**OPERATING SYSTEM(4ITRC2)**

**IT IVSemester**

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**INTRODUCTION OF LINUX**

Linux is an open-source operating system kernel developed by Linus Torvalds in 1991. It is Unix-like, meaning it draws inspiration from Unix, and is known for its stability, security, and flexibility. Over the years, Linux has become the foundation for a wide variety of distributions (or "distros") tailored for different needs, ranging from servers to desktops to embedded systems.

**INTRODUCTION OF UBUNTU**

UBUNTU one of the most popular Linux distributions, was first released in October 2004 by Canonical Ltd. Founded by Mark Shuttleworth, Ubuntu was designed to provide a user-friendly and accessible Linux experience. It is based on Debian, another prominent Linux distribution, and follows a predictable release cycle with Long-Term Support (LTS) versions every two years, which are supported for five years.

**HISTORY:**

2004: Mark Shuttleworth, a South African entrepreneur, founded Canonical Ltd. and released the first version of Ubuntu, 4.10 Warty Warthog, in October 2004. It was based on the Debian distribution and prioritized ease of use and a predictable release cycle.

**Key Milestones:**

* **LTS (Long-Term Support) Versions**: Starting with **6.06 Dapper Drake (2006)**, Ubuntu introduced LTS releases that received extended support, making it suitable for enterprises and stability-focused users.
* **Unity Interface**: With **10.10 Maverick Meerkat (2010)** and officially adopted in **11.04 Natty Narwhal**, Ubuntu introduced the Unity desktop environment, offering a unique user experience. However, Unity sparked debate in the Linux community.
* **Return to GNOME**: In **17.10 Artful Aardvark (2017)**, Ubuntu replaced Unity with the GNOME desktop as its default interface, responding to user feedback.
* **Cloud & IoT**: In recent years, Ubuntu expanded into cloud computing (e.g., Ubuntu Server, OpenStack) and IoT (e.g., Ubuntu Core, Snaps), solidifying its role in the tech ecosystem.

**NOTABLE LTS release:**

16.04 Xenial Xerus (2016): Introduced Snap packages for easier software installation.

20.04 Focal Fossa (2020): Featured a polished GNOME experience and improved performance.

22.04 Jammy Jellyfish (2022): Enhanced security features and user experience

**Versions of Linux:**

Linux itself is a kernel, and numerous **distributions (distros)** are built on it. Popular examples include:

* **Ubuntu** (user-friendly, great for beginners)
* **Debian** (stable and robust, parent of Ubuntu)
* **Fedora** (innovative, cutting-edge features)
* **CentOS/AlmaLinux/Rocky Linux** (enterprise-focused)
* **Arch Linux** (highly customizable, for advanced users)
* **Kali Linux** (security testing and ethical hacking)
* **Red Hat Enterprise Linux (RHEL)** (enterprise-grade, subscription-based)

Each distro periodically releases new versions with updates and improvements.

**Versions of Ubuntu:**

Ubuntu follows a predictable release cycle with **LTS (Long-Term Support)** versions and regular updates. Key versions include:

1. **4.10 Warty Warthog (2004)**: The first Ubuntu release.
2. **6.06 Dapper Drake (2006)**: The first LTS version.
3. **10.04 Lucid Lynx (2010)**: Popular for its long-standing stability.
4. **16.04 Xenial Xerus (2016)**: Introduced Snap packages.
5. **20.04 Focal Fossa (2020)**: Refined GNOME desktop and performance.
6. **22.04 Jammy Jellyfish (2022)**: Improved user experience and security

**FEATURE OF UBUNTU**

1. Open Source: Ubuntu is free to use, modify, and distribute, embodying the principles of open-source software.
2. User-Friendly Interface: It features the GNOME desktop environment, known for its simplicity and ease of navigation.
3. Regular Updates: Ubuntu provides a predictable release cycle, with new versions every six months and LTS (Long-Term Support) versions every two years.
4. Wide Software Support: It offers access to software via Snap packages, APT package manager, and Ubuntu Software Center.
5. Security: Ubuntu includes built-in firewalls and regular security updates, making it a safe choice for users.
6. Customization: Users can extensively customize the desktop environment and system to their liking.
7. Stability: Particularly in LTS versions, Ubuntu is known for providing a stable and reliable experience.
8. Cloud & Server Capabilities: Ubuntu supports cloud platforms like OpenStack and works seamlessly as a server OS.
9. Hardware Support: It has excellent compatibility with a variety of hardware, including older or lower-spec devices.
10. Community & Documentation: Ubuntu's active community provides support, tutorials, and documentation for users of all skill levels.

**DIFFERENCE BETWEEN UBUNTU AND LINUX**

| Feature | Ubuntu | Windows |
| --- | --- | --- |
| Source | Open-source, free to use and modify. | Proprietary, requires a paid license. |
| Kernel | Based on the Linux kernel. | Based on the NT kernel by Microsoft. |
| User Interface | GNOME (default), customizable. | Graphical interface (Windows Explorer), less customizable. |
| Cost | Free, with optional paid support. | Requires purchase, or is bundled with new devices. |
| File System | Ext4, XFS, Btrfs, etc. | NTFS, FAT32, exFAT. |
| Software Availability | Offers open-source applications, uses APT/Snap for package management. | Supports proprietary software, wide availability of commercial apps. |
| Target Audience | Developers, tech-savvy users, servers, and IoT. | General consumers, enterprises, gamers, etc. |
| Performance | Efficient on older/low-spec hardware. | Requires more resources, especially for newer versions. |
| Security | Highly secure, fewer viruses due to its architecture and smaller user base. | Requires regular updates and antivirus software for protection. |
| Command Line Usage | Heavy command-line reliance for advanced tasks. | Minimal command-line interaction for regular users. |
| Updates | Regular and user-controlled updates, especially in LTS versions. | Frequent automatic updates, sometimes intrusive. |
| Gaming | Limited support for gaming (although improving with tools like Steam Proton). | Excellent gaming support with dedicated APIs like DirectX |