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Six reasons why developers choose Ubuntu Desktop

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Executive Summary

The Ubuntu Desktop is an essential enabler for thousands of development teams around the world, building upon years of evolution not only in the Ubuntu community, but Linux itself. One of the most reliable, secure, and versatile environments for desktop use, Ubuntu gives unparalleled freedom and control.

In this whitepaper we will explore these factors and more to see how Ubuntu offers the fastest route from development to deployment on the desktop, server, cloud, and IoT – and why developers and leading technology companies in more than 240 countries choose Ubuntu as their desktop OS of choice.

Introduction

At Canonical, we believe in the power of open source to change the world – that's why the company was created alongside Ubuntu to help it reach a wider market. Our services help governments and businesses the world over with migrations, management and support for their Ubuntu deployments.

Ubuntu is the world's number one desktop Linux operating system (OS) and the third most popular global PC OS. Over 60% of public cloud workloads run on Ubuntu and now, as we continue to move into the internet of things (IoT), Ubuntu will be running everything from gateways to robotics, self-driving cars, drones, consumer electronics, and more.

Ubuntu's prevalence is due in no small part to its popularity among software developers. But what makes Ubuntu Desktop such an attractive development platform for such a diverse range of applications – including full stack web development, Android app development, machine learning, data science, robotics, autonomous vehicles, and embedded device development?

Below, we highlight the six most important reasons why developers continue to choose Ubuntu Desktop.

First choice for artificial intelligence and machine learning

Ubuntu is the preferred operating system for a host of emerging technologies, most notably artificial intelligence (AI), machine learning (ML), and deep learning (DL).

Deep learning is a growth market that is undergoing huge investment, with the likes of Google, Amazon and Microsoft building dedicated tooling. When it comes to AI, ML, and DL, no other OS matches the depth and breadth of Ubuntu's libraries, tutorials, and examples; and no other OS offers the same level of support for the most recent versions of free open source platforms and software. That's why Ubuntu is the operating system of choice for many of the most popular frameworks, including OpenCV, TensorFlow, Theano, Keras and PyTorch.

GPUs have changed the face of AI, and NVIDIA is investing in CUDA on Linux to unleash the power of their latest graphics cards for general computing. These graphics cards can be added to Ubuntu via traditional PCI slots on motherboards, or via external Thunderbolt adapters – making it possible to add an array of large processing capacity hardware to otherwise small laptops, as well as larger rack mounted form factors.

Industry leader NVIDIA sees Ubuntu as the go-to operating system for deep learning environments, which is why its DGX Systems – purpose-built for deep learning – run on Ubuntu.

Canonical has also worked with Google to develop Kubeflow, a solution for rapidly building composable, portable, and scalable machine learning stacks. Kubeflow simplifies and accelerates the process of installing AI tools and frameworks, and in particular makes it easier to leverage GPGPUs from NVIDIA. Building production-ready stacks can be a complex task that often proves a barrier to the adoption of machine learning – but developers can avoid this barrier by using Kubeflow with Ubuntu Desktop.

People are discovering countless applications for deep learning across almost every industry, whether it's detecting financial fraud in real-time, or understanding genetic code. And from Silicon Valley to Wall Street, Ubuntu is providing the foundation for these projects. In the autonomous car sector alone, Ubuntu is powering efforts from Intel, NVIDIA, Samsung, and Baidu.

Consistent OS experience across platforms

Arguably, the greatest advantage of developing on Ubuntu is that it enables users to work with the exact same underlying operating system on their desktops as they do on their servers, in the cloud, and on IoT devices. The same software packages are available on all versions of Ubuntu – along with the same intuitive and unobtrusive user interface – ensuring that developers can effortlessly move between different platforms throughout the course of a project.

This consistent Ubuntu experience makes it easy to test locally before deploying globally – providing developers with a smooth path from development to production, with the same software running on both their desktop and target production environment.

In AI, ML, and DL projects, developers typically build their models on desktops, but then use servers for most of the actual data crunching. With Ubuntu Desktop and Ubuntu Server, the desktop environment is the same as the server environment. This consistency makes iterating on the AI model considerably faster, translating to major time savings in a field that often involves a lot of trial-and-error.
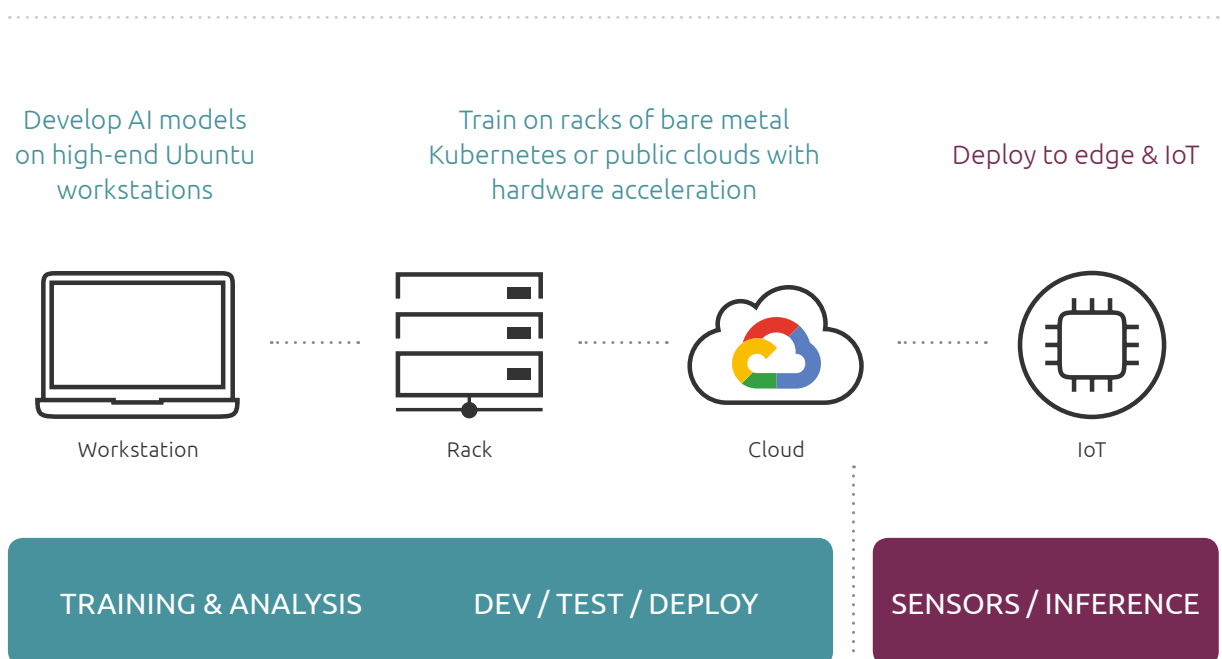
Develop AI models on high-end Ubuntu workstations

Train on racks of bare metal Kubernetes or public clouds with hardware acceleration

Deploy to edge & IoT

Workstation — Rack — Cloud — IoT

TRAINING & ANALYSIS   DEV / TEST / DEPLOY

SENSORS / INFERENCE

Figure 1:
Example of developing a machine learning experience with Kubeflow across a consistent Ubuntu platform, from cloud to edge.

Similarly, users building IoT solutions can develop and debug their software quickly and easily with their preferred tools on Ubuntu Desktop, before building and seamlessly deploying to IoT hardware running Ubuntu Core. Even after deployment, IoT solutions will often need to interact with other devices for testing or off-device computation, so running a homogenous OS foundation across environments is doubly important for ensuring smooth integration between systems.

Small Robot Company

The same is true for cloud and server developers. With Ubuntu Desktop, developers can work, test, and package software on their desktop before deploying to the cloud, where the same underlying operating system is running. And as an added bonus, Canonical's deep relations with public cloud vendors ensure that Ubuntu is the most optimised OS on all public clouds.

Using Ubuntu across development and production helps to significantly boost developer productivity, as there is no need to account for differences between operating systems, and there is no time lost resolving issues caused by software variation. These factors accelerate innovation velocity and enable developers to get their applications to market far more quickly.

"At The Small Robot Company we use Ubuntu on our farming robots, on their on-farm bases (kennels), on our development machines and have instances running in the cloud on AWS. Ubuntu provides a consistent, secure and well understood foundation for our systems."

Joe Allnutt, Chief Roboticist, Small Robot Company

Streamlined distribution through snaps

For developers targeting Linux, snaps offer an ideal way to package and distribute applications. Snaps are containerised applications that work on desktops, cloud, and IoT devices. They are simple to create and install, safe to run, and update automatically. And because snaps are packaged with all their dependencies, they work on all major Linux systems without modification.

Developers can build snaps using the Snapcraft command line tool, which dramatically simplifies traditionally complex packaging work. Snapcraft enables developers to automatically release new versions of their applications to users, and provides vital insights into the user base. In IoT devices, for instance, Canonical research has shown that 69% of customers do not manually update their connected devices, so automatic updates are invaluable in keeping users up-to-date and secure. This automation makes for a smooth customer experience, and eliminates the need for developers to support older versions of their products.

Snaps' automatic update feature reduces maintenance for software vendors as their entire user base can be moved to the current version with no intervention required, resulting in a significant reduction of support requests that need managing. In tandem, the user benefits from the latest version with no interruption in service. For web based services with large user bases such as Skype and Slack, this feature is invaluable to providing a seamless experience.

When a snap is published, The Snap Store provides the perfect method for developers to release free or paid apps for multiple architectures or distributions in one place. What's more, the Snap Store makes it possible to release apps in different channels – such as stable, candidate, beta, and edge. With these channels, developers can test changes on a large scale by giving users the option to access new features early through less stable releases.

When it comes to releasing urgent security fixes or other crucial updates, snaps enable developers to roll out new versions with unprecedented speed. Fing – the company behind the Fingbox network security toolkit – uses snaps to release key updates to over 30,000 IoT devices in a matter of hours.

The Snap Store is enabled by default on tens of millions of Linux systems, so it can often help developers reach a far wider audience with their apps.

Snaps are also an excellent solution for developers targeting IoT, since devices running Ubuntu Core can run snaps as easily as a desktop. Developers can test their snaps locally before compiling the project with Snapcraft for x86 and ARM.

Developers can additionally take advantage of snaps as users themselves. There are an enormous number of popular applications available as snaps direct from the vendors, making it straightforward to find and install the best tools – including Slack, Android Studio, Visual Studio Code, and almost the entire JetBrains suite, among countless others.

Hardware and software freedom

The Ubuntu Desktop is produced by a team of engineers at Canonical using contributions from commercial vendors, the Ubuntu community, and the Linux ecosystem in general. At Canonical, we not only put together the best possible Linux desktop distribution, we also ensure that Ubuntu has unparalleled hardware support across the board.

The team regularly test and certify at every level of the device stack, focusing on audio, Bluetooth, input devices, display adapters, FireWire, network, power management, storage devices, and much more. This means that Ubuntu users are free to upgrade their hardware; to add additional memory, storage, GPU cards, and other components without any limits imposed by the operating system – making it the ideal choice for companies with diverse hardware infrastructures or specific hardware requirements.

Similarly, Canonical is dedicated to ensuring that developers on Ubuntu Desktop have access to the largest possible library of software development tools, and that those tools are constantly kept up-to-date. Due to Ubuntu's regular release cadence, libraries are always fresh, so developers do not have to go out of their way to find the latest tools they need to stay at the forefront of their fields.

Users can also take advantage of numerous programming language compilers, integrated development environments (IDEs), and toolchains to enable targeting of Intel, ARM, Power, s390x, and other specialised environments – all from the desktop.

This level of hardware and software support is essential for a smooth development process. Without it, developers risk having to spend an inordinate amount of time fixing compatibility issues before they can even make progress on their applications. Ubuntu's flexibility will help to reduce friction and accelerate development, eliminating issues that might otherwise arise when selecting components and solutions.

"Ubuntu ticked every box. It has the outstanding hardware support we were looking for, and thanks to Ubuntu's popularity in the market, most vendors have plenty of experience in integrating with Ubuntu-based systems"

Adrian Negoita, CTO, BotsAndUs

Extensive support – from Canonical and the Ubuntu community

It doesn't matter how compelling an operating system's other features are if developers cannot rely on it to be stable, secure, and continuously updated. That is why Ubuntu LTS (Long Term Support) releases benefit from five years of support from Canonical – with critical bug fixes, security updates, and hardware enablement – at no cost. The LTS releases benefit from regular hardware enablement refreshes which bring support for all the latest processors and hardware. These point releases are also an opportunity to publish a new downloadable image which has all the security and performance fixes already in, meaning that once installed, users can be ready to go even quicker.

Ubuntu users can even apply critical kernel security fixes without rebooting their systems thanks to the Canonical Livepatch Service, helping to minimise downtime while maintaining compliance and security.
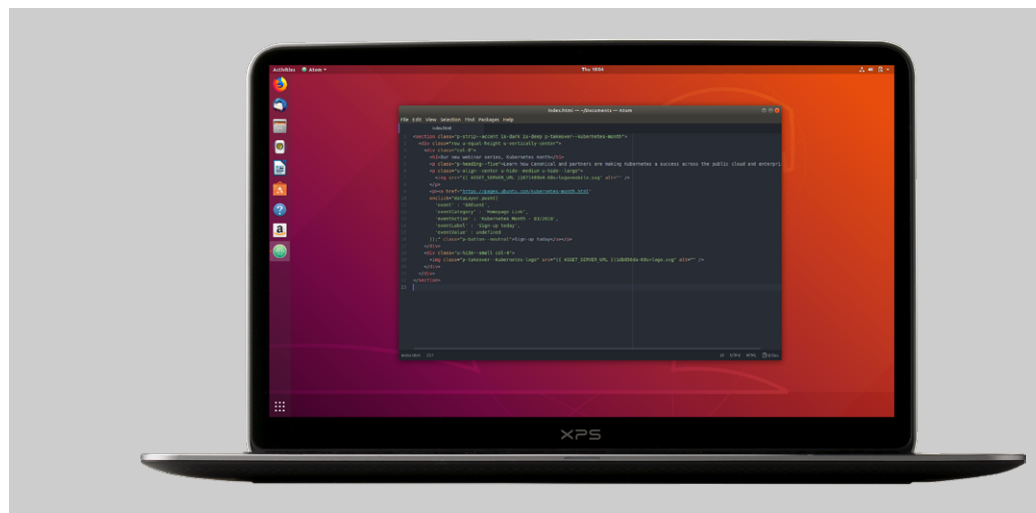
Getting help with Ubuntu Desktop is also exceptionally easy. Ubuntu has a huge developer and application ecosystem, and there are numerous forums handling everything from new user help to technical and software development discussions. Whatever the subject, the Ubuntu community is welcoming and knowledgeable.

And for those seeking to add value to their Ubuntu deployments and achieve a greater level of support and peace of mind, there is the option of Ubuntu Advantage – the commercial support package from Canonical. Ubuntu Advantage includes 24/7 phone and web support from Canonical's experts, exclusive access to a world-class Knowledge Base, the option of a dedicated service engineer, and more.

The list below is a good starting place of where to find the best Ubuntu support from the wider community and ecosystem:
• AskUbuntu
• IRC channels
• Community help wiki
• Ubuntu docs
• Ubuntu tutorials

Certified hardware

Canonical works with leading hardware partners around the world to make Ubuntu available pre-loaded and pre-tested on a wide range of desktops and laptops. Customers can choose from hundreds of PC configurations and purchase directly from Dell, HP, Lenovo, and others.

Certified hardware is designed to meet the needs of organisations in the enterprise, government, public, and education sectors that rely on Ubuntu for their development. Customers can be confident that their PCs will work flawlessly with Ubuntu right out of the box, with no need to spend time on installation.

These certified devices offer all the major benefits of factory-level quality assurance standards, full support, and tight integration with BIOS, component and board-level certification.

A list of certified hardware can be found here.

Key takeaways

As this whitepaper has shown, developers gain significant advantages from using Ubuntu Desktop. The key benefits can be summarised as follows:

- Ubuntu offers unparalleled hardware and software support across the board.

- Ubuntu is the preferred platform for the latest cutting-edge research in AI and computer vision.

- Developers can use the exact same software packages on their desktops as they do on their target production environment.

- Snaps and the Snap Store provide an easy way to distribute applications targeting Linux systems in the cloud, on desktops, and on IoT devices.

- Ubuntu LTS releases are supported by Canonical for five years with bug fixes, security updates, and hardware enablement.

- The vast, global Ubuntu community is always willing to help educate, troubleshoot, and discuss ideas.

- Canonical offers Ubuntu Advantage, an enterprise support package to help users get even more value from their Ubuntu deployments.

Whatever developers are working on, the Ubuntu Desktop is the perfect enabler. Reliable, secure, and overwhelmingly supported, Ubuntu offers the best path from development through to production and distribution.

If you are interested in benefiting from Ubuntu Advantage support, please contact us here

Further reading:

What's new in Ubuntu Desktop 18.04 LTS

ubuntu®
Delivered by Canonical