GNU fdisk User Manual

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Short Contents

1 About

1.1 Name

GNU fdisk − menu driven partition table manipulator, similar to Linux fdisk. It has two variants, lfdisk and gfdisk, lfdisk aims to be close to Linux fdisk, while gfdisk supports the more advanced disk operations like partition resizing. When fdisk is called, the default is to run gfdisk.

2 Using fdisk

2.1 Invoking fdisk

fdisk [options] [device]

2.2 Overview

Hard disks can be divided into logical disks called *partitions* (or *disk slices* in the BSD world), which are described in a *partition table*, which is also called a *disklabel*.

For ordinary use, like file storage or operation system installation, you will most likely need at least one partition, although with most modern operating system, you might also want to create several partitions, including one for swap space. For example, you usually create a seperate partition for home directories. For more information on what partitions you need for your operating system, look at its installation manual.

GNU fdisk is a menu driven program for creating and editing partition tables. It has support for DOS and MAC type partition tables, BSD and SUN type disklabels and others.

On most GNU/Linux distributions *device* is usually one of the following:

>   /dev/hda
>   /dev/hdb
>   /dev/sda
>   /dev/sdb

IDE disks are usually using /dev/hd[a-h] for device names, SCSI disks - /dev/sd[a-p]. The partitions will take the device name followed by the partition number, e.g. /dev/hda1. If you are using a GNU/Linux operating system, you can see */usr/src/linux/Documentation/devices.txt* for more infomation on device naming.

A DOS type partition table can have up to four 'primary' partitions, which get numbers 1-4. One of the primary partitions may be used as an 'extended' partition, which is used as a container for more partitions, which are called 'logical' and take numbers starting from 5.

A BSD/SUN type disklabel can hold up to 8 partitions, and an IRIX/SGI type disk label, called 'dvh' in fdisk, can hold up to 16.

2.3 Options

−h, −−help
> Displays a help message.

−v, −−version
> Displays the program's version.

−L, −−linux-fdisk
> Turns on Linux fdisk compatibility mode. This is the same as running lfdisk. In this mode, only disk operations supported by Linux fdisk will be available.

−G, −−gnu-fdisk
> Turns off Linux fdisk compatibility mode. You will be able to perform more operations on the disk - create on a partition, resize, move or copy a partition, with the filesystem on it, or automatically detect deleted partitions.

−i, −−interactive
> Where necessary, prompts for user intervention. This is the default, when the program is started at a terminal.

−p, −−script
> Never prompts for user intervention. This is the default, when the program is not started at a terminal, when it is called from another program. You can use this mode for scripting, fdisk tries to perform the select the most suitable choice in every case.

−l, −−list Lists the partition table on the specified device and exits. If there is no device specified, lists the partition tables on all detected devices.

−r, −−raw-list
> Displays a hex dump of the partition table of the disk, similar to the way Linux fdisk displays the raw data in the partition table, using the "print the raw data in the partition table" from the expert menu.

−u, −−unit-sector
> Use sectors, instead of cylinders for a default unit.

−s, −−size=`DEVICE`
> Displays the size of the partition on *DEVICE* is printed on the standard output.

−t, −−list-partition-types
> Displays a list of supported partition types and features.

The following options are available only in lfdisk, for Linux fdisk compatibility.

−b, −−sector-size=`SIZE`
> Specify the sector size of the disk. Valid values are 512, 1024 and 2048. Should be used only on older kernels, which don't guess the correct sector size.

−C, −−cylinders=`CYLINDERS`
> Specify the number of cylinders of the disk. Currently does nothing, it is left for Linux fdisk compatibility

−H, −−heads=`HEADS`
> Specify the number of heads of the disk. Reasonable values are 255 or 16.

−S, −−sectors=`SECTORS`
> Specify the number of sectors per track. A reasonable value is 63.

2.4 Commands and usage

When **GNU fdisk** is started, a simple command line interface is displayed. A list with the available commands and a short description can displayed by entering **m**. More detailed information about every command is given below. Most operations are not performed immediately, but only after the user decides to write the partition table to the disk. Those

that need to write to the disk immediately, warn the user about it and are only available when not running in Linux fdisk compatibility mode. The default unit used is cylinder and can be changed to sector. Partition sizes can be specified in any other available unit, though. See the next section for more information.

m   A command obsoleted by reading this manual.

p   Displays the partition table on the disk. It shows information like the start and end of the partitions, and their partition number. This is needed for using most of the commands below, so it is a good idea to list the partition table before using them. The start and end of the partition are displayed in the unit that you have selected for fdisk, while the size is displayed in blocks.

a   Toggles the bootable flag on a partition. On a DOS partition table type the partition with the bootable flag is the one that the system will boot from if there is no a boot manager in the master record. Make sure you have a bootable partition, and it is indeed bootable. You will be asked for a partition number.

d   Delete the selected partition so you can use it to create another partition on the free space left by it.

n   Creates a new partition on some free space in the partition table. You will be asked for the type of partition you want to create, and you can enter **p** for primary, **e** for extended or **l** for logical. Make sure that you select a type, that can be created in the position that you want to create it. You can create logical partition only inside the extended. You will be asked about the start and end of the partition. If you put a **+** before the end, it will be regarded as size. You can also specify the start and end or size in a different unit, please check the next section for more information. If you are using gfdisk, you will also be asked about the filesystem type and whether you want to create a filesystem on the partition. If you don't want to select a filesystem type, just select the default and you can later change the system type with the **t** command.

o   Creates a new empty DOS partition table. Use this command if you want to start the partition table on the disk from scratch, deleting all the partitions that are currently residing on it.

s   Creates a new empty SUN disklabel. If you are using a disk with a SUN disklabel, use this command if you want to start the partition table on the disk from scratch, deleting all the partitions that are currently residing on it.

l   Lists the known filesystem types for the partition table or disklabel on the disk. This is not about the supported filesystem types, but about the way the disklabel marks the filesystem that is supposed to be residing on the partition. It can differ from the real filesystem, although it is not recommended.

t   Changes the filesystem type of a partition. This does not touch the actual filesystem on the partition, it just changes the field in the partition table that marks the filesystem that is supposed to be residing on the partition. If you are running gfdisk, when you select a filesystem during the creation of a new partition, the most appropriate value for this field is selected.

w Writes the partition table to the disk, notifies the operating system about the changes and quits the program. If fdisk wasn't able to notify the OS, you will have to restart the computer in order to use the new partition table.

q Quits the program without saving the changes.

x Displays a menu with extra operations, which are described below.

There is a menu with extra functionality in GNU fdisk. In gfdisk, it will include the specific to gfdisk commands. Everything is described below.

The extra commands in lfdisk include

f Fixes the order of the partitions in the partition table. This is useful, when for example on an DOS partition table, the partitions have a wrong order and you want to order them in order they are placed on the disk.

b Moves the beginning of the data in the partition. Asks for a new start of the partition and then changes the partition geometry.

c Changes the number of the cylinders of the disk.

h Changes the number of the heads of the disk.

s Changes the number of the sectors per track of the disk.

The extra commands in gfdisk include

h Checks the consistency of the filesystem. It is useful to see whether it is safe to perform operations like resize on the partitions. It performs a very basic check on the filesystem, so if you want to make a more thorough test or fix the errors on the filesystem, you should an external utility like e2fsck for ext2 or reiserfsck for reiserfs. Please note that the check is limited on some filesystem types (ext2, ext3 and reiserfs at the time of writing of the manual), but if the partition contains errors resize will gracefully fail without destroying the filesystem.

v Moves the partition to another location on the disk. It asks for the number of the partition you want to move. This command works in the same way as the new partition command and asks same questions, see above. The new location can't overlap with the current location. If this is what you need, you should try using the resize function, instead. Moving the partition requires that all changes you made so far are written to the disk.

c Rescues a partition with a supported filesystem, that has been deleted. You specify the start and end of the region where you want to look for the start of the partition.

z Resizes the partition and its filesystem, if supported. You will be asked for the number of the partition, and the new size and end. Some supported filesystem types require that the start of the partition stays fixed. This command requires that all changes you made so far are written to the disk.

o Copies another partition over an already created partition on the disk. You can copy a partition from a different disk. You will be asked for the device of the disk that you want to copy from and the number of the partitions on both disks. This requires that all changes you made so far are written to the disk.

k   Creates a new file system on the selected partition. You will be asked to choose the filesystem type. The filesystem field in the partition table or disklabel is updated automatically. Please note that this requires that all changes you made so far are commited to the disk. If there is already a filesystem on the partition, it will be destroyed.

2.5 Units

While you can select either cylinders or sectors as display units, you can specify the positions and sizes in units of your choice, by entering the size followed by the unit. This is a list of the units that are available. Please note, that at the time of writing, using some of the units, like percent, as a position or size is broken.

compact   Display each size in the most suitable unit from B, kB, MB, GB and TB.

B   One byte

kB   One kilobyte (1,000 bytes)

MB   One megabyte (1,000,000 bytes)

GB   One gigabyte (1,000,000,000 bytes)

TB   One terabyte (1,000,000,000,000 bytes)

KiB   One kilo binary byte (1,024 bytes)

MiB   One mega binary byte (1,048,576 bytes)

GiB   One giga binary byte (1,073,741,824 bytes)

TiB   One tera binary byte (1,099,511,627,776 bytes)

s   One sector. It depends on the sector size of the disk. You can use it if you want to see or choose the exact size in sectors.

%   One percent from the size of the disk

cyl   One cylinder. It depends on the cylinder size.

chs   Use CHS display units.

3 Bugs

Before editing a BSD disklabel, the partition with the disklabel should already exist on the disk and be detected by the OS. If you have created a BSD-type partition, you need to write the changes to the disk. If fdisk fails to notify the OS about the changes in partition table, you need to restart your computer. As fdisk tries to guess the device holding the BSD disklabel, it might fail to edit it at all, even if the OS has detected it. In this case you are adviced to simply open the device with fdisk directly. It is possible that it doesn't work on some operating systems.

Getting the size of a partition with -s might fail, if fdisk fails to guess the disk device, for the same reasons as with the previous bug.

4 See also

cfdisk(8), **mkfs**(8), **parted**(8)

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