

Contents

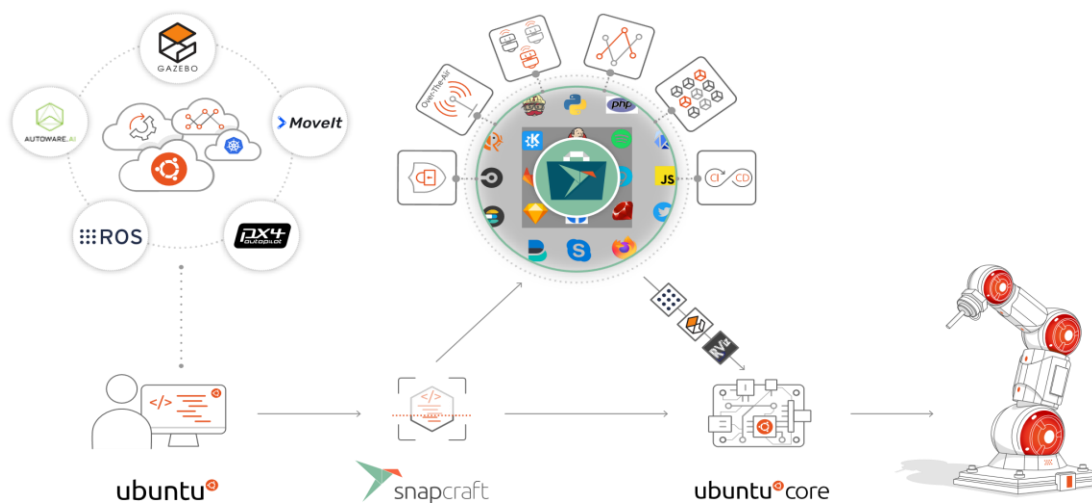
UBUNTU AND CANONICAL AND ROS	2
Ubuntu	2
Operating Systems for Developers	3
Software stack compatibility	3
Tier1 Support for ROS with Ubuntu	3
Frequency	4
Targeted Platforms	4
Support	4
LTS releases	4
Some Big Companies that use Linux IBM, Microsoft, facebook, ...French police	4
VIRTUAL BOX	5
What is Virtualization?	5
Oracle Virtual Box Site	5
What is a Virtual Machine?	5
OTHER REFERENCES	6
LINUX VS WINDOWS AND LINUX WITH WINDOWS	6
Linux vs Windows 10 by Priya Pdamkar	6
Windows Power Shell vs Command Prompt by Priya Pdamkar	6
Install Linux on Windows with WSL	6
VIRTUAL MACHINES	6
Hypervisors and Virtualization Explained What is a Hypervisor? What is Virtualization?	6
Oracle Chapter 1. First Steps for Virtual Box	7
You need to learn Virtual Machines RIGHT NOW!! (Kali Linux VM, Ubuntu, Windows)	7
How to Install VirtualBox on Ubuntu 20.04 LTS 6:43 104,732 views	7

UBUNTU AND CANONICAL AND ROS

https://pages.ubuntu.com/rs/066-EOV-335/images/Robotics_WP_Canonical_Final.pdf?_ga=2.88756828.67797651.1661704750-579904288.1660605996

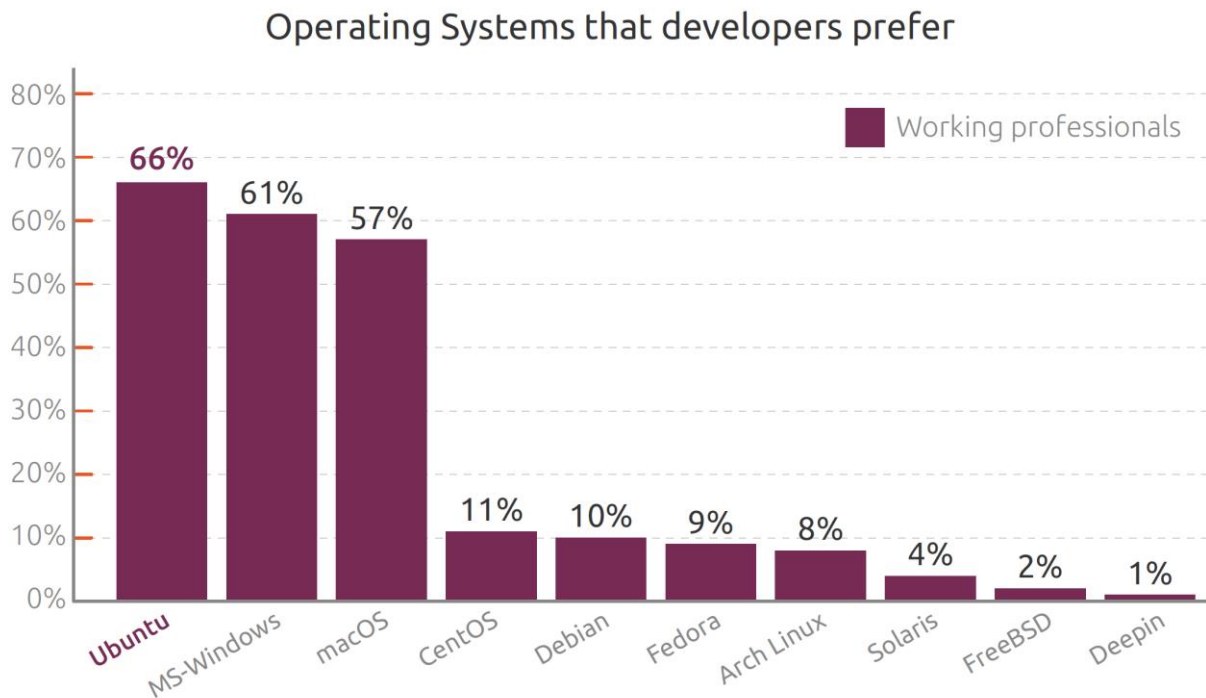
Ubuntu

Ubuntu is an open-source operating system for desktop, cloud, and IoT devices, including robots. For more than a decade, Ubuntu has been a pillar stone for the robotics field supporting key robotics open-source projects, such as ROS, PX4, Autware, Open-CV, PCL, and more. Every aspect of the development process – from the lifecycle of each project to the day-to-day experience of the developers – benefits from Ubuntu’s responsiveness, ease of use, regular software updates, lightweight nature, and a high degree of security.



Ubuntu excels in robotics software stack compatibility, and it has been a pillar stone for the robotics field. For instance, Ubuntu has natively supported the **Robot Operating System (ROS)** since its beginning. This tool includes more than 2,000 robot libraries built on Ubuntu. Ubuntu also supports other key open source projects, such as **PX4**, **Autware**, **Open-CV**, **PCL**, and more. With Ubuntu, you will always have compatibility with the latest robotics projects and their tooling.

Operating Systems for Developers



(Source: [2020 HackerEarth Developer Survey](#))

Software stack compatibility

Companies need to select an OS that is compatible with the software technology required (e.g., libraries, frameworks, applications, etc.). For instance, if you require computer vision libraries or simulation software such as OpenCV or Gazebo, written specifically for Linux distributions, you will need a Linux OS.

This also impacts the software support. Take for instance the [Robot Operating System \(ROS\)](#)—an open-source collection of tools, libraries and conventions designed to simplify the task of creating a wide variety of robotic platforms. Like many other open-source projects, ROS has different [OS tiers of support](#). Each tier is subject to different quality assurance processes and support availability, Tier 1 being the recommended category for picking an OS.

Tier1 Support for ROS with Ubuntu

<https://www.ros.org/reps/rep-2000.html>

This REP defines the timeline for future ROS 2 releases as well as the targeted platforms for each specific one. We define platforms to include both operating system releases (e.g. Ubuntu Xenial (16.04 LTS)) as well as major language releases (e.g. Python 3.5). The target platforms

represent the set on which all core stacks are expected to work. Exceptions can be made for stacks that are intentionally platform-specific.

Frequency

New ROS 2 releases will be published in a time based fashion **every 12 months**. The rationale is that a shorter cycle (like 6 months) results in significant overhead and potentially many active releases at the same time (assuming they have the same support length). On the other hand a longer cycle (like 2 years) is too long for users to wait for new features to be available in a ROS 2 release.

Targeted Platforms

Since regular Ubuntu releases are only supported for 9 months ROS 2 will not target those. A single ROS 2 distribution will only have full Tier 1 support for a **single** Ubuntu LTS. The rationale is that fully supporting two LTS versions - which means 2-year-different versions of upstream dependencies - is a tremendous overhead and sometimes even impossible. On a case-by-case basis, a ROS 2 distribution may support an older Ubuntu LTS distribution as a Tier 3, community-supported platform.

Since macOS (or at least brew) as well as Windows are rolling platforms we aim to support the latest version available at the time of a ROS 2 distribution release. For Debian we also aim to target the latest stable version though if that version is two years behind the Ubuntu version that might not be possible

Support

LTS releases

Since Ubuntu LTS releases come with **5 years** of standard support we aim to match the same duration. In even years new ROS 2 releases will happen one month after the Ubuntu LTS has been released (which usually means a ROS 2 release in May). The ROS 2 release will be supported until the end of the standard support of the Ubuntu LTS release which is 4 years and 11 months from the ROS 2 release date.

Some Big Companies that use Linux IBM, Microsoft, facebook, ...French police

<https://www.linuxandubuntu.com/home/10-top-companies-that-are-powered-by-linux>

The big reason the French Gendarmerie made the Linux move? It saved them 40 percent in total cost of ownership over Windows.

<https://www.zdnet.com/article/french-police-move-from-windows-to-ubuntu-linux/>

<https://en.wikipedia.org/wiki/GendBuntu>

VIRTUAL BOX

What is Virtualization?

When we describe VirtualBox as a "**virtualization**" product, we refer to "full virtualization", that is, the particular kind of virtualization that allows an *unmodified* operating system with all of its installed software to run in a special environment, on top of your existing operating system.

This environment, called a "virtual machine", is created by the virtualization software by intercepting access to certain hardware components and certain features.

The physical computer is then usually called the "**host**", while the virtual machine is often called a "**guest**". Most of the guest code runs unmodified, directly on the host computer, and the guest operating system "thinks" it's running on real machine.

<https://www.virtualbox.org/wiki/Virtualization>

Oracle Virtual Box Site



<https://www.virtualbox.org/>

What is a Virtual Machine?

As the name suggests, a virtual machine (VM) is a virtual environment that [simulates a physical machine](#). VMs have their own central processing unit (CPU), memory, network interface, and storage, but they are independent of physical hardware. Multiple VMs can coexist in a single physical machine without collision, as long as the hardware resources are efficiently distributed. VMs are implemented using [software emulation](#) and hardware virtualization.

<https://www.parallels.com/blogs/ras/virtual-machine/>

OTHER REFERENCES

LINUX VS WINDOWS AND LINUX WITH WINDOWS

Linux vs Windows 10 by Priya Pedamkar

<https://www.educba.com/linux-vs-windows-10/>

Windows Power Shell vs Command Prompt by Priya Pedamkar

cmd or power shell in search area gets these.

<https://www.educba.com/powershell-vs-command-prompt/>

Install Linux on Windows with WSL

- Article 08/12/2022

This guide will show you how to install a Linux distribution (such as Ubuntu, OpenSUSE, Kali, Debian, Arch Linux, and more) using the **Windows Subsystem for Linux. WSL** enables you to use Linux tools, like Bash or Grep, completely integrated with Windows tools, like PowerShell or Visual Studio Code, with no need to dual-boot.

<https://docs.microsoft.com/en-us/windows/wsl/install>

VIRTUAL MACHINES

Hypervisors and Virtualization Explained | What is a Hypervisor? | What is Virtualization?

38,026 views 8:08 A survey of many virtual systems.

[SkillsBuild Training](#)

29.5K subscribers
SUBSCRIBE

What are Hypervisors and Virtualization? A hypervisor, also known as a virtual machine manager, is a type of software that allows you to create and manage virtual machines. In this video we explain what is a hypervisor and how it works, and the difference between Type 1 and Type 2 hypervisors. (Virtual Box is Type 2)

We also introduce you to various hypervisors on the market, such as: 1) VMware ESXi 2) VSphere 3) Hyper-V 4) KVM 5) Citrix XenServer 6) VMware workstation 7) **VirtualBox** 8) VMware Workstation Player 9) VMware fusion

<https://www.youtube.com/watch?v=dhQtoYEODlk>

Oracle Chapter 1. First Steps for Virtual Box

<https://www.virtualbox.org/manual/ch01.html#virt-why-useful>

You need to learn Virtual Machines RIGHT NOW!! (Kali Linux VM, Ubuntu, Windows)

5,291,192 views 27:41 He uses Windows and Virtual Box

<https://www.youtube.com/watch?v=wX75Z-4MEoM>

TIMESTAMPS -----

[0:00](#) ▶▶ Intro [0:47](#) ▶▶ What is a Virtual Machine? [2:27](#) ▶▶ What is a Hypervisor? (Type 1 vs Type 2) [6:18](#) ▶▶ why you NEED a virtual machine [7:05](#) ▶▶ TUTORIAL - Virtual Machine Setup [7:56](#) ▶▶ *Optional - Support 64bit OS with BIOS change [9:30](#) ▶▶ Download Kali Linux, Ubuntu (Operating Systems) [10:30](#) ▶▶ Install Virtual Box (hypervisor) [11:56](#) ▶▶ Create a Virtual Machine (Kali Linux) [18:32](#) ▶▶ Why Virtual Machines are AWESOME!! [19:19](#) ▶▶ TIPS and TRICKS (Virtual Box)

How to Install VirtualBox on Ubuntu 20.04 LTS 6:43 104,732 views

<https://www.youtube.com/watch?v=SUPoqRPn9to>