mount and lsblk Disks and mounts

CONCEPTS

Mount points are just directories: mounting hides whatever was in them until you unmount.

Block device /dev/sdb1
↓ mkfs
Filesystem UUID, label
↓ mount
Mount point /mnt/data
↓ umount
Detached safe to unplug

Use UUID= in fstab: /dev/sdX names can change between boots.

DISCOVER

lsblk
Tree of block devices

lsblk -f
Add filesystem, label, UUID, mountpoint

lsblk -o NAME,SIZE,TYPE,FSTYPE,MOUNTPOINTS
Pick your own columns

lsblk -p
Show full /dev paths

lsblk -J
JSON output for scripts

sudo blkid
List UUID, label and type of devices

sudo blkid *<device>*
Probe a single device

findmnt
Tree of mounted filesystems

findmnt *<dir>*
Which filesystem backs this mount point

findmnt -T *<path>*
Mount holding any path

findmnt -t ext4,xfs
Only some filesystem types

findmnt --real
Hide pseudo filesystems

findmnt -s
Read fstab instead of live mounts

mount
List mounts (noisy, includes pseudo)

MOUNT AND UNMOUNT

sudo mount *<device> <dir>*
Mount, type auto-detected

sudo mount -t *<type> <device> <dir>*
Force the filesystem type

sudo mount -o *<opts> <device> <dir>*
Mount with comma-separated options

sudo mount -r *<device> <dir>*
Mount read-only

sudo mount UUID=*<uuid> <dir>*
Mount by UUID

sudo mount -L *<label> <dir>*
Mount by label

sudo mount -m *<device> <dir>*
Create the mount point first

sudo mount -a
Mount all fstab entries not yet mounted

sudo mount *<dir>*
Mount using the fstab entry for <dir>

sudo mount -o loop *<file.iso> <dir>*
Mount an image file

sudo umount *<dir>*
Unmount by mount point

sudo umount *<device>*
Unmount by device

sudo umount -l *<dir>*
Lazy: detach now, clean up later

sudo umount -R *<dir>*
Unmount the whole tree below

"target is busy": find the culprit with lsof +f -- <dir> or fuser -vm <dir>, or cd out of it.

BIND AND REMOUNT

sudo mount --bind *<dir> <other>*
Make a directory visible at a second path

sudo mount -o remount,ro *<dir>*
Switch a live mount to read-only

sudo mount -o remount,rw *<dir>*
Switch a live mount to read-write

FSTAB AND OPTIONS

fstab fields (/etc/fstab)

#	Field	Example
1	device or UUID=	UUID=1a2b-3c4d
2	mount point	/data
3	filesystem type	ext4
4	options	defaults,noatime
5	dump (legacy)	0
6	fsck order	2

A typical fstab line

```
# device        dir    type
options           dump pass
UUID=<uuid>    /data  ext4
defaults,noatime  0    2
```

Common options

Option	Effect
`defaults`	rw,suid,dev,exec,auto,no
`ro / rw`	read-only / read-write
`noexec`	forbid running binaries
`nosuid`	ignore setuid bits
`nodev`	ignore device files
`noatime`	skip access-time writes
`nofail`	do not fail boot if absent
`noauto`	skip on mount -a and boot
`user`	non-root users may mount
`x-systemd.automount`	mount on first access

findmnt --verify
Lint fstab before rebooting

sudo systemctl daemon-reload
Make systemd re-read fstab

Test an fstab edit with mount -a before rebooting; a bad entry can drop boot into emergency mode.

RECIPES

Mount a new USB disk

```
lsblk -f
sudo mkdir -p /mnt/usb
sudo mount /dev/sdb1 /mnt/usb
# when done
sudo umount /mnt/usb
```

Persist a disk across reboots

```
lsblk -f                          #
note the UUID
sudo mkdir -p /data
echo 'UUID=<uuid> /data ext4
defaults,nofail 0 2' | sudo tee -
a /etc/fstab
findmnt --verify && sudo mount -a
```