

Linux Filesystems

Think of a refrigerator that has multiple shelves that can be used for storing various items. These shelves help you organize the grocery items by shape, size, type, etc. The same concept applies to a filesystem, which is the embodiment of a method of storing and organizing arbitrary collections of data in a human-usable form.

Different Types of Filesystems Supported by Linux:

Conventional disk filesystems: ext2, ext3, ext4, XFS, Btrfs, JFS, NTFS, etc.

Flash storage filesystems: ubifs, JFFS2, YAFFS, etc.

Database filesystems

Special purpose filesystems: procs, sysfs, tmpfs, debugfs, etc.

This section will describe the standard filesystem layout shared by most Linux distributions.

Partitions and Filesystems

A partition is a logical part of the disk, whereas a filesystem is a method of storing/finding files on a hard disk (usually in a partition). By way of analogy, you can think of filesystems as being like family trees that show descendants and their relationships, while the partitions are like different families (each of which has its own tree).

A comparison between filesystems in Windows and Linux is given in the following table:

Windows	Linux
Partition--	Disk1 == <i>/dev/sda1</i>
Filesystem type --	NTFS/FAT32 == <i>EXT3/EXT4/XFS...</i>
Mounting Parameters--	DriveLetter == <i>MountPoint</i>
Base Folder where OS is stored	C drive /

The Filesystem Hierarchy Standard

Linux systems store their important files according to a standard layout called the Filesystem Hierarchy Standard, or FHS. You can download a document that provides much greater detail here, or look up the original source documents on the Linux Foundation website. This standard ensures that users can move between distributions without having to re-learn how the system is organized.

Linux uses the '/' character to separate paths (unlike Windows, which uses '\'), and does not have drive letters. New drives are mounted as directories in the single filesystem, often under /media (so, for example, a CD-ROM disc labeled FEDORA might end up being found at /media/FEDORA, and a file README.txt on that disc would be at /media/FEDORA/README.txt).

The Boot Process

Have you ever wondered what happens in the background from the time you press the Power button until the Linux login prompt appears?

The Linux boot process is the procedure for initializing the system. It consists of everything that happens from when the computer power is first switched on until the user interface is fully operational.

Once you start using Linux, you will find that having a good understanding of the steps in the boot process will help you with troubleshooting problems as well as with tailoring the computer's performance to your needs.

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Not published yet.
Last updated 15th September, 2016.
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