

INSTALLAZIONE ROS NOETIC

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INSTALLA WSL



- *Apri PowerShell come amministratore* ed esegui:

```
ws1 --install
```

- Dopo installazione, *Riavvia* per completare l'installazione di WSL e delle relative funzionalità.
- Premi *windows* + *R* e digita `optionalfeatures` abilita: **Piattaforma macchina virtuale**, **Sottosistema Windows per Linux**, **Piattaforma Windows Hypervision**. Dopo la ricerca dei file, clicca su *Riavvia ora*.

```
Amministratore: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. Tutti i diritti riservati.

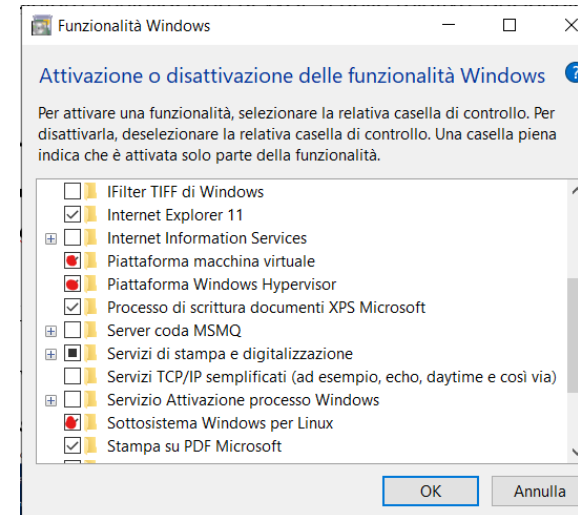
Prova la nuova PowerShell multipiattaforma https://aka.ms/pscore6

PS C:\Windows\system32> wsl --install
Installazione del componente facoltativo di Windows: Microsoft-Windows-Subsystem-Linux

Strumento Gestione e manutenzione immagini distribuzione
Versione: 10.0.19041.3636

Versione immagine: 10.0.19045.5198

Attivazione funzionalità
[=====100.0%=====]
Operazione completata.
Installazione: Ubuntu
Ubuntu è stato installato.
L'operazione richiesta è stata eseguita. Le modifiche avranno effetto al riavvio del sistema.
PS C:\Windows\system32>
```



SCARICARE UBUNTU 20.04v

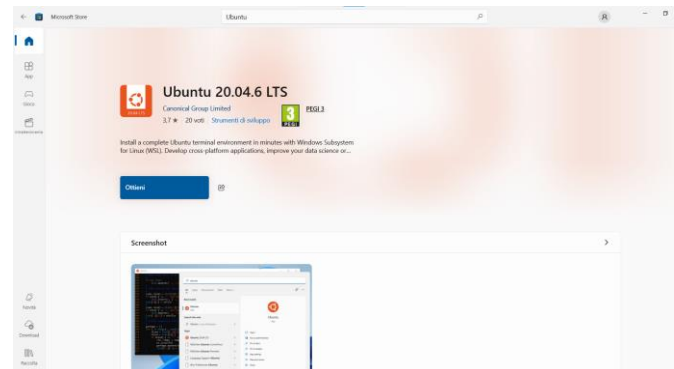
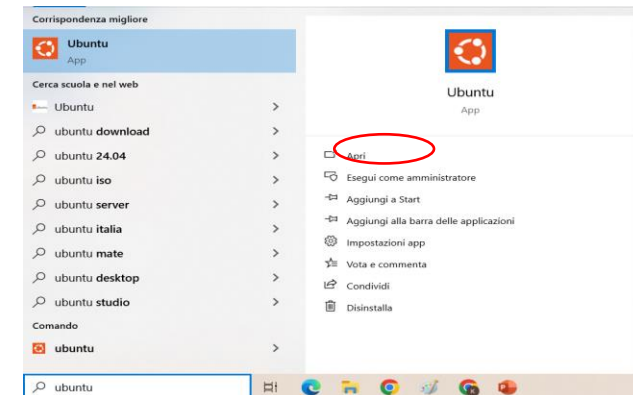


ROS Noetic è stato progettato per funzionare su **Ubuntu 20.04 LTS (Focal Fossa)** e non su versioni successive come **Ubuntu 24.04** per diversi motivi legati alla compatibilità del software:

- Apri lo **start** e cerca Ubuntu, se trovi una versione Ubuntu diversa dalla 20.04,, clicca su **disinstalla**.
- Apri il **Microsoft Store** e cerca «Ubuntu 20.04 LTS»
link:

<https://shorturl.at/QcyMh>

- Clicca su **Ottieni** per scaricarla.
- Al termine, **aprirlo**



INSTALLARE UBUNTU 20.04v



- Una volta avviato Ubuntu, se richiesto, inserire un *username* **UNIX** e una *password*. «non dimenticarli»

Nota: Durante la digitazione della password, non verrà mostrato nulla a schermo. In caso di errore, utilizzare il tasto *backspace* per correggere e riprovare.

Successivamente, confermare la password.

- Dopo la conferma si avvierà l'installazione

di Ubuntu, al termine eseguire questi comandi:

Nota: Se richiesto inserire la password

```
sudo apt update
```

- Dopo il caricamento, digita:

```
sudo apt upgrade
```

Digitare Y nella domanda: Do you want to continue?

- Dopo il caricamento, digita:

```
sudo apt autoremove
```

- Infine, chiudere Ubuntu.

```

kevin@DESKTOP-P7VQN4L: ~
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: Kevin
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[ _SYSTEM] configuration variable. Use the "--force-badname"
option to relax this check or reconfigure NAME_REGEX.
Enter new UNIX username: kevin
New password:
Retype new password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.167.4-microsoft-standard-WSL2 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Fri Dec 13 16:39:23 CET 2024

System load:  0.35           Processes:            42
Usage of /:   0.1% of 1006.85GB Users logged in:      0
Memory usage: 3%           IPv4 address for eth0: 172.31.101.84
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

This message is shown once a day. To disable it please create the
/home/kevin/.hushlogin file.
kevin@DESKTOP-P7VQN4L:~$

```

```

root@kali:~/# apt-get install -y sudo apt update
[sudo] password for kevin:
Get:1 http://archive.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://archive.ubuntu.com/ubuntu focal-security/main amd64 InRelease [128 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-security/main amd64 Packages [3315 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-security/universe amd64 Packages [6028 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-security/main Translation-en [486 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [14.3 kB]
Get:8 http://archive.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [14.3 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [3265 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [456 kB]
Get:11 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 c-n-f Metadata [548 B]
Get:12 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 c-n-f Metadata [548 B]
Hit:13 http://archive.ubuntu.com/ubuntu focal-security/universe Translation-en [215 kB]
Get:14 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [21.4 kB]
Hit:15 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [24.8 kB]
Get:16 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [5968 B]
Get:17 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [540 B]
Get:18 http://archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:19 http://archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:20 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [144 kB]
Get:21 http://archive.ubuntu.com/ubuntu focal/universe Translation-en [148 kB]
Get:22 http://archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [9316 B]
Get:23 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [3692 kB]
70% [18 Translation-en store 0 B] [23 Packages 25.2 kB/3692 kB 1%]

```

```

root@kali:~/# curl -fsSL https://apt.ubuntu.com/keys/0x199E7F500623FE3D | sudo apt-key add -
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
#
#
# Patches available for the local privilege escalation issue in needrestart
# tracked by CVE-2024-48990, CVE-2024-48991, CVE-2024-48992, and CVE-2024-10224
# For more see: https://ubuntu.com/blog/needrestart-local-privilege-escalation
#

The following New packages will be installed:
python3-packaging python3-pyparsing ubuntu-pro-client ubuntu-pro-client-l10n

The following packages will be upgraded:
e2fsprogs fdisk hupnd fupnd-signed gawk gcc-10-base git git-man iptables-ping-
libarchive13 libblkid1 libc-bin libc libcap2 libc-bin libcom-err2 libcurl3-
libglib2.0-data libgnutls30 libgpgme11 libgssapi-krb5-2 libk5crypto3 libklibse-
libpam-cap libpam-modules libpam-modules-bin libpam-runtime libpam-systemd lib-
libpam0.2.4-1 libsqlite3-0 libss2 libssh-4 libssl1.1 libstdc++6 libsystemd0 lib-
motd-news-config mount multipath-tools nano netplan.10n open-iscsi open-vm-tool
python3-confobj python3-cryptography python3-debian python3-distinfo python3-
python3-software-properties python3-twisted python3-twisted-bin python3-update-
systemd-sysv systemd-timesyncd tar tcpdump tzdata ubuntu-advantage-tools udev
163 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
188 standard ITS security updates
Need to get 102 MB of archives.
After this operation, 60.4 MB disk space will be freed.
Do you want to continue? [Y/n]

```

CONFIGURARE I REPOSITORY



- *Apri WSL* e verifica la versione di Ubuntu installata, deve essere la **20.04 LTS**, attraverso questo comando:

```
lsb_release -a
```

Nota: Se la versione non è la 20.04 LTS seguire i passaggi della slide «Disinstallare versioni Ubuntu»

- Aggiorna il sistema:
Nota: Se richiesto inserire la password

```
sudo apt update && sudo apt upgrade -y
```

- Aggiungi il repository ufficiale di ROS:

```
sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-noetic.list'
```

- Aggiungi la chiave GPG del repository:

```
sudo apt install curl -y
```

- Successivamente:

```
curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.asc | sudo apt-key add -
```

- Aggiorna il repository:

```
sudo apt update && sudo apt upgrade
```

```
kevin@DESKTOP-P7VQN4L:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 20.04.6 LTS
Release:        20.04
Codename:       focal
```

Nota: per *incollare* su WSL a volte bisogna premere il tasto destro sulla linea dove si vuole copiare il comando

INSTALLARE ROS NOETIC



- Digita *Clear* per pulire lo schermo.
- *Installa* la versione completa di **ROS Noetic** «operazione può richiedere alcuni minuti»:

```
sudo apt install ros-noetic-desktop-full -y
```

- Dopo l'installazione, *controlla che tutto sia a posto*:

```
rosversion -d
```

dovresti vedere l'output noetic:

- *Sorgi automaticamente gli script di setup ROS* ad ogni avvio:

```
echo "source /opt/ros/noetic/setup.bash" ~/.bashrc
```

- Successivamente *digita*:

```
source ~/.bashrc
```

- *Controlla che ROS sia configurato correttamente* eseguendo:

```
printenv | grep ROS
```

```
Δ kevin@DESKTOP-P7VQN4L:~$ sudo apt install ros-noetic-desktop-full -y
get:107 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libncurses6 amd64 6.2-1ubuntu1 [26.2 kB]
get:108 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libncursesw6 amd64 6.2-1ubuntu1 [26.2 kB]
get:109 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libtinfo6 amd64 6.2-1ubuntu1 [26.2 kB]
get:110 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-desktop-analysis amd64 1.11.8-focal-20240913.152247 [12.8 kB]
get:111 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-diagnostic-updater amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:112 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-diagnostic-common-diagnostic amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:113 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-self-test amd64 1.11.8-focal-20240913.152247 [171 kB]
get:114 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libxslt1.1 amd64 1.1.35-1ubuntu0.2 [230 kB]
get:115 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libxslt1.1 amd64 1.1.35-1ubuntu0.2 [230 kB]
get:116 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-diagnostic amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:117 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-speech-commands amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:118 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-speech-commands-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:119 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-speech-commands-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:120 http://packages.ros.org/ros/ubuntu focal/main amd64 libxslt1.1 amd64 1.1.35-1ubuntu0.2 [230 kB]
get:121 http://packages.ros.org/ros/ubuntu focal-updates/main amd64 libxslt1.1 amd64 1.1.35-1ubuntu0.2 [230 kB]
get:122 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-executive-commands amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:123 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-executive-commands-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:124 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 gcc-9 amd64 9.4.0-1ubuntu1 [26.2 kB]
get:125 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:126 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:127 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:128 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:129 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:130 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:131 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:132 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:133 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:134 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:135 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:136 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:137 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:138 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:139 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:140 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:141 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:142 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:143 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:144 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:145 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:146 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:147 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:148 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:149 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:150 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:151 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 gcc-9 amd64 9.4.0-1ubuntu1 [26.2 kB]
get:152 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std-std-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
get:153 http://packages.ros.org/ros/ubuntu focal/main amd64 ros-noetic-std-conversions-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-ros-std-std-std-std-std-std-std-std amd64 1.11.8-focal-20240913.152247 [10.2 kB]
```

```
kevin@DESKTOP-P7VQN4L:~$ rosversion -d
noetic
kevin@DESKTOP-P7VQN4L:~$ printenv | grep ROS
ROS_VERSION=1
ROS_PYTHON_VERSION=3
ROS_PACKAGE_PATH=/opt/ros/noetic/share
ROSLISP_PACKAGE_DIRECTORIES=
ROS_ETC_DIR=/opt/ros/noetic/etc/ros
ROS_MASTER_URI=http://localhost:11311
ROS_ROOT=/opt/ros/noetic/share/ros
ROS_DISTRO=noetic
kevin@DESKTOP-P7VQN4L:~$
```

CAMBIARE VERSIONE UBUNTU



- Apri WSL della tua distribuzione e versione attualmente in uso di Ubuntu su WSL attraverso:

```
lsb_release -a
```

```
kevin@DESKTOP-P7VQN4L:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 20.04.6 LTS
Release:       20.04
Codename:      focal
```

- Apri PowerShell come amministratore e verifica le versioni installate con il comando:

```
wsl --list --verbose
```

- Se hai già installato la versione desiderata (ad esempio Ubuntu-22.04), puoi impostarla come distribuzione predefinita con il comando:

```
wsl --set-default «Ubuntu-22.04»
```

- Verifica che il cambiamento sia avvenuto

Riapri un terminale WSL o usa:

```
wsl --list --verbose
```

Ora la distribuzione di default avrà un asterisco * accanto al nome

```
Microsoft Windows [Version 10.0.19042.630]
(c) 2020 Microsoft Corporation. All rights reserved.

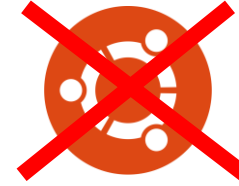
C:\Users\segrey>wsl.exe --list --verbose
  NAME                STATE      VERSION
* Ubuntu-24.04         Running    2
  Ubuntu-20.04         Stopped    2
  Ubuntu-20.04         Stopped    2
```



```
Microsoft Windows [Version 10.0.19042.630]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\segrey>wsl.exe --list --verbose
  NAME                STATE      VERSION
  Ubuntu-24.04         Running    2
* Ubuntu-20.04         Stopped    2
  Ubuntu-20.04         Stopped    2
```

DISINSTALLARE VERSIONI UBUNTU



- Premi Win + X e seleziona **PowerShell (Amministratore)** o cerca "PowerShell" nel menu Start e seleziona **Esegui come amministratore**.
- Elenca le distribuzioni installate

```
wsl --list --all
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. Tutti i diritti riservati.

Prova la nuova PowerShell multiplatforma https://aka.ms/pscore6

PS C:\Windows\system32> wsl --list --all
Distribuzioni del Sottosistema Windows per Linux:
Ubuntu-20.04 (impostazione predefinita)
PS C:\Windows\system32>
```

- **Disinstalla le distribuzioni:** Per rimuovere una distribuzione, usa il comando:

```
wsl --unregister <NomeDistribuzione>
```

Esempio:

```
wsl --unregister Ubuntu-24.04
```

- Verifica che la versione di Ubuntu si sia disinstallato correttamente.

DISINSTALLARE WSL



- Apri PowerShell come amministratore ed esegui questo comando per disabilitare WSL:

```
dism.exe /online /disable-feature /featurename:Microsoft-Windows-Subsystem-Linux6weerg
```

- Se usi WSL 2, disabilita anche il componente *Virtual Machine Platform*:

```
dism.exe /online /disable-feature /featurename:VirtualMachinePlatform
```

- *Riavvia il computer* per applicare le modifiche
- Per verificare che WSL sia stato completamente rimosso, esegui questo comando in PowerShell:

```
wsl --list --all
```

DISINSTALLARE ROS



- Esegui il comando per rimuovere tutti i pacchetti ROS dal sistema:

```
sudo apt remove --purge ros-* -y
```

- Rimuovi eventuali file di configurazione rimasti:

```
sudo apt autoremove --purge -y
```

```
sudo apt clean
```

```
sudo rm -rf /opt/ros/noetic
```

- Apri il file .bashrc e rimuovi eventuali riferimenti a ROS, si aprirà un file:

```
nano ~/.bashrc
```

- Cerca «source /opt/ros/noetic/setup.bash» scorrendo fino in fondo con la freccia giù e rimuovi righe simili. Salva il file (Ctrl+O, Invio) ed esci (Ctrl+X)
- Aggiorna il terminale per applicare le modifiche:

```
~/.bashrc
```

- Rimuovi eventuali dipendenze aggiuntive installate durante l'installazione di ROS

```
sudo apt remove --purge python3-rosdep python3-rosinstall python3-rosinstall-generator python3-wstool build-essential -y
```

- Dopo

```
sudo apt autoremove -y
```

- Apri il menu Start, digita %LOCALAPPDATA%\Packages, quindi premi Invio. Nella cartella che si apre, cerca ed elimina le cartelle che iniziano con "CanonicalGroup...".

```
#!/bin/bash: executed by bash(1) for non-login shells.
# see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
# for examples

# If not running interactively, don't do anything
case $ in
  *i*) ;;
  *) return;;
esac

# don't put duplicate lines or lines starting with space in the history.
# See bash(1) for more options
HISTCONTROL=ignoreboth

# append to the history file, don't overwrite it
shopt -s histappend

# for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
HISTSIZE=1000
HISTFILESIZE=2000

# check the window size after each command and, if necessary,
# update the values of LINES and COLUMNS.
shopt -s checkwinsize

# If set, the pattern *** used in a pathname expansion context will
# match all files and zero or more directories and subdirectories.
shopt -s globstar

# make less more friendly for non-text input files, see lesspipe(1)
# = /usr/bin/lesspipe ) ll eval "${SHELL-/bin/sh lesspipe}"

# set variable identifying the chroot you work in (used in the prompt below)
if [ -n "${debian_chroot:-}" ] && [ -n "${SHELL-/bin/sh lesspipe}" ]; then
  debian_chroot=${SHELL-/bin/sh lesspipe}
fi

# set a fancy prompt (non-color, unless we know we "want" color)
case "$TERM" in
  xterm-color*) _256color=1; color_prompt=yes;;
  *) ;;
esac

# uncomment for a colored prompt, if the terminal has the capability; turned
# off by default to not distract the user: the focus in a terminal window
# should be on the output of commands, not on the prompt
if [ -n "$color_prompt" ]; then
  color_prompt=yes
fi
```

```
fi
fi
source /opt/ros/noetic/setup.bash
```