

Ç ĩñãŨíùóç ôùí Âêäüóãùí ôĩõ FreeBSD

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Áðòù òĩ Ũñèñĩ ðãñéãñŨöáé ôçĩ áĩòéĩãððéóç éáé ĩñãŨíùóç ôçò ñŨãáð áĩŨððòĩçð òĩõ FreeBSD, ùóĩĩ áðĩñŨ óôçĩ ðñĩãðòĩéĩáðá ðĩéĩðééðĩ äêäüóãùĩ òĩõ Êäéðĩðñäéçĩ Óðóððĩáðòĩõ FreeBSD. Âĩçããß ĩã äãððñŨŨñáéá ôçĩ ĩäèĩäĩèĩãßá ðĩõ ÷ñçóéĩðĩéĩãðáé äéá ðéð äðßçĩãð äêäüóãéð òĩõ FreeBSD éáé ðãñéãñŨöáé óã ãñãáéãßá ðĩõ äßĩáé äéáéŸóéĩá óã ùóĩõð ãĩáéáóŸñĩóáé ĩá ðãñŨĩĩòĩ ðãñãĩãðñĩðĩéçĩŸĩãð äêäüóãéð òĩõ FreeBSD äéá áóùðãñééð ð ãĩðĩñééð ÷ñðóç éáé áĩŨððòĩç ðñĩũĩĩðùĩ.

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1 Áéóããũãð

Ç áĩŨððòĩç òĩõ FreeBSD äßĩáé ĩéá ðĩéŸ áñé÷ðð äéãäééãðá. Òĩ FreeBSD áðĩðãéãßáé äðũ óóĩãéóñĩŸð ÷ééŨãũĩ áĩèñðùĩ äðũ ùéĩ òĩĩ èũóĩ. Ç ñŨãá òĩõ FreeBSD ðãñŸ ÷äé ðñũóãáóç ĩŸóũ áĩðĩòĩõ CVS[1] óã ùéĩòð, Ÿðóé þóðã ĩá ĩðĩñãß ùðĩéĩð èŸéäé ĩá ääé ĩçĩŸĩáðá log, äéãñĩñŸð (patches) ðĩõ Ÿ÷ĩòĩ óã äéŨñĩãä development branches, éáé Ũéëã ÷ãñãéðçñéóðééŨ ðĩõ äĩçéĩŸĩ ôçĩ áĩŨððòĩç, óã ĩðĩßá ðñĩéŸððĩòĩ äðũ ôçĩ ÷ñðóç áĩũð áðððçñĩŸ óðóððĩáðòĩõ äéã÷ãßñéóçð èðäééã. Áðòù áðĩðŸéãóã éáé òĩĩ ðéĩ óçĩáĩóéèũ ðãñŨĩĩóã Ÿéĩçð äéá Ÿĩã ĩããŨéĩ ãñéèũ äðũ óäéáĩðĩŸ÷ĩòð ðñĩãããĩãðéóðŸð äðũ ùéĩ òĩĩ èũóĩĩ óðĩ FreeBSD. Âßĩáé ðñĩóãĩŸð, äŸãáéã, ðùð ðĩéŸ óŸĩðñã éã äß÷ã äßĩáé áĩðãèð ÷ãĩðééð ç éãðŨóðáóç áĩ äß÷ãĩ ùéĩé, äðũ ùéĩ òĩĩ èũóĩĩ, ðñũóãáóç ĩá ãñŨðĩòĩ óðĩ èðäééã. Äé’ áðòù, ĩũĩ ĩéã “ãðééããĩŸĩç” ñŨãá äðũ ðãñßðĩõ 300 Ũñã Ÿ÷ĩòĩ ðñũóãáóç ĩá ãñŨðĩòĩ óðĩ CVS repository. Áðòĩß ĩé committers[6] äßĩáé ððãŸéðñĩé äéá òĩ ĩãããéŸðãñĩ ĩŸñĩò ôçò áĩŨððòĩçðð ðĩõ äßĩãðáé óðĩ FreeBSD. ĩéã

ēāiōñēēP-ĩŨäá[7] (core team) áðü äēāēāēñēĩŸĩōð ðñĩāñāĩāóēóðŸ ðēēŸāāóāē āēā íā ðāñŸ ÷ āē ēŨðĩēiō āēāiōð ēāēĩāPāçóç ēāē íēā ēāðāŸēðĩóç òðĩ óŸĩēĩ òuĩ committers.

Īē òā ÷ Ÿóāōĩē ñōēĩĩ āĩŨððōĩçð òiō FreeBSD āāĩ áðPñĩōĩ ēāē ðĩēŸ ÷ ñũĩĩ āēā òĩ ĩāēāēŨñēóĩā òiō òðóðPĩāðĩð āĩŨððōĩçð òā íēā Ÿēāiōç ĩā ðĩēiūðçðā ðiō íā āĩēāē íā ÷ ñçóēĩĩðĩēāBðāē āðñŸüð. Āēā íā ēðēāē āððü òĩ āēēēçĩā, ç āĩŨððōĩç āēĩāðāē òāððü ÷ ñĩĩā òā āōĩ ðāñŨēēçēā ĩĩñðŨðēā. Ī ēŸñēið ēĩñiūð āĩŨððōĩçð āēĩāē ĩ *HEAD P trunk* òðĩ CVS repository ĩāð, āĩñóðüð ēāē ùð “FreeBSD-CURRENT”, P “-CURRENT” āĩ òðĩðñēā.

ĳāð ðēĩ òðāēāñiūð ēĩñiūð òðĩðçñāēðāē, āĩñóðüð ĩā òĩ ũñĩā “FreeBSD-STABLE” P ðēĩ óŸĩðñā “-STABLE”. Ēāē ĩē āōĩ ēĩñiĩē āēĩāē āðĩēçāðĩŸĩē òðĩ ēŸñēĩ CVS repository, òðçĩ Ēāēēēüñĩēā, ēāē āĩðēāñŨñĩōāē ĩŸóü *CVSup*[2] òā mirrors ðāĩōĩŸ òðĩ ēüōĩ. Òĩ FreeBSD-CURRENT[8] āēĩāē ç “ðñðç òāēñŨ” òçð āĩŨððōĩçð òiō FreeBSD ēāēðð òā āððü āēĩñĩōāē ðñðā üēāð ĩē ēāēĩŸñēāð āēēāŸŸð. Òĩ FreeBSD-STABLE āēĩāē ĩ ēĩñiūð āĩŨððōĩçð áðü òĩ ĩðĩēĩ òðēŨ ÷ ñĩĩōāē ĩē āēäüóāēð. Īē āēēāŸŸð āēóŸñ ÷ ĩĩōāē òā āððüĩ, òĩĩ āāŸðāñĩ ēĩñiū āĩŨððōĩçð, ĩā ðēĩ āñāü ñōēiū, āōĩŸ ðñðā (óŸĩñiūĩā ĩā òçĩ ðĩēēðēēP ĩāð) āĩēĩāóðĩŸĩ òðĩ FreeBSD-CURRENT ēāē Ÿ ÷ ĩōĩ āĩāðāóðāē ðĩēŸ ēāēŨ.

ĒāðŨ òçĩ ðāñēĩāĩ ðiō ĩāñēāāāē āðü òç ĩēā Ÿēāiōç òðçĩ āðüĩāĩç, òðēŨ ÷ ñĩĩōāē ēāēçĩāñēĩŨ snapshots áðü òā ĩç ÷ āĩPĩāðā òçð ñŨāāð òiō FreeBSD ēāē āēĩāē āēāēŸóēĩāð áðü òĩĩ āĩððçñāðçðP <ftp://stable.FreeBSD.org/>. Ç ĩāāŨēç āēāēāðēĩñiūðçðā òuĩ āēðāēŸóēĩñĩ snapshots, ēāēðð ēāē ç òŨóç òçð ēĩēĩñiūðçðāð òuĩ ÷ ñçóððĩ ĩāð ĩā āĩçĩāñPñĩōĩ òā ĩç ÷ āĩPĩāðŨ òiðð ĩā òēð ðñiñóðāðð -STABLE āēäüóāēð ĩŸóü *CVSup* ēāē “make world”[8] āĩçēĩŸĩ ĩā ēñāðēŸóāē òĩ FreeBSD-STABLE òā ĩēā ðĩēŸ āĩēüðēóðç ēāðŨðāóç āēüĩā ēāē ðñēĩ āñ ÷ Bðāē ĩ ēŸēēið òuĩ āēŸā ÷ ñĩ ðĩēüðçðāð āēñēāðð ðñēĩ áðü òçĩ āēŨēāóç ĩēāð Ÿēāiōçð òiō FreeBSD.

Óðĩā ÷ ðð òðŸēñĩñōāē áðü òiðð ÷ ñPððāð ĩāð āĩāññŸð ðñĩāēçĩŨðüĩ ēāē āēðPðāēð āēā ēāēĩŸñēā ÷ āñāēðçñēóðēēŨ, ēāðŨ òç āēŨñēāēā òiō ēŸēēið òçð ēŨēā Ÿēāiōçð. Īē āĩāññŸð ðñĩāēçĩŨðüĩ āēóŨāĩñōāē òðçĩ āŨóç *GNATS*[9] ĩŸóü e-mail, ĩā òçĩ āðāñĩāP *send-pr*(1), P ĩŸóü òiō web-interface ðiō ðāñŸ ÷ āðāē òðçĩ āēāŸēðĩóç <http://www.FreeBSD.org/send-pr.html>. Āēðüð áðü òēð āēŨññāð ēēððāð çēāēðñĩēēĩŸ òā ÷ ðāññĩāēĩð ĩā ēŸĩā òā òā ÷ ĩēēŨ ÷ āñāēðçñēóðēēŨ òiō FreeBSD òðŨñ ÷ āē ēāē ç ēēððā çēāēðñĩēēP ēēððā ĀēŸā ÷ ĩō ēāē ĀĩāðŨēēóçð ðĩēüðçðāð òiō FreeBSD (<http://lists.FreeBSD.org/mailman/listinfo/freebsd-qa>), ç ĩðĩēā ðāñŸ ÷ āē Ÿĩā òüñĩōĩ āēā òðāçððPðāēð ò ÷ āðēēŨ ĩā òēð ēāððñŸñēāð òçð “ĩñāŨñiūçð òuĩ āēäüóāüĩ”.

Āēā ĩā āĩððçñāðçēĩŸĩ ĩē ðēĩ òðĩðçñçðēēĩē ÷ ñPððāð ĩāð, ĩā Ÿēāiōç òiō FreeBSD 4.3 āñ ÷ Bðāĩā ĩā ÷ ñçóēĩĩðĩēĩŸĩā ĩā ÷ ññēóðĩŸð ēĩñĩŸð āēäüóāüĩ. Áððĩē ĩē ēĩñiĩē āçĩēiōñāĩŸĩōāē ēēāĩ ðñēĩ òðēā ÷ ðāē ç òāēēēP Ÿēāiōç. ĩāðŨ òçĩ āĩāēĩñiūðçð òçð Ÿēāiōçð, ĩũĩ ðĩēŸ òçĩāĩðēēŸð āēēāŸŸð ēāē ðñĩðēPēāð ò ÷ āðēēŸð ĩā òçĩ āóðŨēāēā āēĩñĩōāē òðĩ ēĩñiū òçð Ÿēāiōçð. Āēðüð áðü òçĩ āĩāññiūðçðā āĩāñŨēĩóçð ĩŸóü CVS, āēðāēŸóēĩā patchkits òðēŨ ÷ ñĩĩōāē āēā ĩā ĩðĩñĩŸĩ ĩā āĩāññēĩBðĩōĩ òā òðóðPĩāðŨ òiðð ũóĩē ÷ ñçóēĩĩðĩēĩŸĩ òēð āēäüóāēð *RELENG_X_Y*.

Òĩ ÒĩPĩā 2 āĩçāāē ĩā ēāððñŸñāēāð òā āēŨññā òðŨāēā òçð āēāēēāóBāð ðiō āñBðēāðāē ðēðü áðü ēŨēā Ÿēāiōç, ĩŸ ÷ ñē ēāē òā āPĩāðā ðiō ĩāçāĩŸĩ òðçĩ ĩāðāēPððēóç ðiō òðóðPĩāðĩð ēāē òĩ ÒĩPĩā 3 āĩçāāē òçĩ Bāēā òç āēāēēāóBā òçð ĩāðāēPððēóçð. Òĩ ÒĩPĩā 5 ðāñēāñŨñāē ðüð ĩðĩñāē ĩā āðāēðāēāē òĩ āāóēēü óŸóçĩā áðü ðñBðĩðð ēāē òĩ ÒĩPĩā 6 ðāñēāñŨñāē ēŨðĩēā áðü òā ðñŨāĩāðā ðiō ĩŨēāĩā áðü òçĩ āēāēēāóBā Ÿēāiōçð òiō FreeBSD 4.4. ÓŸēið, òĩ ÒĩPĩā 7 ðāññĩðēŨēāē ēŨðĩēāð áðü òēð ēāðāðēŸĩōāēð ðiō ēŸēiðĩā ĩā ðŨñāē ç āĩŨððōĩç òðĩ ĩŸēēĩ.

2 Ç ĀēāēēēāóBā ĀçĩēĩōñāBāð ĩēāð ēāĩóçð

Īē ĩŸāð āēäüóāēð òiō FreeBSD òðēŨ ÷ ñĩĩōāē áðü òĩĩ -STABLE ēĩñiū āĩŨððōĩçð ðāñBðiō ēŨēā òŸóðāñāēð ĩPĩāð. Ç āēāēēēāóBā ðñĩāñēĩāóBāð ĩēāð Ÿēāiōçð ĩāēēĩŨāē ò ÷ āāüĩ 45 ĩŸñāð ðñēĩ òçĩ āĩāĩāĩñāĩç çĩāññçĩBā Ÿēāiōçð, ũðāĩ ĩ òðāŸēðñið āēäüóāüĩ òiō FreeBSD òðŸēĩāē Ÿĩā āñŨñĩā òðēð ēēððāð òuĩ ðñĩāñāĩāóēóðPĩ āēā ĩā òðāēðĩBðāē òðĩðð ðñĩāñāĩāóēóðŸð ũðē Ÿ ÷ ĩōĩ 15 ĩŸñāð ēāēñü ĩā ēŨñĩōĩ ũðĩēāð āēēāŸŸð ēŸēiðĩ, ðñēĩ òĩ ðŨāüĩā òiō ēPāēēā. ĪŸóā òā āððü òĩĩ ēāēñü, ðĩēēĩē ðñĩāñāĩāóēóðŸð ēŨñĩōĩ ĩēā òāēñŨ áðü āēēāŸŸð ðiō Ÿ ÷ ĩōĩ ĩāēĩāē ðēŸĩĩ āĩñóðŸð ùð “ĩāēāēāñBðĩāðā MFC”. Ī ũñið MFC òçĩāēĩāē “Merge From CURRENT” ēāē ðāñēāñŨñāē òçĩ āēāēēēāóBā ðñĩñāñĩāBð

òĩō ēpāēēā iēāō āiēēiāōĩŸĩçð āēēāāpð áðũ òĩĩ -CURRENT ðāēñāiāóēēũ ēĩñĩũ áĩŪððōĩçð óðĩĩ óðāēāñũ -STABLE ēĩñĩũ.

2.1 ĩēāā ÷ iō ēpāēēā

ŌñēŪiōā çĩŸñāð ðñēĩ òçĩ áĩāĩāĩũĩāĩç çĩāññĩçĩā Ÿēāĩōçð, ĩ ēpāēēāð òĩō repository āēóŸñ ÷ āðāē óā iēā ðāñbĩrāĩ “ēāēðóóŸñçóçð”. ĒāðŪ òç āēŪñēāēā āððð òçð ðāñēũāĩð, ũēāð iē āēēāāŸð óðĩĩ -STABLE ēĩñĩũ ðñŸðāē iā Ÿ ÷ iōĩ òçĩ Ÿāēñēóç òçð Release Engineering Team <re@FreeBSD.org>. Ĩē āēēāāŸð ðĩō āðēōñŸðĩiōāē óā āððp òçĩ ðāñbĩrāĩ ðĩō āēāñēāb 15 çĩŸñāð ābĩāē:

- Āēĩñēpóāēð āĩüóðĩĩ ðñĩāēçĩŪðũĩ.
- Āĩçĩāñpóāēð óðçĩ ðāēĩçñbũóç.
- ĀēēāāŸð ó ÷ āðēēŸð iā òçĩ áóðŪēāēā.
- ĨēēñŸð āēēāāŸð óðĩið ïāçāĩŸð óðóēāðĩ, ũðũð ð ÷. ç ðñĩóēðēç òũĩ IDs iŸũĩ óðóēāðĩ.
- Ĩðĩēāāpðĩōā Ūēēç āēēāāp ðēóðāŸāē ç ñŪāā áĩŪððōĩçð ũðē ðñŸðāē iā ābĩāē, iā òĩ áĩāĩāĩũĩāĩ ðŪiōā ñbóēĩ.

ĨāðŪ òēð ðñpóāð 15 ĩŸñāð ēāēðóóŸñçóçð, òðēŪ ÷ iāðāē iēā āiēēiāóóēēp Ÿēāĩōç āēā iā ÷ ñçóēĩĩðĩēçēāb óāĩ āiēēĩp òçð ðāēēēpð Ÿēāĩōçð ēāē ĩ ēpāēēāð āēóŸñ ÷ āðāē óā iēā ðāñbĩrāĩ “ðāāpĩāðĩð”. ðēŸĩĩ ābĩāē ðĩēŸ ðēĩ āŸóēĩēĩ iā ābĩĩĩ iŸāð āēēāāŸð óðĩ óŸóðçĩā, āēðũð ēē áĩ āēĩñēpñĩĩ ēŪðĩēĩ ðĩēŸ ðĩāāñũ bugp ēŪðĩēĩ ðñũāēçĩā áóðŪēāēāð. ĒāðŪ òç āēŪñēāēā òĩō ðāāpĩāðĩð òĩō ēpāēēā, òĩðēŪ ÷ éóðĩĩ ĩbā āiēēiāóóēēp Ÿēāĩōç òðēŪ ÷ iāðāē ēŪēā āāāñŪāā, ĩŸ ÷ ñē iā ābĩāē Ÿĩēĩç ç ðāēēēp Ÿēāĩōç. Ōēð çĩŸñāð āēñēāpð ðñēĩ òçĩ ðāēēēp Ÿēāĩōç, ç ñŪāā ðĩō ābĩāē òðāŸēðĩç āēā òēð āēāũóāēð ābĩāē óā óðĩā ÷ p āðēēĩēĩũĩbā ĩā òçĩ ñŪāā áóðŪēāēāð, òçĩ ñŪāā óðĩðpñçóçð òçð ðāēĩçñbũóçð, ēāē òçĩ ñŪāā óðĩðpñçóçð òũĩ ports, āēā iā āāāāēũēĩŸĩ ðũð ũēā óā āðāñābðçóā ēĩñŪðēā āēā iēā ðēpñç Ÿēāĩōç ābĩāē āēāēŸóēĩā.

2.2 Ēbóóā ĀēŸā ÷ iō òçð Ōāēēēpð ēāĩōçð

Ÿðāĩ āñēāðŸð āiēēiāóóēēŸð āēāũóāēð Ÿ ÷ iōĩ ābĩāē āēāēŸóēĩāð, Ÿ ÷ iōĩ āiēēiāóóāb āðũ āñēāðũ ēũóĩ ēāē ũēā óā òĩāāñŪ ēŸĩāóā Ÿ ÷ iōĩ áĩāēēēāb, ç ðāēēēp Ÿēāĩōç ĩðĩñāb iā āñ ÷ bóāē.

2.2.1 Āçĩēĩñābā òĩō ēĩñĩŸ ēāĩōçð

Ÿðũð ðāñēāñŪøāĩ óðçĩ āēóāāũāp, ĩē ēĩñĩb RELENG_x_y ābĩāē iēā ó ÷ āðēēŪ iŸā ðñĩóēðēç óðçĩ ĩāēĩāēĩābā òũĩ āēāũóāĩ iāð. Ōĩ ðñpðĩ āpĩā óðçĩ āçĩēĩñābā áðōĩŸ òĩō ēĩñĩŸ ābĩāē iā āāāāēũēābðā ũðē āĩōēāŸāðā ĩā òçĩ ðāēāðóābā Ÿēāĩōç òĩō ðçāābĩð ēpāēēā āðũ òĩĩ RELENG_x ēĩñĩũ āðũ òĩĩ ĩðĩbĩ ēā òðēŪiāðā òĩ iŸĩ ēĩñĩũ.

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

Ōĩ āðũāĩ āpĩā ābĩāē iā āçĩēĩñāpóāðā iēā āðēēŸðā (tag) óðĩ óçĩābĩ āēēbĩçóçð òĩō ēĩñĩŸ, póðā iā ĩðĩñābðā iā āābðā òēð āēāóĩñŸð ĩā òçĩ āñ ÷ p òĩō ēĩñĩŸ āŸēĩēā óðĩ ĩŸēēĩ ĩā òĩ CVS:

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

Ēāē òũðā ĩðĩñābðā iā āçĩēĩñāpóāðā òĩ iŸĩ ēĩñĩũ ĩā:

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

Οδηγός: Το `RELEASE_*` αρχείο `RELEASE` είναι η `CVS-meisters` και οι `RELEASE` αρχεία είναι οι `RELEASE` αρχεία.

Το `RELEASE` αρχείο `RELEASE` είναι η `CVS-meisters` και οι `RELEASE` αρχεία είναι οι `RELEASE` αρχεία.

2.2.2 Αρχή του Απριλίου

Οι `RELEASE` αρχεία `RELEASE` είναι οι `RELEASE` αρχεία.

- `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`

Οι `RELEASE` αρχεία `RELEASE` είναι οι `RELEASE` αρχεία.

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

Οι `RELEASE` αρχεία `RELEASE` είναι οι `RELEASE` αρχεία.

Άσπυ ιεῖεεεεεεεεεε ε δνιιιιιιιιιιιι εδς ιΥάδ αδΒοιςδς Υεαῖορςδ, δνΥδαι ιά αῖαῖαῖαῖαῖα ιαῖεεU αῖ÷αΒ αεά ιά αῖαῖαῖαῖαῖα οῖι εῖοῖι αεά ες ιΥά Υεῖορς οῖο 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 ôãëëêP Ýêäiôç åßiáé Ýôieîç, ç ðãñáéÛòù áíôieîP èá äçieiõñãPóáé ôçí åôëêÝóá 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 ēpāëéä.

ΙαάεεΥό οινΥό, ιδιναβ ίά ÷ ηαεάοοάβ ίά αβιριό εÜθρεάο αεεάαΥό οάεαδoαβá οóεαιβ *ιαδÜ* όγι όθρεΥόόόό όυι
 αóεεαόρι. ΆαίρεÜ, ααί άβίáε άýóετει ίά άβίáε εÜóε όÝóιει áóτý όι CVS άδεόνΥθάε ίά ίαοάεερίβoάε εÜθρείο óεó
 αóεεΥόαó ίά ίάóρεΥό üðüó cvs tag -d tagname filename. Άβίáε θρεý όγιαόóεü üüó αóóΥό τέ αεεάαΥό όçó
 óεαάóoαβáó οóεαιβó ίά όγιαεüετýí ίά óεó óóóóΥό αóεεΥόαó áεá όγι óoάεαηεíΥίç Ýεαίόç. Ιε άδβόçίáó áεäüóáóó όιö
 FreeBSD θηÝθάε ίά άβίáε δÜíóá άýετει ίά ίάάάáηá÷ετýí. ΌιόεεΥό αεεάαΥό óóι θáηεáÜεετí όιö ιç÷-ίáεεý όυι
 áεäüóáúí ααί άδεόνΥθρίoάε.

3 ðàáãëþôôéóç ôçò ëäïóçò

Ιε "aeauaaeo" oio FreeBSD ioiniiri ia iaadaaeuodoeoioiri adu ioiieiaaBpiora Y ÷ ae Yia o ÷ aeoeU anPaini ic ÷ Uicia eae dnuoaaaoe ooi repository oio dcaabio epaeaa. (4eie Y ÷ ioi aooB oc aioiaouocoa, aoiy danY ÷ ioia dnuoaaaoe iYou aipioio CVS! AaBoa oi Aa ÷ aenbaei oio FreeBSD aea daneoeouoanao eadonYnaeo.) C iuic aeaeep adabococ abiae ia oou ÷ ae oiooBneic ooi dnoBia oao aea oci ooeaop vn(4). (Ooi -CURRENT, aooB c ooeaop Y ÷ ae aioeaaaoaoeab adu oci iYia ooeaop aboeio aaoeoiYno oa iBic md(4).) Ai c ooeaop aai abiae aioiaouuYic ooi dnoBia oao, ouoa i eaoUeeceio iaauo ea oionueab adouiaoa uoi aeoeaaoaB c aioieP vnconfig(8) eaoU oc aeUnea ea oc oUocd aioiaaBa oio iYio aeBicocd. 4ea oa anaeeBa oio ÷ naeUaioae aea ia iaadaeudobaia iea Yeaoc abiae aeaeYoeia oa iioB dcaabio epaeaa ooi eaoUeia src/release. AooU oa anaeeBa Y ÷ ioi uo oeio ia danY ÷ ioi uoe ÷ naeUaioae aea ia ÷ obaioae ie aeauaaeo oio FreeBSD ia Yia oiaop eae oaeaeeneYi onoi. Iea dePncd Yeaoc ioiaB ia iaadaeudoeoia ÷ ncioieieioa oooU oa anaeeBa ia iea eae iui aioieP, ooi dneeaiamYicd eae oc aieioaBa aiuo ISO an ÷ abio eaoUeecei aea ia eaaB oa CDROM, ie aeoeYooa aeBicocd, eaep eae i eaoUeeceio aaeeaoUoaooc iYou FTP. AooB c aioieP abiae ooeep c make release.

3.1 Ç áíôïëþ make release

[illegible]

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 ððíßí áñßðéáðáé òí CVS repository.
- RELEASETAG - Ç áðééÝðá CVS ðîõ áíðéóðíé÷-áß ðóçí Ýêáîóç òçí ððíßá èÝéäðá íá ìáðááëüðððáððá.

Áí ááí Ý÷-áðá ðáç ðñüóááóç ðá èÛðíéí ðíðéëü CVS repository ìá ðñí èðáééá ðîõ FreeBSD, ððíñáððá 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, ððí áñ÷-áßí /usr/share/examples/cvsup/cvs-supfile, òí ððíßí ððíñáððá íá ÷ ñçóéíðíéçéäðá áéá íá áíðéáñÛððá òí CVS repository ðîõ FreeBSD ððí áéëü óáð ðíðéëü mirror.

Áí ðáñáëáßðáððá òçí áðééÝðá RELEASETAG, ðüðá èá ìáðááëüðððéóðáß íéá ðëðñçð Ýêáîóç áðü òçí èíñðð ðîõ HEAD (áçë. ðîõ -CURRENT) èíññíý. Ìé áêüüóáéð ðîõ ððéÛ÷-ñíðáé áðü áððüí ðñí èíññü, ððíðëüð áíáðÝññíðáé ðáí “-CURRENT snapshots”.

ÕðÛñ÷-íðí éáé ððééÝð Ûëëäð ìáðááëçðÝð ðîõ ððíññíý íá ÷ ñçóéíðíéçéçíý áéá íá ðáñáíáðñíðíéçéäðá òçí Ýêáîóç óáð. Ìé ðéí ððééÝð 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) ððáí:

```
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 ððíñáß íá ÷ ññéóðáß ðá áñéäðÛ ìá÷-ññéóðÛ ìáðáíý ðîõð áðíáðá.

- Äçíëíðñáß áñüð éáéáññý ðáñéáÛëëíððð ðá íéá ìá÷-ññéóðð éáñáñ÷-ßá éáðáëüüí ìá òçí áíðíëð “make installworld”.
- Áíáñüáß áðü òí CVS ìéáð éáéññéáð Ýêáîóçð ðîõ ðçááßíð èðáééá ðîõ ðððððíáððð, òçð ðáêñññüóçð éáé ðñí ports ìÝðá ðóçí éáñáñ÷-ßá éáðáëüüí ìáðááëðððéóçð òçð Ýêáîóçð.
- Ñðéíðáéð ðñí áñ÷-áßí ððí éáðÛëíá /etc éáé /dev ìÝðá ððí ðáñéáÛëëí chroot.
- ÁéðÝéáóç òçð áíðíëðð chroot ìÝðá ðóçí éáñáñ÷-ßá éáðáëüüí ðîõ áðíéíÛððçéá, áéá íá ìçí ððíñáß òí áñüðáñéëü ðáñéáÛëëí íá áðçñáÛðáé òç ìáðááëðððéóçð òçð Ýêáîóçð.
- ÁéðÝéáóç òçð áíðíëðð make world ìÝðá ððí ðáñéáÛëëí chroot.
- Ìáðááëðððéóç ðñí áêðáëÝóéíð ðîõ áßíáé ò÷-áðééÛ ìá ðí òýóðçíá Kerberos.
- Ìáðááëðððéóç ðîõ ððñðíá GENERIC.
- Äçíëíðñáß áñüð ðáéééñý éáðáëüüíð ððí ððíßí èá ìáðááëüðððéóðíý éáé èá áðíèçéáððéñý ìé áêðáëÝóéíð ìñðÝð ðñí ðáéééðí ðáéÝðñí.
- Ìáðááëðððéóç éáé ááéáðÛððáóç ðñí áñááéáßíð ðîõ ÷ ñáéÛáñíðáé áéá òçí ðñíáðíéíáððá òçð Ýêáîóçð éáé òç ìáðáðñíðð òçð ðáêñññüóçð áðü ðñí ðçááßíð èðáééá (SGML) ðá html éáé áñ÷-áßá éáéíÝñð ðîõ èá ððñááýíðí òçí Ýêáîóçð.
- Ìáðáðñíðð éáé ááéáðÛððáóç òçð ðáêñññüóçð (áá÷-áéñßáéá ÷ ñðððç, áéóáñüáééÛ éáßíáíá, òçíáéðáéð Ýêáîóçð, èßððáð ððíááðððçðáðð ðéééñý, èëð.)

- Îāóāāēpôôéóc òuĩ “ôõĩðēáõĩŸĩũĩ” (crunched) āēôāēŸóēĩũĩ ðĩō ēā ÷ ñçóēĩĩðĩēçēĩŸĩ óóēð 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 āñāáóbāð. ðñēĩ ôçĩ Ÿēāĩóç 4.6-RELEASE òĩō 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 üũĩ ēāē ç āēpóóā Tcl/Tk. ÎāðŪ ôçĩ ìāóāāēpôôéóc òuĩ ēāðŪēēçēũĩ X servers, òĩ ðñũāñāĩā ēā ðāēāðŪñāē üēā óā āñ÷ābā óā óðēēĩāŸð āñ÷ābũĩ ðĩō ðāñēĩŸĩāē ìā āñāē òĩ `sysinstall(8)` ìŸóā óõĩ ēāðŪēēĩāĩ `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 óŸóðçĩā ìā ìñēóĩŸĩç ôçĩ óēĩp ôçð ìāóāāēçðpð `CPUTYPE` āēā āāēðēóõĩðĩbçóç òuĩ āēðāēŸóēĩũĩ āēā ēŪðĩēĩ óðāēāēñēĩŸĩĩ āðāĩāñāáóðp.

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. Ĭā ìā÷ũñēóðũ Ūñēñĩ, ìā ðbôēĩ Ç ÎñāŪtūóc ēāĩōçð 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 ðñpóā 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

ðǎñéǎñÛöǎé óǎ ðǎñéǎ÷ìíǎíǎ òîõ ǎßóèîõ, êé Ýíǎ ǎñ÷ǎßí CDROM.INF ðîõ ðǎñéÝ÷ǎé ìǎðǎ-ðéçñîîññßǎð ǎéǎ íǎ ìðññǎß òî ðñüǎñǎìǎ sysinstall(8) íǎ ǎéÝǎñǎé éǎé íǎ ÷ñçóéîîðîéßóǎé áðòü òî ǎßóèî, éǎèð òé Ýíǎ ǎñ÷ǎßí filename.txt ðîõ ðǎñÝ÷ǎé íéǎ èßóðǎ ǎñ÷ǎßüí òîõ CDROM. Áðòß ç èßóðǎ ìðññǎß íǎ ǎçîéîñǎçèǎß ðîéý áðéÛ, ùð ǎñðò:

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

Íé óðǎéǎèñéíÝíǎð áðǎéòßóǎéð ǎéǎ èÛèǎ Ýíǎ áðü áðòÛ òǎ CD ðǎñéǎñÛîîíóǎé ðǎñǎéÛòü:

3.4.1 Áßóèîò 1

Î ðñðòîð ǎßóèîð ǎßíǎé ó÷ǎǎüí áðîééǎéóóééÛ áðîðÝéǎóíǎ òçð ǎíóîéßðð make release. Íé ìüíǎð ǎééǎǎÝð ðîõ ðñÝðǎé íǎ ǎßñîíí òóîí éǎðÛéíǎñ disc1 ǎßíǎé ç ðñîíóèßèç òîõ éǎðÛéíǎñò tools, òüí XFree86, éǎé üóî òî ǎóíǎðüí ðǎñéóóüðǎññüí ðǎéÝòüí ìðññíýí íǎ ÷ñÝóíóí òóî ǎßóèî. Í éǎðÛéíǎñò tools ðǎñéÝ÷ǎé ǎñǎǎéǎßǎ ðîõ áðéòñÝðîíí óǎ ÷ñßóðǎð Ûéèüí éǎéðîñǎéèßí óðóðçîÛòüí íǎ òðéÛñîíí òéð ǎéóéÝððǎð ǎéèßçóçð. Áðòüð ì ðñðòîð ǎßóèîð ðñÝðǎé íǎ òðéÛ÷ǎðǎé bootable Ýðóé ðóðǎ íǎ ìðññíýí íé ÷ñßóðǎð òüí ìüíðÝññüí ððîéíǎéóððí íǎ áðîðǎýǎíóí òî óðÛǎéí ǎçîéîñǎßǎð òüí ǎéóéǎððí ǎéèßçóçð.

Áí íéǎ ǎéǎóîñǎðéèß Ýéǎíóç òüí XFree86 éǎ ǎéǎíÝíǎðǎé ìǎ òçí Ýéǎíóç áðòß, ðñÝðǎé íǎ ǎçîñǎñüèǎß òî ðñüǎñǎìǎ sysinstall(8) ǎéǎ òçí íÝǎ èÝóç éǎé íé ñǎçǎßǎð ǎǎéǎðÛóðǎóçð. Í ó÷ǎðéèüð èðǎééǎð òðÛñ÷ǎé óóîí éǎðÛéíǎñ src/release/sysinstall òóîí -STABLE èññü ð óóîí éǎðÛéíǎñ src/usr.sbin/sysinstall òóîí -CURRENT èññü. ÓðǎéǎèñéíÝíǎ, òǎ ǎñ÷ǎßǎ dist.c, menus.c, éǎé config.c éǎ ÷ñǎéǎóðǎß íǎ ǎçîñǎñüèíýí.

3.4.2 Áßóèîò 2

Î ǎǎýðǎññò ǎßóèîð ǎßíǎé áðßóçð áðîðÝéǎóíǎ òçð ǎíóîéßðð make release éǎðÛ Ýíǎ ìǎǎÛéí ìÝññò. Áðòüð ì ǎßóèîð ðǎñéÝ÷ǎé Ýíǎ “live filesystem” ðîõ ìðññǎß íǎ ÷ñçóéííðîéçèǎß áðü òî sysinstall(8) ǎéǎ íǎ ǎñǎðǎóóíýí ðññǎéßíǎðǎ óǎ íéǎ ǎǎéǎðÛóðǎóç òîõ FreeBSD. Èé áðòüð ì ǎßóèîð ðñÝðǎé íǎ ǎßíǎé bootable. Éǎ ðñÝðǎé áðßóçð íǎ ðǎñéÝ÷ǎé Ýíǎ óðîðéǎóíÝíí ǎíðßǎñǎóîí òîõ CVS repository òóîí éǎðÛéíǎñ CVSROOT éǎé ǎßǎìǎðǎ áðü ǎðññééÛ ðññǎñÛñǎðǎ óóîí éǎðÛéíǎñ commerce.

3.4.3 Áßóèîé 3 éǎé 4

Íé òðüéîéðîé ǎðí ǎßóèîé ðǎñéÝ÷ǎéí ǎðéðññüèǎðǎ ðǎéÝóǎ éñǎéóíééý ǎéǎ òî FreeBSD. Óǎ ðǎéÝóǎ éǎ ðñÝðǎé íǎ ǎßíǎé ñǎǎñðîéçíÝíǎ, Ýðóé ðóðǎ èÛèǎ ðǎéÝðî íǎ ǎßíǎé óóîí ðǎéí ǎßóèí ìǎ üéǎ óǎ ðǎéÝóǎ áðü óǎ ñðíǎ ǎñǎñðÛóǎé ǎéǎ íǎ ǎǎéǎðǎóðǎéǎß éǎé íǎ òñÝíǎé. ðǎñéóóüðǎññò ðéçñîîññßǎð ǎéǎ òçí ǎçîéîñǎßǎ áðòðí òüí ǎßóèüí ǎíǎóÝññíóǎé óóîí Ûñèññ Ç ÎñãÛîùόç èǎíóçð òüí ðǎéÝòüí Éñǎéóíééý áðü Òñßðîðð (../releng-packages/article.html).

4 Áéǎíñß òüí Áêäüüóàùí

4.1 ÁîððçñǎðçðÝð FTP

¼ðǎí ç Ýéǎíóç ǎßíǎé Ýóîéíç, Ý÷ǎé ǎñééíǎóðǎß ǎéðǎíðð, éǎé Ý÷ǎé ðǎéǎðǎñéóðǎß ǎéǎ ǎéǎíñß, ì éýñéîð FTP ǎñððçñǎðçððð ðñÝðǎé íǎ ǎçîñǎñüèǎß. Íé áðßóçíñé ǎñððçñǎðçðÝð FTP òîõ FreeBSD ǎßíǎé üéîé mirrors ǎñüð éýñéîð ǎñððçñǎðçðð òóîí ñðíßí Ý÷ǎéí ðññóǎǎóç ìüí Ûéèîé FTP ǎñððçñǎðçðÝð. Áðòüð ì ǎñððçñǎðçððð ǎßíǎé ǎñüðüð ùð ftp-master. ¼ðǎí ç Ýéǎíóç ǎßíǎé Ýóîéíç, ðñÝðǎé íǎ ǎçîñǎñüèíýí òǎ ðǎñǎéÛòü ǎñ÷ǎßǎ óóîí ftp-master:

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

Ιέα ἀδελφ web οἰσβῶα δῖο δᾶνέΥ ÷ ἁέ ἁἰβεοᾶο ὁᾶ ἁεῦῶιῖῖοδ ὁçῖᾶῖῖῖῖῖῖ FTP ῖᾶῖᾶῖῖῖῖῖ ῖῖᾶ ὁçῖ ὁῖῖΥ ÷ ῖῖῖᾶ ῖῖῖῖῖ ὁῖῖ FreeBSD.

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

I éadóUeräidö áduü öiri rðirBi iðinryí íá äBñrði äæéáoóóóÜöáéö iYóu FTP, üðuò öiri Y÷æë ðñiäöieiÜöáé ç áföieP make release.

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

¼ëá óá ðññĩãôáãëùôôéóìÝíá ðáéÝôá ãéá ôçí ôñÝ÷ĩôóá Ýëäĩôç.

```
/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 όοίôùîâóóç äéá ôîí êáoÜëîāī .../.../ports/i386/packages-X.Y-release.

```

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

Ôá áñ÷åßá ISO.

Ἀέα ᾄναεοοουοᾶῆᾶδ̣ δεϑ̣ειρ̣οιῆῆḂao ρ÷ἀδεεῦ̣ ιὰ οϑ̣ι ἱῆᾰῦ̣ῖουϑ̣ οὐι mirror ἀεάῆῆḂd FTP οἷo FreeBSD, ᾄᾶᾶεᾶep ᾶᾶḂa οἷ
Ῥ̣ῆῆῆ Ödeῦ÷ῖῖoᾶd Ῐῖᾶ FreeBSD mirror (/hubs/).

[illegible]

4.2 Àíáðáñáũùã òúi CD-ROM

[illegible]

5 Åăăêôáóéìüôçôá

[illegible]

5.1 ĀçîēîōñāāĀ ĐñîóáñîîóíŸíúí ĀéóēāôôĀ ĀēēĬîççò.

ĐîēēŸ ãāēāóáóôŨóāēò Ÿ÷îŕî đîēýđēîēāò áđāēôĀóāēò đîŕ îđîñāĬ íā ôç óāēñŨ òîŕò íā áđāēôîŸí ôçî đñîóēĬēç đñāēóóúôāñîŸ íāçāĬ Ā āñāāēāĬŸ ÷ñĀóôç óôēò āēóēŸôôā ãāēāôŨóóáóçò. Ĭ “îđāēŨēēēîŕ” òñüđîŕ íā òî ēŨíāôā áôôü āĬíāē íā ēŨíāôā ôēò āēēāŸô óāò óôŸî ēāôŨēîāî đîŕ Ÿ÷āē āôîēîŨóāē íāôŨ òî ôŸēîŕ ôçò ç āēāāēēāóĀā make release:

- ĐāñŨóôā óā patches óāò Ā đñîóēŸóôā óā āđēđēŸîí āñ÷āĀ íŸóā óôŸî ēāôŨēîāî chroot ôçò Ÿēāîŕçò.
- `rm ${CHROOTDIR}/usr/obj/usr/src/release/release.[59]`
- ÍāôāāēüôôĬóôā đŨēē òî sysinstall(8), òî đñĀĬíā, Ā üđîēā Ũēēā đñîāñŨîāóā Ÿ÷îŕî āđçñāāóôāĬ áđü ôēò āēēāŸô óāò.
- `chroot ${CHROOTDIR} ./mk floppies`

Ĭē íŸāò āēóēŸôôā ãāēāôŨóóáóçò ēā āçîēîōñāçēîŸí óôŸî ēāôŨēîāî \${CHROOTDIR}/R/stage/floppies.

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

ĬđîñāĬôā āđĬóçò íā ēāñîĬóāôā Ĭóôā āēēŸô óāò āēēāŸô íā đñāāóôîŸí íā ïñôĀ patch óôçî Ÿēāîŕç üđüò ēā ôôēŨ÷íāôāē, āĬñîŕíāò ôēĬĀ óôçî íāôāāēçôĀ LOCAL_PATCH üôāí òñŸíāôā ôçî āîŕîēĀ make release.

5.2 ĐñîāñāîîāôĬæîîóāò òî sysinstall

Œî āñāāēāĬî āāēāôŨóóáóçò ēāē ñŸēîŕçò òîŕ FreeBSD, òî sysinstall(8), îđîñāĬ íā đñîāñāîîāôēóôāĬ āēā íā ēŨíāē đēî āŸēîēāò ôēò áôôñîāôîđîēçîŸíāò āāēāóáóôŨóāēò óā đîēēŨ ìç÷āĬíāóā. Áôôü òî ÷āñāēôçñēóôēēü òîŕ đñîāñŨîîāôîŕ îđîñāĬ íā ÷ñçóēîîđîēçēāĬ óā óôŕíāôāóîŸ íā òî PXE[13] ôçò Intel āēā íā íāēēîĬóāē ç āāēāôŨóóáóçò áđü òî āĬēôŕî, Ā óā óôŕíāôāóîŸ íā đñîóáñîîŕíŸíāò āēóēŸôôā ãēēĬîççò ēē Ÿíā sysinstall script. Íā đāñŨāāēāîā áđü ôŸôîēî sysinstall script îđîñāĬôā íā āñāĬôā óôî āñ÷āĬŸî src/release/sysinstall/install.cfg.

6 ÍāēĬíāóā òîŕ ĐĀñāîā áđü ôçî êäîŕç 4.4 òîŕ FreeBSD

Ç āēāāēēāóĀā āôîēîāóĬāò ôçò Ÿēāîŕçò 4.4 òîŕ FreeBSD íāēĬîççā āđĬóçîā ôçî Ĭç ÁôāîŸóôîŕ 2001. ÍāôŨ áđü áôôĀ ôçî çîāññîçîĬā, üēāò îē āēēāŸô óôŸî ēîñîü RELENG_4 òîŕ FreeBSD Ÿđñāđā íā Ÿ÷îŕî Ÿāēñēóç áđü ôçî Release Engineering Team <re@FreeBSD.org>. Ç đñĀôç āîēēîāóôēēĀ Ÿēāîŕç āēā ôçî āñ÷ēôāēôîŸēēĀ x86 Ÿāēíā āēāēŸóēîç óôēò 16 ÁôāîŸóôîŕ, ēē āēîēîŕēĬēçēā áđü 4 āēüîā āîēēîāóôēēŸô āēāüóāēò đîŕ îāĬāçóāí ôçî ôāēēēĀ Ÿēāîŕç óôēò 18 òîŕ ÓāđôŸîāñç. Ĭ ôđāŸēôŸîô áôôŨēāēāò Ÿđāēíā ôçîāîŕēēü ñüēî ēāôŨ ôçî āēŨñēāēā ôçò ôāēāôôāĬāò āāāñŨāāò ēāēĬò ēŨđîēā đñîāēĬíāóā áôôŨēāēāò āñŸēçēāí óā đñîçāîŸîāîāò, āîēēîāóôēēŸô āēāüóāēò. ÓôñîēēēŨ, đŨîŸ áđü 500 email óôŨēēçēāí ôçî Release Engineering Team <re@FreeBSD.org> óā āēŨóôçîā îēēñüôāñî áđü Ÿíā îĬíā.

Ç ēîēîŸüôçôā òùí ÷ñçóĬĬ íāò Ÿēāíā óāôŸô üôē ç áôôŨēāēā ēāē ç óôāēāñüôçôā íēāò Ÿēāîŕçò āāí ēŨ 'đñāđā íā ēôôēŨæāóāē āēā ēāíāŸüò āĬāŕôð đñîēāóîĬāò Ā çîāññîçîĬāò đîŕ Ÿ÷îŕî ôāēāĬ óāí óôü÷îē áđü đñēí. Œî FreeBSD Ÿ÷āē íāāāēĬóāē āñāîāôēēŨ ēāôŨ ôçî āēŨñēāēā ôçò æüĬò òîŕ óāí óŸóóçîā, ēāē ç áíŨāēç āēā óôāēāēñēîŸîç đîēēôēēĀ ēāē îñāŨîŸüç āēā ôçî āçîēîōñāāā íŸŸî āēāüóāùí āĬíāē đēŸîŸî óāíāñĀ đñāēóóúôāñî áđü đîŕŸ. ÁôôĀ ç áíŨāēç ēā āĬíāē āēüîā đēî ôçîāîŕēēĀ ēāēĬò òî FreeBSD ēā āñ÷āĬāē íā íāôāóŸñāôāē óā íŸāò đēāóôüñîāò.

7 ÎäëïïôëéÝò Êáôáðëýíóáëò

Ãßíáë æüðëëðò óçíáóßáð ïë ðñáëðëéÝò éáë ç ïñÃÛîóç òçð ðëááëéáóßáð äçíëíðñáð òùí Æëüüóàùí íáð íá óðíááßæííí ïá òçí óðíá÷ð ðóíáíííáíç áÛóç òùí ÷ñçóðñí íáð. Ìá áÛóç áððð òç óëÝðç ðñááæííáóðá ðëëçñÛ áëá íá ðáëíçñëðóíðíá òçí ðëááëéáóßá ðáñááùðð òùí Æëüüóàùí òîõ FreeBSD.

- *ÐáñÛëëççç áëðÝëáóç* - ÌáñëéÛ ïÝñç òçð ïáðááëðððëóçð ïéáð ðáëáðÛóðáóçð ïðñíýí íá ðñíííí “ðñëý ðáñÛëëçççá”. Óá ðëí ðñëéÛ áðü ðá óðÛáëá áßíáë I/O intensive, ïðüðá ç ýðáñíç ðñëëðí ððçëðð-ðá÷-ýðçðáð ðßóëùí áßíáë ðëí óçíáíðëëð áðü òçíí ÷ñðç ðñëëðí áðáíáñáóðñí áëá íá áðëóá÷ðíëáß ëÛðüð ç ðëááëéáóßá ðîð make release. Áí ðáóíñáðëëëß ðßóëíë ÷ñçóëíðñëççýíí áëá ðíðíáðá òçð éáñáñ÷ðð ðîð chroot(2) ðáñëáÛëëíððð, ðüðá ðí CVS checkout òùí éáðáëüüáí ports éáë doc ïðñíáß íá áßíáë ðáððü÷ñííá ïá òçí áñííëð make world ððñí Ûëëí ðßóëí. ×ñçóëíðñëðíóáð ïéá RAID ëýóç (hardware ð software) ïðñíáß íá ïáëðóáë ðñáóóëéÛ ðñí óðñëëëü ÷ñññ ðîð ÷ñáëÛáðáë íá ïáðáëüððëóóáß ïéá ðëðñçð Ýëáíóç.
- *Ïáðááëðððëóç ðëüüóàùí áëá ðëáðñáðëéÝò áñ÷éðáëðñíëéÝò* - ÈÝëáðá íá ïáðáëüððßóáðá ïéá Ýëáíóç áëá IA-64 ð Alpha óá ëÛðíëíí x86 áðáíáñáóðð? make TARGET=ia64 release.
- *ÃñëéíÝð áëá ëÛëç* - ×ñáëáæííáóðá éáëýðáñá ðñááëáßá áëá áððüíáðí Ýëáñ÷í ïñëüðçðáð óðñ FreeBSD.
- *Ãñááëáßá ÆáëáðÛóðáóçð* - Õñ ðñüáñáñÛ íáð áëá òçí ðáëáðÛóðáóç ðîð FreeBSD Ý÷áë ïáðáñÛóáë ðñí ðñëëý ðñí áíáíáñíññ ÷ñññ æüðð ðîð. ÕðÛñ÷íñí ðñí ðñíáð ðñí ðñáÛëííóáë áëá íá ðëíðñëðóíðíí ëÛðíëíí Ûëëí, ðëí ïñðÝññí ïç÷áíëðü ðáëáðÛóðáóçð. Ìéá áðü ðëð ðëí ððñí÷áíáð, áßíáë ç ðñáá libh[5] ðñí óðñ÷áýáë òçí ðëíðñçççç áñüð Ýñððñí, ïÝñ ðññðñí ðáëáðáñßóíáðñí ëñáóíëëý éáë áñüð GUI ðññáñÛíáðñí ðáëáðÛóðáóçð.

8 Æ÷áñéóóßáð

Èá ðëáëá íá áð÷áñéóððóù ðñí Jordan Hubbard, ðñí ïñ Ýäüóá òçí ððëáëñßá íá ðÛññ ëÛðíëá áðü òçí áðëýíç òçð Ýëáíóçð 4.4 ðñí FreeBSD, éáëðð éáë áëá ïëç òçí ðñëáëÛ ðñí Ý÷áë ëÛíáë áðð éáë ÷ññíéá áëá íá áßíáë ðñí FreeBSD áððü ðñí áßíáë óðñáñá. ÕðëéÛ, ç Ýëáíóç ááí éá ðóáí ðñíÝ áðñáðñí íá ïñëëçññëáß ÷ññðð ïëç òçí ó÷áðëëð ïá òçí Ýëáíóç ðñëáëÛ ðñí 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 ðñí áð÷ññýíóáë ïá òçí áñÛððñí ðñí FreeBSD. ÈÝëü áðßóçð íá áð÷áñéóððóù ðñíðð Rodney Grimes <rgrimes@FreeBSD.org>, Poul-Henning Kamp <phk@FreeBSD.org>, éáë ïñíðð ðñíð Ûëëíðð ðñí ðñáÛóççáí áëá íá ððëÛññí ðá ðñááëáßá áëá ðëð ðëüüóáëð óðëð ðñððáð ïÝñáð òçð äçíëíðñáð ðñí FreeBSD. Áððü ðñí Ûñëñí Ý÷áë áðçñááóðáß áðü éáßíáíá ó÷áðëëÛ ïá òçí ïñÃÛîóç òùí Æëüüóàùí áðü ðñí CSRG[14], òçí ïñáá ðñí NetBSD[11], éáë òçí ðññóáóç áëá ïéá ðëááëéáóßá ïñÃÛîóçð òùí Æëüüóàùí ðñí 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>)