Filesystem Administration

When Linux starts, it automatically mounts the file systems specified in the file `/etc/fstab`. By revising this file, you can customize the operation of your system.

Configuring Local Drives

When you install Linux, the installation program configures the file `/etc/fstab` to specify what filesystems are to be mounted when the system is started. Here's a typical `/etc/fstab` file:

```
# /etc/fstab: static file system information.
#
# <file system> <mount point> <type> <options>       <dump> <pass>
/dev/hda2      /           ext2   defaults        0      1
/dev/hda3      none        swap   sw              0      0
proc           /proc       proc   defaults        0      0
```

The first three lines, those beginning with a hash mark (#), are comments that are ignored by the system; they merely help human readers identify and understand the file. The next three lines each specify a filesystem to be mounted at system startup. Six columns of information appear:

Filesystem
The device that contains the filesystem.

Mount point
The system directory that will hold the filesystem.

Filesystem type
Specifies the type of the filesystem. Popular types include:

ext2

the standard Linux filesystem

swap
the standard Linux swap filesystem

proc
a special filesystem provided by the kernel, used by system components to obtain system information in a standard way

iso9660
the standard filesystem used on CD-ROM

msdos
the standard MS-DOS filesystem

See the man page for **mount** for other filesystem types.

Mount options

Specifies the options given when the filesystem is mounted. If multiple options are given, each is separated from the next by a comma (,); no spaces appear within the list of options. Popular options include:

defaults
Specifies a series of options appropriate for most filesystems. For details, see the man page for **mount**.

errors=remount-ro
Specifies that if errors are found when the filesystem is checked, the filesystem will be remounted in read-only mode so that the system administrator can analyze the errors without risking further damage.

sw
Specifies that the filesystem will be mounted as a swap partition.

ro
Specifies that the filesystem will be mounted for read access only. This option is always specified for CD-ROM devices and may be specified for other devices.

noauto

Specifies that the filesystem will not be automatically mounted at system startup.

In addition, the *user* option can be specified. This option allows any user—not only `root`—to mount the filesystem.

Dump flag

Specifies whether the **dump** command will create a backup of the filesystem. Filesystems with no value or a value of zero will not be dumped.

Pass

Specifies the order in which filesystems are checked at boot time. No value or a value of zero specifies that the filesystem will not be checked.

You can modify the lines within the `/etc/fstab` file and add new lines as you see fit. For example, here's a line that specifies a CD-ROM drive:

```
/dev/cdrom    /cdrom    iso9660 ro
```

By adding this file to the `/etc/fstab` file, you instruct the system to mount the CD-ROM filesystem when the system starts. If you don't want the filesystem automatically mounted, you can specify this line:

```
/dev/cdrom    /cdrom    iso9660 ro,noauto
```

The system will not automatically mount the CD-ROM filesystem described by this line, but you can mount the CD-ROM by using the **mount** command. Because the system already knows the device, mount point, filesystem type, and options, you can abbreviate the mount command to:

```
mount /cdrom
```

or:

```
mount /dev/cdrom
```

Either of these is equivalent to:

```
mount -t iso9660 -o ro /dev/cdrom /cdrom
```

You can automatically mount additional hard disk partitions by describing them in the `/etc/fstab` file:

```
/dev/hdb1      /home       ext2   defaults
```

Another tip is to use an entry in the `/etc/fstab` file to allow users other than `root` to mount a floppy disk:

```
/dev/fd0       /floppy     auto   noauto,user
```

Configuring Swap Partitions

Just as you can use the **mount** and **unmount** commands to explicitly mount and unmount filesystems, you can control the operation of swap partitions by using the **swapoff** and **swapon** commands.

If you want to modify your swap partition, you may need to temporarily turn off swapping. To do so, enter the command:

```
swapoff -a
```

This command turns off swapping on every swap device mentioned in `/etc/fstab`. If you want to turn off swapping on a particular device, enter the command:

```
swapoff /dev/device
```

where `device` specifies the swap device; for example, `hda3`.

To turn on swapping, enter the command:

```
swapon -a
```

This command turns on swapping for all swap devices mentioned in `/etc/fstab`. If you want to turn on swapping on a particular device, enter the command:

```
swapon /dev/device
```

where *device* specifies the swap device; for example, `hda3`.

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