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**Bahir Dar University**

**Bahirdar institute of technology**

**Operating system individual system**

**Solus operating system**

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# Introduction

Solus previously known as Evolve OS is an independently developed operating system for the x86-64 architecture based on the Linux kernel and a choice of Budgie, GNOME, KDE Plasma or Xfce as the desktop environment. Its package manager eopkg(Evolved Package Kit) is based on the PiSi package management system from Pardus Linux, and it has a semi-rolling release model, with new package updates landing in the stable repository every Friday. The developers of Solus have stated that Solus was intended exclusively for use on personal computers and will not include software that is only useful in enterprise or server environments.

Unlike many distributions that are derivatives of existing systems, Solus is built from scratch, offering a unique and cohesive user experience. Its design philosophy emphasizes simplicity, elegance, and efficiency, making it an appealing choice for both newcomers and seasoned Linux users.

## HISTORY

On September 20, 2015, Ikey Doherty announced that "Solus 1.0 will be codenamed Shannon, after the River Shannon in Ireland", indicating that "codenames for releases will continue this theme, using Irish rivers."

In July 2016, Solus announced the intention to discard the concept of fixed point releases and to embrace a rolling release model.

In January 2017, Doherty announced that Solus will adopt Flatpak to reassemble third party applications. In August, Doherty announced that Solus also will adopt "Snaps".

On June 13 the same year, it was announced that the developer team had been expanded with Stefan Ric, and Ikey Doherty – previously working for Intel on Clear Linux OS – started working full-time on Solus.

On November 2, 2018, technology website Phoronix published an open letter from original founder Ikey Doherty confirming that he was stepping back from the project, assigning "any and all intellectual, naming and branding rights relating to the ownership of Solus" to the development team "with immediate and permanent effect, acknowledging them as the official owners and leadership of the project."

On January 1, 2022, experience lead Josh Strobl announced his resignation from Solus, after 6 years of involvement with the project. The Budgie desktop environment, originally created as a project internal to Solus, would be split out of Solus and developed independently under Strobl's newly founded Buddies of Budgie organization.

In January 2023, Solus infrastructure suffered an outage which lasted until April 2023. This outage brought down their website,

forums, and development platform required to update the system. Their website was restored by moving it from internal infrastructure to GitHub Pages on February 27, 2023. On April 16, in a post on Reddit entitled "Righting the ship", Josh Strobl announced a series of measures aimed at restoring order to the project. This was followed by a blog post "A New Voyage" which provided more detail about the new personnel, and announced the intention to explore re-basing Solus on Serpent OS. Their development infrastructure and forums were restored alongside that announcement and build infrastructure on April 20.

## Objectives

The primary objective of Solus OS is to provide a fast, stable, and user-friendly Linux distribution optimized for modern desktop computing. Unlike many Linux distros that target servers or enterprise environments, Solus focuses on delivering a refined, hassle-free experience for everyday users.

### Key objective of Solus Os

1.out of the box usability- Solus Os is designed to work well immediately after installation, with pre-installed software for everyday tasks like web browsing, media playback and office work.

2.Simplicity and elegance- it features the budgie desktop environment(developed by solus) for a clean, intuitive and modern user experience.

3.Performance optimization- Solus is rolling release distro, meaning it gets continuous updates without needing major upgrades, and its optimized for speed and responsiveness.

4.Curated software experience- Instead of offering everything like some distros, solus focuses on a curated selection of software for stability and quality.

5.Targeted at personal computing- its not aimed at servers or enterprise environments, but rather for developers, content creators, gamers and general desktop users.

## Requirements

### 1.Hardware requirement

- 64-bit processor with virtualization support (Intel VT-x or AMD-V)
- 2GB RAM (4GB recommended)
- 10GB disk space (20GB recommended)
- 1024×768 resolution

### 2.Software Requirements

- 64-bit Quad-core 2.0 GHz+
- 8 GB or more

-30 GB+ SSD (for faster performance)

-1920×1080 (Full HD) or higher

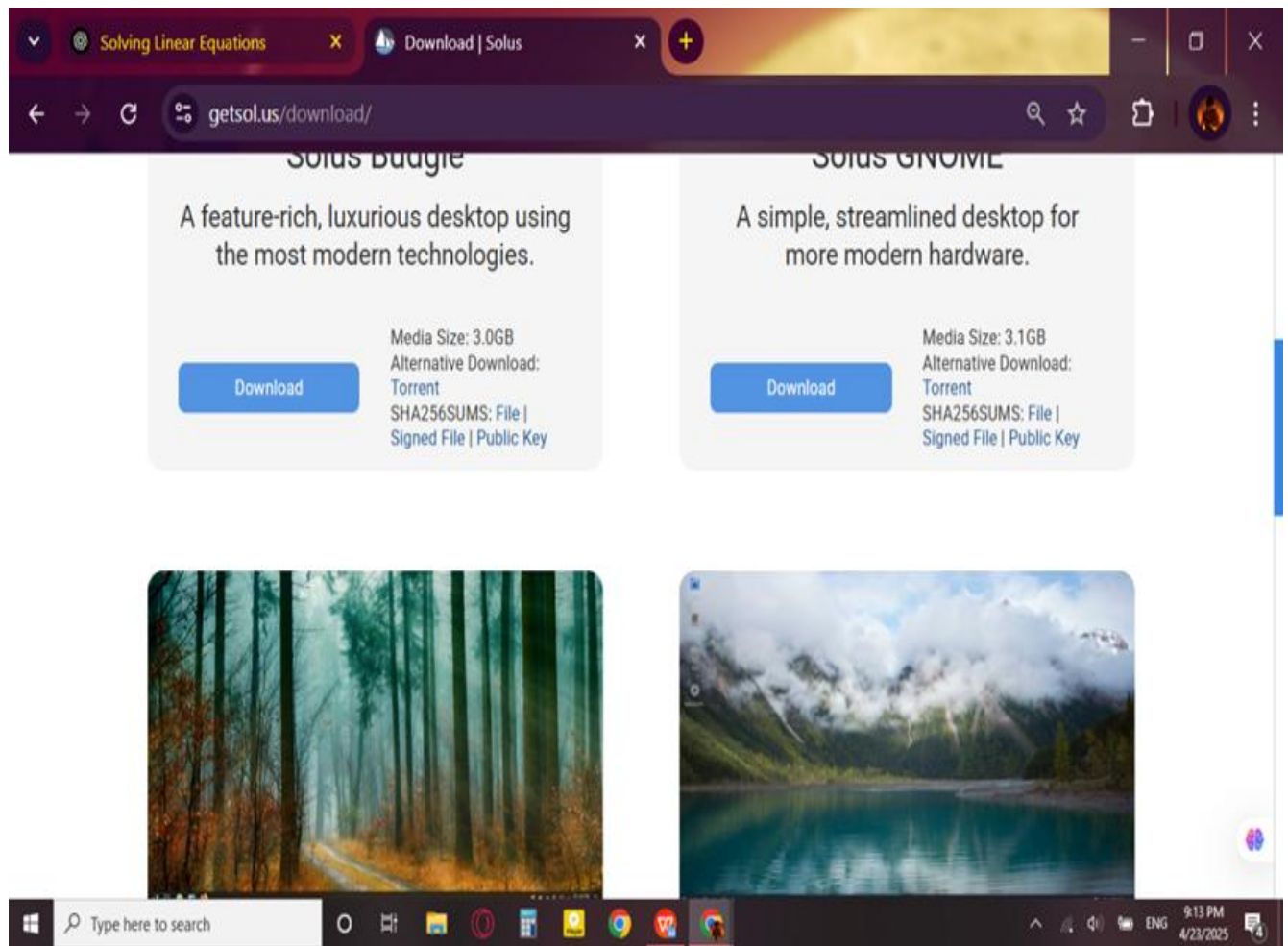
## Installation steps

Step 1 : Download the solus os -visit the official solus os website

<https://getsol.us/download>



Step 2: choose the edition- Solus offers different editions: Budgie (default), GNOME, and MATE



Download Options:

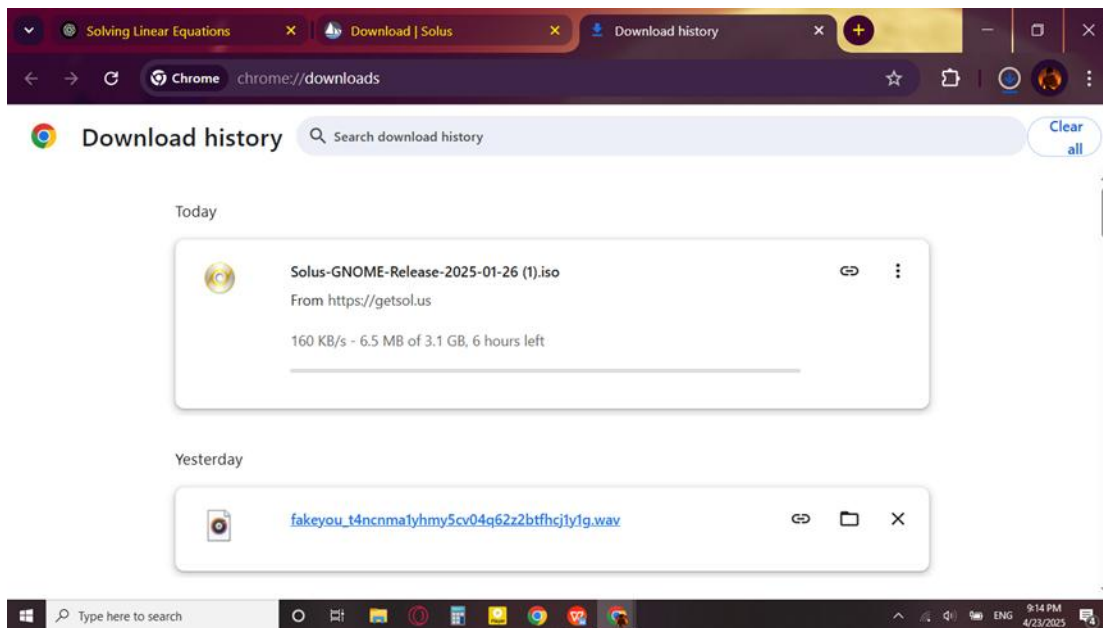
Direct download (HTTP)

Torrent option (faster for some users)

Verify downloads using SHA256 checksums (security best practice)

Step 3: Start Download





## Step 4: Creating bootable media

Using Rufus (Windows):

Insert USB drive (minimum 4GB recommended)

Open Rufus and select:

Device: Your USB drive (e.g., SolutionGNOME [32GB])

Boot selection: Browse and select your downloaded ISO

Partition scheme: MBR (for BIOS or UEFI compatibility)

Target system: BIOS or UEFI

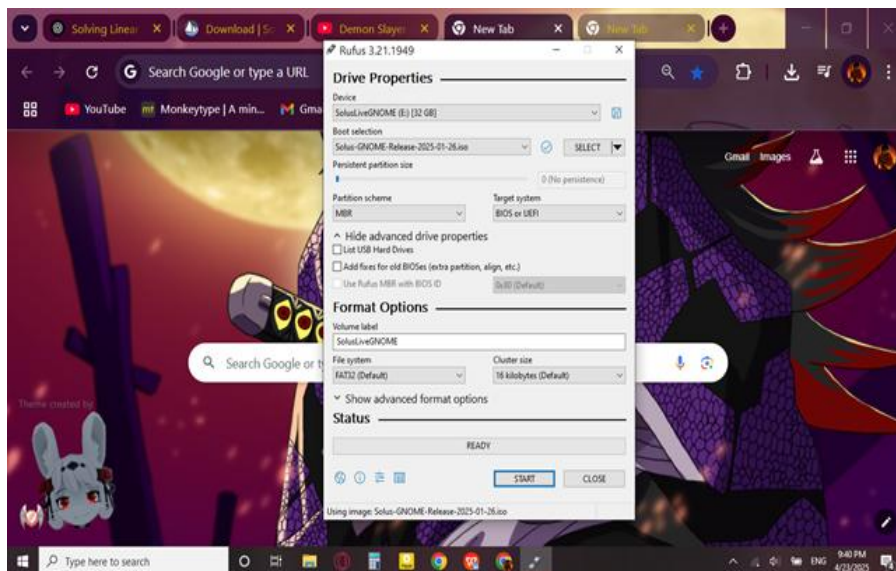
File system: FAT32 (default)

Cluster size: 16 kilobytes (default)

Click "START" to create bootable USB

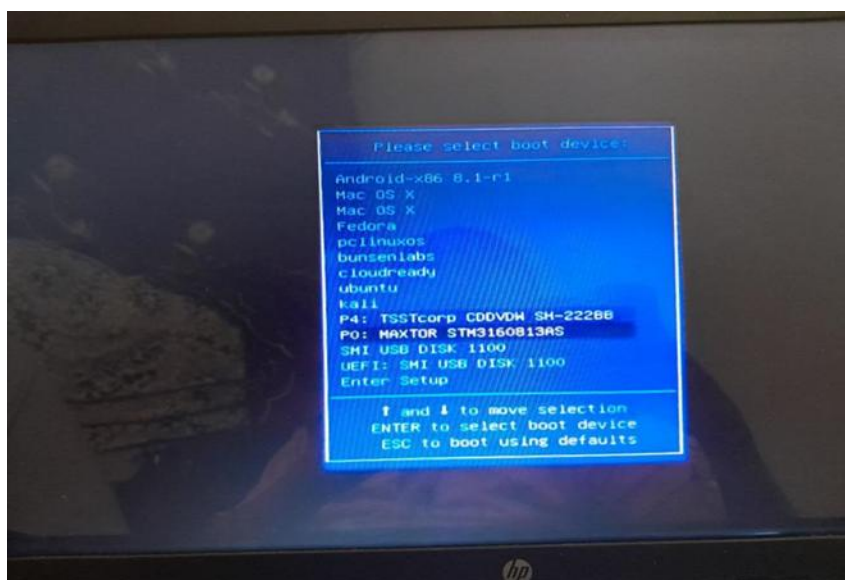
- This will erase all data on the USB drive

- Process may take 5-15 minutes



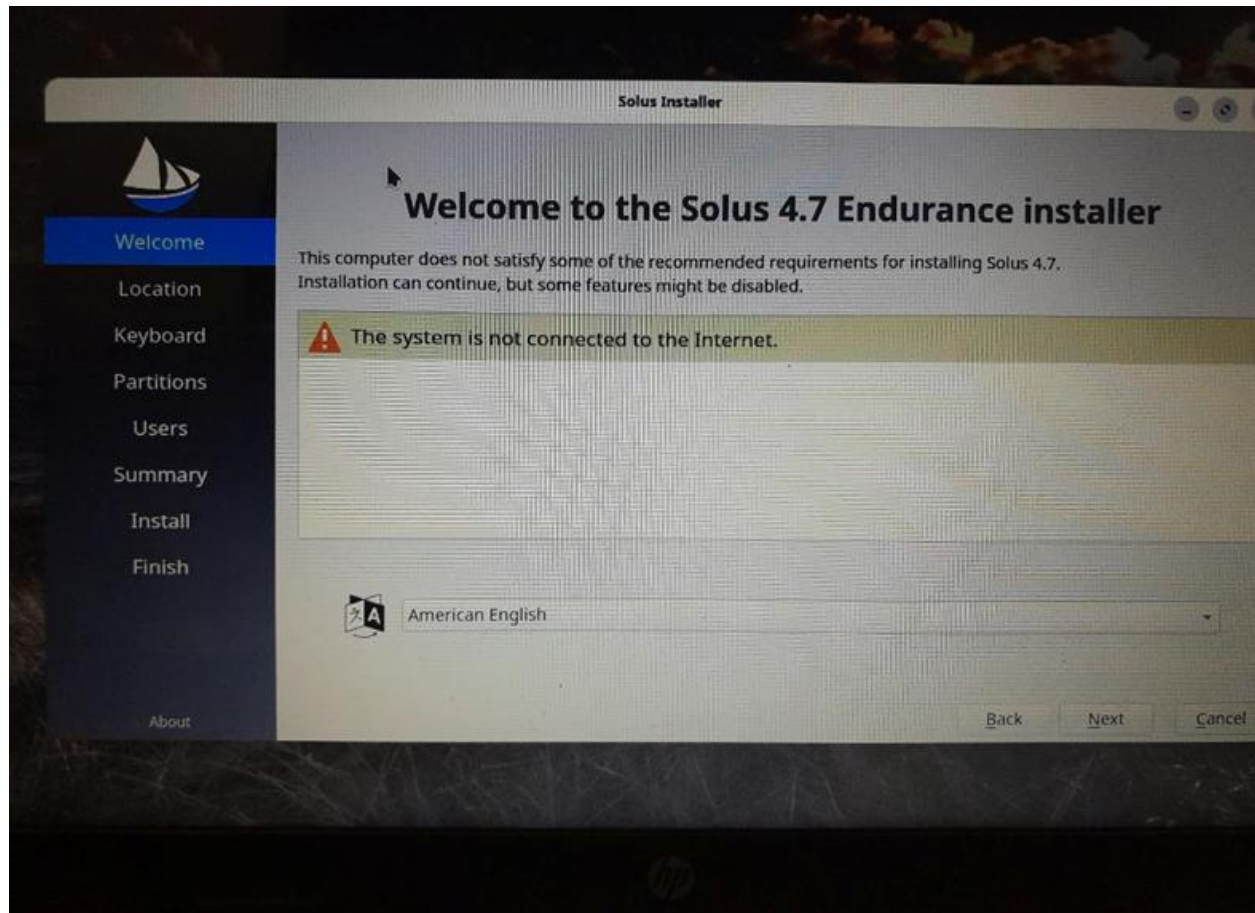
## Step 5 : Reboot your computer

- Insert your Solus USB installer
- Restart your computer and enter boot menu (typically F12, ESC, or Del key)
- Select your Boot device
- Choose UEFI option if available for modern systems



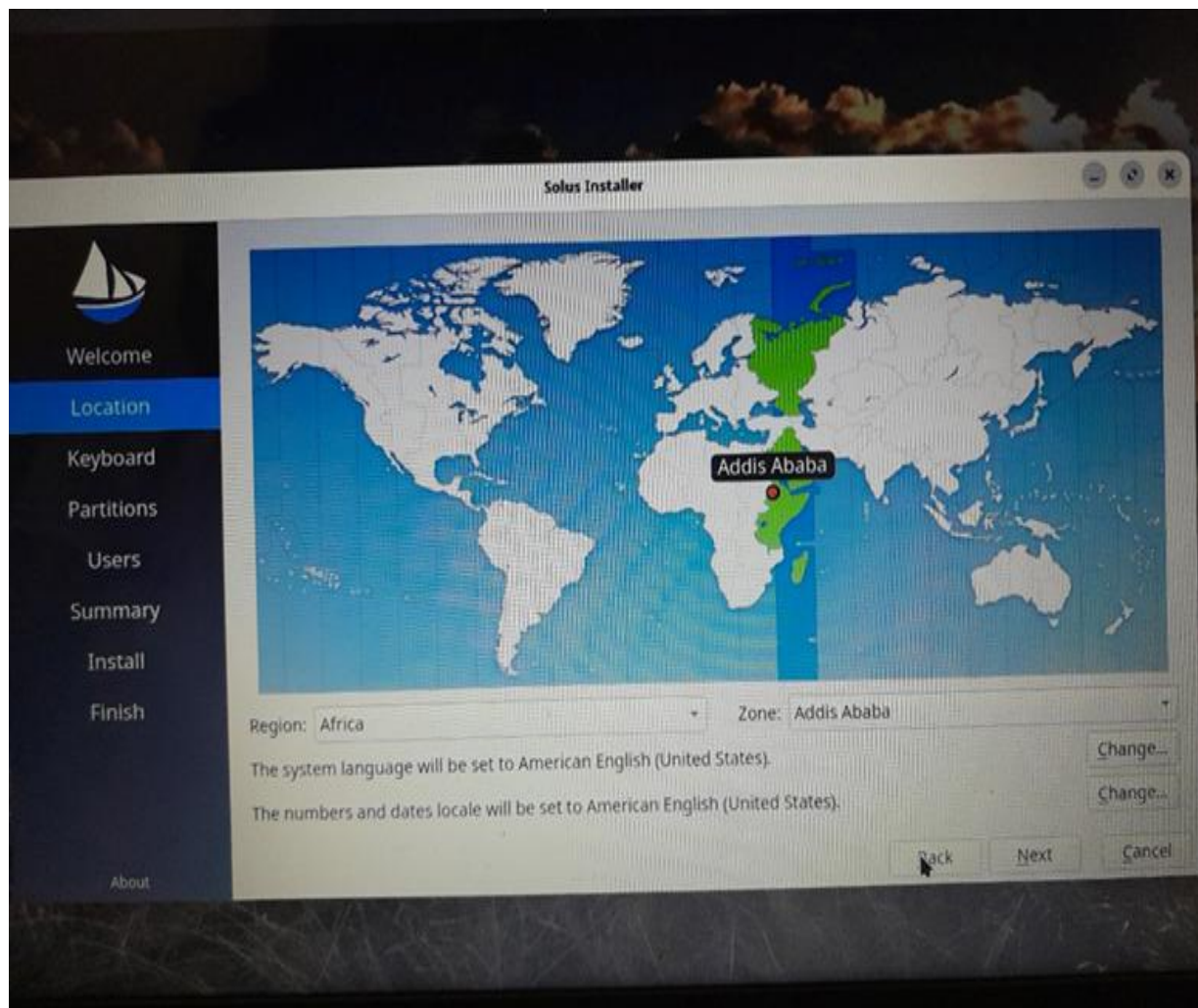
## Step 6 : Welcome screen

- Here, the installer checks your system requirements
- Click next to continue



## Step 7 : Location Setup

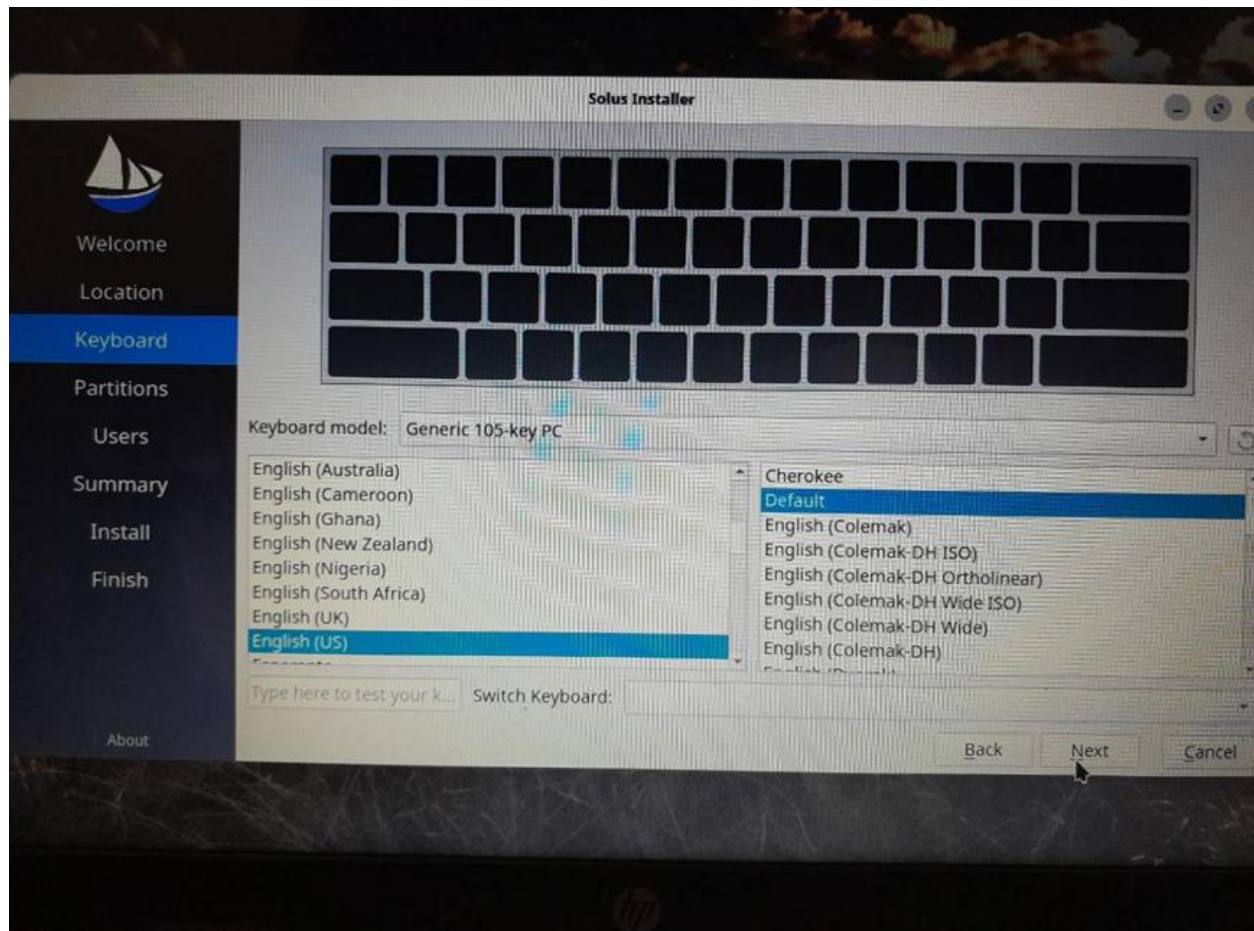
- Select your region
- Choose your timezone
- Choose language
- Click next



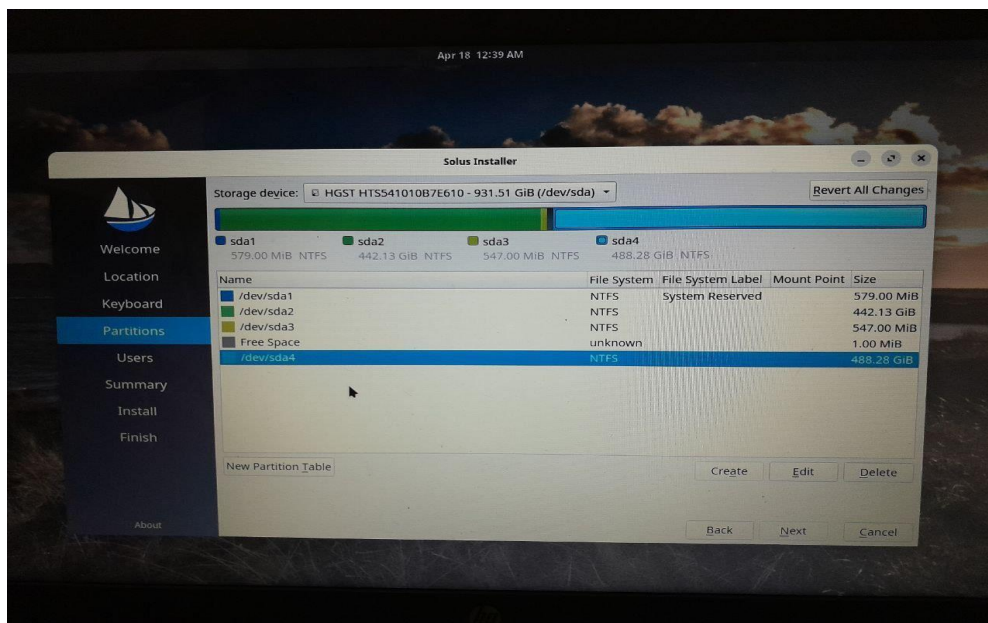
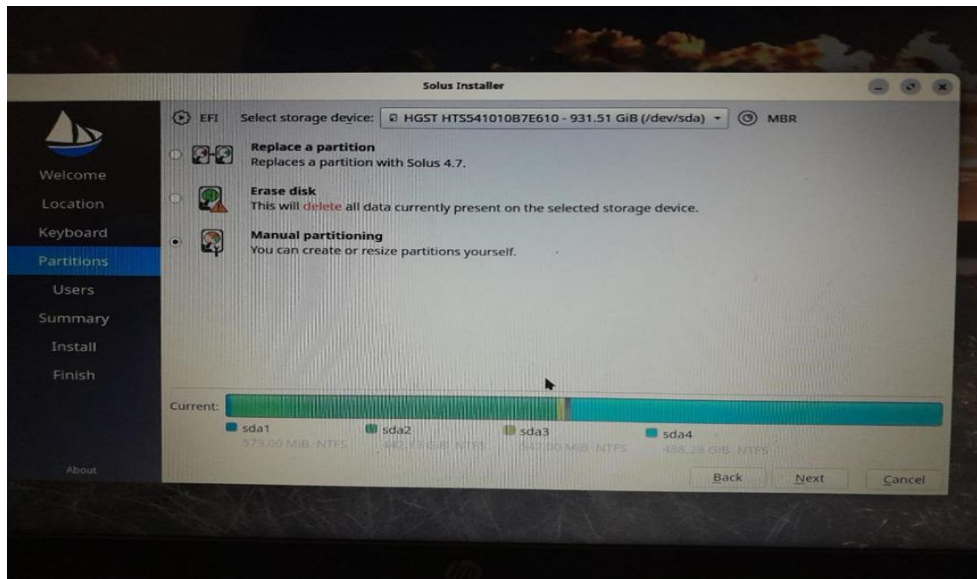


## Step 8 : Keyboard Configuration

- Select keyboard model
- Choose keyboard layout
- Click next to proceed



## Step 9 : Choosing partitioning

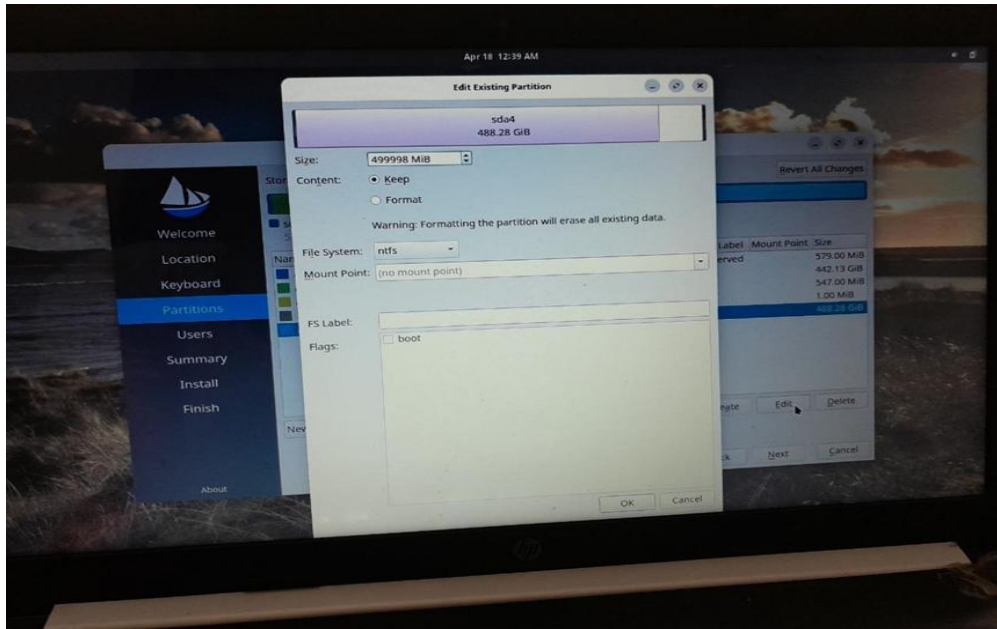


## Step 10 : Manual partitioning guide (If necessary)

1. Select your storage device
2. Review current partitions (NTFS partitions shown)
3. Create new partitions:

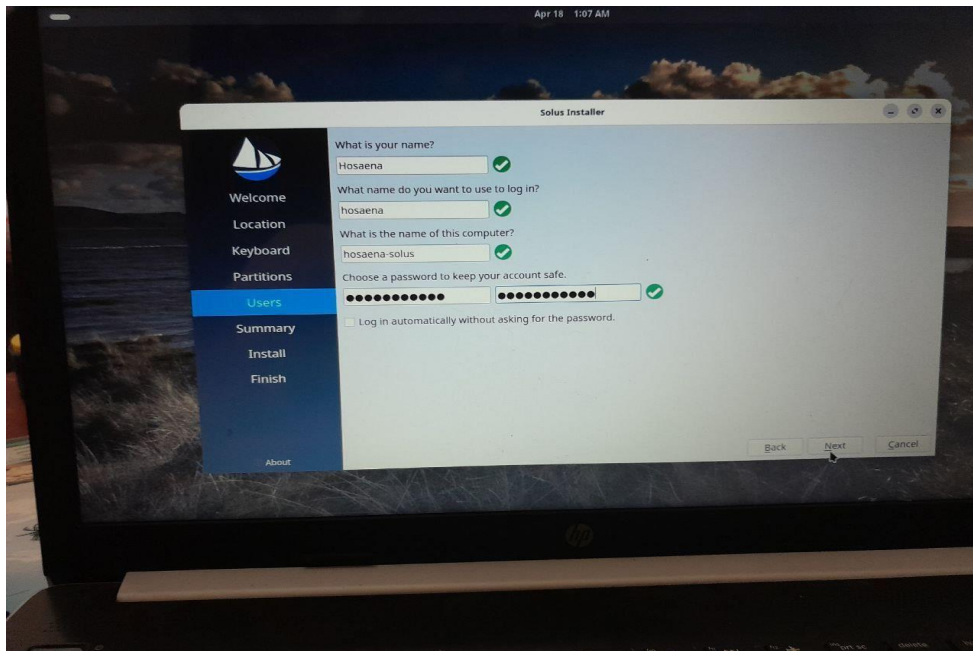
- Root (/) partition: Minimum 20GB, ext4 filesystem
- Swap partition: Equal to RAM size (optional)
- Home (/home) partition: Remaining space (optional)

#### 4. Set mount points and filesystem types



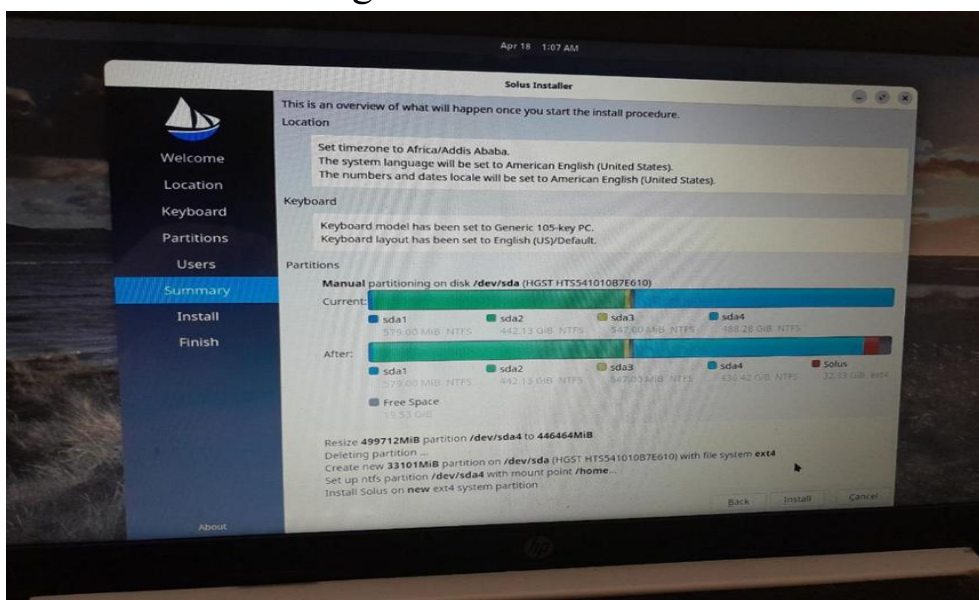
## Step 11 : User account setup

- Enter your full name
- Username will auto generate (You can edit it if you want)
- Set computer name
- Create a password
- Decide if you want it to automatically login without asking for a password
- Click next



## Step 12 : Installation summary

- Review all settings
- Verify partitions carefully
- Click “Install” to begin

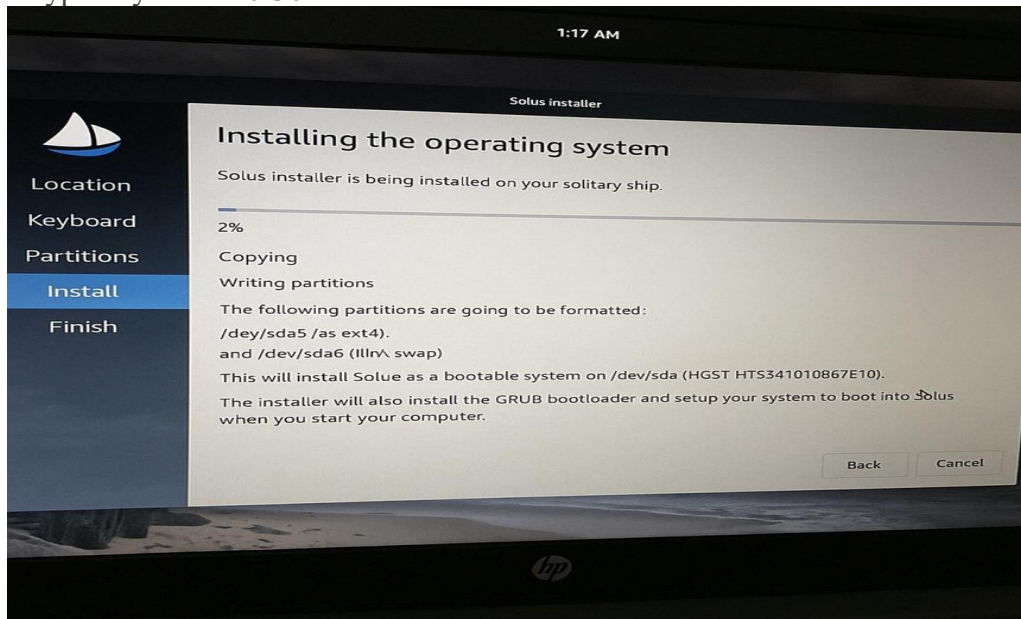




## Step 13 : Installation Process

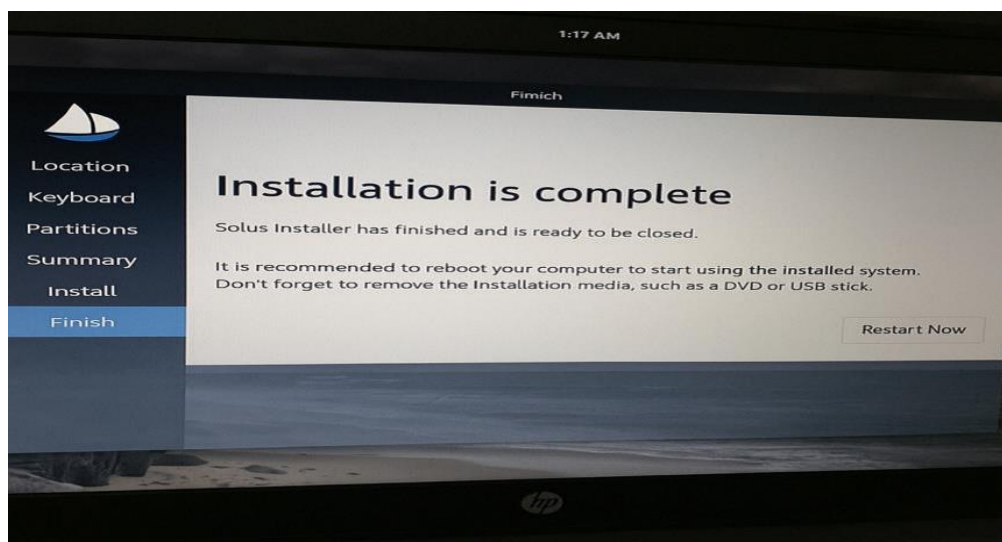
system will:

- Create new partitions
- Format with selected filesystems
- Install base system
- Configure user account
- Progress bar will show status
- Typically takes 10-30 minutes



## Step 14: Completion

1. When finished, you'll see completion message
2. Options:- Reboot into firmware interface (UEFI/BIOS)
  - Or reboot directly into Solus
3. Remove installation media when prompted
4. System will boot into Solus login screen



## Issuer faced

1. When I was installing the OS my internet was not strong enough to install it.
2. When I reached the Summary step and was about to install it, it was gonna delete the previous OS and all files on the computer.

## Solution :

1. For the first issue, we connected to a stronger internet to install it.
2. For the second issue, we watched youtube guide videos to get around the problem.

## Filesystem Supported :

Solus OS supports several filesystems, with ext4 being the default and most recommended choice due to its stability, journaling capabilities, and optimal performance for Linux systems. It also supports Btrfs as an alternative, which offers advanced features like snapshots, compression, and subvolumes, though it is less commonly used. For compatibility with Windows, Solus provides read/write support for NTFS, FAT32, and exFAT, allowing seamless file sharing between Linux and Windows systems. However, ZFS, a high-performance filesystem with built-in redundancy, is not natively supported due to licensing complexities and its heavy memory requirements. Similarly, HFS+ (macOS Journaled) and APFS (Apple File System) are not supported, as Solus is primarily designed for x86/ARM architectures rather than macOS hardware. Overall, Solus prioritizes ext4 for its reliability and FAT/NTFS/exFAT for cross-platform usability, while excluding niche or proprietary filesystems like ZFS and APFS to maintain simplicity and legal compliance.

## Advantages of Solus

- User-Friendly: Solus provides a user-friendly experience with a well-designed desktop environment, making it accessible for beginners and advanced users alike.
- Independent: Solus is an independent distribution, which means it has its package management system (eopkg) and software repository curated specifically for Solus, ensuring software compatibility and stability.
- Desktop Environment: Solus offers a choice of desktop environments, including Budgie (its flagship desktop environment), GNOME, MATE, and Plasma, catering to different user preferences.
- Optimized Performance: Solus is optimized for performance and responsiveness, providing a smooth and efficient computing experience even on older hardware.
- Software Center: Solus features a Software Center that simplifies the installation and management of applications, allowing users to easily discover and install software packages.
- Rolling Release: Solus follows a rolling release model, providing users with the latest software updates and features continuously, without the need for version upgrades.

## Disadvantages of Solus

- Limited Software Availability: While Solus has a curated repository, it may have a smaller selection of software compared to more established distributions like Ubuntu or Fedora. This could be a drawback for users needing access to a wide range of specialized or less common applications.
- Third-Party Software Support: Due to its independent nature, Solus may face challenges with third-party software support. Some proprietary

applications or hardware drivers may not be readily available or fully compatible with Solus.

- **Less Enterprise Focus:** Solus is more geared towards desktop users and may not have the same level of support or focus on enterprise features and deployment scenarios as other distributions targeted specifically at enterprise environments.
- **Community Size:** While Solus has an active community, it may be smaller compared to larger distributions, which can affect the availability of community-contributed resources, guides, and troubleshooting assistance.
- **Learning Curve for New Users:** While Solus aims to be user-friendly, newcomers to Linux may still experience a learning curve, especially when it comes to system customization, software management via the eopkg package manager, or troubleshooting unique issues specific to Solus.

## Conclusion

Solus OS is an excellent choice for desktop users who want a clean, fast, rolling-release Linux distro. While it lacks some enterprise features, it is ideal for personal use, programming, and learning Linux.

## Future Recommendations

- Expand software availability (Snap/Flatpak support).
- Improve documentation for troubleshooting.
- Add ZFS support for advanced user.

## What is virtualization?

Virtualization is a technology that allows you to create virtual, simulated environments from a single, physical machine. Virtualization allows hardware systems to function at their highest capacity. With virtualization, multiple operating systems can run alongside each other and share the same virtualized hardware resources for optimized efficiency. Teams can make more use of their computing resources to support important applications and workloads. It works by using software, such as a hypervisor, to create virtual machines that share the hardware resources of the host system.

How it works?

Virtualization uses specialized software, called a hypervisor, to create several cloud instances or virtual machines on one physical computer. Cloud instances or virtual machines After you install virtualization software on your computer, you can create one or more virtual machines. You can access the virtual machines in the same way that you access other applications on your computer. Your computer is called the host, and the virtual machine is called the guest. Several guests can run on the host. Each guest has its own operating system, which can be the same or different from the host operating system.

From the user's perspective, the virtual machine operates like a typical server. It has settings, configurations, and installed applications. Computing resources, such as central processing units (CPUs), Random Access Memory (RAM), and storage appear the same as on a physical server. You can also configure and update the guest operating systems and their applications as necessary without affecting the host operating system.

**Hypervisors** The hypervisor is the virtualization software that you install on your physical machine. It is a software layer that

acts as an intermediary between the virtual machines and the underlying hardware or host operating system. The hypervisor coordinates access to the physical environment so that several virtual machines have access to their own share of physical resources. For example, if the virtual machine requires computing resources, such as computer processing power, the request first goes to the hypervisor. The hypervisor then passes the request to the underlying hardware, which performs the task. The following are the two main types of hypervisors.

**Type 1 hypervisors** A type 1 hypervisor—also called a bare metal hypervisor—runs directly on the computer hardware. It has some operating system capabilities and is highly efficient because it interacts directly with the physical resources.

**Type 2 hypervisors** A type 2 hypervisor runs as an application on computer hardware with an existing operating system. Use this type of hypervisor when running multiple operating systems on a single machine.

What are the different types of virtualization?

You can use virtualization technology to get the functions of many different types of physical infrastructure and all the benefits of a virtualized environment. You can go beyond virtual machines to create a collection of virtual resources in your virtual environment.

**Server virtualization** Server virtualization is a process that partitions a physical server into multiple virtual servers. It is an efficient and cost-effective way to use server resources and deploy IT services in an organization. Without server virtualization, physical servers use only a small amount of their processing capacities, which leave devices idle.

**Storage virtualization** Storage virtualization combines the functions of physical storage devices such as network attached storage (NAS) and storage area network (SAN). You can pool the storage hardware in your data center, even if it is from different vendors or of different types. Storage virtualization

uses all your physical data storage and creates a large unit of virtual storage that you can assign and control by using management software. IT administrators can streamline storage activities, such as archiving, backup, and recovery, because they can combine multiple network storage devices virtually into a single storage device.

**Network virtualization** Any computer network has hardware elements such as switches, routers, and firewalls. An organization with offices in multiple geographic locations can have several different network technologies working together to create its enterprise network. Network virtualization is a process that combines all of these network resources to centralize administrative tasks. Administrators can adjust and control these elements virtually without touching the physical components, which greatly simplifies network management.

The following are two approaches to network virtualization.

**Software-defined networking** Software-defined networking (SDN) controls traffic routing by taking over routing management from data routing in the physical environment.

For example, you can program your system to prioritize your video call traffic over application traffic to ensure consistent call quality in all online meetings.

**Network function virtualization** Network function virtualization technology combines the functions of network appliances, such as firewalls, load balancers, and traffic analyzers that work together, to improve network performance.

**Data virtualization** Modern organizations collect data from several sources and store it in different formats. They might also store data in different places, such as in a cloud infrastructure and an on-premises data center. Data virtualization creates a software layer between this data and the applications that need it. Data virtualization tools process an application's data request and return results in a suitable format. Thus, organizations use data virtualization solutions to increase flexibility for data integration and support cross functional data analysis.

**Application virtualization** Application virtualization pulls out the functions of applications to run on operating systems other

than the operating systems for which they were designed. For example, users can run a Microsoft Windows application on a Linux machine without changing the machine configuration. To achieve application virtualization, follow these practices:

Application streaming – Users stream the application from a remote server, so it runs only on the end user's device when needed.

Server-based application virtualization – Users can access the remote application from their browser or client interface without installing it.

Local application virtualization – The application code is shipped with its own environment to run on all operating systems without changes.

Desktop virtualization Most organizations have nontechnical staff that use desktop operating systems to run common business applications. For instance, you might have the following staff:

A customer service team that requires a desktop computer with Windows 10 and customer-relationship management software

A marketing team that requires Windows Vista for sales applications

You can use desktop virtualization to run these

different desktop operating systems on virtual machines, which your teams can access remotely. This type of virtualization makes desktop management efficient and secure, saving money on desktop hardware.

The following are types of desktop virtualization.

Virtual desktop infrastructure Virtual desktop infrastructure

runs virtual desktops on a remote server. Your users can access them by using client devices. Local desktop virtualization In local desktop virtualization, you run the hypervisor on a local computer and create a virtual computer with a different operating system. You can switch between your local and virtual environment in the same way you can switch between applications.

Why virtualization in modern operating system?

virtualization improves the efficiency and availability of resources and applications in an organization. Instead of relying on the old model of "one server, one application" that leads to



not being able to use resources effectively, virtual resources are dynamically applied to meet business needs without any excess fat.

One of the goal of virtualization is to centralize administrative tasks while improving scalability and overall hardware-resource utilization. With virtualization, several operating systems can be run in parallel on a single central processing unit (CPU). This parallelism tends to reduce overhead costs and differs from multitasking, which involves running several programs on the same OS.

Using virtualization, an enterprise can better manage updates and rapid changes to the operating system and applications without disrupting the user. "