HNIX Init/Login replacement

Linköping 890313

Jag hoppas att du blir nöjd med detta programpaket.

Dessa program utvecklades ursprungligen för mitt eget bruk då jag fann att de medlevererade programmen inte uppfyllde de enkla krav som jag ställde på dem. Några av dessa krav var automatisk hastighetsanpassning vid inloggning, en init som inte krashar systemet när man startar och stoppar login med hjälp av enable och disable, en login som inte självsvänger och lastar ner terminal-drivaren när ett modem sätter DCD hög, mm.

När andra personer fick reda på vad jag gjort och uttryckte önskemål om en "distribution" så framställde jag dokumentation och snyggade upp lite bitar.

Jag förutsätter att du anser att värdet på programmen överstiger det pris jag begär för dem och att du därför inte uppmuntrar att kopior görs av programmen.

Jag kan naturligtvis inte förhindra att kopior görs, men om jag finner att många kopior blir gjorda tolkar jag detta som att programmen inte är värda det pris jag begär och därmed minskar chansen att jag producerar fler programpaket liknande detta.

Nog om detta, lycka till med installationen.

Göran

HNIX Init/Login replacement

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Update #1 for 3:rd Edition

Affected Program/File: /etc/rc

Related Program/File: /etc/shutdown

Add the line

```
rm -f /etc/nologin /fastboot
```

near the end of your **/etc/rc** file.

This will remove the fastboot flag created by /etc/shutdown, and the nologin flag, also created by /etc/shutdown, which may be left if the system is **reset** before shutdown has any chance to remove it.

Hnix init / login replacement

Document: /usr/src/man/hnix.mm

Author: Goran Larsson, HoH

Date: March 13, 1989

3:rd Edition

Abstract

This document describes the configuration and installation of the programs and files that together form the *Hnix init/login replacement*.

The programs are delivered as is, and no guaranties regarding functionality or performance are given. For your safety and my conscience, please make a backup copy of your hard disks before installing this software.

CONTENTS

3:rd Edition   March 13, 1989

1. **Overview**

□ This package contains replacaments for the following **abcenix** programs.

- init
- login
- enable
- disable

The replacements provides more functionality compared with the old programs. **getty** and **login** for example replaces the old **login**, and has customizable prompts and supports automatic baudrate detection. **enable/disable** when named **dialin/dialout** can be used by unprivileged users on selected terminal lines. **init** is more stable and does not die when it receives unwanted signals. **init** also uses an alternate method for communications with **enable/disable/dialin/dialout**. This method passes commands through shared memory and provides feedback so that the calling program can detect when **init** has completed the command. The **key** used by this mechanism is *0x49*, so this **key** can not be used for other purposes.

□ Manual pages are provided for all programs.

□ The package also provides additional programs.

2. **Saving old files**

□ Backup the following files.

- /etc/init
- /bin/login
- /bin/enable
- /bin/disable
- /etc/ttys

You can copy them into a save directory or copy (tar) them to floppy.

3. **Configuration**

□ Read the package into a scratch directory.

- cd /usr
- tar xvf /dev/mf2
- cd /usr/hnix

You should have extracted the following files:

□ Install
□ Headers
□ enable
□ enable-HUP
□ freebee/
□ getty
□ gettydef.src
□ init
□ initlib/
□ lastlogins
□ login
□ mkgettydef
□ shutdown
□ sysname
□ ttys

□ Edit the *ttys* file to match your system. Refer to the **ttys**(5) manual page.

□ Read the **mkgettydef**(8) manual page and modify *gettydef.src* to taste. You can leave out the network device if you do not run **abcnet** or **dnet**, although it does not hurt to keep it.

□ Read the boxed comment on the front page regarding guaranties and backing up your disks.

4. **Installation**

□ Become superuser and complete the installation by executing the install script named **Install**. Due to some unknown reason root has been given the group 50 in the */etc/passwd* file. This is not good since many programs assume that root belongs to group zero. If you look in */etc/group* you will find that group zero is called root. Just change the fragment ":0:50:" to ":0:0:" in */etc/passwd*. If this is not done, then **enable/disable** will not work. You may want to change the **Install** script if your executable files are owned by somebody other than **bin**, for example **sys**. There might be other things you might like to change, but keep security in mind when changing permissions on the programs and datafiles.

- ./Install

□ Reboot and enjoy.

5. Ownerships and protections

The following table can be used to check that the files are owned by the correct owner and have the right protection.

file	owner	group	protection	note
/etc/init	*bin*	*bin*	*710*	
/etc/getty	*bin*	*bin*	*710*	
/bin/login	*root*	*root*	*4711*	*set uid*
/etc/mkgettydef	*bin*	*bin*	*710*	
/etc/enable	*root*	*root*	*6711*	*set uid & gid*
/etc/disable	*root*	*root*	*6711*	*set uid & gid*
/etc/dialin	*root*	*root*	*6711*	*set uid & gid*
/etc/dialout	*root*	*root*	*6711*	*set uid & gid*
/etc/lastlogins	*bin*	*bin*	*710*	
/etc/sysname	*bin*	*bin*	*710*	
/etc/shutdown	*bin*	*bin*	*710*	
/etc/ttys	*root*	*root*	*664*	
/etc/gettydef.src	*root*	*root*	*660*	
/etc/gettydef	*root*	*root*	*664*	
/usr/adm/lastlog	*root*	*root*	*660*	

6. **Experimantal SIGHUP Support**

This version of the *Hnix init/login replacement kit* has an experimental version of **enable/disable/dialin/dialout** that should be used if you want the terminal driver to send **SIGHUPs** to login processes that users leave running by hanging up the phone without logging out. The steps needed to use this **EXPERIMENTAL** feature is

- □ Rename the modem device from *tty02* to *cua02*.
- □ Create a new modem device with the command **/etc/mknod /dev/tty02 c 1 130**.
- □ Save the ''old'' enable and then copy enable-HUP to /etc/enable. Check the links, owner, and protections.
- □ Make sure that the */etc/gettydef.src* file specifies *stty "-clocal"* for the **tty02** device. If not, edit and recompile.

If you want to dial out using, say, **kermit** you should use the *cua* device, otherwise **kermit** will be unable to open the device. The proper sequence is

- /etc/dialout tty02
- kermit -l /dev/cua02 -b 2400 -p e
- /etc/dialin tty02

Once the modem has set **DCD** to true, you can use the *tty* device if you like. Note that the modem must drop **DCD** when it looses the carrier, otherwise all this will simply not work. The cable connecting the modem to the port must have the proper wires, it should be a straight cable, male in one end, female in the other, and pins 2 to 8 and 20 connected and pin 1 connected to the screen.

7. **Versions**

The files that together makes this edition has individual version numbers. If you execute the command **strings** *program* **| grep Header:** then a string like

$Header: init.c,v 1.13 89/03/13 00:55:53 root Exp $

appears. A complete list of these version numbers can be found in the *Headers* file. No guaranties are given that other versions of these programs may work together.

8. Initlib

The directory *initlib* contains sources for the interface to **init**. If you want to write your own program that does things like **shutdown** or **enable**, this is for you. Note that missuse of init can make your system behave very strange. Be sure that you know what you are doing.

9. **FreeBees**

The directory *freebee* contains some programs that are totally unrelated to this software package. A short description is all that you get, except for the sources.

stat — Sort of a *doit yourself ls*. It can display file information in any way you want. A man-page is included.

graphmem — A demonstration program that show how to access the graphic memory from C.

wipe — This program clears the screen graphically (all pixels)

cache — A variation of **graphmem** that dumps the font cache on the screen.

wipec — This program clears the font cache. All fonts are invisible after this!

unloadfont — This program unloads a font from the fontcache. This is needed if you have linked in a new font in the *used* directory and the old font on that position is already loaded. Run this program and then load the new font with the appropriate escape sequence.

noclick — This little goodie will keep you sane. It kills the horrible keyboard click Luxor want's us to hear and hate.

10. Problems

The only known problem at this time is that a warning message

Log info out of phase, info may be lost...

may be emitted by the **log** daemon when **shutdown** is used to take the system down to single user mode and the system is then rebooted from single user mode using **^D**. Log info is not lost, so for the time beeing, just ignore the message.

NAME

login - log in to the system

SYNOPSIS

login [**-p**] [*username*]

DESCRIPTION

login signs *username* on to the system initially. **login** may also be used at any time to change from one userID to another.

When used with no argument, **login** requests a user name and password (if appropriate). Echoing is turned off (if possible) while typing the password. Note: the number of significant characters in a password is 8. (See **passwd**(1).)

When successful, **login** updates accounting files, prints the message of the day, informs you of the existence of any mail, and displays the time you last logged in. If failed login attempts have been made since your last login, a message about this will be printed. None of these messages are printed if there is a *.hushlogin* file in your home directory; this is mostly used to make life easier for nonhuman users, such as **uucp**(1).

login initializes the user and group IDs and the working directory, then starts a command interpreter shell (usually either **/bin/sh**, **/bin/ksh** or **/bin/csh**) according to specifications found in the file */etc/passwd*. Argument 0 of the command interpreter is the name of the command interpreter with a leading dash ('-') prepended.

If the command interpreter is specified as ''*'', then **login** uses the home directory specification as a new root. It changes to that directory and issues the **chroot**(2) system call. Note that all file specifications from now on refers to the new root. This new root should have an */etc* directory with a new *passwd* file. **login** uses this new *passwd* file to locate the users real home directory and command interpreter. The new root should also contain suitable programs in the new */bin* directory, especially the users command interpreter and application. This feature can be used for security reasons to isolate certain users from the rest of the system, for example accounts without passwords that run specific applications.

login also modifies the environment (**environ**(5)) with information specifying home directory, command interpreter, your username, default search path and mailbox. The **-p** argument preserves the remainder of the environment, otherwise any previous environment is discarded.

If the file */etc/nologin* exists, **login** prints its contents on the user's terminal and exits. This is used by **shutdown**(8) to stop logins when the system is about to go down.

The **login** command, recognized by **sh**(1), **ksh**(1) and **csh**(1), is executed directly (without forking), and terminates that shell. To resume working, you must log in again.

login times out and exits if its prompt for input is not answered within a reasonable time.

When the Bourne shell **(sh)** and the Korn shell **(ksh)** starts up, it reads a file called *.profile* from your home directory (that of the username you use to log in). When the C shell **(csh)** starts up, it reads a file called *.cshrc* from your home directory, and then reads a file called *.login*.

NOTE

If the */usr/adm/lastlog* file does not exist, no information about the last login will be printed. This file can be created by the superuser with the command ''touch /usr/adm/lastlog''.

OPTIONS

−p Preserve any existing environment variables and their values; otherwise the previous environment is discarded.

FILES

/etc/utmp	accounting
/usr/adm/wtmp	accounting
/usr/adm/lastlog	time of last login and login failure counters
/etc/gettydef	terminal parameters and prompts
/usr/spool/mail/*	the post office
/etc/motd	message-of-the-day
/etc/passwd	password file
/etc/nologin	stop login, print message
/bin/sh	antique command interpreter
/bin/ksh	excellent command interpreter
/bin/csh	braindamaged command interpreter
~/.profile	startup file for **sh** and **ksh**
~/.cshrc	initialization file for **csh**
~/.login	startup file for **csh**
~/.hushlogin	makes login quieter

SEE ALSO

sh(1), **ksh**(1), **csh**(1), **mail**(1), **passwd**(1), **uucp**(1), **passwd**(5), **environ**(5), **gettydef**(5), **utmp**(5), **init**(8), **getty**(8), **shutdown**(8), **mkgettydef**(8), **lastlogins**(8)

DIAGNOSTICS

No directory Login denied

Your home directory does not exist, contact the system administrator.

Login incorrect

If the name or the password is bad (or mistyped).

number **failures since last login**

Contact your system administrator if you did not cause this.

No shell
The command interpreter in the passwd file could not be started. Contact your system administrator.

Timeout period expired
You are to slow.

NAME

/etc/ttys – login terminals file

DESCRIPTION

The */etc/ttys* file contains a list of the devices that are candidates for logins. **init**(8) uses this file at startup to start login processes.

The file contains entries of the form

state public name

A name must be the filename of a device special file. The path is assumed to be */dev/* so that string should not be supplied. If *state* is ''1'', the device is enabled for logins; if ''0'', the device is disabled. If *public* is ''P'', the device is public and any user may allocate it using the **dialout** command (see **enable**(8).) If *public* is ''0'', the device belongs to the system.

EXAMPLES

The entry ''10tty01'' means that a login process should be started on tty01. The entry ''0Ptty02'' means that the tty02 device should be free for anybody to use.

FILES

/etc/ttys

SEE ALSO

enable(8), **login**(1), **getty**(8), **ttys**(5), **init**(8)

NAME

enable disable dialin dialout – control login lines

SYNOPSIS

/etc/enable [**-deio**] *terminal*
/etc/disable [**-deio**] *terminal*
/etc/dialin [**-deio**] *terminal*
/etc/dialout [**-deiorw**] *terminal*

DESCRIPTION

The **enable** family of programs is used to change the contents of */etc/ttys* and tell **init**(8) about it in a controlled way. The operation can be governed both by switches and by the program name.

disable (or -d) Disables a terminal for login. Can only be used by the superuser.

enable (or -e) Enables a terminal for login. Can only be used by the superuser.

dialout (or -o) Disables a terminal for login. Can be used by anybody if the terminal is marked as public in */etc/ttys*. The ownership of the device is changed to that of the user issuing the dialout command. The protection on the device are by default set to -rw-------, but the **-r** and **-w** switches can change this. These switches determine if other users should be allowed to read respectively write to the device. An entry (users name in upper case) is also made in the */etc/utmp* file so that the **who**(1) command shows that the line is in use.

dialin (or -i) Enables a terminal for login. Can only be used by the user who allocated the line with the **dialout** command, or by the superuser.

EXAMPLES

```
dialout tty02
who
ls -l /dev/tty02
kermit -l /dev/tty02 -b 2400 -p
dialin tty02
```

FILES

/etc/ttys	terminals and their flags
/etc/utmp	notes to the world
/dev/*	terminals

BUGS

If the */etc/ttys* file is changed while this program is running, unpredictable things may happen.

SEE ALSO

login(1), **getty**(8), **ttys**(5), **who**(1), **init**(8)

DIAGNOSTICS

Several diagnostics can be issued. You should (as usual :-)) have no problems to understand them.

NAME

getty - adjust terminal line and start login

SYNOPSIS

getty *tty*

DESCRIPTION

getty waits for input on the *tty* device. When correct terminal parameters have been determined, **getty** asks for a username and starts **login**(1). **getty** can be told to select between a set of speeds or to automatically determine the speed from the users input. The behaviour of **getty** can be changed with the **mkgettydef**(8) program. From the list of customizable items some can be noted: heading, prompt and terminal parameters.

FILES

/etc/gettydef	terminal parameters and prompts
/bin/login	completes the login process

SEE ALSO

login(1), **init**(8), **mkgettydef**(8)

DIAGNOSTICS

Timeout period expired

You are to slow.

NAME

init – process control initializer

SYNOPSIS

/etc/init

DESCRIPTION

init is started by the kernel directly after boot. After start, init checks the autoboot flag, and if it is set to ''NO'', starts the default command interpreter (*/bin/sh*) with the console as the controlling terminal. This mode is called **single user mode**. When the system administrator exits this command interpreter, with ^D, init begins to enter **multi user mode**. If the autoswitch is set to ''YES'' then multi user mode is entered without going through single user mode. The actions needed to bring up multi user mode starts with the interpretation of the Run Command file (*/etc/rc*) by the standard command interpreter. After that, init looks through the */etc/ttys* file and forks of an login process for each terminal that is enabled. This is done by executing */etc/getty* with the terminal name as the first argument. Now init starts to sleep. Each time a process associated with a terminal dies, init starts a new login process.

init will also wake up if certain signals are received.

SIGINT can be used to tell init that a command has been placed in shared memory, the default beeing to force a re-examination of the */etc/ttys* file (in case it has been changed)

SIGHUP can be used to return to single user mode

SIGQUIT is used to suppress creations of login processes as users loggs out

SIGTERM halts the system

FILES

/etc/ttys	terminals and their flags
/bin/sh	standard command interpreter used for single user shell and Run Command file interpretation
/etc/getty	waits for terminal activity, then executes /bin/login
/etc/rc	Run Command file
/etc/utmp	accounting
/usr/adm/wtmp	accounting
/etc/mtab	mounted file systems
/dev/console	controlling terminal for single user mode
/dev/autosw	flags autoboot or single user mode
/dev/*	terminals
/usr/adm/messages	diagnostics

BUGS

The signals used for various actions has different functions on all other UNIX systems. This will probably change.

SEE ALSO

login(1), **getty**(8), **stty**(1), **ttys**(5), **kill**(1), **kill**(2), **shutdown**(8), **enable**(8)

DIAGNOSTICS

Diagnostics are written to the system messages file by the *log* process.

INIT RECEIVED UNSOLICITED SIGNAL *number*
some application is sending bogous signals to init

Init failed to execute '*command*', sleeping
init could not start a login process

NAME

lastlogins - display times and failures for logins

SYNOPSIS

/etc/lastlogins

DESCRIPTION

lastlogins displays a list of usernames together with times and terminals for the last login session. Also the failure counters are displayed. The first failure figure is the total failures since the */usr/adm/lastlog* file was created, the second figure is the failures since that user logged in last time.

FILES

/usr/adm/lastlog   information source

SEE ALSO

login(1)

DIAGNOSTICS

can not open /usr/adm/lastlog

NAME

mkgettydef – create definition file for getty and login

SYNOPSIS

/etc/mkgettydef *gettydef.src*

DESCRIPTION

mkgettydef is the compiler that compiles the file named as it's argument into a definition file for getty and login. This file contains terminal characteristics, prompt texts and baud rate detection strategy.

The structure of the source input contains one block for each device used for login.

device *name*
definitions for device name

Device names are selected from **default**, **network** or a device name listed in */etc/ttys*. The default device is a pseudo device that supplies data not given for other devices. The network device is used for logins over the DNET network.

The device definitions are built from the following keywords.

herald Takes a string as argument. This string is displayed before **getty**(8) issues the first login prompt. Default value is an empty string.

loginprompt Takes a string as argument. This string is the login prompt issued by **login**(1). Default value is "login: "

gettyprompt1 Takes a string as argument. This string is the login prompt issued by **getty**. Default value is "login: "

gettyprompt2 Takes a string as argument. This string is the login prompt issued by **login** when called from **getty**. Default value is "login: "

passwdprompt Takes a string as argument. This string is the password prompt issued by **login**. Default value is "password:"

timeout Takes an integer as argument. This integer is the timeout time in seconds before **getty** or **login** terminates. Default value is 60 seconds.

stty Takes a string as argument. The string contains **stty**(1) commands describing the terminal characteristics. Default is all stty flags off.

strategy This keyword determines how the speed should be selected. The argument is one of the keywords **normal**, **autobaud** or **rotate**. Normal strategy takes speed from the stty entry. Autobaud determines the baud from the input. The user should enter carriage returns until the prompt shows. The algorithm used by **getty** can select between 300, 600, 1200, 2400, 4800 and 9600 baud. Rotate strategy takes up to four more arguments. These arguments are speeds that are selected in order each time the user hits BREAK.

trigger This keyword is unique to the network device. The argument should be a string that describes the beginning of the network pseudo terminal. If, at login time, **getty** finds that the input comes from a trigger terminal then no terminal parameters should be touched as they are sent over from the calling machine. The **stty** keyword is illegal for the network device.

A source line beginning with ''#'' is taken as a comment. The normal escape notation used in ''C'' can be used. See example.

EXAMPLE

```
#
# definitions for getty and login
#

#
# default values for all devices, may be overridden selectively below
#

device default

herald       "\r\n    ABCenix 5.18  (Hubert)\r\n\r\n"
loginprompt  "Login: "
gettyprompt1 "Hubert login: "
gettyprompt2 "Hubert login: "
passwdprompt "Password: "
timeout      60
stty    "-ignbrk brkint ignpar -parmrk -inpck istrip -inlcr     \
        -igncr icrnl -iuclc ixon ixany -ixoff                   \
        opost -olcuc onlcr -ocrnl -onocr -onlret -ofill -ofdel  \
        nl0 cr0 tab3 bs0 vt0 ff0                                \
        9600 cs7 -cstopb cread parenb -parodd hupcl clocal      \
        isig icanon -xcase echo echoe echok -echonl -noflsh     \
        intr '^?' quit '^\\' erase '^H' kill '^X' eof '^D' eol '^-'"
strategy normal

#
# unique definitions for device network
#

device network
trigger "/dev/pk"

herald "\r\n    ABCenix 5.18  (Hubert) (network)\r\n\r\n"
strategy normal
```

```
#
# unique definitions for device console (workstation screen)
#

device console

herald "\r\n    ABCenix 5.18  (Hubert) (console)\r\n\r\n"
strategy normal

#
# unique definitions for device tty02 (dialin/dialout modem)
#

device tty02

herald "\r\n    ABCenix 5.18  (Hubert) (tty02)\r\n\r\n"
stty "-clocal"
strategy autobaud

#
# unique definitions for device tty03 (local terminal)
#

device tty03

herald "\r\n    ABCenix 5.18  (Hubert) (tty03)\r\n\r\n"
strategy rotate 9600 4800 2400
```

FILES

gettydef	result
gettydef.src	standard source text
/etc/ttys	terminals

SEE ALSO

login(1), **getty**(8), **stty**(1), **ttys**(5)

DIAGNOSTICS

Error checking is excessive and the messages are intended to be self explanatory (as they say :-))

NAME

shutdown – allow superuser to bring the system down gracefully

SYNOPSIS

/etc/shutdown [**-krhfn**] *shutdowntime* [*message*]

DESCRIPTION

shutdown allows super users to tell users and remind users of iminent shutdown of the unix system and shut it down automatically and even reboot or halt the machine if they desire. The *shutdowntime* can be given as either an absolute time in the hour:minute format, or a relative time in the +minutes format. Immediate shutdown can be specified by the time specification ''now''. After nagging all users for a while, **shutdown** will disable logins at most five minutes before actual halt. When halt time arrives, all processes are killed (SIGHUP followed by SIGKILL) and all filesystems are dismounted.

OPTIONS

-k	fake shutdown, make users think the system is going down
-r	reboot
-h	halt
-f	fast boot
-n	no sync before going down

Enters single user mode without -r or -h options.

EXAMPLES

```
/etc/shutdown 17:00 preventive maintenance
/etc/shutdown -h now
/etc/shutdown -k 10:00 backup of all disks
```

FILES

/etc/nologin	created to cause **login**(1) to disable logins
/fastboot	created if -f option is given and can be used by **/etc/rc**

SEE ALSO

login(1), **init**(8)

DIAGNOSTICS

Some messages may be given when problems shows up.

NOTE

As it is impossible to halt an unmodified ABC 1600 due to the watchdog, the halt and reboot options both reboots. If the watchdog has been disabled, both options halt the system. It is not sure whether the nosync option works, it might be so that the filesystem handlers always syncs before exiting. The fast boot option is of little use in abcenix as fsck is invoked automatically, if needed. To simplify it: it is only the fake shutdown (-k) and reboot (-r) options that are of interrest.

BUGS

The warning message *Log info out of phase, info may be lost...* may be emitted by the **log** daemon when **shutdown** is used to take the system down to single user mode and the system is then rebooted from single user mode using **^D**.

NAME

sysname – change systems node name

SYNOPSIS

/etc/sysname *name*

DESCRIPTION

sysname patches the kernel so that the **uname**(1) command returns the correct name. **sysname** should be run from the */etc/rc* file.

EXAMPLES

```
uname -a
/etc/sysname hubert
uname -a
```

FILES

/abcenix	file used as namelist
/etc/kmem	file used as core file (patched)

SEE ALSO

uname(1), **uname**(2)

DIAGNOSTICS

```
error opening /etc/kmem
error in /abcenix namelist
symbol not in /abcenix
error reading /etc/kmem
error writing /etc/kmem
```

NAME

enable disable dialin dialout – control login lines

SYNOPSIS

/etc/enable [**-deio**] *terminal*
/etc/disable [**-deio**] *terminal*
/etc/dialin [**-deio**] *terminal*
/etc/dialout [**-deiorw**] *terminal*

DESCRIPTION

The **enable** family of programs is used to change the contents of */etc/ttys* and tell **init**(8) about it in a controlled way. The operation can be governed both by switches and by the program name.

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enable (or -e) Enables a terminal for login. Can only be used by the superuser.

dialout (or -o) Disables a terminal for login. Can be used by anybody if the terminal is marked as public in */etc/ttys*. The ownership of the device is changed to that of the user issuing the dialout command. The protection on the device are by default set to -rw-------, but the **-r** and **-w** switches can change this. These switches determine if other users should be allowed to read respectively write to the device. An entry (users name in upper case) is also made in the */etc/utmp* file so that the **who**(1) command shows that the line is in use.

dialin (or -i) Enables a terminal for login. Can only be used by the user who allocated the line with the **dialout** command, or by the superuser.

NOTES

If a terminal both has a */dev/tty*XX and a */dev/cua*XX device then that terminal is assumed to be a modem and that the *tty* device has a minor number that is 128 higher than usual. The *cua* device is assumed to have the standard minor number. **enable** will use the *cua* device when it must open the device without carrier present.

This version of **enable** is **EXPERIMENTAL.**

EXAMPLES

```
dialout tty02
who
ls -l /dev/tty02
kermit -l /dev/cua02 -b 2400 -p
dialin tty02
```

FILES

/etc/ttys	terminals and their flags
/etc/utmp	notes to the world
/dev/*	terminals
/dev/cua*	dialers

BUGS

If the */etc/ttys* file is changed while this program is running, unpredictable things may happen.

SEE ALSO

login(1), **getty**(8), **ttys**(5), **who**(1), **init**(8)

DIAGNOSTICS

Several diagnostics can be issued. You should (as usual :-)) have no problems to understand them.