# Linux 101

## Scenario

1. **Verificare le informazioni sul sistema** (quale distribuzione, versione del kernel, ecc.).
2. **Gestire file e directory** (creazione, copia, spostamento, cancellazione, compressione).
3. **Usare comandi di base da riga di comando** (navigazione del file system, pipe, ridirezione).
4. **Installare un pacchetto software open source** e verificare la licenza.
5. **Creare uno script Bash** che esegua alcune operazioni automatiche.
6. **Esaminare i log di sistema** e verificare lo stato di alcuni processi.
7. **Gestire la rete** e controllare la connettività esterna.
8. **Controllare risorse hardware** (RAM, CPU, dischi) e individuare i device file corrispondenti.
9. **Mostrare l'uso di un editor di testo** per creare o modificare file di configurazione.

# 1. Identificazione della distribuzione e del sistema

## 1.1 Apri il terminale e identifica la distribuzione e la versione:

```
cat /etc/os-release
```

Output:

```
PRETTY_NAME="Ubuntu 24.04.2 LTS"
NAME="Ubuntu"
VERSION_ID="24.04"
VERSION="24.04.2 LTS (Noble Numbat)"
VERSION_CODENAME=noble
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=noble
LOGO=ubuntu-logo
```

Oppure, su alcune distro:

```
lsb_release -a
```

Output:

```
No LSB modules are available.
Distributor ID: Ubuntu
Description: Ubuntu 24.04.2 LTS
Release: 24.04
Codename: noble
```

## 1.2 Verifica la versione del kernel:

```
uname -r
```

Output:

```
6.8.0-55-generic
```

## 1.3 Mostra le informazioni generali del sistema:

```
uname -a
```

Output:

```
Linux ubu01 6.8.0-55-generic #57-Ubuntu SMP PREEMPT_DYNAMIC Wed Feb 12
23:42:21 UTC 2025 x86_64 x86_64 x86_64 GNU/Linux
```

# 2.Navigazione nel file system e gestione di file e directory

## 2.1 Navigazione

### Muoviti nella tua home directory:

Ma prima di farlo possiamo assicurarci che non siamo già della directory di home.

```
xiaolong@ubu01:/home$
```

In questo caso non dobbiamo fare altri prompt perché ci troviamo già in home.
Altrimenti:

```
xiaolong@ubu01:~$
```

In questo caso ci troviamo in una directory e per tornare indietro come directory facciamo:

```
cd ../
```

Questo è il comando per tornare indietro di una directory. Ci sono alcune volte che bisogna farlo più volte perché è possibile che ci troviamo in più sottocartelle.
Per sapere il percorso della sottocartella in cui ci si trova ora esegui:

```
pwd
```

Output di esempio:

```
/home/xiaolong
```

### Mostra tutti i file (inclusi quelli nascosti) nella home:

```
ls -la
```

Output:

```
total 12
drwxr-xr-x 3 root root 4096 Mar 5 10:28 .
drwxr-xr-x 23 root root 4096 Mar 5 10:23 ..
drwxr-x--- 4 xiaolong xiaolong 4096 Mar 12 10:18 xiaolong
```

## 2.2 Creazione directory

### Crea una struttura di directory di prova (ad esempio `progetto/esercizi/script`):

```
mkdir -p progetto/esercizi/script
```

Non da nessun output a meno che non dia problemi.
Per verificare che la directory sia stata creata si può fare il comando dir per visualizzare tutti i file/cartelle esistenti.
Output:

```
file.txt progetto prova2.txt prova.txt user
```

In questo caso si può visualizzare un testo che si chiama progetto quindi è stato creato correttamente.

## 2.3 Creazione di file:

### Entra nella cartella `progetto/esercizi`:

```
cd progetto/esercizi
```

### Crea un file di testo vuoto `appunti.txt`:

```
touch appunti.txt
```

### Verifica l'esistenza del file:

```
ls -l
```

Output:

```
-rw-rw-r-- 1 xiaolong xiaolong 0 Mar 17 19:57 appunti.txt
drwxrwxr-x 2 xiaolong xiaolong 4096 Mar 12 11:55 script
```

## 2.4 Copia e spostamento:

### Copia `appunti.txt` nella cartella `script`

```
cp appunti.txt script/
```

Per verificare se la copia del file è stata fatta correttamente si può entrare nella cartella script e fare dir per verificare l'esistenza del file.

### Rinomina (o sposta) il file `appunti.txt` in `appunti_vecchi.txt`:

```
mv appunti.txt appunti_vecchi.txt
```

Output:

```
appunti_vecchi.txt
```

Facendo dir dopo aver modificato il nome si ha come output il nome file cambiato come indicato sopra.

## 2.5 Eliminazione:

### Elimina il file rinominato:

```
rm appunti_vecchi.txt
```

### (Facoltativo) Elimina l'intera cartella `progetto`:

Per eseguirlo correttamente bisogna tornare indietro fino alla cartella precedente alla cartella progetto altrimenti non si può eseguire correttamente.

```
rm -r progetto
```

# 3 Uso del terminale, pipe e redirezioni

## 3.1 Redirezione:

### Esegui un comando che elenca i contenuti della home e salvali in un file `lista_home.txt`:

```
ls -l ~ > lista_home.txt
```

Se dovesse dare problemi di permesso come per esempio:

```
-bash: lista_home.txt~: Permission denied
```

Prova a salvare il file in un'altra parte come in questo modo:

```
ls -l ~ > /tmp/lista_home.txt
```

`/tmp/` è una directory temporanea dove solitamente tutti gli utenti possono scrivere.

**Verifica che il file `lista_home.txt` sia stato creato correttamente, guardandone il contenuto:**

```
cat lista_home.txt
```

Output:

```
-rw-rw-r-- 1 xiaolong xiaolong 26 Mar 5 12:25 file.txt
-rw-rw-r-- 1 xiaolong xiaolong 5 Mar 5 12:03 prova2.txt
-rw-rw-r-- 1 xiaolong xiaolong 0 Mar 5 11:58 prova.txt
-rw-rw-r-- 1 xiaolong xiaolong 0 Mar 5 11:59 user
```

## 3.2 Pipe

**Esegui il comando `ps aux` per visualizzare i processi in esecuzione, ma filtralo con `grep` per cercare un particolare termine, ad esempio `root`:**

```
ps aux | grep root
```

Output:

```
root 1 0.0 0.6 22280 13620 ? Ss Mar05 0:19 /sbin/init
root 2 0.0 0.0 0 0 ? S Mar05 0:00 [kthreadd]
root 3 0.0 0.0 0 0 ? S Mar05 0:00 [pool_workqueue_release]
root 4 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-rcu_g]
root 5 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-rcu_p]
root 6 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-slub_]
root 7 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-netns]
root 9 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/0:0H-events_highpri]
root 12 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-mm_pe]
root 13 0.0 0.0 0 0 ? I Mar05 0:00 [rcu_tasks_kthread]
root 14 0.0 0.0 0 0 ? I Mar05 0:00 [rcu_tasks_rude_kthread]
root 15 0.0 0.0 0 0 ? I Mar05 0:00 [rcu_tasks_trace_kthread]
root 16 0.0 0.0 0 0 ? S Mar05 0:00 [ksoftirqd/0]
root 17 0.0 0.0 0 0 ? I Mar05 0:10 [rcu_preempt]
```

```
root 19 0.0 0.0 0 0 ? S Mar05 0:00 [idle_inject/0]
root 20 0.0 0.0 0 0 ? S Mar05 0:00 [cpuhp/0]
root 21 0.0 0.0 0 0 ? S Mar05 0:00 [cpuhp/1]
root 22 0.0 0.0 0 0 ? S Mar05 0:00 [idle_inject/1]
root 23 0.0 0.0 0 0 ? S Mar05 0:08 [migration/1]
root 24 0.0 0.0 0 0 ? S Mar05 0:00 [ksoftirqd/1]
root 26 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/1:0H-events_highpri]
root 27 0.0 0.0 0 0 ? S Mar05 0:00 [kdevtmpfs]
root 28 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-inet_]
root 30 0.0 0.0 0 0 ? S Mar05 0:00 [kauditd]
root 31 0.0 0.0 0 0 ? S Mar05 0:00 [khungtaskd]
root 32 0.0 0.0 0 0 ? S Mar05 0:00 [oom_reaper]
root 33 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-write]
root 35 0.0 0.0 0 0 ? S Mar05 0:47 [kcompactd0]
root 36 0.0 0.0 0 0 ? SN Mar05 0:00 [ksmd]
root 38 0.0 0.0 0 0 ? SN Mar05 0:00 [khugepaged]
root 39 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kinte]
root 40 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kbloc]
root 41 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-blkcg]
root 42 0.0 0.0 0 0 ? S Mar05 0:00 [irq/9-acpi]
root 43 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-tpm_d]
root 44 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-ata_s]
root 45 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-md]
root 46 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-md_bi]
root 47 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-edac-]
root 48 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-devfr]
root 49 0.0 0.0 0 0 ? S Mar05 0:00 [watchdogd]
root 50 0.0 0.0 0 0 ? I< Mar05 0:03 [kworker/1:1H-kblockd]
root 51 0.0 0.0 0 0 ? S Mar05 0:00 [kswapd0]
root 52 0.0 0.0 0 0 ? S Mar05 0:00 [ecryptfs-kthread]
root 53 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kthro]
root 54 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-acpi_]
root 55 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-mld]
root 56 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-ipv6_]
root 63 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kstrp]
root 65 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/u5:0]
root 70 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-crypt]
root 80 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-charg]
root 111 0.0 0.0 0 0 ? I< Mar05 0:04 [kworker/0:1H-kblockd]
root 125 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-hv_vm]
root 126 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-hv_vm]
root 127 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-hv_pr]
root 128 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-hv_su]
root 150 0.0 0.0 0 0 ? S Mar05 0:00 [scsi_eh_0]
```

```
root 151 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-scsi_]
root 182 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kdmfl]
root 208 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-raid5]
root 249 0.0 0.0 0 0 ? S Mar05 0:04 [jbd2/dm-0-8]
root 250 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-ext4-]
root 322 0.0 1.3 58696 26368 ? S<s Mar05 0:08 /usr/lib/systemd/systemd-
journald
root 347 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kmpat]
root 348 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-kmpat]
root 373 0.0 1.3 289116 27136 ? SLsl Mar05 2:14 /sbin/multipathd -d -s
root 401 0.0 0.3 29052 7672 ? Ss Mar05 0:01 /usr/lib/systemd/systemd-udevd
root 402 0.0 0.0 0 0 ? S Mar05 0:00 [psimon]
root 468 0.0 0.0 0 0 ? S Mar05 0:40 [hv_balloon]
root 564 0.0 0.0 0 0 ? S Mar05 0:00 [jbd2/sda2-8]
root 565 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-ext4-]
root 791 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-cfg80]
root 900 0.0 0.1 4236 2688 ? Ss Mar05 0:02 /usr/sbin/cron -f -P
root 916 0.0 0.4 18064 9036 ? Ss Mar05 0:02 /usr/lib/systemd/systemd-logind
root 923 0.0 0.6 469068 13568 ? Ssl Mar05 0:19 /usr/libexec/udisks2/udisksd
root 993 0.0 1.1 107012 22912 ? Ssl Mar05 0:00 /usr/bin/python3
/usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root 1023 0.0 0.6 392032 12672 ? Ssl Mar05 0:00 /usr/sbin/ModemManager
root 1027 0.0 0.2 6980 4864 tty1 Ss Mar05 0:00 /bin/login -p --
root 1244 0.0 0.0 0 0 ? S Mar05 0:00 [psimon]
root 1303 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-tls-s]
root 1336 0.0 0.4 12020 8064 ? Ss Mar05 0:00 sshd: /usr/sbin/sshd -D
[listener] 0 of 10-100 startups
root 1575 0.0 2.1 578016 41176 ? Ssl Mar05 1:03 /usr/libexec/fwupd/fwupd
root 1582 0.0 0.4 314092 8320 ? Ssl Mar05 0:00 /usr/libexec/upowerd
root 1607 0.0 0.1 90000 2876 ? Ss Mar05 0:00 gpg-agent --homedir
/var/lib/fwupd/gnupg --use-standard-socket --daemon
root 35819 0.0 0.0 0 0 ? I 19:00 0:00 [kworker/0:0-events]
root 35840 0.0 0.0 0 0 ? I 19:20 0:00 [kworker/1:2-events]
root 35873 0.0 0.0 0 0 ? I 19:48 0:00 [kworker/u4:0-events_unbound]
root 35879 0.0 0.4 14964 7920 ? Ss 19:51 0:00 sshd: xiaolong [priv]
root 35910 0.0 0.4 14964 8304 ? Ss 19:51 0:00 sshd: xiaolong [priv]
root 36244 0.0 0.0 0 0 ? I 20:20 0:00 [kworker/0:1-cgroup_destroy]
root 36245 0.0 0.0 0 0 ? I 20:20 0:00 [kworker/u4:3-events_power_efficient]
root 36298 0.0 0.0 0 0 ? I 20:40 0:00 [kworker/1:3-cgroup_destroy]
root 36307 0.0 0.0 0 0 ? I 20:40 0:00 [kworker/u4:2-events_power_efficient]
root 36329 0.0 0.0 0 0 ? I 21:00 0:00 [kworker/0:2]
root 36330 0.0 0.0 0 0 ? I 21:00 0:00 [kworker/0:3]
root 36331 0.0 0.0 0 0 ? I 21:00 0:00 [kworker/u4:1-events_power_efficient]
```

```
xiaolong 36333 0.0 0.1 6544 2304 pts/1 S+ 21:01 0:00 grep --color=auto root
```

## 3.3 Ricerca testuale:

Se hai qualche file di testo (come `lista_home.txt`), prova a cercare un pattern all'interno (ad esempio `Documents`):

```
grep Documents lista_home.txt
```

### Possibili scenari:

**Se "Documents" è presente**, stamperà tutte le righe che la contengono.
**Se "Documents" non è presente**, non restituirà nulla (comando eseguito senza output).
**Se il file `lista_home.txt` non esiste**, riceverai un errore tipo:

```
grep: lista_home.txt: No such file or directory
```

# 4 Installazione di un pacchetto open source e verifica licenza

## 4.1 Aggiorna gli indici dei pacchetti (su distribuzioni basate su Debian/Ubuntu):

```
sudo apt update
```

Output:

```
Hit:1 http://it.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://it.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://it.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Get:5 http://it.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages
[921 kB]
Get:6 http://it.archive.ubuntu.com/ubuntu noble-updates/main amd64
Components [151 kB]
Get:7 http://it.archive.ubuntu.com/ubuntu noble-updates/restricted amd64
Components [212 B]
Get:8 http://it.archive.ubuntu.com/ubuntu noble-updates/universe amd64
Packages [1,040 kB]
Get:9 http://it.archive.ubuntu.com/ubuntu noble-updates/universe amd64
Components [364 kB]
Get:10 http://it.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64
Components [940 B]
```

```
Get:11 http://it.archive.ubuntu.com/ubuntu noble-backports/main amd64
Components [208 B]
Get:12 http://it.archive.ubuntu.com/ubuntu noble-backports/restricted amd64
Components [212 B]
Get:13 http://it.archive.ubuntu.com/ubuntu noble-backports/universe amd64
Components [20.0 kB]
Get:14 http://it.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64
Components [212 B]
Fetched 2,750 kB in 1s (3,536 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
50 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

## 4.2 Installa il pacchetto (ad esempio `tree`):

```
sudo apt install tree
```

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
tree
0 upgraded, 1 newly installed, 0 to remove and 50 not upgraded.
Need to get 47.1 kB of archives.
After this operation, 111 kB of additional disk space will be used.
Get:1 http://it.archive.ubuntu.com/ubuntu noble/universe amd64 tree amd64
2.1.1-2ubuntu3 [47.1 kB]
Fetched 47.1 kB in 0s (620 kB/s)
Selecting previously unselected package tree.
(Reading database ... 86663 files and directories currently installed.)
Preparing to unpack .../tree_2.1.1-2ubuntu3_amd64.deb ...
Unpacking tree (2.1.1-2ubuntu3) ...
Setting up tree (2.1.1-2ubuntu3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.
```

```
No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

## 4.3 Verifica la presenza e la versione del pacchetto:

```
tree --version
```

Output:

```
tree v2.1.1 © 1996 - 2023 by Steve Baker, Thomas Moore, Francesc Rocher,
Florian Sesser, Kyosuke Tokoro
```

## 4.4 Controlla informazioni di licenza / documentazione. Spesso puoi dare un'occhiata in `/usr/share/doc/tree` oppure usare `apt show tree` per vederne i metadati.

```
show tree per
```

Output

```
Package: tree
Version: 2.1.1-2ubuntu3
Priority: optional
Section: universe/utils
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>
Original-Maintainer: Florian Ernst <florian@debian.org>
Bugs: https://bugs.launchpad.net/ubuntu/+filebug
Installed-Size: 111 kB
Depends: libc6 (>= 2.38)
Homepage: http://oldmanprogrammer.net/source.php?dir=projects/tree
Task: xubuntu-desktop, lubuntu-desktop, ubuntu-mate-core, ubuntu-mate-
desktop, ubuntu-budgie-desktop-minimal, ubuntu-budgie-desktop, ubuntu-
budgie-desktop-raspi, ubuntu-unity-desktop, ubuntucinnamon-desktop-minimal,
ubuntucinnamon-desktop-raspi
Download-Size: 47.1 kB
APT-Manual-Installed: yes
APT-Sources: http://it.archive.ubuntu.com/ubuntu noble/universe amd64
Packages
```

```
Description: displays an indented directory tree, in color
Tree is a recursive directory listing command that produces a depth indented
listing of files, which is colorized ala dircolors if the LS_COLORS
environment
variable is set and output is to tty.
```

# 5 Creazione di uno script bash di base

## 5.1 Crea lo script: all'interno della cartella `script` precedentemente creata (o dove preferisci), crea un file mioscript.sh con un editor di testo (ad es. `nano mioscript.sh`) e aggiungi:

## Digita:

```
nano mioscript.sh
```

Dopo premi invio e ti si apre un editor di testo integrato dove potrai andare ad inserire il codice sotto

```
#!/bin/bash

echo "Questo è il mio primo script!"
echo "Oggi è il: $(date)"
echo "Il mio utente corrente è: $USER"
```

Una volta aperto l'editor `nano` , puoi scrivere o modificare il tuo script. Per salvare e uscire:

- **CTRL + X** per uscire
- **Y** per confermare il salvataggio
- **Invio** per confermare il nome del file

## 5.2 Rendi eseguibile lo script:

```
chmod +x mioscript.sh
```

## 5.3 Esegui lo script

```
./mioscript.sh
```

Output:

```
Questo è il mio primo script!
Oggi è il: Tue Mar 18 03:04:04 PM UTC 2025
```

```
Il mio utente corrente è: xiaolong
```

### 5.4 Aggiungi parametri allo script, ad esempio:

```
#!/bin/bash

if [ $# -eq 0 ]; then
echo "Non hai passato alcun argomento allo script."
exit 1
fi

echo "Hai passato questi argomenti: $@"
```

Per lanciarlo digita:

```
./mioscript.sh arg1 arg2.
```

Output

```
Hai passato questi argomenti: arg1 arg2.
```

# 6 Archiviazione e compressione di file

### 6.1 Crea un archivio tar della cartella `script`:

```
tar -cvf script_backup.tar script/
```

Output:

```
script script_backup.tar
```

### 6.2 Comprimi l'archivio con gzip:

Otterrai un file `script_backup.tar.gz` .

```
gzip script_backup.tar
```

Output:

```
script script_backup.tar.gz
```

### 6.3 Verifica il contenuto di un archivio tar compresso direttamente:

```
tar -tvzf script_backup.tar.gz
```

Output:

```
drwxrwxr-x xiaolong/xiaolong 0 2025-03-18 15:16 script/
-rwxrwxr-x xiaolong/xiaolong 146 2025-03-18 15:16 script/mioscript.sh
```

# 7 Verifica di processi e log di sistema

## 7.1 Lista processi:

```
ps aux | less
```

Output:

```
root 373 0.0 1.3 289116 27136 ? SLsl Mar05 2:23 /sbin/multipathd -d -s
root 401 0.0 0.3 29052 7672 ? Ss Mar05 0:02 /usr/lib/systemd/systemd-udevd
root 402 0.0 0.0 0 0 ? S Mar05 0:00 [psimon]
root 468 0.0 0.0 0 0 ? S Mar05 0:42 [hv_balloon]
root 564 0.0 0.0 0 0 ? S Mar05 0:00 [jbd2/sda2-8]
root 565 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-ext4-]
systemd+ 632 0.0 0.6 21584 12800 ? Ss Mar05 0:02 /usr/lib/systemd/systemd-
resolved
systemd+ 637 0.0 0.4 91020 7936 ? Ssl Mar05 0:04 /usr/lib/systemd/systemd-
timesyncd
root 791 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-cfg80]
systemd+ 869 0.0 0.4 18984 9600 ? Ss Mar05 0:01 /usr/lib/systemd/systemd-
networkd
root 900 0.0 0.1 4236 2688 ? Ss Mar05 0:02 /usr/sbin/cron -f -P
message+ 901 0.0 0.2 9984 5504 ? Ss Mar05 0:03 @dbus-daemon --system --
address=systemd: --nofork --nopidfile --systemd-activation --syslog-only
polkitd 905 0.0 0.4 308160 8064 ? Ssl Mar05 0:24 /usr/lib/polkit-1/polkitd -
-no-debug
root 916 0.0 0.4 18064 9036 ? Ss Mar05 0:02 /usr/lib/systemd/systemd-logind
root 923 0.0 0.6 469068 13568 ? Ssl Mar05 0:21 /usr/libexec/udisks2/udisksd
syslog 951 0.0 0.3 222508 6016 ? Ssl Mar05 0:01 /usr/sbin/rsyslogd -n -iNONE
root 993 0.0 1.1 107012 22912 ? Ssl Mar05 0:00 /usr/bin/python3
/usr/share/unattended-upgrades/unattended-upgrade-shutdown --wait-for-signal
root 1023 0.0 0.6 392032 12672 ? Ssl Mar05 0:00 /usr/sbin/ModemManager
root 1027 0.0 0.2 6980 4864 tty1 Ss Mar05 0:00 /bin/login -p --
root 1244 0.0 0.0 0 0 ? S Mar05 0:00 [psimon]
xiaolong 1247 0.0 0.5 20304 11520 ? Ss Mar05 0:00 /usr/lib/systemd/systemd -
-user
xiaolong 1249 0.0 0.1 21144 3524 ? S Mar05 0:00 (sd-pam)
xiaolong 1260 0.0 0.2 8656 5504 tty1 S+ Mar05 0:00 -bash
root 1303 0.0 0.0 0 0 ? I< Mar05 0:00 [kworker/R-tls-s]
```

```
root 1336 0.0 0.4 12020 8064 ? Ss Mar05 0:00 sshd: /usr/sbin/sshd -D
[listener] 0 of 10-100 startups
root 1575 0.0 2.1 578252 41128 ? Ssl Mar05 1:07 /usr/libexec/fwupd/fwupd
root 1582 0.0 0.4 314092 8320 ? Ssl Mar05 0:00 /usr/libexec/upowerd
root 1607 0.0 0.1 90000 2876 ? Ss Mar05 0:00 gpg-agent --homedir
/var/lib/fwupd/gnupg --use-standard-socket --daemon
root 39148 0.0 0.0 0 0 ? I 12:10 0:01 [kworker/1:1-events]
root 39177 0.0 0.0 0 0 ? I 12:40 0:01 [kworker/0:1-events]
root 39553 0.0 0.0 0 0 ? I 15:04 0:00 [kworker/u4:3-events_power_efficient]
root 39866 0.0 0.0 0 0 ? I 15:30 0:00 [kworker/u4:0-events_unbound]
root 39898 0.0 0.0 0 0 ? I 16:00 0:00 [kworker/1:0-cgroup_destroy]
root 39899 0.0 0.0 0 0 ? I 16:02 0:00 [kworker/u4:2-events_unbound]
root 39905 0.0 0.4 14964 7920 ? Ss 16:06 0:00 sshd: xiaolong [priv]
root 39907 0.0 0.4 14964 8304 ? Ss 16:06 0:00 sshd: xiaolong [priv]
xiaolong 40041 0.0 0.3 14964 6960 ? S 16:06 0:00 sshd: xiaolong@notty
xiaolong 40060 0.0 0.3 15220 7728 ? S 16:06 0:00 sshd: xiaolong@pts/0
xiaolong 40061 0.0 0.1 2748 2048 ? Ss 16:06 0:00 /usr/lib/openssh/sftp-
server
xiaolong 40062 0.0 0.2 8648 5504 pts/0 Ss 16:06 0:00 -bash
root 40080 0.0 0.0 0 0 ? I 16:10 0:00 [kworker/0:2-cgroup_destroy]
xiaolong 40089 0.0 0.2 10884 4480 pts/0 R+ 16:15 0:00 ps aux
xiaolong 40090 0.0 0.0 328 0 pts/0 D+ 16:15 0:00 [less]
```

## Oppure utilizza `top` o `htop` (se installato):

Output con top:

```
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
40226 xiaolong 20 0 11980 6016 3840 R 0.3 0.3 0:00.03 top
1 root 20 0 22280 13620 9524 S 0.0 0.7 0:20.74 systemd
2 root 20 0 0 0 0 S 0.0 0.0 0:00.21 kthreadd
3 root 20 0 0 0 0 S 0.0 0.0 0:00.00 pool_workqueue_release
4 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_g
5 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-rcu_p
6 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-slub_
7 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-netns
9 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/0:0H-events_h+
12 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mm_pe
13 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_kthread
14 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
15 root 20 0 0 0 0 I 0.0 0.0 0:00.00 rcu_tasks_trace_kthre+
16 root 20 0 0 0 0 S 0.0 0.0 0:00.53 ksoftirqd/0
17 root 20 0 0 0 0 I 0.0 0.0 0:11.19 rcu_preempt
18 root rt 0 0 0 0 S 0.0 0.0 0:07.51 migration/0
```

```
20 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/0
21 root 20 0 0 0 0 S 0.0 0.0 0:00.00 cpuhp/1
22 root -51 0 0 0 0 S 0.0 0.0 0:00.00 idle_inject/1
23 root rt 0 0 0 0 S 0.0 0.0 0:09.29 migration/1
24 root 20 0 0 0 0 S 0.0 0.0 0:00.43 ksoftirqd/1
26 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/1:0H-events_h+
27 root 20 0 0 0 0 S 0.0 0.0 0:00.00 kdevtmpfs
28 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-inet_
30 root 20 0 0 0 0 S 0.0 0.0 0:00.01 kauditd
31 root 20 0 0 0 0 S 0.0 0.0 0:00.57 khungtaskd
32 root 20 0 0 0 0 S 0.0 0.0 0:00.00 oom_reaper
33 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-write
35 root 20 0 0 0 0 S 0.0 0.0 0:50.27 kcompactd0
36 root 25 5 0 0 0 S 0.0 0.0 0:00.00 ksmd
38 root 39 19 0 0 0 S 0.0 0.0 0:00.00 khugepaged
39 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kinte
40 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kbloc
41 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-blkcg
42 root -51 0 0 0 0 S 0.0 0.0 0:00.01 irq/9-acpi
43 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-tpm_d
44 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-ata_s
45 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-md
46 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-md_bi
47 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-edac-
48 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-devfr
49 root -51 0 0 0 0 S 0.0 0.0 0:00.00 watchdogd
50 root 0 -20 0 0 0 I 0.0 0.0 0:03.25 kworker/1:1H-kblockd
51 root 20 0 0 0 0 S 0.0 0.0 0:00.10 kswapd0
52 root 20 0 0 0 0 S 0.0 0.0 0:00.00 ecryptfs-kthread
53 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kthro
54 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-acpi_
55 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-mld
56 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-ipv6_
63 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-kstrp
65 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/u5:0
70 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-crypt
80 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-charg
111 root 0 -20 0 0 0 I 0.0 0.0 0:04.42 kworker/0:1H-kblockd
125 root 0 -20 0 0 0 I 0.0 0.0 0:00.00 kworker/R-hv_vm
```

## 7.2 Leggi i log di sistema (ad esempio su distro tipo Ubuntu il file `/var/log/syslog`, su altre `/var/log/messages` o

`/var/log/journal` con `journalctl`):

*Se la tua distro non usa `syslog`, puoi usare `journalctl -xe`*

```
sudo tail -n 20 /var/log/syslog
```

Output:

```
2025-03-18T16:10:08.072729+00:00 ubu01 systemd[1]: Starting sysstat-
collect.service - system activity accounting tool...
2025-03-18T16:10:08.077191+00:00 ubu01 systemd[1]: sysstat-collect.service:
Deactivated successfully.
2025-03-18T16:10:08.077406+00:00 ubu01 systemd[1]: Finished sysstat-
collect.service - system activity accounting tool.
2025-03-18T16:15:01.396016+00:00 ubu01 CRON[40087]: (root) CMD (command -v
debian-sa1 > /dev/null && debian-sa1 1 1)
2025-03-18T16:17:01.396706+00:00 ubu01 CRON[40098]: (root) CMD (cd / && run-
parts --report /etc/cron.hourly)
2025-03-18T16:18:22.577683+00:00 ubu01 systemd[1]: Started session-
2290.scope - Session 2290 of User xiaolong.
2025-03-18T16:18:22.660410+00:00 ubu01 systemd[1]: Started session-
2291.scope - Session 2291 of User xiaolong.
2025-03-18T16:20:18.077977+00:00 ubu01 systemd[1]: Starting sysstat-
collect.service - system activity accounting tool...
2025-03-18T16:20:18.080950+00:00 ubu01 systemd[1]: sysstat-collect.service:
Deactivated successfully.
2025-03-18T16:20:18.081088+00:00 ubu01 systemd[1]: Finished sysstat-
collect.service - system activity accounting tool.
2025-03-18T16:20:38.033479+00:00 ubu01 systemd[1]: session-2286.scope:
Deactivated successfully.
2025-03-18T16:20:38.238458+00:00 ubu01 systemd[1]: session-2287.scope:
Deactivated successfully.
2025-03-18T16:20:41.082852+00:00 ubu01 systemd[1]: Started session-
2292.scope - Session 2292 of User xiaolong.
2025-03-18T16:20:41.159532+00:00 ubu01 systemd[1]: Started session-
2293.scope - Session 2293 of User xiaolong.
2025-03-18T16:21:54.871592+00:00 ubu01 systemd[1]: session-2290.scope:
Deactivated successfully.
2025-03-18T16:21:55.110177+00:00 ubu01 systemd[1]: session-2291.scope:
Deactivated successfully.
2025-03-18T16:21:57.241175+00:00 ubu01 systemd[1]: session-2292.scope:
Deactivated successfully.
2025-03-18T16:21:57.677021+00:00 ubu01 systemd[1]: session-2293.scope:
Deactivated successfully.
```

```
2025-03-18T16:22:00.232704+00:00 ubu01 systemd[1]: Started session-
2294.scope - Session 2294 of User xiaolong.
2025-03-18T16:22:00.317725+00:00 ubu01 systemd[1]: Started session-
2295.scope - Session 2295 of User xiaolong.
```

# 8 Controllo della rete

## 8.1 **Mostra le interfacce di rete**:

```
ip a
```

o, in alternativa, su sistemi più vecchi:

```
ifconfig
```

Output:

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group
default qlen 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host noprefixroute
valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group
default qlen 1000
link/ether 00:15:5d:8f:65:01 brd ff:ff:ff:ff:ff:ff
inet 192.168.100.10/24 brd 192.168.100.255 scope global eth0
valid_lft forever preferred_lft forever
inet6 fe80::215:5dff:fe8f:6501/64 scope link
valid_lft forever preferred_lft forever
```

## 8.2 **Test di connettività** con un host esterno, ad esempio **google.com**:

```
ping -c 4 google.com
```

Output:

```
PING google.com (216.58.204.142) 56(84) bytes of data.
64 bytes from par21s05-in-f14.1e100.net (216.58.204.142): icmp_seq=1 ttl=114
time=4.14 ms
64 bytes from par21s05-in-f14.1e100.net (216.58.204.142): icmp_seq=2 ttl=114
time=3.72 ms
```

```
64 bytes from par21s05-in-f14.1e100.net (216.58.204.142): icmp_seq=3 ttl=114
time=3.93 ms
64 bytes from par21s05-in-f14.1e100.net (216.58.204.142): icmp_seq=4 ttl=114
time=3.97 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 3.724/3.942/4.140/0.148 ms
```

## 8.3 Risoluzione DNS:

```
nslookup google.com
```

Output:

```
Server: 127.0.0.53
Address: 127.0.0.53#53

Non-authoritative answer:
Name: google.com
Address: 216.58.204.142
Name: google.com
Address: 2a00:1450:4002:414::200e
```

o

```
dig google.com
```

Output:

```
; <<>> DiG 9.18.30-0ubuntu0.24.04.2-Ubuntu <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 1204
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;google.com. IN A

;; ANSWER SECTION:
google.com. 5 IN A 216.58.204.142
```

```
;; SERVER: 127.0.0.53#53(127.0.0.53) (UDP)
;; WHEN: Tue Mar 18 16:34:22 UTC 2025
;; MSG SIZE rcvd: 55
```

# 9 Controllo dell’hardware e dei device files

## 9.1 Informazioni CPU:

```
lscpu
```

Output:

```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 45 bits physical, 48 bits virtual
Byte Order: Little Endian
CPU(s): 2
On-line CPU(s) list: 0,1
Vendor ID: AuthenticAMD
Model name: AMD EPYC 9374F 32-Core Processor
CPU family: 25
Model: 17
Thread(s) per core: 1
Core(s) per socket: 2
Socket(s): 1
Stepping: 1
BogoMIPS: 7700.04
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat ps
e36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb
rdtscp lm rep_good nopl cpuid extd_apicid tsc_known_freq pni pclmulq
dq ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c
rdrand hypervisor lahf_lm cmp_legacy cr8_legacy abm sse4a misaligns
se 3dnowprefetch osvw topoext ssbd ibrs ibpb vmmcall fsgsbase bmi1 a
vx2 smep bmi2 erms invpcid avx512f avx512dq rdseed adx smap avx512if
ma clflushopt clwb avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
xgetbv1 xsaves user_shstk avx512_bf16 clzero arat avx512vbmi umip a
vx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vp
opcntdq rdpid fsrm
Virtualization features:
Hypervisor vendor: Microsoft
Virtualization type: full
Caches (sum of all):
L1d: 64 KiB (2 instances)
L1i: 64 KiB (2 instances)
```

```
L2: 2 MiB (2 instances)
L3: 32 MiB (1 instance)
NUMA:
NUMA node(s): 1
NUMA node0 CPU(s): 0,1
Vulnerabilities:
Gather data sampling: Not affected
Itlb multihit: Not affected
L1tf: Not affected
Mds: Not affected
Meltdown: Not affected
Mmio stale data: Not affected
Reg file data sampling: Not affected
Retbleed: Not affected
Spec rstack overflow: Vulnerable: Safe RET, no microcode
Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer
sanitization
Spectre v2: Mitigation; Retpolines; IBPB conditional; IBRS_FW; STIBP
disabled; R
SB filling; PBRSB-eIBRS Not affected; BHI Not affected
Srbds: Not affected
Tsx async abort: Not affected
```

## 9.2 Informazioni RAM:

```
free -h
```

Output:

```
total used free shared buff/cache available
Mem: 1.9Gi 393Mi 342Mi 976Ki 1.3Gi 1.5Gi
Swap: 1.3Gi 12Ki 1.3Gi
```

## 9.3 Panoramica dei dischi:

```
lsblk
```

Output:

```
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sda 8:0 0 10G 0 disk
├─sda1 8:1 0 538M 0 part /boot/efi
├─sda2 8:2 0 1.8G 0 part /boot
└─sda3 8:3 0 7.7G 0 part
```

```
└─ubuntu--vg-ubuntu--lv 252:0 0 7.7G 0 lvm /
sr0 11:0 1 1024M 0 rom
```

Oppure

```
fdisk -l
```

Se non dovesse funzionare prova:

```
sudo fdisk -l
```

Perché l'accesso ai dispositivi `/dev/sda` e `/dev/mapper/...` è limitato agli utenti con privilegi `root`
Output:

```
Disk /dev/sda: 10 GiB, 10737418240 bytes, 20971520 sectors
Disk model: Virtual Disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: gpt
Disk identifier: 702F9DEE-D1B4-4061-8533-FA68902A76C7

Device Start End Sectors Size Type
/dev/sda1 2048 1103871 1101824 538M EFI System
/dev/sda2 1103872 4773887 3670016 1.8G Linux filesystem
/dev/sda3 4773888 20969471 16195584 7.7G Linux filesystem


Disk /dev/mapper/ubuntu--vg-ubuntu--lv: 7.72 GiB, 8287944704 bytes, 16187392
sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 4096 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
```

## 9.4 **Verifica dei device file** (esempio: disco principale solitamente `/dev/sda` **o** `/dev/nvme0n1`, **ecc.):**

```
ls -l /dev/sd*
```

Output:

```
brw-rw---- 1 root disk 8, 0 Mar 5 10:28 /dev/sda
brw-rw---- 1 root disk 8, 1 Mar 5 10:28 /dev/sda1
brw-rw---- 1 root disk 8, 2 Mar 5 10:28 /dev/sda2
```

```
brw-rw---- 1 root disk 8, 3 Mar 5 10:28 /dev/sda3
```