

Linux 硬盘分区及挂载操作

一、使用 `disk -l` 查看需要进行分区、挂载的磁盘：

```
[root@i-oyc2gyj8 ~]# fdisk -l
Disk /dev/sda: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x000e84fd

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *           2048     41943039     20970496   83  Linux
WARNING: fdisk GPT support is currently new, and therefore in an experimental phase. Use at your own discretion.

Disk /dev/sdb: 21.5 GB, 21474836480 bytes, 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: gpt
Disk identifier: 2F899AC5-0D12-432F-AB3D-D98747A96C0C

#           Start         End      Size Type    Name
 1           2048     41943006     20G  Linux filesystem

Disk /dev/sdc: 2147 MB, 2147483648 bytes, 4194304 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

Disk /dev/sdd: 322.1 GB, 322122547200 bytes, 629145600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes

[root@i-oyc2gyj8 ~]#
```

二、`fdisk /dev/sdd` 进入对 `sdd` 这块硬盘的分区交互操作界面：

```
[root@i-oyc2gyj8 ~]# fdisk /dev/sdd
Welcome to fdisk (util-linux 2.23.2).

Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table
Building a new DOS disklabel with disk identifier 0x02eda257.

Command (m for help):
```

可通过输入 `m` 回车查看该命令下参数：

```
Command (m for help): m
Command action
 a toggle a bootable flag
 b edit bsd disklabel
 c toggle the dos compatibility flag
 d delete a partition
 g create a new empty GPT partition table
 G create an IRIX (SGI) partition table
 l list known partition types
 m print this menu
 n add a new partition
 o create a new empty DOS partition table
 p print the partition table
 q quit without saving changes
 s create a new empty Sun disklabel
 t change a partition's system id
 u change display/entry units
 v verify the partition table
 w write table to disk and exit
 x extra functionality (experts only)

Command (m for help):
```

1、见上图，通过按 g 将该硬盘转换为 GPT 格式（单盘 2T 以上需使用 GPT 格式，不然只能识别到 2T）

```
Command (m for help): g
Building a new GPT disklabel (GUID: 28E09393-5463-4448-8933-D607A3208DC9)

Command (m for help): █
```

2、按 n 进行分区，无其他具体要求时连续回车即可，单盘全部容量作一个分区

```
Command (m for help): n
Partition number (1-128, default 1):
First sector (2048-629145566, default 2048):
Last sector, +sectors or +size{K,M,G,T,P} (2048-629145566, default 629145566):
Created partition 1

Command (m for help): █
```

3、输入 wq，保存并退出，可通过 fdisk-l 查看到存在序号为 1 的 gpt 分区

```
Command (m for help): wq
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
[...]
```

```
Disk /dev/sdd: 322.1 GB, 322122547200 bytes, 629145600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: gpt
Disk identifier: 28E09393-5463-4448-8933-D607A3208DC9

#          Start          End          Size Type          Name
1          2048          629145566    300G Linux fileyste
[root@i-oye2gyj8 ~]# █
```

三、使用命令 `mkfs.ext4 /dev/sdd1` (这里操作的是 sdd1 分区, 不是 sdd 盘了)

将分区 sdd1 格式化为 ext4 格式, 中途无需回车, 等待自动结束即可。

```
[root@i-oyc2gyj8 ~]# mkfs.ext4 /dev/sdd1
mke2fs 1.42.9 (28-Dec-2013)
Discarding device blocks: done
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
19660800 inodes, 78642939 blocks
3932146 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2227175424
2400 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424, 20480000, 23887872, 71663616

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

[root@i-oyc2gyj8 ~]#
```

四、新建挂在路径 `mkdir /data` 这里将在根目录下创建 data 目录用于挂载

```
[root@i-oyc2gyj8 ~]# mkdir /data
[root@i-oyc2gyj8 ~]# ls /
bin boot data dev etc home lib lib64 lost+found media mnt nginx_download opt proc root run sbin srv sys tmp usr var
[root@i-oyc2gyj8 ~]#
```

使用命令 `mount /dev/sdd1 /data` 挂载分区到指定目录

```
[root@i-oyc2gyj8 ~]# mount /dev/sdd1 /data
[root@i-oyc2gyj8 ~]#
```

使用命令 `lsblk` 查看挂载完成

```
[root@i-oyc2gyj8 ~]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda   8:0    0  20G  0 disk
└─sda1 8:1    0  20G  0 part /
sdb   8:16   0  20G  0 disk
└─sdb1 8:17   0  20G  0 part /nginx_download
sdc   8:32   0   2G  0 disk [SWAP]
sdd   8:48   0 300G  0 disk
└─sdd1 8:49   0 300G  0 part /data
[root@i-oyc2gyj8 ~]#
```

五、以上完成后即挂载硬盘初步完成，属于临时挂载，设备重启后挂载会丢失，需要写入系统；这里有两种写入方式。

使用命令编辑 vi /etc/fstab 按 i 进入编辑模式。这里以下 2 选 1 个即可。

```
#
# /etc/fstab
# Created by anaconda on Fri Jun 19 09:50:11 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=5713523a-c406-43af-a226-913f66eeb0d3 / ext4 defaults 1 1
LABEL=YUNIFYSWAP none swap sw 0 0
UUID=f435b543-2a4e-447f-918a-6580d541afc0 /nginx_download xfs defaults 0 0
~
~
~
```

1、路径写入方式，需要注意路径必须是绝对路径，目录必须完全一致

按文件中格式添加自己挂载的路径，例如本教程中挂载：

```
/dev/sdd1 /data ext4 defaults 0 0
```

中间空格随意，但必须有。后按 wq 保存退出

```
#
# /etc/fstab
# Created by anaconda on Fri Jun 19 09:50:11 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk'
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info
#
UUID=5713523a-c406-43af-a226-913f66eeb0d3 / ext4 defaults 1 1
LABEL=YUNIFYSWAP none swap sw 0 0
UUID=f435b543-2a4e-447f-918a-6580d541afc0 /nginx_download xfs defaults 0 0
/dev/sdd1 /data ext4 defaults 0 0
~
~
```

2、UUID 写入方式：先使用命令查询出分区 uuid 号，使用命令 blkid 查询

```
[root@i-oyc2gyj8 ~]# blkid
/dev/sda1: UUID="5713523a-c406-43af-a226-913f66eeb0d3" TYPE="ext4"
/dev/sdb1: UUID="f435b543-2a4e-447f-918a-6580d541afc0" TYPE="xfs" PARTUUID="a6e32422-3315-4ed2-ac4f-56fb16f9433c"
/dev/sdc: LABEL="YUNIFYSWAP" UUID="f490fae5-73c7-47a0-88df-084f3ed627e0" TYPE="swap"
/dev/sdd1: UUID="79d851b9-30b3-4ed4-a3cd-45fb861cd711" TYPE="ext4" PARTUUID="253626d0-fc90-4c31-9f16-927adb4eb857"
[root@i-oyc2gyj8 ~]#
```

写入 fstab 文件并保存退出。

```
#  
# /etc/fstab  
# Created by anaconda on Fri Jun 19 09:50:11 2020  
#  
# Accessible filesystems, by reference, are maintained under '/dev/disk'  
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info  
#  
UUID=5713523a-c406-43af-a226-913f66eeb0d3 / ext4 defaults 1 1  
LABEL=YUNIFYSWAP none swap sw 0 0  
UUID=f435b543-2a4e-447f-918a-6580d541afc0 /nginx_download xfs defaults 0 0  
UUID=79d851b9-30b3-4ed4-a3cd-45fb861cd711 /data ext4 defaults 0 0  
~
```

使用 `mount -a` 可验证挂载文件是否写错，无回显即代表完成永久挂载。

注：UUID 写入与路径写入无本质区别，使用 UUID 更加安全和稳妥，一个分区的 UUID 是唯一的，不会造成混乱和冲突，而硬盘的分区号有可能会因为更换硬盘操作导致分区号发生变化，导致挂载失效，设备无法正常运行。

至此，硬盘挂载完成！