

## Description of the file system hierarchy

A lot of linux(unix) beginners have trouble finding files in the filesystem hierarchy. This article could be a help for that problem.

A typical Linux system has, among others, the following directories:

/ This is the root directory. This is where the whole tree starts.

/bin This directory contains executable programs which are needed in single user mode and to bring the system up or repair it.

/boot Contains static files for the boot loader. This directory only holds the files which are needed during the boot process. The map installer and configuration files should go to /sbin and /etc.

/dev Special or device files, which refer to physical devices. See `mknod(1)`.

/dos If both MS-DOS and Linux are run on one computer, this is a typical place to mount a DOS file system.

/etc Contains configuration files which are local to the machine. Some larger software packages, like X11, can have their own sub-directories below /etc. Site-wide configuration files may be placed here or in /usr/etc. Nevertheless, programs should always look for these files in /etc and you may have links for these files to /usr/etc.

/etc/opt Host-specific configuration files for add-on applications installed in /opt.

/etc/sgml This directory contains the configuration files for SGML and XML (optional).

/etc/skel When a new user account is created, files from this directory are usually copied into the user's home directory.

/etc/X11 Configuration files for the X11 window system (optional).

/home On machines with home directories for users, these are usually beneath this directory, directly or not. The structure of this directory depends on local administration decisions.

/lib This directory should hold those shared libraries that are necessary to boot the system and to run the commands in the root filesystem.

/mnt This directory contains mount points for temporarily mounted filesystems.

/opt This directory should contain add-on packages that contain static files.

/proc This is a mount point for the proc filesystem, which provides information about running processes and the kernel. This pseudo-file system is described in more detail in `proc(5)`.

/root This directory is usually the home directory for the root user (optional).

/sbin Like /bin, this directory holds commands needed to boot the system, but which are usually not executed by normal users.

/tmp This directory contains temporary files which may be deleted

with no notice, such as by a regular job or at system boot up.

`/usr` This directory is usually mounted from a separate partition. It should hold only sharable, read-only data, so that it can be mounted by various machines running Linux.

`/usr/X11R6`  
The X-Window system, version 11 release 6 (optional).

`/usr/X11R6/bin`  
Binaries which belong to the X-Windows system; often, there is a symbolic link from the more traditional `/usr/bin/X11` to here.

`/usr/X11R6/lib`  
Data files associated with the X-Windows system.

`/usr/X11R6/lib/X11`  
These contain miscellaneous files needed to run X; Often, there is a symbolic link from `/usr/lib/X11` to this directory.

`/usr/X11R6/include/X11`  
Contains include files needed for compiling programs using the X11 window system. Often, there is a symbolic link from `/usr/include/X11` to this directory.

`/usr/bin`  
This is the primary directory for executable programs. Most programs executed by normal users which are not needed for booting or for repairing the system and which are not installed locally should be placed in this directory.

`/usr/bin/X11`  
is the traditional place to look for X11 executables; on Linux, it usually is a symbolic link to `/usr/X11R6/bin`.

`/usr/dict`  
Replaced by `/usr/share/dict`.

`/usr/doc`  
Replaced by `/usr/share/doc`.

`/usr/etc`  
Site-wide configuration files to be shared between several machines may be stored in this directory. However, commands should always reference those files using the `/etc` directory. Links from files in `/etc` should point to the appropriate files in `/usr/etc`.

`/usr/games`  
Binaries for games and educational programs (optional).

`/usr/include`  
Include files for the C compiler.

`/usr/include/X11`  
Include files for the C compiler and the X-Windows system. This is usually a symbolic link to `/usr/X11R6/include/X11`.

`/usr/include/asm`  
Include files which declare some assembler functions. This used to be a symbolic link to `/usr/src/linux/include/asm`.

`/usr/include/linux`  
This contains information which may change from system release to system release and used to be a symbolic link to `/usr/src/linux/include/linux` to get at operating system specific information.  
(Note that one should have include files there that work correctly with the current `libc` and in user space. However, Linux kernel source is not designed to be used with user programs and does not know anything about the `libc` you are using. It is very

likely that things will break if you let /usr/include/asm and /usr/include/linux point at a random kernel tree. Debian systems don't do this and use headers from a known good kernel version, provided in the libc\*-dev package.)

/usr/include/g++

Include files to use with the GNU C++ compiler.

/usr/lib

Object libraries, including dynamic libraries, plus some executables which usually are not invoked directly. More complicated programs may have whole subdirectories there.

/usr/lib/X11

The usual place for data files associated with X programs, and configuration files for the X system itself. On Linux, it usually is a symbolic link to /usr/X11R6/lib/X11.

/usr/lib/gcc-lib

contains executables and include files for the GNU C compiler, gcc(1).

/usr/lib/groff

Files for the GNU groff document formatting system.

/usr/lib/uucp

Files for uucp(1).

/usr/local

This is where programs which are local to the site typically go.

/usr/local/bin

Binaries for programs local to the site.

/usr/local/doc

Local documentation.

/usr/local/etc

Configuration files associated with locally installed programs.

/usr/local/games

Binaries for locally installed games.

/usr/local/lib

Files associated with locally installed programs.

/usr/local/include

Header files for the local C compiler.

/usr/local/info

Info pages associated with locally installed programs.

/usr/local/man

Man pages associated with locally installed programs.

/usr/local/sbin

Locally installed programs for system administration.

/usr/local/share

Local application data that can be shared among different architectures of the same OS.

/usr/local/src

Source code for locally installed software.

/usr/man

Replaced by /usr/share/man.

/usr/sbin

This directory contains program binaries for system administration which are not essential for the boot process, for mounting /usr, or for system repair.

/usr/share

This directory contains subdirectories with specific application data, that can be shared among different architectures of the

same OS. Often one finds stuff here that used to live in /usr/doc or /usr/lib or /usr/man.

/usr/share/dict  
Contains the word lists used by spell checkers.

/usr/share/doc  
Documentation about installed programs.

/usr/share/games  
Static data files for games in /usr/games.

/usr/share/info  
Info pages go here.

/usr/share/locale  
Locale information goes here.

/usr/share/man  
Manpages go here in subdirectories according to the man page sections.

/usr/share/man/man[1-9]  
These directories contain manual pages for the specific locale in source code form. Systems which use a unique language and code set for all manual pages may omit the substring.

/usr/share/misc  
Miscellaneous data that can be shared among different architectures of the same OS.

/usr/share/nls  
The message catalogs for native language support go here.

/usr/share/sgml  
Files for SGML and XML.

/usr/share/terminfo  
The database for terminfo.

/usr/share/tmac  
Troff macros that are not distributed with groff.

/usr/share/zoneinfo  
Files for timezone information.

/usr/src  
Source files for different parts of the system, included with some packages for reference purposes. Don't work here with your own projects, as files below /usr should be read-only except when installing software.

/usr/src/linux  
This was the traditional place for the kernel source. Some distributions put here the source for the default kernel they ship. You should probably use another directory when building your own kernel.

/usr/tmp  
Obsolete. This should be a link to /var/tmp. This link is present only for compatibility reasons and shouldn't be used.

/var  
This directory contains files which may change in size, such as spool and log files.

/var/adm  
This directory is superseded by /var/log and should be a symbolic link to /var/log.

/var/backups  
Reserved for historical reasons.

/var/cache

Data cached for programs.

`/var/catman/cat[1-9]` or `/var/cache/man/cat[1-9]`

These directories contain preformatted manual pages according to their man page section. (The use of preformatted manual pages is deprecated.)

`/var/cron`

Reserved for historical reasons.

`/var/lib`

Variable state information for programs.

`/var/local`

Variable data for `/usr/local`.

`/var/lock`

Lock files are placed in this directory. The naming convention for device lock files is LCK.. where is the device's name in the filesystem. The format used is that of HDU UUCP lock files, i.e. lock files contain a PID as a 10-byte ASCII decimal number, followed by a newline character.

`/var/log`

Miscellaneous log files.

`/var/opt`

Variable data for `/opt`.

`/var/mail`

Users' mailboxes. Replaces `/var/spool/mail`.

`/var/messages`

Reserved for historical reasons.

`/var/preserve`

Reserved for historical reasons.

`/var/run`

Run-time variable files, like files holding process identifiers (PIDs) and logged user information (`utmp`). Files in this directory are usually cleared when the system boots.

`/var/spool`

Spooled (or queued) files for various programs.

`/var/spool/at`

Spooled jobs for `at(1)`.

`/var/spool/cron`

Spooled jobs for `cron(1)`.

`/var/spool/lpd`

Spooled files for printing.

`/var/spool/mail`

Replaced by `/var/mail`.

`/var/spool/mqueue`

Queued outgoing mail.

`/var/spool/news`

Spool directory for news.

`/var/spool/rwho`

Spooled files for `rwhod(8)`.

`/var/spool/smmail`

Spooled files for the `smmail(1)` mail delivery program.

`/var/spool/uucp`

Spooled files for uucp(1).

/var/tmp

Like /tmp, this directory holds temporary files stored for an unspecified duration.

/var/yp

Database files for NIS.

CONFORMS TO

The Filesystem Hierarchy Standard, Version 2.2  
name.com/fhs/

BUGS

This list is not exhaustive; different systems may be configured differently.

Taken from the manpage of hier ("man hier")

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