
FreeBSD

Korea FreeBSD Users Group – <http://www.kr.FreeBSD.org/>

Chapter 3 :

<rick@rickinc.com> .

<nobreak@kr.FreeBSD.org> .

: 2004 8 7

: 2005 3 8

: 1.0

FreeBSD Documentation Project FreeBSD Handbook 2004 8

7 . FreeBSD Handbook ,
, CVS Repository
,
,
가
가 . KFUG(Korea FreeBSD Users Group)
KFUG

“FreeBSD Handbook” “FreeBSD Documentation Project” , “ FreeBSD
” “ (Young-oak Lee)” .

Copyright © 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004 The FreeBSD Documentation Project.

3

3.1

FreeBSD

. FreeBSD 가

..

- FreeBSD “가 ” 가
- 가
- FreeBSD
- FreeBSD
- 가
- , 가
- 가
- 가
- 가
- FreeBSD 가
- 가

3.2 가 &

FreeBSD

FreeBSD
FreeBSD

3.2.1

FreeBSD

```
Additional ABI support:
Local package initialization:
Additional TCP options:

Fri Sep 20 13:01:06 EEST 2002

FreeBSD/i386 (pc3.example.org) (ttyv0)

login:
```

가

FreeBSD/i386 (pc3.example.org) (ttyv0)

```
      . x86
      "FreeBSD"
      (
      가 ) pc3.example.org
      -- ttyv0
```

```
X86      :      i386      .      386 CPU      FreeBSD
      i386      .      "      "
```

login:

FreeBSD

3.2.2 FreeBSD

FreeBSD

가
FreeBSD ()
“ ”
“ ”) 가 FreeBSD 가
가
FreeBSD 가 가

: FreeBSD 가

login:

john 가 john
Enter "password" 가 :

login: john

Password:

john Enter !
가

FreeBSD

가

MOTD(/etc/motd) (#, \$ %)
FreeBSD

```
Password:
Last login: Sun Sep 12 19:12:15 from 211.112.127.83
Copyright (c) 1980, 1983, 1986, 1988, 1990, 1991, 1993, 1994
    The Regents of the University of California. All rights reserved.

Last login: Fri Sep 10 21:08:31 2004 from 210.90.81.126
Copyright (c) 1980, 1983, 1986, 1988, 1990, 1991, 1993, 1994
    The Regents of the University of California. All rights reserved.

FreeBSD 4.10-RELEASE (GENERIC) #0: Tue May 25 22:47:12 GMT 2004

Welcome to FreeBSD!

Before seeking technical support, please use the following resources:

o Security advisories and updated errata information for all releases are
  at http://www.FreeBSD.org/releases/ - always consult the ERRATA section
  for your release first as it's updated frequently.

o The Handbook and FAQ documents are at http://www.FreeBSD.org/ and,
  along with the mailing lists, can be searched by going to
  http://www.FreeBSD.org/search/. If the doc distribution has
  been installed, they're also available formatted in /usr/share/doc.

If you still have a question or problem, please take the output of
`uname -a`, along with any relevant error messages, and email it
as a question to the questions@FreeBSD.org mailing list. If you are
unfamiliar with FreeBSD's directory layout, please refer to the hier(7)
man page. If you are not familiar with man pages, type `man man`.

You may also use /stand/sysinstall to re-enter the installation and
configuration utility. Edit /etc/motd to change this login announcement.
You have new mail.
%■
```

[3-8bmp]

3.2.3

FreeBSD

FreeBSD

가

“가

”

가 FreeBSD 가
가 가 FreeBSD 가

F2 **Alt-F8** FreeBSD 가 . FreeBSD **Alt-F1, Alt-**

Note: FreeBSD
syscons(4), atkbd(4), vidcontrol(1) kbdcontrol(1)

가 "가 " FreeBSD 가
. 가
가

3.2.4 /etc/ttys

FreeBSD 8 가
가 가
/etc/tty

FreeBSD 가 /etc/ttys
(#) 가
가 9 가 FreeBSD 가
8 가 ttysv 가

```
#
# $FreeBSD: src/etc/etc.i386/ttys,v 1.8.2.1 2003/11/14 12:59:51 simokawa Exp $
#   @(#)ttys      5.1 (Berkeley) 4/17/89
#
# This file specifies various information about terminals on the system.
# It is used by several different programs.  Common entries for the
# various columns include:
#
# name      The name of the terminal device.
#
# getty     The program to start running on the terminal.  Typically a
#           getty program, as the name implies.  Other common entries
#           include none, when no getty is needed, and xdm, to start the
#           X Window System.
#
# type     The initial terminal type for this port.  For hardwired
#           terminal lines, this will contain the type of terminal used.
#           For virtual consoles, the correct type is cons25.  Other
#           common values include network for network connections on
#           pseudo-terminals, dialup for incoming modem ports, and unknown
#           when the terminal type cannot be predetermined.
#
# status   Must be on or off.  If on, init will run the getty program on
#           the specified port.  If the word "secure" appears, this tty
#           allows root login.
#
# name     getty                               type      status      comments
#
# If console is marked "insecure", then init will ask for the root password
# when going to single-user mode.
console none                               unknown off secure
#
ttyv0  "/usr/libexec/getty Pc"               cons25  on  secure
# Virtual terminals
ttyv1  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv2  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv3  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv4  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv5  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv6  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv7  "/usr/libexec/getty Pc"               cons25  on  secure
ttyv8  "/usr/X11R6/bin/xdm -nodaemon"       xterm   off  secure
```

[3-9.bmp]

가

ttys(5)

3.2.5

“ ” 가?

12.6.2

FreeBSD

가

가

/etc/ttys

. console :

```
# name  getty                type  status  comments
#
# If console is marked "insecure", then init will ask for the root password
# when going to single-user mode.
console none                unknown of secure
```

Note: console secure insecure
FreeBSD 가 root

insecure . root
가 FreeBSD

3.3

BSD FreeBSD 가
FreeBSD
CPU
가
가
가
8 가 3

0	No read, no write, no execute	- - -
1	No read, no write, execute	- - x
2	No read, write, no execute	- w -

3	No read, write, execute	-wx
4	Read, no write, no execute	r--
5	Read, no write, execute	r-x
6	Read, write, no execute	rw-
7	Read, write, execute	rwX

```

% ls -l /
ls(1)
ls -l

```

```

% ls -l
total 530
-rw-r--r-- 1 root wheel 512 Sep 5 12:31 myfile
-rw-r--r-- 1 root wheel 512 Sep 5 12:31 otherfile
-rw-r--r-- 1 root wheel 7680 Sep 5 12:31 email.txt
...

```

```

ls -l
-rw-r--r--

```

() , (character) ,
pseudo-file
3 rw- r--
r-- dash(-)

644 3 가

FreeBSD , ,
/dev
가

가 가
(
).

가

가 setuid sticky

chmod(1)

3.3.1

가
8 ()
() ()

()	U	
()	G	
()	O	
()	A	(“ ”)
()	+	가
()	-	
()	=	
()	R	
()	W	
()	X	
()	t	Sticky bit
()	s	Set UID GID

chmod(1)

FILE

% **chmod go= FILE**

(,)

FILE

가 .

% **chmod go-w, a+w FILE**

3.4

FreeBSD

. 가

root "/"

root

가

가 root

/usr, /var, /mnt /cdrom

/etc/fstab

. /etc/fstab

. /etc/fstab

noauto

가

rc(8)

. /etc/fstab

가

fstab(5)

/etc/fstab

```
# See the fstab(5) manual page for important information on automatic mounts
# of network filesystems before modifying this file.
#
# Device          Mountpoint      FStype  Options      Dump    Pass#
/dev/ad0s1b      none            swap    sw           0       0
/dev/ad0s1a      /               ufs     rw           1       1
#/dev/ad0s1h    /home          ufs     rw           2       2
/dev/ad0s1h     /home          ufs     rw,userquota 1       2
/dev/ad0s1e     /tmp           ufs     rw           2       2
/dev/ad0s1g     /usr           ufs     rw           2       2
/dev/ad0s1f     /var           ufs     rw           2       2
/dev/acd0c      /cdrom         cd9660  ro,noauto    0       0
proc            /proc          procfs  rw           0       0
```

[3-10.bmp]

hier(7)
가

/	root
/bin/	
/boot/	가
/boot/defaults/	. loader.conf(5)
/dev/	. intro(4)
/etc/	
/etc/defaults/	. rc(8)
/etc/mail/	sendmail(8)
/etc/namedb/	named . named(8)
/etc/periodic/	cron(8) , , . periodic(8)
/etc/ppp/	ppp . ppp(8)
/mnt/	가
/proc/	. procfs(5) mount_procfs(8)
/root/	root
/sbin/	
/stand/	Standalone
/tmp/	. mfs(8) (/tmp).
/usr/	
/usr/bin/	
/usr/include/	C include
/usr/lib/	
/usr/libdata/	
/usr/libexec/	& (). 가 FreeBSD
/usr/local/	/usr/local /usr 가 hier(7) . /usr/local/share 가 /usr/local man

	share/doc/port .
/usr/obj/	usr/src .
/usr/ports	FreeBSD ().
/usr/sbin/	& (가)
/usr/share/	
/usr/src/	BSD
/usr/X11R6/	가 X11R6 ().
/var/	, , .
/var/log/	.
/var/mail/	.
/var/spool/	.
/var/tmp/	.
/var/yp	NIS

3.5

FreeBSD 가 가 .
readme.txt README.TXT . FreeBSD
(.txt) .

:	*.doc	*.exe
---	-------	-------

(/)
readme.txt 가 bar
foo 가
foo/bar/readme.txt .
root

가 . root

DOS

MacOS :

FreeBSD

FreeBSD

c:/foo/bar/readme.txt

root

. root

root

/

root

FreeBSD

가

A, B, C

3

가

가

A1

A2(B1, B2 C1, C2)

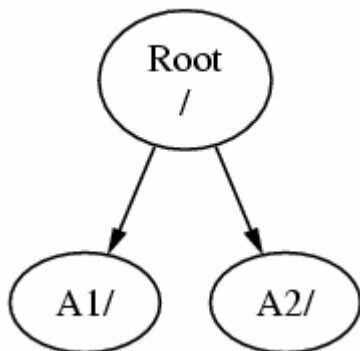
root

가

A root

ls

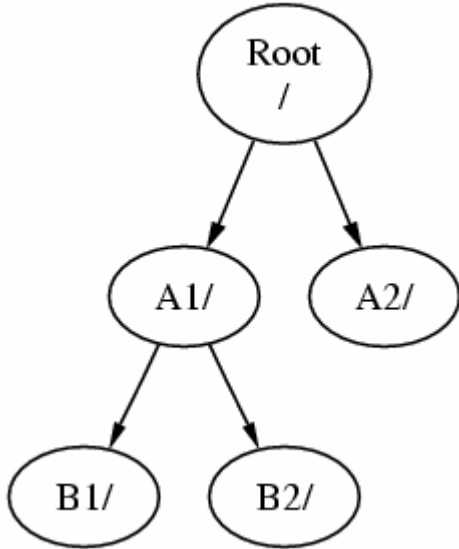
A1 A2



[3-1.bmp]

B

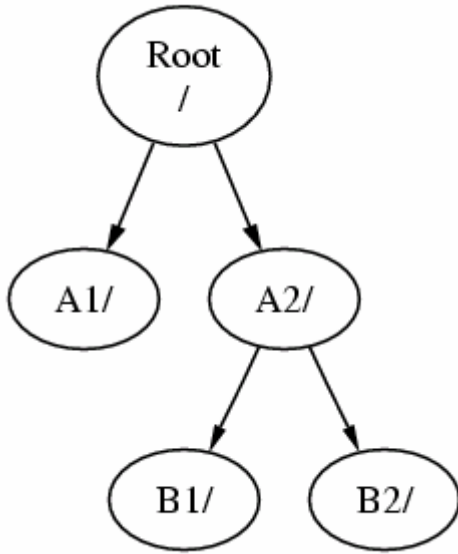
A1 가 . B root A1
B 가 .



[3-2.bmp]

B1 B2 가 /A1/B1 /A1/B2 가 .
/A1 B가 A

B가 A2 .



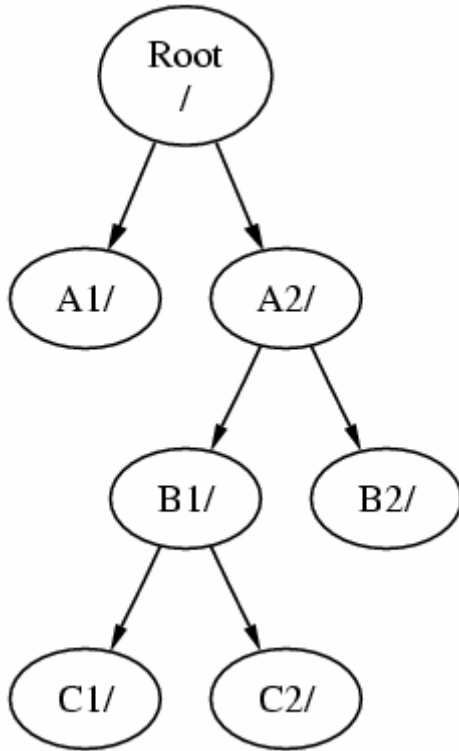
[3-3.bmp]

/A2/B1 /A2/B2 가

C

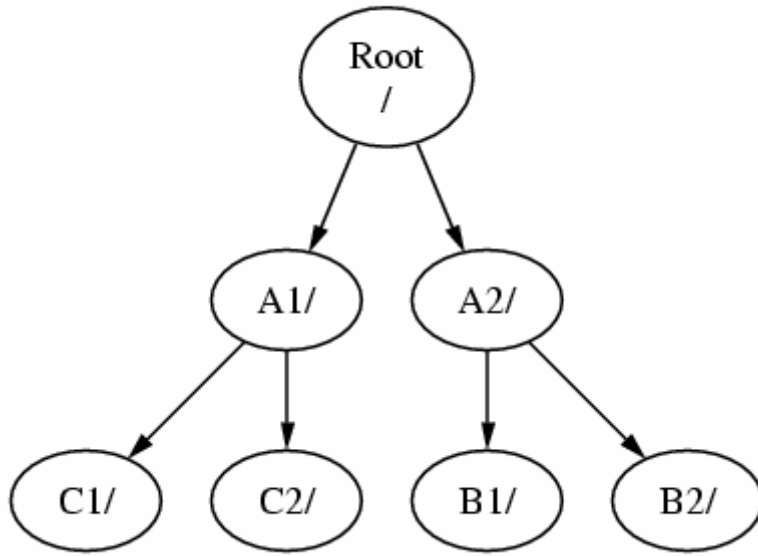
B

B1



[3-4.bmp]

C A A1



[3-5.bmp]

DOS

join

. FreeBSD

가

가

root

●

가

root

. /home

가

nosuid

suid/guid

suid/guid	:	root
	/etc/passwd	root
. Setuid 가	root 가	
setuid		

```
root          가          . Setgid
                .
                setuid          .
-r-sr-xr-x 2 root wheel 32888 May 26 06:30 /usr/bin/passwd
```

● FreeBSD

가 가 가

● FreeBSD

가 가

● 가 FreeBSD

: FreeBSD 4.4 growfs(8)
가

FreeBSD
가 a h

FreeBSD FreeBSD 가
가

FreeBSD

가 .

a	root 가 .
b	가 .
c	가 C ().
d	d d d sysinstall

가 FreeBSD 가 (slice)
FreeBSD 가 FreeBSD 가
1 4 .
s 1 "da0s1"
SCSI . 4
5 "ad0s5" IDE
a h 가
"da0a" da "ad1s3e"
IDE
가 0
3-1
FreeBSD 가
s + + 3-1
3-2

FreeBSD , FreeBSD
()

3-1.

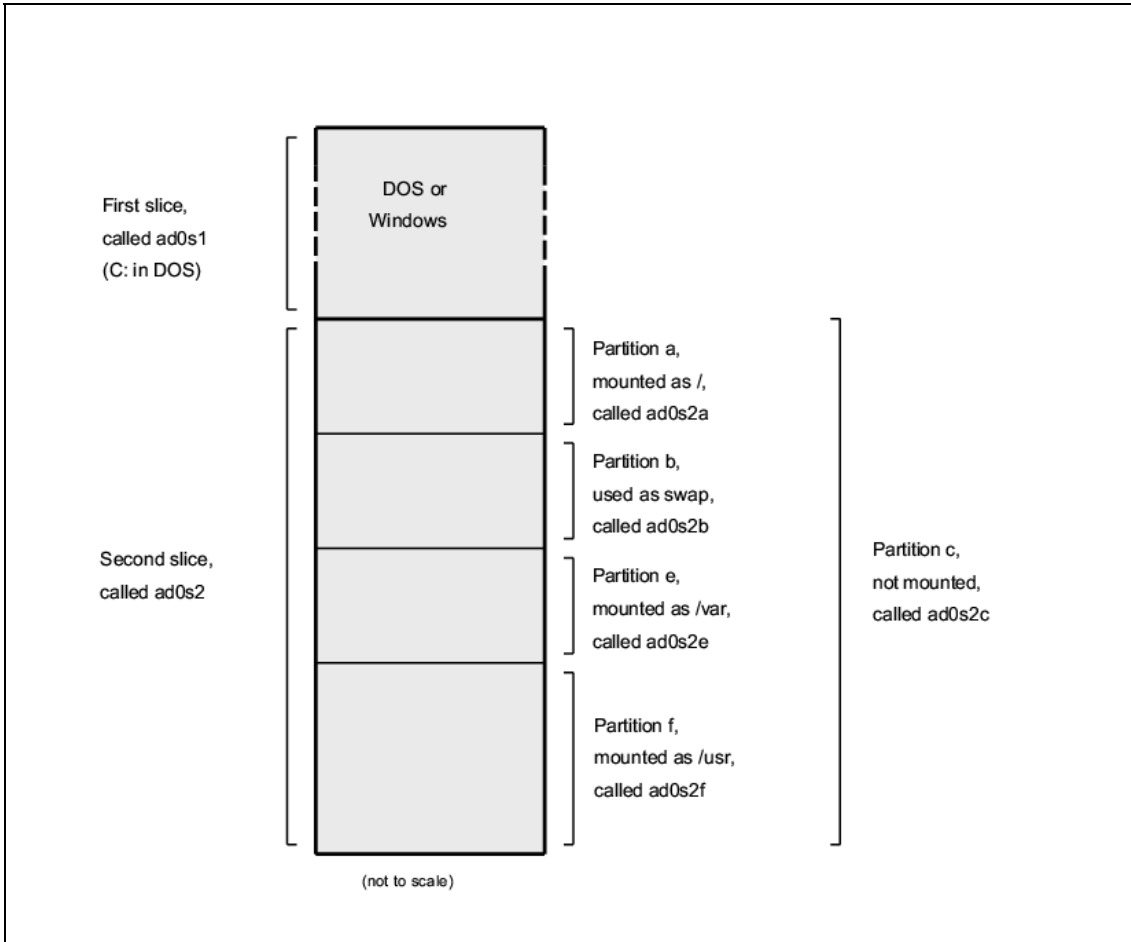
Ad	ATAPI (IDE) disk
Da	SCSI direct access disk
Acd	ATAPI(IDE) CDROM
Cd	SCSI CDROM
Fd	Floppy disk

3-1. , ,

ad0s1a	IDE	(ad0)	(s1)	(a)
da1s2e	SCSI	(da1)	(s2)	(e)

3-2.

FreeBSD IDE .
 가 4GB 2GB (DOS) 가 가 .
 DOS C: FreeBSD
 FreeBSD 가 .
 가 . a root e
 /var f /usr .



3.6

/usr/local	/	root	/dev, /usr
	가	가	.
		가	가 . /var log/, spool/
			. root
	/	/var	.
			가
			CDROM

3.6.1 fstab

/etc/fstab (noauto)

```
# See the fstab(5) manual page for important information on automatic mounts
# of network filesystems before modifying this file.
#
# Device      Mountpoint  FStype  Options      Dump  Pass#
/dev/amrd0s1b none        swap    sw           0     0
/dev/amrd0s1a /           ufs     rw          1     1
/dev/amrd0s1h /home       ufs     rw          2     2
/dev/amrd0s1e /tmp        ufs     rw          2     2
/dev/amrd0s1g /usr        ufs     rw          2     2
/dev/amrd0s1f /var        ufs     rw          2     2
/dev/acd0c    /cdrom     cd9660  ro,noauto   0     0
proc         /proc      procfs  rw          0     0
```

[3-11.bmp]

/etc/fstab 가 :

device /*mount-point* *fstype* *options* *dumpfreq* *passno*

device (). 16.2 .

mount-point ().

fstype mount(8) . FreeBSD *ufs* .

options *rw* *ro* *noauto* . mount(8)

dumpfreq

```

                                가
                                dump(8)가
                                .
                                0
                                .
                                .
                                가
                                .
                                passno 0
                                . root
                                (
                                ) passno 1
                                passno
                                passno 가
                                1
                                .
                                fsck(8) 가
    
```

3.6.2. mount

mount(8)

가

mount device mountpoint

mount(8)

-a

/etc/fstab

"noauto"

-t

-d

-v

mount(8)

-f

()

-r

rdonly -o

-t fstype

-a

"ufs"

-u

-v

-w

-o

(,)

nodev

noexec

nosuid

setuid setgid

3.6.3 umount

umount(8) , -a -A 가

-f -v 가 . -f 가

-a -A -t . -A root

3.5

FreeBSD

가

process ID PID

가

가

가

가

가

가

Init

. init

PID

1

. Init

FreeBSD 가

ps(1) top(1)

. ps(1)

PID

top(1)

가

ps(1)

```
% ps
  PID TT  STAT      TIME COMMAND
 298  p0  Ss      0:01.10 tcsh
 7078 p0  S       2:40.88 xemacs mdoc.xsl (xemacs-21.1.14)
37393 p0  I       0:03.11 xemacs freebsd.dsl (xemacs-21.1.14)
48630 p0  S       2:50.89 /usr/local/lib/netscape-linux/navigator-linux-4.77.bi
48730 p0  IW      0:00.00 (dns helper) (navigator-linux-)
72210 p0  R+      0:00.00 ps
 390  p1  Is      0:01.14 tcsh
 7059 p2  Is+     1:36.18 /usr/local/bin/mutt -y
 6688 p3  IWs     0:00.00 tcsh
10735 p4  IWs     0:00.00 tcsh
20256 p5  IWs     0:00.00 tcsh
 262  v0  IWs     0:00.00 -tcsh (tcsh)
 270  v0  IW+     0:00.00 /bin/sh /usr/X11R6/bin/startx -- -bpp 16
 280  v0  IW+     0:00.00 xinit /home/nik/.xinitrc -- -bpp 16
 284  v0  IW      0:00.00 /bin/sh /home/nik/.xinitrc
 285  v0  S       0:38.45 /usr/X11R6/bin/sawfish
```

[3-6.bmp]

```
ps(1)
ID . PID 1 99999
. TT tty
STAT . TIME CPU
CPU 가
COMMAND
```

```
ps(1) 가
auxww
u . x
ww ps(1)가
```

top(1)

```
% top
last pid: 72257; load averages: 0.13, 0.09, 0.03 up 0+13:38:33 22:39:10
47 processes: 1 running, 46 sleeping
CPU states: 12.6% user, 0.0% nice, 7.8% system, 0.0% interrupt, 79.7% idle
Mem: 36M Active, 5256K Inact, 13M Wired, 6312K Cache, 15M Buf, 408K Free
Swap: 256M Total, 38M Used, 217M Free, 15% Inuse

  PID USERNAME PRI NICE  SIZE  RES STATE   TIME  WCPU   CPU COMMAND
 72257 nik      28  0  1960K 1044K RUN     0:00 14.86%  1.42% top
  7078 nik       2  0 15280K 10960K select 2:54  0.88%  0.88% xemacs-21.1.14
  281  nik       2  0 18636K  7112K select 5:36  0.73%  0.73% XF86_SVGA
  296  nik       2  0  3240K 1644K select 0:12  0.05%  0.05% xterm
48630 nik       2  0 29816K  9148K select 3:18  0.00%  0.00% navigator-linu
  175  root       2  0   924K  252K select 1:41  0.00%  0.00% syslogd
 7059  nik       2  0  7260K  4644K poll   1:38  0.00%  0.00% mutt
...
```

[3-7.bmp]

```

          .      (      5      )
          (
(      )
가      (      47      ),
CPU
ps(1)      가
, CPU      top(1)
가
.      Netscape 가      30MB
9MB
top(1)      2      s

```

3.8

```

가
가

```

가

BSD 가

3 가 가

"d"가 가 BIND
named), Apache

httpd , lpd

maild sendmail

가

() 가
가 가 가

kill(1) kill(2)

root

FreeBSD

가

FreeBSD

Segmentation Violation (*SIGSEGV*)

alarm(3)

(*SIGALRM*)

SIGTERM *SIGKILL*

SIGTERM

SIGTERM

SIGKILL

가

" 가

" . *SIGKILL* FreeBSD

```

: 가 가 가
가 ( 가 )
" "

```

SIGHUP, SIGUSR1 SIGUSR2
가

가 . 가

. httpd

SIGHUP

httpd

SIGHUP

[:]

```

inetd(8) . inetd(8)
/etc/inetd.conf SIGHUP inetd(8)
1. ID . ps(1) grep(1)
. grep(1)
inetd(8) root ps(1) ax

% ps -ax | grep inetd
198 ?? IWs 0:00.00 inetd -wW

inetd(8) PID 198 . grep inetd
ps(1)

```

```

2. kill(1) . inetd(8) root su(1)
root 가

% su
Password:
# /bin/kill -s HUP 198

kill(1)
"kill: PID: Operation not
permitted" . PID

PID "kill: PID: No such process"

```

[]

```

/bin/kill 가? kill
/bin/kill
/bin/kill

TERM KILL

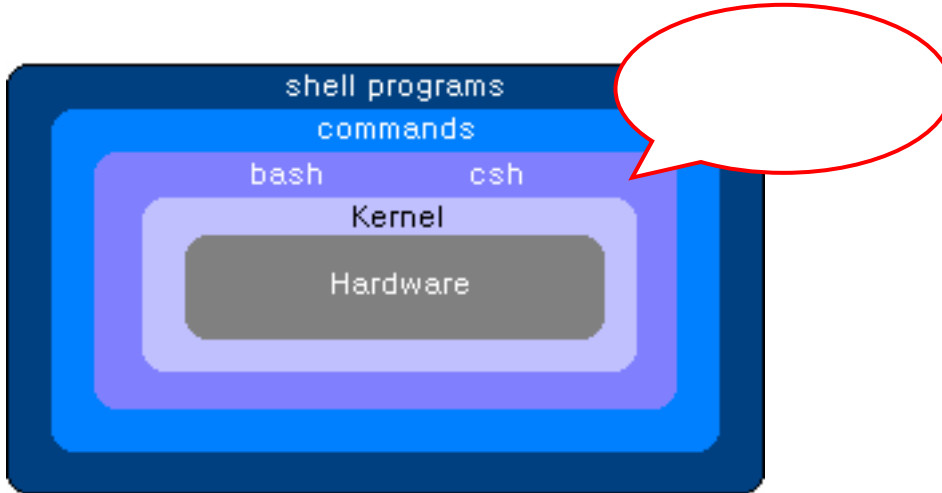
: ID
1 init(8) . /bin/kill -s KILL 1
Return kill(1)

```

3.9

FreeBSD

가 FreeBSD sh C- tcsh
. zsh bash FreeBSD



[3-12.bmp]

가? . C tcsh C
bash
가
가
가 Tab
가 . foobar foo.bar
가 . foobar rm fo
[Tab].[Tab]
rm foo[BEEP].bar
[BEEP] . foobar foo.bar fo foo
.. Tab

가

USER	
PATH	(:)
DISPLAY	가 x11
SHELL	
TERM	
TERMCAP	
OSTYPE	FreeBSD.
MACHTYPE	CPU
EDITOR	가
PAGER	가
MANPATH	(:)

```

tosh tcsh csh C
setenv sh bash
export csh tcsh EDITOR
/usr/local/bin/emacs

```

% **setenv EDITOR /usr/local/bin/emacs**

% **export EDITOR="/usr/local/bin/emacs"**

```

$
$TERM echo echo $TERM $TERM

```

```

*
echo * ls

```

```

*
echo
( )
echo $TERM . echo $TERM $TERM

```

3.9.1

```

가 chsh . chsh EDITOR
; vi . "Shell:"

chsh -s ;
bash

```

% chsh -s /usr/local/bin/bash

chsh

```

#Changing user database information for kidp.
Shell: /bin/csh
Full Name: User &
Office Location:
Office Phone:
Home Phone:
Other information:

```

[3-13.bmp]

```

Note: /etc/shells
/etc/shells
/etc/shells
bash bash 가 /usr/local/bin/

```

echo "/usr/local/bin/bash" >> /etc/shells

chsh

3.10

FreeBSD

```
가      가      (easy)      (editor)      ee
. ee      ee filename      . filename
      /etc/rc.conf      ee /etc/rc.conf
```

ee

```

^_ (escape) menu  ^y search prompt  ^k delete line  ^p prev li  ^g prev page
^o ascii code    ^x search         ^l undelete line ^n next li   ^v next page
^u end of file   ^a begin of line  ^w delete word   ^b back 1 char
^t begin of file ^e end of line    ^r restore word  ^f forward 1 char
^c command       ^d delete char    ^j undelete char ^z next word
: 1 C: 1 =====
# -- sysinstall generated deltas -- # Sat Sep 11 02:44:14 2004
# Created: Sat Sep 11 02:44:14 2004
# Enable network daemons for user convenience.
# Please make all changes to this file, not to /etc/defaults/rc.conf.
# This file now contains just the overrides from /etc/defaults/rc.conf.
```

[3-14.bmp]

```
^      Ctrl      ^e      Ctrl+e 가      . ee
가      Esc
```

```

main menu

a) leave editor
b) help
c) file operations
d) redraw screen
e) settings
f) search
g) miscellaneous

press Esc to cancel
```

[3-15.bmp]

```
FreeBSD          vi          emacs
vim              FreeBSD
vim      emacs
```

...

3.11

```
, ,
FreeBSD 가
/var/run/dmesg.boot
acd0      IDE CDROM      kbd0
/dev
```

3.11.1

가 가

3.11.1.1 MAKEDEV

*DEVFS*가 (5.0 FreeBSD)
MAKEDEV(8)

```
# cd /dev
# sh MAKEDEV ad1
```

IDE

3.11.1.2 DEVFS ()

DEVFS

DEVFS

devfs(5)

DEVFS FreeBSD 5.0

3.12

FreeBSD 가 ELF
3 가

- out(5)

가

a.out(5)

)

(

(magic number)

. 3

:

.text

.data

.bss

- COFF

SVR3

.text, .data

.bss

가

- elf(5)

32-bit

64-bit

가

COFF

가 : ELF ABI 가 가
 . 가 SYSV ()
 3 ABI : SVR4, Solaris, SCO) .
 FreeBSD ABI , ELF branding
 . brandelf(1)
 .
 FreeBSD “ ” a.out(5) 3.X 가
 BSD . 가
 FreeBSD ELF ()
 FreeBSD ELF . 가
 ELF 가
 , jump - table
 a.out 가 . ELF
 " "
 . FreeBSD
 Sun SunOS 가 .
 가?
 . a.out (PDP - 11)
 . 68k VAXen
 a.out .
 CPU core 가 .
 가(RISC) a.out
 a.out
 . COFF, ECOFF
 ELF 가 .
 가 ()
 . VM

```

.
가
init
가
가
a.out
a.out
. ELF
ELF
a.out ELF
( )
. FreeBSD 가 가 가
GNU
가
FreeBSD 가 가
as ld 가 GNU (binutils)
ELF, C++ 가 ELF
FreeBSD 가 . ELF a.out
. ELF
. ELF a.out
가 가 init
가 가 가 a.out
GENERIC (legacy) a.out

```

3.13

3.13.1

FreeBSD

가 man . man

% man *command*

command . ls :

% man ls

:

- 1.
- 2.
3. C
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.

가

chmod chmod()
man

% man 1 chmod

chmod .
chmod(1) chmod
chmod(2) .
? -k

% man -k mail

"mail" 가
apropos .

/usr/bin

:

% cd /usr/bin

% man -f *

:

% cd /usr/bin

% whatis *

3.13.2 GNU Info

FreeBSD

(FSF)

가

.

info

emacs

emacs

info

info

가

.

info(1)

:

% info

h

.

?

.