶðð ḡῖῖῖγ, ῇῇð.)

- ĩāóāāēpôóéóc òuĩ “òõĩðéáõĩŸĩũĩ” (crunched) āēðāēŸóēĩũĩ ðĩō éā ÷ ñçóēĩĩðĩēçēĩŸĩ óóēð āéóēŸôðāð āāēáðŨóóáócò.
- Āçĩēĩōñāβā òuĩ ðāēŸòũĩ ôçð āāēáðŨóóáócò éāē òuĩ ðāēŸòũĩ ðçāāβĩō ēpāēēā.
- Āçĩēĩōñāβā òuĩ ĩŸóũĩ āēēβĩçóçð éāē ôçð āéóēŸôðāð “fixit”.
- Āçĩēĩōñāβā ôçð éāñāñ÷βāð éāóāēüũĩ āēā ôçĩ āāēáðŨóóáóc ĩŸóũĩ FTP.
- (ðñĩíáēñāôēēŸ) Āçĩēĩōñāβā òuĩ ISO āñ÷āβũĩ āēā ĩŸóā CDROM/DVD media.

Āēā ðāñéóóũðāñāð ðēçñĩōĩñβāð ó÷āðēēŸ ĩā ôçĩ āēāāēēáóβā āçĩēĩōñāβāð ĩēāð Ÿēāĩóçð, āāβôā ôçĩ óāēβāā ôāēĩçñβũóçð release(7).

### 3.2 ĩāóāāēpôóéóc òuĩ XFree86

Ōĩ āñāóēēũ ðāñēāŨēēĩ **XFree86** āβĩāē Ÿĩā óçĩāĩóēēũ ēñĩŨðē ēŨēā Ÿēāĩóçð āēā ðĩēēĩŸð ÷ ñβóðāð ðĩō ēŸēĩōĩ òĩ FreeBSD āēā óðāēĩŸð āñāáóβāð. ðñēĩ ôçĩ Ÿēāĩóç 4.6-RELEASE òĩō FreeBSD, ĩē āðβóçĩāð āēüüóāēð òĩō FreeBSD ÷ ñçóēĩĩðĩēĩŸóāĩ ôçĩ Ÿēāĩóç 3.x òuĩ **XFree86**. Ĩ ðēĩ āŸēĩēĩð ðñũðĩð ĩā ĩāóāāēũðôðóðāðā áððŸð óēð āēüüóāēð āβĩāē ĩā ÷ ñçóēĩĩðĩēĩŸóāĩ òĩ ðñũāñāĩā `src/release/scripts/X11/build_x.sh`. Áðũũ òĩ ðñũāñāĩā áðāēðāβ ĩā āβĩāē ðāç óççĩŸĩā óõĩ óŸóççĩŸ óáð òũũĩ òĩ ðāñēāŨēēĩ XFree86 üũĩ éāē ç āēpóóā Tcl/Tk. ĩāðŨ ôçĩ ĩāóāāēpôóéóc òuĩ éāðŨēēçēũĩ X servers, òĩ ðñũāñāĩā éā ðāēāðŨñāē üēā óā āñ÷āβā óā óðēēĩāŸð āñ÷āβũĩ ðĩō ðāñēĩŸĩāē ĩā āñāē òĩ `sysinstall(8)` ĩŸóā óõĩ ēāðŨēĩāĩ `XF86336` óõĩ ĩŸóĩ āāēáðŨóóáócò.

ĩāēēĩpĩóáð ĩā ôçĩ Ÿēāĩóç 4.6-RELEASE òĩō FreeBSD, òĩ `sysinstall(8)` āāēāēéóðŨ ôçĩ Ÿēāĩóç 4.x òuĩ XFree86, óāĩ ēāñĩēēŨ ðāēŸóā. ÁððŨ ĩðĩñāβ ĩā āβĩāē āβôā óā ðāēŸóā ðĩō āçĩēĩŸñāçóā òĩ cluster òuĩ ports ð ĩðĩēāāðĩðā Ũēēā ðāēŸóā ðĩō Ÿ÷ĩōĩ āçĩēĩōñāçēāβ áðũ Ÿĩā ports tree ĩā ôçĩ ēāðŨēēçç āðēēŸóā.

**Óçĩāβũóç:** Āβĩāē ðĩēŸ óçĩāĩóēēũ ĩā áðāēñŸóðāðā áðũ òĩ āñ÷āβĩ `/etc/make.conf` ĩðĩēāóāðĩðĩā òĩðēēŸð ñòēĩβóāēð Ÿ÷āðā ēŨĩāē. Āēā ðāñŨāāēāĩā, āāĩ āβĩāē ēāēp ēāŸā ĩā āēāĩŸĩāðā āēðāēŸóēĩā ðĩō Ÿ÷ĩōĩ ĩāóāāēũðôéóðāβ óā ēŨðĩēĩ óðāēāēñēĩŸĩĩ óŸóççĩā ĩā ĩñēóĩŸĩç ôçĩ óēĩp ôçð ĩāóāāēçððò `CPUTYPE` āēā āāēðéóõĩðĩβçóç òuĩ āēðāēŸóēĩũĩ āēā ēŨðĩēĩ óðāēāēñēĩŸĩĩ áðāĩāñāáóðp.

### 3.3 ðñĩāñŨĩĩáðā Ōñβòũĩ (“ports”)

Ç Óðēēĩāp òuĩ Ports òĩō FreeBSD (<http://www.FreeBSD.org/ports>) āβĩāē ĩēā óðēēĩāp ĩā ðāñéóóũðāñā áðũ 24,000 ðñĩāñŨĩĩáðā áðũ òñβòĩðð, ðĩō āβĩāē āēāēŸóēĩā āēā FreeBSD. ĩē ĨŨāā Āēā÷āβñéóçð òuĩ Ports `<portmgr@FreeBSD.org>` āβĩāē òðāŸððĩēē āēā ôçĩ óõĩðpñçóç āĩũð āŸĩóñĩō áðũ ðçāāβĩ ēpāēēā āēā óā ports, ðĩō ĩðĩñāβ ĩā ÷ ñçóēĩĩðĩēçēāβ āēā ĩā āçĩēĩōñāçēĩŸĩ óā ðāēŸóā ĩā óā ðñĩāñŨĩĩáðā ðĩō óðñāŸĩōĩ óēð āðβóçĩāð āēüüóāēð òĩō FreeBSD.

Ç āēāāēēāóβā óõĩðpñçóçð ôçð óðēēĩāpð òuĩ ports āβĩāē ēŨðē ðĩō āāĩ ĩðĩñĩŸĩā ĩā ēāēŸøĩðĩā āāp. ĩā ĩā÷ũñéóðũ Ũñēñĩ, ĩā ðβòēĩ Ç ĨñāŨtūóc ēāĩóçð òuĩ ðāēŸòũĩ ĒĩāēóĩēēŸ áðũ Ōñβòĩðð ([./releng-packages/article.html](http://releng-packages/article.html)), ēāēŸðāē áðũ òĩ ēŸĩā.

### 3.4 Āñ÷āβā ISO ôçð ēāĩóçð

ĩāēēĩpĩóáð ĩā ôçĩ Ÿēāĩóç 4.4 òĩō FreeBSD, ç ĨŨāā ĀĩŨðððĩçð òĩō FreeBSD áðĩōŨóēóā ĩā āēāĩŸĩāē ēāē óā ôŸóóāñā ISO āñ÷āβā ðĩō ðñpóā ðĩōēĩŸóāĩ ĩē āðāēñāβāð *BSDi/Wind River Systems/FreeBSD Mall* óðēð “āðβóçĩāð” āēāmŸð CDROM ðĩō Ÿēāĩāĩ. ēŨēā Ÿĩā áðũ óā ôŸóóāñā ISO āñ÷āβā ðñŸðāē ĩā ðāñēŸ÷āē Ÿĩā āñ÷āβĩ `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
```

Îé óðǎéǎêñéíÝíǎð áðǎéòßóǎéð ǎéǎ êÛêǎ Ýíǎ áðü áðòÛ òǎ CD ðǎñéǎñÛîîíóǎé ðǎñǎéÛòü:

### 3.4.1 Áßóêîõ 1

Î ðñðòîð ǎßóêîõ ǎßíǎé ó÷ǎǎüí áðîééǎéóóéêÛ áðîðÝéǎóíǎ òçð ǎíóîéßð make release. Îé 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. Î 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 íé ÷ñßóðǎð òüí ìüðÝññüí ððîéñǎéóðñí íǎ áðîðǎýǎñîí òî óðÛǎéí ǎçìéîñǎßǎð òüí ǎéóéǎððñí ǎéêßíçóçð.

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

### 3.4.2 Áßóêîõ 2

Î 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. Êé áðòüð ì ǎßóêîõ ðñÝðǎé íǎ ǎßíǎé bootable. Êǎ ðñÝðǎé áðßóçð íǎ ðǎñéÝ÷ǎé Ýíǎ óóíðéǎóíÝñí ǎíóßǎñǎóñ òîõ CVS repository óóñí êǎðÛéñǎñ CVSROOT êǎé ǎßǎìǎðǎ áðü ǎðññéêÛ ðññǎñÛñǎðǎ óóñí êǎðÛéñǎñ commerce.

### 3.4.3 Áßóêîõ 3 êǎé 4

Îé òðüéñéðîé ǎðí ǎßóêîõ ðǎñéÝ÷ǎéí áðéðññüéǎðǎ ðǎéÝóǎ éñǎéóíééý ǎéǎ òî FreeBSD. Óǎ ðǎéÝóǎ êǎ ðñÝðǎé íǎ ǎßíǎé ñǎǎñðîéçíÝíǎ, Ýðóé ðóðǎ êÛêǎ 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 ÎñǎÛîùόç êǎñóçð òüí ðǎéÝòüí Éñǎéóíééý áðü Òñßðîðð (../releng-packages/article.html).

## 4 Áéǎíñß òüí Áêäüüóàùí

### 4.1 ÁñððçñǎðçðÝð FTP

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



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

Ιέα ἀδῆP web οάβεΒαά θῖο δᾶνεΥ ÷ ἄε ἁἀβεθᾶο ὀά ἁεÜöĩñῖοδ ὀçĭáíðéēýð FTP έάόάέüāῖῖοδ ἁέα ὀçĭ ὀñΥ ÷ ῖῖόά Υέäiῖῖ ὀiῖ FreeBSD.

```
/pub/FreeBSD/releases/arch/x.y-RELEASE/
```

Í éadóUeräö äðü öüí rðíBí ìðñííí íá äBííðí ääéäóáóðÜöáéð íÝóü FTP, üðüð öüí Ý÷äé ðñíäöíéÜöáé ç áíðíeP make release.

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

¼ëá ôá ðññîáôáãëùôôéóìÝíá ðáéÝôá ãéá ôçí ôñÝ÷ïôá Ýëäïç.

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

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

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

```

λέά όοίâîëêêP όοίôùîâóóç äéá ôîí êáoÜëîäî .../.../...ports/i386/packages-X.Y-release.

```

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

Ôá áñ÷åßá ISO.

Άέα δᾶνεόουοῖαῖδᾶ ὁδεχῖροῖνῖαο ο÷ἀοέεῦ ἰα ὀγῖ ἱῖᾶῦῖούος οὐῖ mirror ἀεάῖῖῖῖ FTP οῖῖ FreeBSD, δᾶῖᾶᾶᾶᾶ ᾶᾶῖᾶ οῖ Ῥῖῖῖ Ῥοεῦ÷ῖῖῖᾶδ Ὶῖᾶ FreeBSD mirror (/hubs/).

Ιδιόηας ία δ'Υηάε ανέαο'Υο ηηαο αδ'υ ός'ί οόέαηδ' θ'ιρ έα άίς'ίαν'ηεάβ ί ftp-master ι'Υ÷ηέ ία άίς'ίαν'ηε'ίς'ί οός'ί  
δεάέ'ι'ο'ς'όβ'ά ο'ι'οδ' ό'ά δ'η'η'ο'ι'ο' άδεδ'Υ'α'ι'ο' FTP mirror ία ός'ί ι'Υ'ά 'Υ'ε'α'ι'ο'ς'. Άδεά'Υ'ε'ε'α'ο'άε ίε οδ'α'γ'ε'ο'η'ε 'Υ'ε'α'i'ο'ς'ό ία  
οδ'ί'ά'η'ί'ς'ί'ς'ί' ία ός'ί 'ς'ε'ά'ε'ο'η'ί'ε'η' έβ'ο'ό'ά ο'υ'ι' mirror sites ο'ι'ο' FreeBSD  
(<http://lists.FreeBSD.org/mailman/listinfo/freebsd-hubs>) δ'η'έ'ί' ά'ί'ά'έ'ί'ε'ς'ο'i'ο'ί' ός'ί' ά'α'ί'έ'η' ά'ε'ά'ε'α'ο'έ'ι'υ'δ'ς'ό'ά' ός'δ' ι'Υ'ά'ο  
'Υ'ε'α'i'ο'ς'ό ο'ό'ι'οδ' ά'ι'οδ'ς'η'ά'ός'ο'Υ'ο' FTP.

#### 4.2 Àáæéêþ Áíáðáñáũùãþ ôúi CD-ROM

Ἐὰ σοὶ δὲ ἔχνη ἐὰς ὀγδοῖα: Ὅτ' αἰτῶ ὅδε ἀνά ὅτι ἀδικοῖτε τοὺς ISO ἀνὰ βίην τοὺς FreeBSD ὅτι εἰ ὁ δεινὸς τοῦ ἰδινᾶς ἰὰ εὐία ἐ ἰάε ἐβ' ἀιάδ' ἀνάβ' αὐτῶν, ἐὰς ἰὺ ὄνα ἀεὶ Ἰα ÷ τοῦ διέου ὁ ὁάδ τοῦ ἰδινῆς ἰὰ δ' ἀνῆρ ἰ.

5 Āăēôáóéìüôçôá

[illegible]

## 5.1 Äçĭēĭōñāßá ÐñĭóáñĭōĭŸĭñĭ Āéóēāōōþĭ Āēēßĭçóçð.

ÐĭēēŸð āēēāóáóōŨóāēð Ÿ÷ĭōĭ ðĭēŸðēĭēāð áðāēðþóāēð ðĭō ĭðĭñāß ĭā ôç óāēñŨ ðĭōð ĭá áðāēðĭŸĭ ôçĭ ðñĭóēþēç ðñāēóóóðññĭ ĭāçāþĭ þ āñāāēāßñĭ ÷ñþóçç óóēð āēóēŸððāð āāēāðŨóóáçðð. Ĩ “ĭðāēŨēēēĭð” ðññðĭð ĭá ðĭ ēŨĭāðā áððñ āßĭāē ĭá ēŨĭāðā ðēð āēēāŸð óāð óðĭĭ ēāðŨēĭāĭ ðĭō Ÿ÷āē āðĭēĭŨóāē ĭāðŨ ðĭ ðŸēĭð ôçð ç āēāāēēāóßá make release:

- ÐāñŨóðā ðá patches óāð þ ðñĭóēŸððā ðá āðēðēŸĭĭ āñ÷āßá ĭŸóá óðĭĭ ēāðŨēĭāĭ chroot ôçð Ÿēāĭóçð.
- `rm ${CHROOTDIR}/usr/obj/usr/src/release/release.[59]`
- ĭāðāāēñððóðā ðŨēē ðĭ sysinstall(8), ðĭĭ ððñþĭá, þ ũðĭēá Ũēēá ðñĭāñŨñāðā Ÿ÷ĭōĭ āðçñāāóðāß áðñ ðēð āēēāŸð óāð.
- `chroot ${CHROOTDIR} ./mk floppies`

ĭē ĭŸāð āēóēŸððāð āāēāðŨóóáçðð ēá äçĭēĭōñāçēĭŸĭ óðĭĭ ēāðŨēĭāĭ \${CHROOTDIR}/R/stage/floppies.

ĀĭāēēāēðēēŨ, ĭðĭñāßðā ĭá ÷ñçóēĭĭðĭēþóāðā ðĭ make target boot.flp, þ ĭðĭñāßðā ĭá ðñŸĭāðā áðāðēāßāð ðĭ script ðĭō äçĭēĭōñāßá ðá óðððþĭāðā āñ÷āßñĭ src/release/scripts/doFS.sh.

ĭðĭñāßðā āðßóçð ĭá ēāñĭþóðāð þóðā āēēŸð óāð āēēāŸð ĭá ðñāāóðĭŸĭ ĭā ĭññðþ patch óçĭ Ÿēāĭóç ũðñð ēá ðōēŨ÷ĭāðāē, āßñĭðāð ðēĭþ óçĭ ĭāðāāēçðþ LOCAL\_PATCH ũðāĭ ðñŸĭāðā ôçĭ āĭðĭēþ make release.

## 5.2 Ðñĭāñāĭāðßæĭĭóāð ðĭ sysinstall

Ōĭ āñāāēāßĭ āāēāðŨóóáçðð ēāē ñŸēĭóçðð ðĭō FreeBSD, ðĭ sysinstall(8), ĭðĭñāß ĭá ðñĭāñāĭāðēóðāß āēá ĭá ēŨĭāē ðēĭ āŸēĭēāð ðēð áððñāðĭðĭēçĭŸĭāð āāēāðáóðŨóāēð óā ðĭēēŨ ĭç÷āþĭāðā. Áððñ ðĭ ÷āñāēðçñēóðēēñ ðĭō ðñĭāñŨñāðĭð ĭðĭñāß ĭá ÷ñçóēĭĭðĭēçēāß óā óðĭāðóáññ ĭā ðĭ PXE[13] ôçð Intel āēá ĭá ĭāēēĭþóāē ç āāēāðŨóóáçðð áðñ ðĭ āßēððĭ, þ óā óðĭāðóáññ ĭā ðñĭóáñĭōĭŸĭāð āēóēŸððāð āēēßĭçóçðð ēē Ÿĭá sysinstall script. ĭá ðāñŨāāēāĭá áðñ ðŸðĭēĭ sysinstall script ĭðĭñāßðā ĭá āñāßðā óðĭ āñ÷āßñĭ src/release/sysinstall/install.cfg.

## 6 ĭāēþĭāðā ðĭō Ðþñāĭā áðñ ôçĭ êäĭóç 4.4 ðĭō FreeBSD

Ç āēāāēēāóßá āðĭēĭāðāðð ôçð Ÿēāĭóçð 4.4 ðĭō FreeBSD ĭāēßĭçóçā āðßóçĭá ôçĭ ĭç ÁðāĭŸóðĭð 2001. ĭāðŨ áðñ áððþ ôçĭ çĭāññçĭßá, ũēāð ĭē āēēāŸð óðĭĭ ēĭñññ RELENG\_4 ðĭō FreeBSD Ÿðñāðā ĭá Ÿ÷ĭōĭ Ÿāēñēóç áðñ ôçĭ ĨŨāā ĨñāŨñóçð ðñĭ Āēäüóäñĭ <re@FreeBSD.org>. Ç ðñþçç āĭēēĭāóðēēþ Ÿēāĭóç āēá ôçĭ āñ÷ēðāēðĭēēþ x86 Ÿāēĭā āēāēŸóēĭç óðēð 16 ÁðāĭŸóðĭð, ēē āēĭēĭðēþēçēā áðñ 4 áēñĭā āĭēēĭāóðēēŸð āēäññóāēð ðĭō ĭāþāçóāĭ óçĭ ðāēēēþ Ÿēāĭóç óðēð 18 ðĭō ÓāððŸĭāñç. Ĩ ððāŸēðñð áóðŨēāēāð Ÿðāēĭā óçĭāĭðēēñ ññēĭ ēāðŨ ôçĭ āēŨñēāēá ôçð ðāēāððāßāð āāāñŨāāð ēāēþð ēŨðĭēá ðñĭāēþĭāðā áóðŨēāēāð āñŸēçēāĭ óā ðñĭçāĭŸĭāĭāð, āĭēēĭāóðēēŸð āēäññóāēð. ÓðñēēēŨ, ðŨĭñ áðñ 500 email óðŨēçēāĭá ôçĭ ĨŨāā ĨñāŨñóçð ðñĭ Āēäüóäñĭ <re@FreeBSD.org> óā āēŨóçĭā ĭēēññðññĭ áðñ Ÿĭá ĭþĭá.

Ç ēĭēĭñóçðā ðñĭ ÷ñçóðþĭ ĭāð Ÿēāĭā óāðŸð ũðē ç áóðŨēāēá ēāē ç óðāēāñññóçðā ĭēāð Ÿēāĭóçð āāĭ ēŨ 'ðñāðā ĭá ēððēŨæāðāē āēá ēāĭāññð āßāñð ðñĭēāðĭßāð þ çĭāññçĭßāð ðĭō Ÿ÷ĭōĭ ðāēāß óāĭ óðñ÷ĭē áðñ ðñēĭ. Ōĭ FreeBSD Ÿ÷āē ĭāāāēþóāē āñāĭāðēēŨ ēāðŨ ôç āēŨñēāēá ôçð æñþð ðĭō óāĭ óŸóçĭā, ēāē ç āĭŨāēç āēá óðāēāēñēĭŸĭç ðĭēðēēþ ēāē ĭñāŨñóçç āēá ôçĭ äçĭēĭōñāßá ĭŸñĭ āēäññóäñĭ āßĭāē ðēŸĭĭ óāĭāñþ ðñāēóóóðññĭ áðñ ðĭōŸ. Áððþ ç āĭŨāēç ēá āßĭāē áēñĭā ðēĭ óçĭāĭðēēþ ēāēþð ðĭ FreeBSD ēá āñ÷āßāē ĭá ĭāðāŸŸñāðāē óā ĭŸāð ðēāððñññāð.

## 7 ÎäëïïôëéÝò Êáôáðëýíóáëò

Ãßíáë æüðëëðò óçíáóßáð ïë ðñáëðëéÝò éáë ç ïñÃÛîóç òçð ñéááëéáóßáð äçíëíðñáð òùí Æëüüóàùí íáð íá óðíááßæííí ïá òçí óðíá÷ð ðóíáíííáíç áÛóç òùí ÷ñçóðíí íáð. Ìá áÛóç áððð òç óëÝðç ãñááæííáóðá ðëëçñÛ áéá íá ðáëíçñëðóíðíá òçí ñéááëéáóßá ðáñááùñðò òùí Æëüüóàùí òîõ FreeBSD.

- *ÐáñÛëëççç áëðÝéáóç* - ÌáñëéÛ ïÝñç òçð ïáðááëðððëóçð ïéáð ÆáëáðÛóðáóçð ïðñíýí íá Æñííí “ðñëý ðáñÛëëçççá”. Óá ðëí ðñëéÛ áðü ðá óðÛáéá áßíáë I/O intensive, ïðüðá ç ýðáñíç ðñëëðí ðççëðð-ðá÷-ýðçðáð Æßóëùí áßíáë ðëí óçíáíðëëð áðü òçíí ÷ñðç ðñëëðí áðáíáñáóðíí áéá íá áðëóá÷ðíëáß ëÛðüð ç ñéááëéáóßá ðîð make release. Áí ñéáóíñáðëëëß Æßóëíë ÷ñçóëíðñëççýíí áéá ðíðíáðá òçð éáñáñ÷ðáð ðîð chroot(2) ðáñéáÛëëíððò, ðüðá ðí CVS checkout òùí éáðáëüüáí ports éáë doc ïðñíáß íá áßíáë ðáððü÷ñííá ïá òçí áñííëð make world ððñí Ûëëí Æßóëí. ×ñçóëíðñëðíóáð ïéá RAID ëýóç (hardware ð software) ïðñíáß íá ïáëðóáë ãñáóóëéÛ ðñí óðñíëëü ÷ñññ ðîð ÷ñáëÛáðáë íá ïáðááëüððëóóáß ïéá ðëðñçð Ýëáíóç.
- *Ïáðááëðððëóç Æëüüóàùí áéá ñéáóíñáðëëéÝò áñ÷éðáëðñíëéÝò* - ÈÝëáðá íá ïáðááëüððßóáðá ïéá Ýëáíóç áéá IA-64 ð Alpha óá ëÛðíëíí x86 áðáíáñáóðð? make TARGET=ia64 release.
- *ÃñëéíÝð áéá ëÛëç* - ×ñáëáæííáóðá éáëýðáñá ãñááëáßá áéá áððüíáðí Ýëáã÷í ïñëüðçðáð óðñ FreeBSD.
- *Ãñááëáßá ÆáëáðÛóðáóçð* - Õñ ðñüãñáíÛ íáð áéá òçí ÆáëáðÛóðáóç ðîð FreeBSD Ý÷áë ïáðáñÛóáë ðññ ðñëëý ðñí áíáíáíññ ÷ñññ æüðð ðîð. ÕðÛñ÷ííí ÆëÛíñáð ïñÛáð ðîð ãñáÛëííóáë áéá íá ðëíðñëðóíðíí ëÛðíëíí Ûëëí, ðëí ïñóÝññ ïç÷áíëüí ÆáëáðÛóðáóçð. Ìéá áðü ðëð ðëí ððíó÷ííáð, áßíáë ç ïñÛá libh[5] ðîð óðí÷áýáë òçí ðëíðñçççç áíüð Ýñðñíð, ïÝñ ðññðñð ðáëáðáñßóíáðñð ëñáóíëëý éáë áíüð GUI ðññáñÛíáðñð ÆáëáðÛóðáóçð.

## 8 Æð÷áñéóðßáð

Èá ðëáéá íá áð÷áñéóððóù ðññ Jordan Hubbard, ðîð ïñó Ýäüóá òçí ððëáëñßá íá ðÛññ ëÛðíëá áðü òçí áðëýíç òçð Ýëáíóçð 4.4 ðîð FreeBSD, éáëðð éáë áéá ïëç òçí ãñóëáëÛ ðîð Ý÷áë ëÛíáë ááð éáë ÷ññíéá áéá íá áßíáë ðñ FreeBSD áððü ðîð áßíáë óðíáñá. ÕóóëéÛ, ç Ýëáíóç ááí éá ðóáí ðñóÝ áðíáðñ íá ïñíëççññëáß ÷ññßð ïëç òçí ó÷áðëëð ïá òçí Ýëáíóç ãñóëáëÛ 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 ïñíë ïë ððñíëðñíë ðîð áð÷ññýíóáë ïá òçí áñÛððñíç ðîð FreeBSD. ÈÝëü áðßóçð íá áð÷áñéóððóù ðñðð Rodney Grimes <rgrimes@FreeBSD.org>, Poul-Henning Kamp <phk@FreeBSD.org>, éáë ïñíðð ðñðð Ûëëíðð ðñð ãñáÛóççáí áéá íá ððëÛñííí ðá ãñááëáßá áéá ðëð Æëüüóáëð óóëð ðñððáð ïÝñáð òçð äçíëíðñáð ðñð FreeBSD. Áððü ðñ Ûñëñí Ý÷áë áðçñááóðáß áðü éáßíáíá ó÷áðëëÛ ïá òçí ïñÃÛîóç òùí Æëüüóàùí áðü ðñ CSRG[14], òçí ïñÛá ðñð NetBSD[11], éáë òçí ðññóðáóç áéá ïéá ñéááëéáóßá ïñÃÛîóçð òùí Æëüüóàùí ðñð 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](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>)