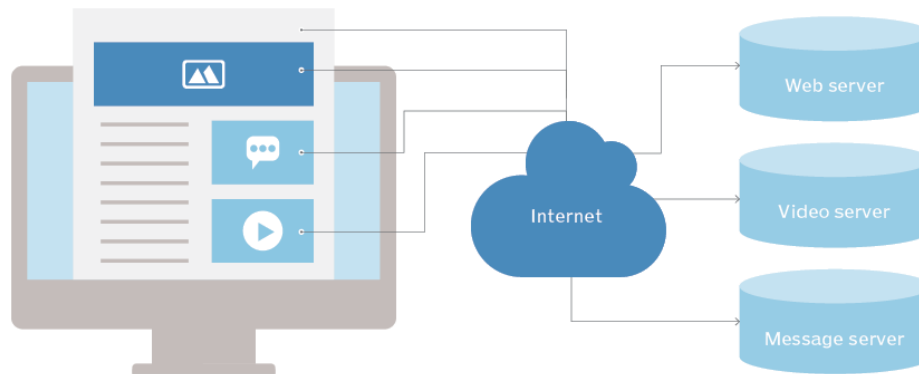


Apache

- ▶ Apache is a free, open-source web server that delivers web content to users over the internet
- ▶ Apache accepts HTTP requests from users and sends back the requested information in the form of web pages. It's responsible for ensuring that the server your website is stored on can communicate with the device a visitor is using

Apache Work

How HTTP works



Company Background

- ▶ **Founded:** 1954 in Minneapolis, Minnesota.
- ▶ **Headquarters:** Houston, Texas.
- ▶ **Operations:** Apache Corporation operates in the United States, Egypt, the United Kingdom's North Sea, and Suriname. Its primary focus is on oil and natural gas exploration, extraction, and production.
- ▶ **Focus Areas:** Apache has focused on both conventional and unconventional resources, such as shale gas in the U.S., deepwater projects, and complex wells in various parts of

Strategic Management and Decision-Making

Diversification and Risk Management: Over the years, Apache has used diversification strategies in terms of geography (international expansion) and asset types (oil vs. natural gas). They have a mixed portfolio that spans both conventional and unconventional resources.

Acquisitions: Apache has grown significantly through key acquisitions. For instance, their 2010 purchase of Mariner Energy expanded their offshore Gulf of Mexico operations, while the acquisition of BP assets in Egypt's Western Desert boosted their international portfolio.

Challenges Faced

- ▶ **Fluctuating Oil Prices:** Like other oil and gas companies, Apache has faced challenges due to the cyclical nature of oil prices. Low oil prices in the mid-2010s forced Apache to cut back on capital expenditures and sell non-core assets
- ▶ **Environmental Regulations and Sustainability:** Apache has had to navigate complex environmental regulations, particularly in regions like the U.S. and the North Sea. The company has also been under pressure to improve its sustainability efforts, with growing focus on reducing carbon emissions and addressing climate change.

Web server

- ▶ **Web server** refers to software reciprocating HTTP requests sent by web users. The main purpose of using a web server is to host websites on the internet and exhibit the content, visuals, and other elements of a website or page to the users.
- ▶ As previously mentioned, Apache is a web server allowing websites to display content, visual elements, and other components to the user upon sending an HTTP request.

Open Source Server

- ▶ One of the main reasons raising the popularity of Apache is the accessibility of the source code. Simply explaining the source code of Apache is free, allowing server users and developers to modify and extend the capabilities according to their needs.

Reliable Solution

- ▶ From Slack to LinkedIn and Netflix to Airbnb, almost everyone uses Apache, and the reason is reliability. Apache has been in the market for more than two decades, and throughout this period, it has undergone numerous upgrades to enhance the user experience.

Community & Support

- ▶ Another perk of Apache is constant community support. The server has a diverse and active range of communities comprising developers, experts in the field, and Apache users, sharing their ideas and knowledge for enhancing the server.
- ▶ You can access forums, join groups, and mail relevant resources to seek their guidance and advice on the topic.

Unparallel Performance

- ▶ Apache is known for its ability to manage high loads while ensuring unbeatable performance. Meaning every time there is an incoming request, it will efficiently split the data into available resources to strike a balance and enhance the performance & overall output.

Features of Apache

- ▶ Processing of static files
- ▶ Seamless runtime of modules
- ▶ Auto-indexing
- ▶ .htaccess
- ▶ IPv6 compatibility
- ▶ Supports HTTP/HTTPS
- ▶ FTP connections
- ▶ Gzip compression and decompression

Features of Apache

- ▶ Bandwidth limitation
- ▶ Perl, PHP, and Lua scripts
- ▶ Logging and tracking
- ▶ URL rewriting
- ▶ Geolocation
- ▶ Proxy and load balancing
- ▶ Performance optimization
- ▶ Highly configurable and scalable

Advantages

- ▶ Open source and free.
- ▶ Wide range of modules.
- ▶ Virtual and shared hosting capabilities.
- ▶ Highly configurable and customizable.
- ▶ Swift performance.
- ▶ Seamless management of large files.
- ▶ Compatible with various frameworks and CMS platforms, including PHP, Perl, WordPress, Joomla, etc.
- ▶ Easy to use even for non-technical use

Disadvantages

- ▶ Might face performance issues on heavy websites.
- ▶ Frequent modifications can result in website vulnerability.
- ▶ Installing new features or periodic customization can cause bugs and errors.

Explain evolution of UNIX

- ▶ UNIX development was started in 1969 at Bell Laboratories in New Jersey.
- ▶ Bell Laboratories was (1964–1968) involved on the development of a multi-user, timesharing operating system called Multics (Multiplexed Information and Computing System). Multics was a failure. In early 1969, Bell Labs withdrew from the Multics project.
- ▶ Bell Labs researchers who had worked on Multics (Ken Thompson, Dennis Ritchie, Douglas McIlroy, Joseph Ossanna, and others) still wanted to develop an operating system for their own and Bell Labs' programming, job control, and resource usage needs.

Explain evolution of UNIX

- ▶ When Multics was withdrawn Ken Thompson and Dennis Ritchie needed to rewrite an operating system in order to play space travel on another smaller machine The result was a system called UNICS (UNiplexed Information and Computing Service)
- ▶ The first version of Unix was written in the low-level PDP-7(Programmed data process) assembler language.Later, a language called TMG was developed for the PDP-7 by R. M. McClure. Using TMG(TransMoGrifier)to develop a FORTRAN compiler, Ken Thompson instead ended up developing a compiler for a new high-level language he called B, based on the earlier BCPL (Basic Combined Programming Language) language developed by Martin Richard. When the PDP-11 computer arrived at Bell Labs, Dennis Ritchie built on B to create a new language called C. Unix components were later rewritten in C, and finally with the kernel itself in 1973

Explain evolution of UNIX

- ▶ Unix V6, released in 1975 became very popular. Unix V6 was free and was distributed with its source code.
- ▶ • In 1983, AT&T released Unix System V which was a commercial version.
- ▶ The following were the major mile stones in UNIX history early 1980's
- ▶ AT&T was developing its System V Unix.
- ▶ Hewlett-Packard developed HP-UX for its workstations. • DEC released ULTRIX. • In 1986, IBM developed AIX (Advanced Interactive eXecutive).

What is LINUX operating system?

- ▶ From smartphones to cars, supercomputers and home appliances, the Linux operating system is everywhere.
- ▶ Just like Windows XP, Windows 7, Windows 8, and Mac OS X, Linux is an operating system. An operating system is software that manages all of the hardware resources associated with your desktop or laptop. To put it simply – the operating system manages the communication between your software and your hardware. Without the operating system (often referred to as the “OS”), the software wouldn’t function.

The OS is comprised of a number of pieces

- ▶ **The Bootloader:** The software that manages the boot process of your computer. For most users, this will simply be a splash screen that pops up and eventually goes away to boot into the operating system.
- ▶ **The kernel:** This is the one piece of the whole that is actually called “Linux”. The kernel is the core of the system and manages the CPU, memory, and peripheral devices. The kernel is the “lowest” level of the OS.
- ▶ **Daemons:** These are background services (printing, sound, scheduling, etc) that either start up during boot, or after you log into the desktop.

The OS is comprised of a number of pieces

- ▶ **The Shell:** You've probably heard mention of the Linux command line. This is the shell – a command process that allows you to control the computer via commands typed into a text interface.
- ▶ **Graphical Server:** This is the sub-system that displays the graphics on your monitor. It is commonly referred to as the X server or just "X"
- ▶ **Applications:** Desktop environments do not offer the full array of apps. Just like Windows and Mac, Linux offers thousands upon thousands of high-quality software titles that can be easily found and installed.

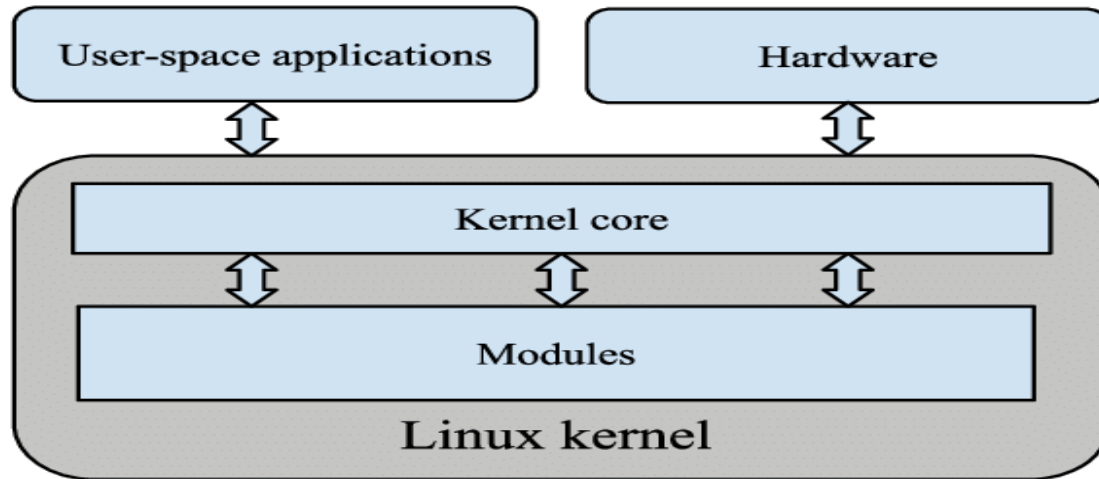
The OS is comprised of a number of pieces

- ▶ Linux is also distributed under an open source license. Open source follows the following key
- ▶ The freedom to run the program, for any purpose.
- ▶ The freedom to study how the program works, and change it to make it do what you wish.
- ▶ The freedom to redistribute copies so you can help your neighbor.
- ▶ The freedom to distribute copies of your modified versions to others.

The most popular Linux distributions are

- ▶ Ubuntu Linux
- ▶ Linux Mint
- ▶ Arch Linux
- ▶ Deepin
- ▶ Fedora
- ▶ Debian
- ▶ openSUSE.

Linux



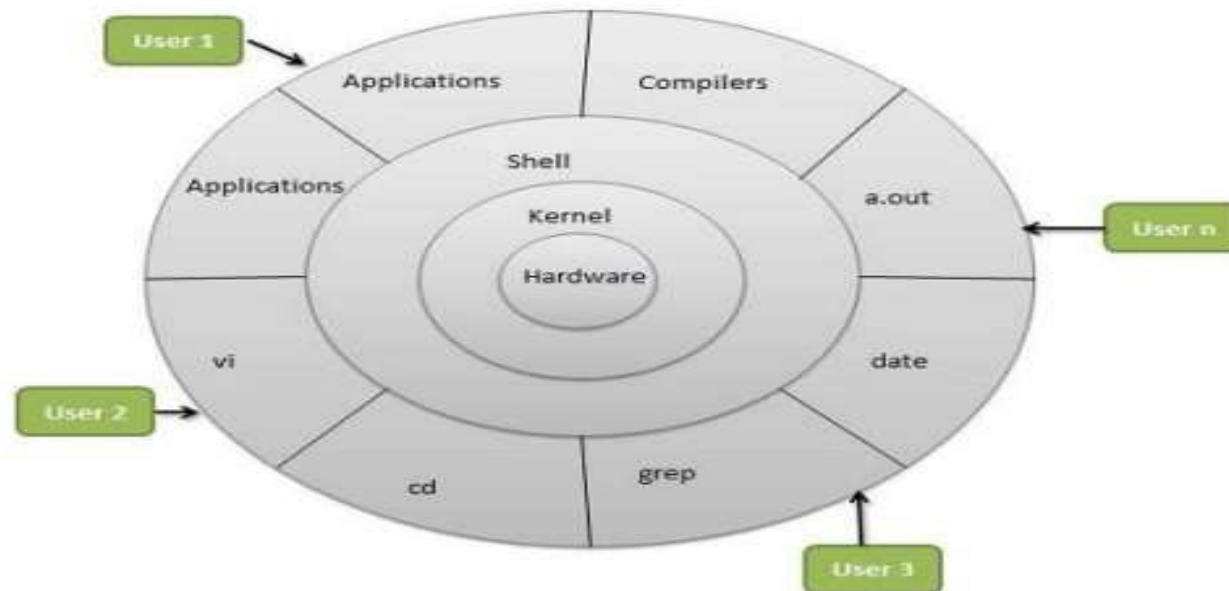
Basic Features

- ▶ **Portable** – Portability means software can work on different types of hardware in the same way. Linux kernel and application programs support their installation on any kind of hardware platform
- ▶ **Open Source** – Linux source code is freely available and it is a community based development project. Multiple teams work in collaboration to enhance the capability of Linux operating system and it is continuously evolving.
- ▶ **Multi-User** – Linux is a multiuser system means multiple users can access system resources like memory/ ram/ application programs at the same time.

Basic Features

- ▶ **Multiprogramming** – Linux is a multiprogramming system means multiple applications can run at same time.
- ▶ **Security** – Linux provides user security using authentication features like password protection/ controlled access to specific files/ encryption of data.

Basic Features



The architecture of a Linux System consists of the following layers

- ▶ **Hardware layer** – Hardware consists of all peripheral devices (RAM/ HDD/ CPU etc).
- ▶ **Kernel** – It is the core component of Operating System, interacts directly with hardware, provides low level services to upper layer components. □
Shell – An interface to kernel, hiding complexity of kernel's functions from users. The shell takes commands from the user and executes kernel's functions.
- ▶ **Utilities** – Utility programs that provide the user most of the functionalities of an operating systems.

milestones

- ▶ April 1991: From his dorm room at the University of Helsinki, college student Linus Torvalds begins working on his own operating system kernel, mostly just to see if he could do it.
- ▶ July 1993: Slackware Linux, developed by Patrick Volkerding, launches as the first commercial Linux distribution. It is currently the oldest Linux distribution still under development.
- ▶ March 1994: Linus Torvalds releases Linux 1.0, consisting of 176,250 lines of code.
- ▶ April 1995: Linux gets its own trade conference, Linux Expo, created by Donnie Barnes at North Carolina State University. Barnes went on to work for Red Hat, which later took over the expo.

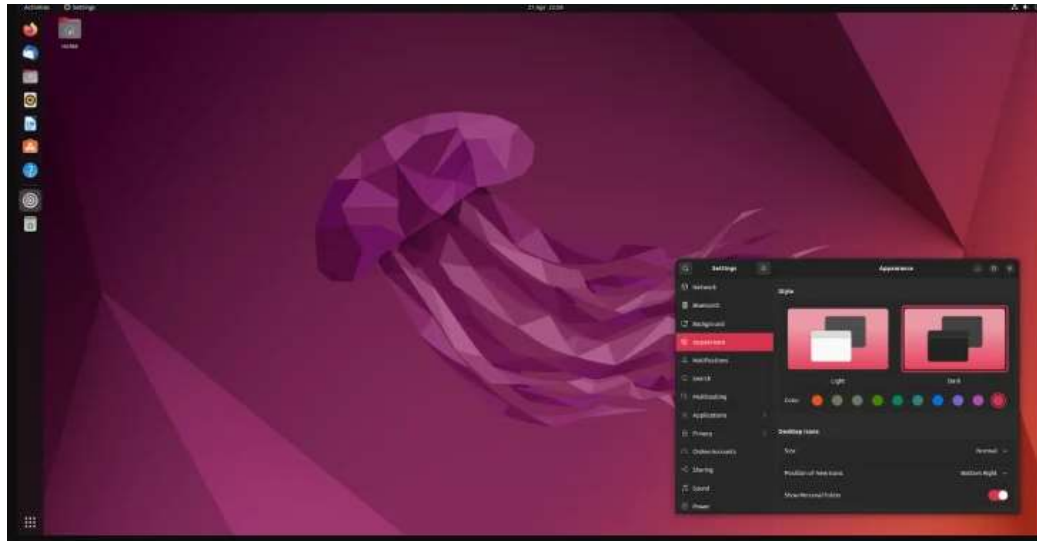
milestones

- ▶ October 2004: Canonical releases Ubuntu 4.1, aka "Warty Warthog," which raised the bar for community-developed Linux distributions with a six-month release cycle and a focus on user experience. • January 2007: Several leading
- ▶ January 2007: Several leading mobile technology companies, including Motorola, NEC, Samsung, NTT DoCoMo, Panasonic, and Vodafone form the LiMo Foundation to collaborate on Linux-based smartphones. This represents a major shift in the direction of Linux devices, and presages the arrival of Google Android.
- ▶ November 2007: The Open Handset Alliance, which includes Google, Intel, Sony, HTC, Motorola, and 78 other companies, announces its presence with a preview of Android. One week later, the OHA released a SDK to developers.

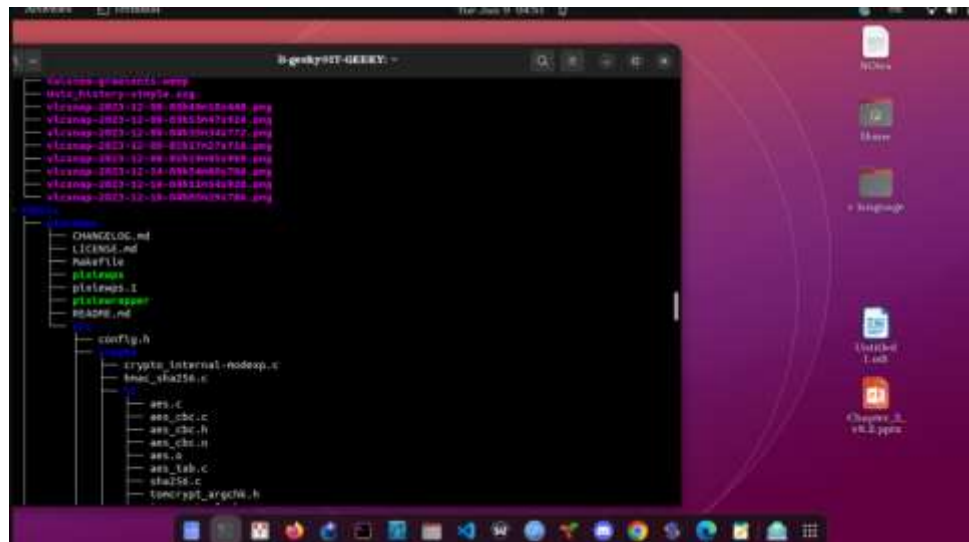
milestones

- ▶ **October 2008:** The first commercial Android phone, the T-Mobile G1, ships to consumers, marking the emergence of Linux onto mainstream consumer computing devices. On mobile phones, Android has gone on to compete mightily with Apple's iOS, putting Linux squarely in the forefront of today's hottest platform war.

Ubuntu



100



Ubuntu

- ▶ Ubuntu is an open-source operating system based on the Linux kernel. It is one of the most popular Linux distributions and is known for being user-friendly, stable, and secure. Ubuntu is widely used in personal computers, servers, cloud platforms, and even in embedded systems.

Key aspects of Ubuntu

- ▶ **Linux-based:** Ubuntu is built on the Linux kernel, meaning it inherits Linux's characteristics like security, flexibility, and stability.
- ▶ **Free and Open-Source:** Ubuntu is free to use, and its source code is open, allowing anyone to view, modify, and distribute it.
- ▶ **User-friendly:** It is designed to be simple and accessible, making it a good choice for users transitioning from other operating systems like Windows or macOS.

Key aspects of Ubuntu

- ▶ **Software Repository:** Ubuntu has a vast software repository, and applications can be easily installed via its package manager, apt, or through the Ubuntu Software Center.
- ▶ **Desktop Environments:** It traditionally uses the GNOME desktop environment, though different Ubuntu flavors (like Kubuntu, Xubuntu) offer alternatives such as KDE or Xfce.

Key aspects of Ubuntu

- ▶ **Long-Term Support (LTS):** Ubuntu releases an LTS version every two years, providing five years of security and maintenance updates, making it ideal for enterprises.
- ▶ **Community Support:** Backed by a large community and Canonical Ltd., Ubuntu receives robust community and professional support.
- ▶ **Customization:** Users can customize almost every aspect of Ubuntu, from appearance to system behavior.

Ubuntu Flavors

- ▶ **Kubuntu (with KDE)**
- ▶ **Xubuntu (with Xfce)**
- ▶ **Lubuntu (with LXQt)**
- ▶ **Ubuntu Studio (for multimedia creation)**

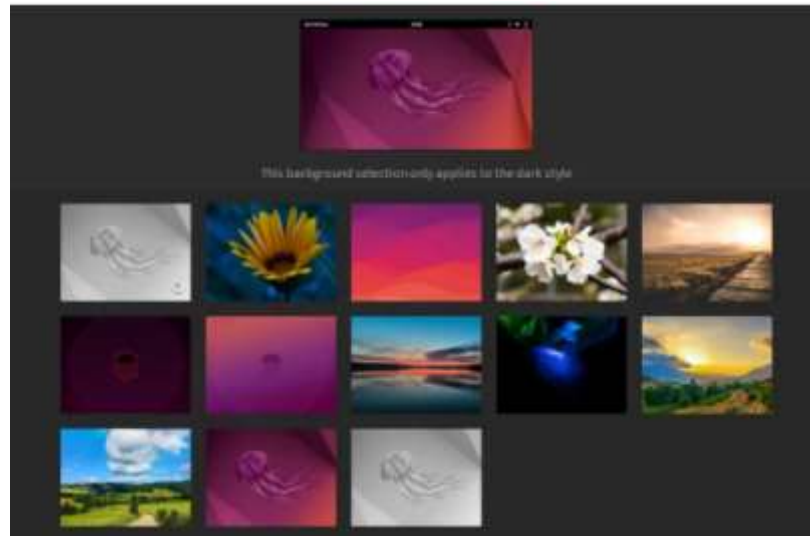
New customisation options!



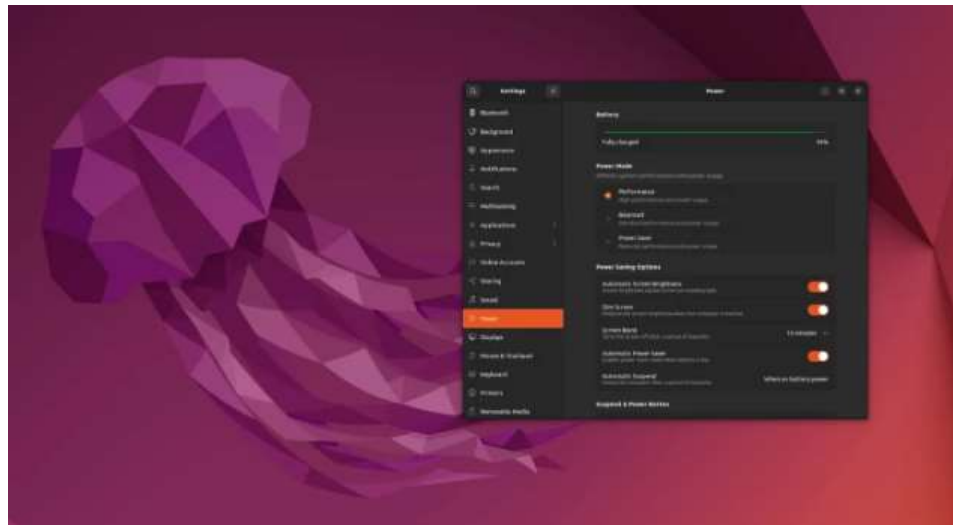
New customisation options!

- ▶ Ubuntu's Yaru theme continues to be refined. Jammy Jellyfish features a new accent colour-picker that allows you to customise your desktop even further
- ▶ Linux desktop performance has had a massive upgrade for this release.

New customisation options!



Performance & power improvements for the Linux Desktop



User Interface

- ▶ **GNOME Desktop Environment:** The default interface on Ubuntu Desktop provides a modern and streamlined experience.
- ▶ **Customizable:** Users can install different desktop environments like KDE Plasma, Xfce, and more, allowing flexibility in appearance and functionality.

Package Management

- ▶ **APT (Advanced Package Tool):** Ubuntu uses the APT package manager, making it easy to install, update, and manage software.
- ▶ **Software Availability:** Thousands of applications are available from the Ubuntu Software Center, the official Ubuntu repositories, or external sources in .deb package format.
- ▶ **Snap Packages:** Ubuntu also supports Snap, a universal package format that simplifies installation and provides sandboxed applications.

Key Features

- ▶ **Security:** Ubuntu includes regular security updates, a robust firewall, and strong encryption tools.
- ▶ **Support for Developers:** It's widely used by developers for programming, web development, and testing due to its vast toolset, ease of configuration, and support for multiple languages.
- ▶ **Community Support:** There's extensive documentation and an active community, making it easier to find solutions, tutorials, and forums for assistance.

Usage and Applications

- ▶ **Personal and Business Desktops:** Ubuntu Desktop is used by individuals and enterprises for general computing, from web browsing to content creation.
- ▶ **Servers and Cloud:** Ubuntu Server powers many web servers and is widely used in cloud computing, especially in environments like AWS, Azure, and Google Cloud.
- ▶ **IoT and Embedded Systems:** Ubuntu Core, a minimalist version of Ubuntu, is optimized for Internet of Things (IoT) devices.