

# FreeBSD ! "#\$%&' " \$( ) \* + \$ , - "%' . - "# / (SSD)

! "#\$%&' (

) \*\$#+, \$%- . #/ , O1%. \$, ( ' , /#2-3#1%"' . \$1. 45#\$ . 2- " O6 5' , 7#1O6 8, \$4#+, \$1 52( , #35%"' ( 1, \$4%' 1%. 9O6 , ' , \$ . 9 "% #, " #1. FreeBSD.

), \$4%' 1%. 9O. , ' , \$ . 9O ' 9. : \$ /4. ' 98; . , \$1# 1 /#1O< . " "#+ "%5=>" #, \$' /# /4' ?' " . #\$, 8\$, \$1' ( 1 " ' 6 51' >8; ' 6, ( ?%, \$ . + (>=, \$7' 6 5' , 7#1). @5"%7#, , 2. 58. \$ /4' " (\$- 1# 1" ' 9%"' . , ?\$# , ' , \$ . 9. , 7%7 /4%1' 2#, 5#, \$8/" # #?. " - 9%2#. 5' , 7#1#. /4#, \$4%" , \$1# ' #A4%"' ? . " " O+ #BC=9 3%/#9' "%: ; . A# 8, \$4#+, \$1%.

D #5. 2- " # 4%, , 9%\$4' 1%. 9O9 1#/4#, %9 # \$" #, (\$, ( \$' /O ' 6%4%7\$. 4' , \$' 7' \$1. 45#\$ . 2- " O6 " #, ' \$ . 2. +, /#56#5( ; ' 6 52( ' , /#2-3#1%"' ( 1 7%?. , \$1. 5' , 7#1 1# FreeBSD, /%4%9. \$4O (54%, 7#\$#4O. /4. 5, \$%12( : \$ ' " \$ . 4. , 1 \$%7' 6 8, 2#1' (6, 9. 6%"' 39O rc.initdiskless, %1\$9%\$' 3' 48: ; ' . ' "' &' %2' 3%&' : \$%7' 6 , ' , \$ . 9 ' 85#12. \$1#4( : ; ' . \$4. B#1%"' (9 E%+2#1O6 , ' , \$ . 9, 5#, \$8/" O6 \$#2-7# 52( ?\$. "' ( , % \$%7>. /#, \$4#. "' . E%+2#1O6 , ' , \$ . 9 , " 82( . FS\$%- ( 3%7%" ?' 1%. \$, ( #/ , %"' . 9 " . 7#\$#4O6 #B; ' 6 , \$4%\$. A' + 52( , 28?%. 1 9%2O6 , ' , \$ . 9 FreeBSD ' 4%B#\$ 1 4. >' 9. \$#2-7# 52( ?\$. "' ( .

## 8' &\$%6/\*!\$

1. J1. 45#\$ . 2- " O. 5' , 7#1O. 8, \$4#+, \$1% ..... 1
2. P%4%9. \$4O (54% ..... 2
3. P#5, ' , \$ . 9 rc' E%+2#1O. , ' , \$ . 9O 1 4. >' 9. \$#2-7# ?\$. "' ( ..... 2
4. F#35%"' . E%+2#1#+, ' , \$ . 9O , " 82( ..... 4
5. FS4%\$. A' ' 4%B#\$O , , ' , \$ . 9#+ 52( , 28?%. 1 " . B#2-<' 6 ' 5#, \$8/" O6 \$#2-7# 52( ?\$. "' ( E%+2#1O6 , ' , \$ . 9 ..... 6

## 1. O#\$%&' " \$( ) \* + \$ &! - 1' #+ \$ , - "%' . - "# /

GS% , \$%- ( B85. \$ #A4%"' ?' 1%\$-, ( 4%, , 9#\$4. "' . 9 \$1. 45#\$ . 2- " O6 5' , 7#1O6 8, \$4#+, \$1, 7#\$#4O. 5. 2%: \$, ( "% #, " #1. E2. <-/%9(\$' . H2. <-/%9(\$- (12(. \$, ( \$1. 45#\$ . 2- " O9 (35. , - " . \$ 51' >8; ' 6, ( ?%, \$ . +) 3%/#9' "%: ; ' 9 8, \$4#+, \$1#9, 7#\$#4#. (12(. \$, ( \*". 4A#" . 3%1' , ' 9O9 (5%" " O. #, \$%: \$, ( 1 /%9(\$' 5%>. /#, 2. #S72: ?. "' ( 1, . 6 ' , \$#?"' 7#1 /' \$%"' ). H2. <- /%9(\$- 9#>. \$ BOS- " . ?81, \$1' \$ . 2- " #+ 7 , ' 2- " O9 E' 3' ? . , 7' 9 1#35. +, \$1' (9' 5#, %\$#?" # BO, \$4% (4. <. "' ( "% #, " #1. E2. <-/%9(\$' , #/ , O1%. 9O. 1 \*\$#+ , \$%- . , A#4%35# 9. 52. " " . . , ? . 9 5' , 7' EIDE 52( #/. 4%&' + 3%/ ' , ' , A#4%35# BO, \$4. . ' 6 1 , 28?%. 1O/#2" . "' ( #/. 4%&' + ?\$. "' ). @5"' 9 ' 3 #?. " - 1%>" O6 , 1#+, \$1 E2. <-/%9(\$' , 4%32' ?" O. 1%4' %" SO 7#\$#4#A# B858\$ 4%, , 9#\$4. " O 5%2. . 1 \*\$#+ , \$%- . , (12(. \$, ( \$#, ?\$# 7%>5O+ . , 7#\$4 ' 9. . \$

#A4%"' ?." " O. 1#39#>" #, '\$ /# /. 4. 3%/ ' , O1%"' : .) O 9#>. \$. \$#2-7# 3%/ ' , O1%\$- , , '\$ 4%\$- ' , "#1% 3%/ ' , O1%\$- "% , . 7\$#4 E2. < -/%9(\$' #/4. 5. 2=" "#. 7#2' ?., \$1# 4%3 5# \$#A#, 7%7 ,. 7\$#4 , \$%" . \$ /#2" #, \$- : ". 4%B#\$#, /# , #B" O9. I #\$( ' 9" #A' . /4#587\$O "% #, "#1. E2. < -/%9(\$' %1\$#9%\$' ?., 7' /4. "%/4%12(: \$ ' , /#4?. " " O. B2#7' , % " . 7#\$#4O. 5%>. 4% , /4. 5. 2(: \$ #/. 4%&' ' 3%/ ' , ' /# 1, . 98 9#582: , E%7\$#9 (12(. \$, (" %2' ?' . #A4%"' ?.' ' (" % 7#2' ?., \$1# #/. 4%&' + 3%/ ' , ' , 7#\$#4O. 9#A8\$ 1O/#2" (\$- , ( , 8, \$4#+, \$1#9. F#14. 9. " " O. 9#582' ' 9.: \$ 6%4%7\$. 4' , '\$ 7' # \$ 1,000,000 5# 10,000,000 &' 72#1 3%/ ' , ' "% , . 7\$#4. G\$' 6%4%7\$. 4' , '\$ 7' 9#A8\$ 3%1' , . \$- # \$ \$ . 9/. 4%\$84O 4%B#?. + , 4. 5O.

) ?%, \$" #, '\$ , 9O #B, 85' 9 7#9/%7\$" O. 9#582' E2. < -/%9(\$' , , #19. , '\$ 9O. , # , \$%" 5%4\$#9 ATA, 7#\$#4O. , \$%2' 1. , -9% /# /82(4" O9' 1 7%?. , \$1. " #, ' \$ . 2( 5%" " O6 52( &' E4#1O6 7%9. 4. @, #BO+ ' " \$ . 4. , /4. 5, \$%12(. \$ \$#\$ E%7\$, ?\$# # " ' , ##\$1. \$, \$18: \$ < ' " . IDE /# 7#" \$%7\$%9 ' , #19. , '\$ 9O , " %B#4#9 7#9%" 5 ATA. J#7' 9 #B4%3#9, /4' /#9#; ' #?. " - /4#, \$#A# ' 5. < . 1#A# %5%/\$. 4% \$%7' . 8, \$4#+, \$1 9#A8\$ /#572: ?%\$- , ( " . /# , 4. 5, \$1. " " # 7 < ' " . IDE 7#9/-: \$ . 4%. K, 2' /# , \$8/' \$- \$%7' 9 #B4%3#9, # \$ %7' . #/. 4%&' # " " O. , ' , \$ . 9O, 7%7 FreeBSD, 4% , /#3"%: \$ 5' , 7 7%7 #BO?" O+ 1' " ?., \$ . 4 (1. , -9% 9%2. " - 7' +).

F8; . , \$18: \$ ' 548A' . 4. < . " ' ( 52( \$1. 45#\$ . 2- " O6 5' , 7#1, " # ' 6 , \$#' 9# , \$- , B. 31. , \$" #, \$- ' , 4%1" " \$ . 2- "%( , 2#>" #, \$- ' , /#2-3#1%" ' ( 1O1#5(\$ ' 6 3% 4%97' \*\$#+ , \$%\$- ' .

## 2. 2 /% / 3\$ "% + 4&% /

L2( \$ . 6, 7\$# , #35%. \$ 1, \$4%' 1%. 98: , ' , \$ . 98 FreeBSD, ' " \$ . 4. , /4. 5, \$%12(: \$ " . , 7#2-7# /%4%9. \$4#1 (54%.

), . 1, \$4%' 1%. 9O. , ' , \$ . 9O FreeBSD, 7#\$#4O. ' , /#2-38: \$ E2. < -/%9(\$- 1 7%?. , \$1. , ' , \$ . 9" #A# 5' , 7%, 3%' " \$ . 4. , #1%" O 1' , /#2-3#1%" ' ' 5' , 7#1 1 /%9(\$' ' E%+2#1O6 , ' , \$ . 9 1 /%9(\$' . M3-3% #A4%"' ?." " #A# 7#2' ?., \$1% &' 72#1 3%/ ' , ' , 7#\$#4O. 9#>" # 1O/#2" ' \$- , E2. < -/%9(\$- : , 5' , 7' E%+2#1O. , ' , \$ . 9O "% " =9 B858\$, , 7#4. . 1. , A#, 9#" '\$ 4#1%\$- , ( 1 4. >' 9. 5#, \$8/% \$#2-7# 52( ?\$ . " ' ( .) \$%7#9 , 28?%. E%+2#1O. , ' , \$ . 9O \$' /% /tmp ' /var 9#" '\$ 48: \$, ( 7%7 E%+2#1O. , ' , \$ . 9O 1 /%9(\$' 52( \$#A#, ?\$#BO /#31#2' \$- , ' , \$ . 9. , #35%\$- >84"%2O ' #B" #1' \$- , ? . \$?' 7' ' 14. 9. " " O. E%+2O. H%+2#1O. , ' , \$ . 9O 1 /%9(\$' (12(: \$, ( 74' \$' ?., 7' 9 7#9/#" . " \$#9 8, / . < " #+ 4%B#\$O FreeBSD "% \$1. 45#\$ . 2- " O6 8, \$4#+, \$1%6.

) O 5#2>" O 85#, \$#1. 4' \$- , ( , ?\$# 1 7#" E' A84%&' # " #9 E%+2. 1%< . A# (54% /4' , 8\$, \$18: \$ , 2. 58: ; ' . , \$4#7' :

```
options MD_ROOT # md device usable as a potential root device
```

## 3. 2' &- ! - "\$3/ rc ! 5/. ( ' #+ \$ - ! - "\$3+ # %\$6! 3\$ " ' () 1' 7"\$\*! 4

M" ' &' %2' 3%&' ( 1, \$4%' 1%. 9#+ , ' , \$ . 9O FreeBSD /# , 2. 3%A4837' 8/4%12(. \$, ( /etc/rc.initdiskless.

```

/etc/rc.d/var 9# " $' 48. $ /var 7%7 E%+2#18: ,', $ . 98 1 /%9($' , , #35%. $ 87%3O1%. 9O+ , /' , #7
7%$%2#A#1 1 /var /4' /#9#; ' 7#9%" 5O mkdir(1), ' 39. " (. $ 4. > ' 9O 5#, $8/% "% ". 7#$#4O. ' 3
*$' 6 7%$%2#A#1. ) /4&., . . 1O/#2" . " ' ( /etc/rc.d/var 3%5. +, $18. $, ( . ; = #5"% /. 4. 9. " "%(
rc.conf - varsize. F74' /$ /etc/rc.d/var , #35%. $ 4%35. 2 /var "% #, " #1. 3"%?. " ' ( *$#+ /. 4. 9. " " #+
' 3 rc.conf:

```

```

varsize=8192

```

N%/#9" ' \$., ?\$# /# 89#2?%" ' : \*\$# 3"%?. " ' . 87%3%" # 1 , . 7\$#4%6.

```

H%7$ ' , /#2- 3#1%" ' ( E%+2#1#+ ,', $ . 9O /var 1 4. > ' 9. ?$. " ' ( ' 3%/ ' , ' (12( . $, ( 1%> " O9
/4' 3" %7#9, $%7 7%7 4%35. 2 / ( ' 2: BO. 548A' . 4%35. 2O, 7#$#4O. 9#A8$ "%6#5' $-, ( "% E2. < -
"#, ' $ . 2.) 5#2> . " 9#" $' 4#1%$-, ( 1 4. > ' 9. $#2- 7# 52( ?$. " ' ( . ), /#9" ' $., ?$# 1 4%35. 2.
J1. 45#$ . 2- " O. 5' , 7#1O. 8, $4#+, $1% 9O 7%, %2' , - #A4%" ' ? . " ' + E2. < - /%9($' - #, #B. " " #
#A4%" ' ? . " ' +, 7%, %: ; ' 6, ( 1#39#> "#, $ . + 3%/ ' , ' . ) %> "# " . 9#" $' 4#1%$- E%+2#1O.
, ' , $ . 9O "% E2. < - "#, ' $ . 2( 6 1 4. > ' 9%6 ?$. " ' ( ' 3%/ ' , ' , ' 1%> "#, $- #7%3% # $ E%+2%
/#57%?7' " . 9#> . $ BO$- / . 4. #& . " . "% . H%+2 /#57%?7' "% 3%A48> . " " #+ , ' , $ . 9. 9#> . $
/ . 4. > . ?- 78, #7 E2. < - "#, ' $ . 2( 9. " . . ? . 9 3% A#5. O%, $#. > 84"%2' 4#1%" ' . ' , #35%" ' .
14. 9. " " O6 E%+2#1 /4' 1#5( $ 7 $#98 > . 4. 382- $%$8. P#*$#98, 74#9. 85%2. " ' ( 3%/ ' , ' swap ' 3
1%< . A# E%+2% /etc/fstab, 1O 5#2> " O $%7> . ' 39. " ' $- /#2. /%4%9. $4#1 7%> 5#+ E%+2#1#+
, ' , $ . 9O "% ro $%7' 9 #B4%3#9:

```

# Device	Mountpoint	FStype	Options	Dump	Pass#
/dev/ad0s1a	/	ufs	ro	1	1

```

) 4. 382- $%$. *$' 6 ' 39. " . " ' + 1 , 4. 5" . , $%$' , $' ? . , 7#+ , ' , $ . 9. " . , 7#2- 7# /4' 2#> . " ' +
" . 9. 52. " " # / . 4. , $%" 8$ 4%B#$%$-. Q%/4' 9. 4, cron " . B85. $ " #49%2- " # 3%/8, 7%$-, ( 1
4. 382- $%$. # $, 8$, $1' ( $%B2' & 52( " . A# 1 7%$%2#A. /var, , #35%" " #9 /etc/rc.d/var, % syslog ' dhcp
B858$ ' , /O$O1%$- /4#B2. 9O ' 3-3% 5#, $8/% E%+2#1#+ , ' , $ . 9O $#2- 7# 52( ?$. " ' ( , % $%7> .
#$, 8$, $1' ( 3%/ ' , . + 1 /var, 7#$#4O+ BO2 , #35%" , 74' /$#9 /etc/rc.d/var. I#$ ( *$' /4#B2. 9O
(12(: $, ( 14. 9. " " O9' ' #B, 8> 5%: $, ( 19. , $ . , 4. < . " ' . 9 /4#B2. 9 , 3%/8, 7#9
4%, /4#, $4%" = " " O6 /4#A4%99" O6 /%7. $#1 1 4%35. 2. F$4%$. A' ' 4%B#SO , , ' , $ . 9#+ 52(
, 28?%. 1 " . B#2- < ' 6' 5#, $8/" O6 $#2- 7# 52( ?$. " ' ( E%+2#1O6 , ' , $ . 9.

```

```

) %> "# /#9" ' $-, ?$# E%+2#1%( ,', $ . 9%, 7#$#4%( BO2%, 9#" $' 4#1%" % $#2- 7# 52( ?$. " ' ( /4'
/#9#; ' E%+2% /etc/fstab, 1 2: B#+ 9#9. " $ 9#> . $ BO$- , 5. 2%" % 5#, $8/" #+ /# ?$. " ' : '
3%/ ' , ' 1O5%?. + 7#9%" 5O:

```

```

# /sbin/mount -uw partition

```

' 9#> . \$ BO\$- 1#314%; . "% 7 4. > ' 98 5#, \$8/% \$#2- 7# 52( ?\$. " ' ( /# \$%7#+ 7#9%" 5. :

```

# /sbin/mount -ur partition

```

# 4. 8' 9&/\* ! \$ 5/. (' #' . -! - "\$3+ - \*, (4

J%7 7%7 , #19. , \$' 90. , ATA 7#9/%7\$" O. E2. < -7%4\$O 4% , /#3" %: \$, ( 1# FreeBSD 7%7 #BO?" O. >=, \$7' . 5' , 7' IDE, \$# \$ . #4. \$' ? . , 7' 1O 9#> . \$ . 8, \$%" #1' \$- FreeBSD /# , . \$' /4' /#9#; ' 5' , 7. \$ kern ' mfsroot ' 2' , 7#9/%7\$-5' , 7%.

@5" %7# 5%> . 9%2. " -7%( 8, \$%" #17% FreeBSD /4' /#9#; ' #BO?" O6 /4#&. 584 8, \$%" #17' 9#> . \$ /4' 1. , \$' 7 , #35%" ' : , , \$ . 90 4%39. 4#9, /4. 1O<%: ; ' 9 200 9. A%B%+\$ . J%7 7%7 B#2-<' ' , \$1# 2: 5. + ' , /#2-38: \$ 8, \$4#+, \$1# E2. < -/%9(\$' 9. " -< . A# 4%39. 4% (128 9. A%B%+\$ , ?' \$%. \$, ( 1. , -9% B#2-<' 9 - 32 ' 2' 5%> . 16 9. A%B%+\$ ' , /#2-38: \$, ( A#4%35# ?%; . ), \$# 8, \$%" #17% #BO?" O9 #B4%3#9 " . /#56#5' \$-/4#, \$# " % 5' , 7. " . \$ 9. , \$% 5%> . 52( , %9#+ 9' " ' 9%2- " #+ 8, \$%" #17' .

F%9O9 /4#, \$O9 , /#, #B#9 #B#+\$' \*\$# #A4%" ' ? . " ' . " % #BC=9 (12( . \$, ( 8, \$%" #17% FreeBSD #BO?" O9 #B4%3#9 " % #BO?" O+ >=, \$7' + 5' , 7. P#, 2. #7#" ?%" ' ( 8, \$%" #17' , #B4. >- \$ . #/. 4%&' # " 8: , , \$ . 98 5# 4%39. 4%, 7#\$4O+ /#9. ; % . \$, ( " % 1%< E2. < -" #, ' \$ . 2- , % 3%\$ . 9 /#2" #, \$-: 3%%46' 1' 48+\$ . E%+2#18: , , \$ . 98. F2. 58: ; ' . < %A' /#1. 58\$ 1%, ? . 4. 3 /4#&. , , /#5A#\$17' ?%, \$' E2. < -/%9(\$' 52( 1%< . + 3%%46' 1' 4#1" " #+ E%+2#1#+ , , \$ . 90. N%/#9" ' \$ . , ?\$# ' 3-3% \$A#, ?\$# #BO?" ( 8, \$%" #17% " . 1O/#2" (2%, -, \$%7' . #/. 4%&' ' , 7%7 4%3B' . " ' . " % 4%35. 2O, 4%39. \$7%, , #35%" ' . E%+2#1#+ , , \$ . 90 ' \$%7 5%2. . 5#2> " O BOS- 1O/#2" . " O 148?" 8: . D4#9. 5' , 7. \$ kern ' mfsroot 1%9 \$%7> . " 8> " # 1#, /#2-3#1\$- , ( 5' , 7. \$#+ fixit.

## 1. R%3B' . " ' . 1%< . A# E2. < -" #, ' \$ . 2( " % 4%35. 2O

P#, 2. 3%A4837' /4' /#9#; ' 5' , 7. \$ kern ' mfsroot, 1OB. 4' \$ . /8" 7\$ custom ' 3 9. " : 8, \$%" #17' . M3 , 2. 58: ; . A# /8" 7\$% 9. " : 1OB. 4' \$ . partition. ) 9. " : 4%B#SO , 4%35. 2%9' 1O 5#2> " O 85%2' \$- 1. , , 8; , , \$18: ; ' . 4%35. 2O /4' /#9#; ' 72%1' < ' **d** . P#, 2. 85%2. " ' ( 1. . 6 ' 9. : ; ' 6, ( 4%35. 2#1 , #35%+\$ . 4%35. 2 /4' /#9#; ' 72%1' < ' **c** ' , #A2%, ' \$ . , - , /4. 52%A%. 9O9 /# 89#2?" " : 4%39. 4#9 4%35. 2%. D#A5% 1O B85. \$ . #/4#< . " O " % /4. 59. \$ \$' /% 4%35. 2%, 85#, \$#1. 4- \$ . , - , ?\$# 3" %?. " ' . \$' /% 4%1" # 165. J. / . 4- 3%/ ' < ' \$ . \*\$8 \$%B2' &8 4%35. 2#1 " % 5' , 7, " %>%1 72%1' < 8 **w** (" % \*\$#9 \*74%" . \*\$% #/&' ( , 74OS%). K, 2' 1O ' , /#2-38. \$ . 7#9/%7\$" 8: E2. < -7%4\$8 , #19. , \$' 98: , ATA, 1O 5#2> " O 1OB4\$- FreeBSD Boot Manager. J. / . 4- " %>9' \$ . 72%1' < 8 **q** 52( 1O6#5% ' 3 9. " : 4%B#SO , 4%35. 2%9' . L#2> " # BOS- 1O5%" # . ; = 4%3 9. " : 52( 1OB#4% 9. " . 5> . 4% 3%A4837' - /#1\$#4' \$ . \$#, ?\$# 1O 1OB' 4%2' 4%" ...

## 2. F#35%" ' . E%+2#1O6 , ' , \$ . 9 " % 1%< . 9 8, \$4#+, \$1. E2. < -/%9(\$'

) O+5' \$ . ' 3 9. " : 8, \$%" #17' custom, ' ' 3 A2%1" #A# 9. " : 8, \$%" #17' 1OB. 4' \$ . /8" 7\$ **fixit**. P#, 2. 16#5% 1 4. > ' 9 4%B#SO fixit, 11. 5' \$ . , 2. 58: ; 8: 7#9%" 58:

```
# disklabel -e /dev/ad0c
```

) \*\$#\$ 9#9. " \$ 1O 1#+5. \$ . 1 4. 5%7\$#4 vi ' 3-/#5 7#9%" 5O disklabel. N%\$ . 9, 1%9 " 8> " # 5#B%1' \$- , \$4#78 a: 1 7#" &. E%+2%. G\$% , \$4#7% a: 5#2> " % 1OA2(5. \$- /4' 9. 4" # \$%7:

```
a:      123456 0      4.2BSD 0      0
```

N5., - 123456 (12(. \$, ( '?' , 2#9, 1 \$#?' #, \$' , #1/%5%: ; ' 9 , \$. 9, ?\$# 6%4%7\$. 4' 38. \$ 4%39. 4' 9.: ; .+, ( 3%/ ' , ' 52( c:.) #B; . 9, 10 7#/' 48. \$. , 8; ., \$18: ; 8: , \$4#78 52( c: 52( , \$4#7' a: , ". 3%BO1%( #/4.5.2' \$- fstype 7%7 4.2BSD. F#64%" ' \$. E%+2 ' 3%1. 4< ' \$. 4.5%7\$' 4#1%" ' ..

```
# di sklabel -B -r /dev/ad0c
# newfs /dev/ad0a
```

3. R%39.; . " ' . 1%< . + E%+2#1#+ , ' , \$. 90 "% E2. < -" #, ' \$. 2.

F9#" \$' 48+\$. \$#2-7# ?\$# /#5A#\$#12. " " O+ E2. < -" #, ' \$. 2-:

```
# mount /dev/ad0a /flash
```

P#572: '?' \$ . \*\$8 9%< ' " 8 7 , . \$' , ?\$#BO 9#> "# BO2# /. 4. " . , \$' " %< tar-E%+2 ' 4%, /%7#1%\$- . A# 1 E%+2#18: , ' , \$. 98 "% E2. < -" #, ' \$. 2.. ) # \$ /4' 9. 4 \$A#, 7%7 \*\$# 9#> " # , 5. 2%\$-:

```
# ifconfig xl0 192.168.0.10 netmask 255.255.255.0
# route add default 192.168.0.1
```

J. /. 4-, 7#A5% 9%< ' "% "%6#5' \$, ( 1 , . \$' , /. 4. /' < ' \$. 1%< tar-E%+2. N5., - 10 9#> . \$. , \$#27" 8\$-, ( , ". 7#\$#4#+ /4#B2. 9#+ - . , 2' #BC=9 1%< . + E2. < -/%9(\$' 4%1. " , 7 /4' 9. 48, 128 9. A%B%+\$%9, % 1%< tar-E%+2 /4. 10< %. \$ 64 9. A%B%+\$%, \$# 10 " . 9#> . \$. #5" #14. 9. " " # 4%39., \$' \$- tar-E%+2 "% E2. < -" #, ' \$. 2. ' 4%, /%7#1%\$- . A# - 1%9 " . 61%\$' \$ 9., \$%. @5" ' 9 ' 3 4. < . " ' + \*\$## /4#B2. 90, . , 2' 10 ' , /#2-38. \$. FTP, (12(. \$, ( 4%, /%7#17% E%+2% 1# 14. 9( . A# /. 4. 5%' /# FTP. K, 2' 10 /. 4. 5%=\$. E%+2 ' 9. " " # \$%7, \$# 10 " " 7#A5% ". /#28?' \$. "% 5' , 7. #5" #14. 9. " " # %46' 1" O+ E%+2 ' . A# , #5. 4>' 9#.: :

```
ftp> get tarfile.tar "| tar xvf -"
```

K, 2' 1%< E%+2 #B4%B#\$%" 8\$' 2' \$##+ gzip, 10 \$%7>. 9#>. \$. \*\$A# 5#B' \$-, (:

```
ftp> get tarfile.tar "| zcat | tar xvf -"
```

P#, 2. \$A#, 7%7 10 /#28?' 2' , #5. 4>' 9#. 1%< . + 3%%46' 1' 4#1%" " #+ E%+2#1#+ , ' , \$. 90 "% E%+2#1#+ , ' , \$. 9. E2. < -/%9(\$' , 10 9#>. \$. 4%39#" \$' 4#1%\$- E2. < - /%9(\$- ' 10/#2" ' \$- /. 4. 3%A48378:

```
# cd /
# umount /flash
# exit
```

```
P4' 8,2#1' ', ?$# 10 /4%1' 2- "# "%, $4# ' 2' E%+2#18: ', $ . 98 /4' . = , #35%" ' ' "%
#BO?" #9 >=, $7#9 5' ,7. (, 9#" $' 4#1%" ' . 9 E%+2#106 , ' , $ . 9 1 4. >' 9. $#2-7# 52(
?$. "' ( ' , " . #B6#5' 909' #/&' (9' , 1, $4#. " " O9' 1 (54#), 1%< % 1, $4%' 1%. 9%(
, ' , $ . 9% FreeBSD $ . / . 4- 5#2> "% 8, / . < " # 3%A48>%$- , (.
```

## 5. 8 "% / " \$ : ! ! % / ; ' " + - - ! - " \$ 3 ' . & ( 4 - ( , 7 / \$ # \* \$ ; ' ( ) < ! = ! & ' - " , > \* + = " ' ( ) 1 ' & ( 4 7 " \$ \* ! 4 5 / . ( ' # + = - ! - " \$ 3

```
) 4%35. 2. P#5, ' , $ . 9% rc ' E%+2#10. , ' , $ . 90 1 4. >' 9. $#2-7# ?$. "' ( BO2# 87%3%" #, ?$#
E%+2#1%( ' , $ . 9% /var, , #35%1%. 9%( ,74' /$#9 /etc/rc.d/var, ' "%2' ?' . 7#4" . 1#+ E%+2#1#+
, ' , $ . 90, 5#, $8/" #+ $#2-7# 52( ?$. "' (, /4' 1#5($ 7 /4#B2. 9%9 /4' 4%B#$ . 9" #A' 6
4%, /4#, $4%" = " O6 /4#A4%99" O6 /%7. $#1, ' , /#2-38. 9O6 1# FreeBSD. ) *$#+ , $%- . B858$
5%" O 4. 7#9. " 5%&' ' /# "%, $4#+7. " #49%2- " #+ 4%B#$O cron ' syslog, 8, $%" #17. /#4$#1 ' 1. B-
, . 41. 4% Apache.
```

### 5.1. Cron

```
)# 14. 9( 3%A4837' , #5. 4>' 9#. 7%$%2#Aa /var E#49' 48. $, ( ,74' /$#9 /etc/rc.d/var ' , /#2-38(
5%" " O. ' 3/etc/mtree/BSD.var.dist, /#*$#98 1 " =9 , #35%. $, ( " . ,7#2-7# , $%" 5%4$" O6 7%$%2#A#1,
1?' , 2. 7#$#4O6 - cron, cron/tabs, at.
```

```
@5 "%7# *$# " . 4. < % . $ /4#B2. 98 , , #64%" . "' . 9 cron-$%B2' & 9. > 58 / . 4. 3%A4837%9' . D#A5%
, ' , $ . 9% / . 4. 3%A48>% . $, (, $# E%+2#1%( ' , $ . 9% /var, 7#$#4%( 4%, /#2%A%. $, ( 1 /%9($' , B85. $
8"' ?$#>. "%, 19. , $ . , # 1, . 9' cron-$%B2' &%9' , 7#$#40. 1O 9#A2' $%9' 9. $- . P#*$#98 #5" ' 9
' 3 4. < . "' + 9#>. $ , $%- , #35%" ' . cron-$%B2' & 52( /#2-3#1%$. 2. +, 7#$#4O9 #"' " 8>" O,
9#" $' 4#1%" ' . 1%< . + E%+2#1#+ , ' , $ . 90 / 1 4. >' 9. ?$. "' ( ' 3%/ ' , ' , ' 7#/' 4#1%" ' . *$' 6
cron-$%B2' & 1 B. 3#/%, " #. 9. , $#, "%/4' 9. 4, 1 /etc/tabs, ' /# , 2. 58: ; . . 5#B%12. "' . , $4#7' 1
7#" . & ,74' /$% /etc/rc.initdiskless 52( 7#/' 4#1%" ' ( *$' 6 cron-$%B2' & 1 7%$%2#A /var/cron/tabs
/# , 2. . A# , #35%" ' ( 1# 14. 9( ' "' &' %2' 3%&' ' , ' , $ . 90. )%9 9#>. $ $%7>. /#S4. B#1%$- , (
5#B%1' $- , $4#78, 7#$#4%( ' 39. " ( . $ 4. >' 9O 5#, $8/% ' /4%1% "% 7%$%2#A' , 7#$#40. 1O
, #35%2' , ' "% E%+2O, 7#$#40. 1O , 7#/' 4#1%2' 1 ,74' /$. /etc/rc.initdiskless.
```

### 5.2. Syslog

```
) E%+2. syslog.conf 3%5%" # 9. , $#/#2#>. "' . " . 7#$#4O6 E%+2#1 /4#$#7#2#1, 7#$#40.
' 9. : $, ( 1 7%$%2#A. /var/log. G$' E%+2O " . , #35%: $, ( ,74' /$#9 /etc/rc.d/var 1# 14. 9(
' "' &' %2' 3%&' ' , ' , $ . 90. P#*$#98 A5. -" ' B85- 1 ,74' /$. /etc/rc.d/var, /# , 2. . . 7&' ' ,
, #35%: ; . + 7%$%2#A' 1 /var, 1%9 " 8>" # 5#B%1' $- " . ?$# 14#5. , 2. 58: ; . A#:
```

```
# touch /var/log/security /var/log/maillog /var/log/cron /var/log/messages
# chmod 0644 /var/log/*
```

### 5.3. ?- "/\* ' #1 / >' %" ' #

```
P. 4. 5 $ . 9, 7%7 #B, 85' $- ' 39. " . ' ' (, 7#$#4O. " 8> " # , 5. 2%$- 52( 8, /. < " #A# ' , /#2- 3#1%" ' (
5. 4. 1% /#4$#1, ". #B6#5' 9# " %/#9" ' $- # $#9, ?$# 1%< ' E%+2#1O. , ' , $. 9O "% E2. < -
"#, ' $. 2(6 5#, $8/" O $#2- 7# 52( ?$. " ' ( . P#*$#98 1%9 " 8> " # 14. 9. " " # 9# " $' 4#1%$- ' 6 1
4. >' 9. ?$. " ' ( ' 3%/' , ' , ' , /#2- 38( /%4%9. $4O 7#9%" 5" #+ , $4#7' , 7%7 *$# /#7%3%" # 1
P#5, ' , $. 9% rc ' E%+2#1O. , ' , $. 9O 1 4. >' 9. $#2- 7# ?$. " ' ( . ) O 1, . A5% 5#2> " O
/. 4. 9#" $' 4#1%$- *$' E%+2#1O. , ' , $. 9O 1 4. >' 9 $#2- 7# 52( ?$. " ' ( /#, 2. #7#" ?%" ' (
4%B#$ - ' 32' < " ' . 3%/' , ' "% E2. < " #, ' $. 2- 9#A8$ 3"%?' $. 2- " # , #74%$' $- . A# , 4#7
*7, /28%$%&' ' .
```

```
O$#BO 9#> " # BO2# 1#+$' 1 7%$%2#A , /#4$%9' ' 8, /. < " # 1O/#2" ' $- 7#9%" 58 make install ,
". #B6#5' 9# , #35%$- 7%$%2#A 52( /%7. $#1 1 E%+2#1#+ , ' , $. 9. , ". 4%, /#2%A%: ; . +, ( 1
/%9($' , A5. B85$ 64%" ' $- , ( /%7. SO 9. > 58 /. 4. 3%A4837%9' . J%7 7%7 52( 8, $%" #17' /%7. $% 1
2: B#9 , 28?%. $4. B8. $, ( 9#" $' 4#1%" ' . 1%< ' 6 E%+2#1O6 , ' , $. 9 52( ?$. " ' ( ' 3%/' , ' , ' 9. . $
, 9O, 2 1O5. 2' $- #B2%, $- E2. < - " #, ' $. 2( $%7> . ' 52( 3%/' , ' ' "E#49%&' ' # /%7. $ .
```

```
P4. > 5. 1, . A# , #35%+$ . 7%$%2#A , B%3#+ 5%" " O6 # /%7. $%6. @BO?" # *$# 7%$%2#A /var/db/pkg, " #
9O " . 9#> . 9 4%39. , $' $- B%38 ' 9. " " # 35. , - , $%7 7%7 #"% ' , ? . 3" . $ /#, 2. /. 4. 3%A4837'
, ' , $. 9O.
```

```
# mkdir /etc/pkg
```

```
J. /. 4- 1 , 74' /$ /etc/rc.d/var 5#B%1- $. , $4#78, 7#$#4%( , 1(3O1%. $ 7%$%2#A /etc/pkg , /var/db/pkg.
Q%/4' 9. 4:
```

```
# ln -s /etc/pkg /var/db/pkg
```

```
J. /. 4- 7%> 5O+ 4%3 /4' 9#" $' 4#1%" ' ' 1%< ' 6 E%+2#1O6 , ' , $. 9 52( ?$. " ' ( ' 3%/' , ' '
8, $%" #17' /%7. $%, 7#9%" 5% make install B85. $ 4%B#$%$- , % ' "E#49%&' ( # /%7. $ . B85. $
8, /. < " # 3%/' , %" % 1 7%$%2#A /etc/pkg ($%7 7%7 E%+2#1( , ' , $. 9% B85. $ 1 *$# 14. 9(
, 9#" $' 4#1%" % 52( ?$. " ' ( ' 3%/' , ' ) , 7#$#4O+ 1, . A5% B85. $ 5#, $8/" O9 #/. 4%&' # " #+
, ' , $. 9. 7%7 /var/db/pkg.
```

### 5.4. @\$; -- \$%#\$% Apache



```
S %A' , #/' , %" " O. 1 *$#+ ?%, $' , $%$- ' , ". #B6#5' 9# 1O/#2" ' $- 2' < - 1 $#9
, 28?%. , . , 2' Apache "%, $4#. " , #64%" ($- , 1#+ pid ' 2' > 84" %2 1" . 7%$%2#A%
/var. F "%, $4#+7%9' /# 89#2?%" ' : Apache E#49' 48. $ , 1#+ pid E%+2 1
/var/run/httpd.pid, % E%+2O > 84" %2#1 - 1 /var/log.
```

L%2.. 1 , \$%- . /#54%389. 1%. \$, (, ?\$# Apache , #64%" (. \$ , 1#' E%+2O > 84" %2#1 1 7%\$%2#A  
apache\_log\_dir 1". 7%\$%2#A% /var. D#A5% \*\$#\$ 7%\$%2#A 4%, /#2#>." "% E%+2#1#+ , ' , \$. 9. ,  
, 9#" \$' 4#1%" "#+ 1 4.>' 9. \$#2-7# 52( ?\$. "' (, Apache ". , 9#>.\$ , #64%" (\$- E%+2O  
> 84" %2#1, ?\$# 1 , 1#: #?. 4. 5- 9#>.\$ 10301%\$- /4#B2. 9O 1 4%B#\$ . 1. B-, . 41. 4%. ) \$%7#9  
, 28?%. ". #B6#5' 9# 5#B%1' \$- "#1O+ 7%\$%2#A 7 , /' , 78 7%\$%2#A#1 ' 3 /etc/rc.d/var 52( ' 6  
, #35%" ' ( 1 7%\$%2#A. /var ' , 1(3%\$- apache\_log\_dir , /var/log/apache. Q8> "# \$%7>. 3%5%\$- /4%1%  
5#, \$8/% ' 12%5. 2- &% "#1#A# 7%\$%2#A%.

F" %?%2% 5#B%1- \$. 7%\$%2#A log/apache 7 , /' , 78 7%\$%2#A#1 , #35%1%. 9O6 , 74' /\$#9 /etc/rc.d/var.

N%\$. 9 5#B%1- \$. 1 , 74' /\$ /etc/rc.d/var /#, 2. , . 7&' ' , #35%" ' ( 7%\$%2#A#1 \$%7' . 7#9%" 5O:

```
# chmod 0774 /var/log/apache  
# chown nobody:nobody /var/log/apache
```

M "%7#" . &, 85%2' \$. , 8; . , \$18: ; ' + 7%\$%2#A apache\_install/logs ' 3%9. "' \$. . A# , , O27#+:

```
# rm -rf apache_log_dir  
# ln -s /var/log/apache apache_log_dir
```