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Lab-Report

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Lab Report No : 01

Lab Report Name: How to install Linux operating system

Theory :

What is Operating System?
Just like Windows, iOS, and Mac OS, Linux is an operating system. In fact, one of the most popular
platforms on the planet, Android, is powered by the Linux 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 (OS), the software wouldn?t function.
The Linux operating system comprises several different pieces:
1. 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.
2. 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.
3. Init system – This is a sub-system that bootstraps the user space and is charged with
controlling daemons. One of the most widely used init systems is systemd? which also
happens to be one of the most controversial. It is the init system that manages the boot
process, once the initial booting is handed over from the bootloader (i.e., GRUB or GRand
Unified Bootloader).
4. Daemons – These are background services (printing, sound, scheduling, etc.) that either start
up during boot or after you log into the desktop.
5. 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.

6. Desktop environment – This is the piece that the users actually interact with. There are many
desktop environments to choose from (GNOME, Cinnamon, Mate, Pantheon, Enlightenment,
KDE, Xfce, etc.). Each desktop environment includes built-in applications (such as file
managers, configuration tools, web browsers, and games).7. Applications – Desktop
environments do not offer the full array of apps. Just like Windows
and macOS, Linux offers thousands upon thousands of high-quality software titles that can be
easily found and installed. Most modern Linux distributions (more on this below) include App
Store-like tools that centralize and simplify application installation. For example, Ubuntu Linux
has the Ubuntu Software Center (a rebrand of GNOME Software? Figure 1) which allows you
to quickly search among the thousands of apps and install them from one centralized location.

Ubunt u

Ubuntu is probably the most well-known Linux distribution. Ubuntu is based on Debian, but it has its own
software repositories. Much of the software in these repositories is synced from Debian's repositories.
The Ubuntu project has a focus on providing a solid desktop (and server) experience, and it isn't afraid to
build its own custom technology to do it. Ubuntu used to use the GNOME 2 desktop environment, but it
now uses its own Unity desktop environment. Ubuntu is even building its own Mir graphical server while
other distributions are working on the Wayland.
Ubuntu is modern without being too bleeding edge. It offers releases every six months, with a more
stable LTS (long term support) release every two years. Ubuntu is currently working on expanding the
Ubuntu distribution to run on smartphones and tablets.

Linux Mint

Mint is a Linux distribution built on top of Ubuntu. It uses Ubuntu's software repositories, so the same
packages are available on both. Originally, Mint was an alternative distribution loved mainly because it
included media codecs and proprietary software that Ubuntu didn't include by default.

This distribution now has its own identity. You won't find Ubuntu's own Unity desktop here — instead,
you get a more traditional Cinnamon or MATE desktop. Mint takes a more relaxed approach to software
updates and won't automatically install critical software updates. Controversially, this has led some
Ubuntu developers to label it insecur

Debian

Debian is an operating system composed only of free, open-source software. The Debian project has
been operating since 1993 — over 20 years ago! This widely respected project is still releasing new
versions of Debian, but it's known for moving much more slowly than distributions like Ubuntu or Linux
Mint. This can make it more stable and conservative, which is ideal for some systems.
Ubuntu was originally founded to take the core bits of stable Debian and improve on them more quickly,
packaging the software together into a user-friendly system that's more frequently updated.Fedora

Fedora is a project with a strong focus on free software — you won't find an easy way to install
proprietary graphics drivers here, although third-party repositories are available. Fedora is bleeding edge
and contains the latest versions of software.
Unlike Ubuntu, Fedora doesn't make its own desktop environment or other software. Instead, the Fedora
project uses "upstream" software, providing a platform that integrates all this upstream software
without adding their own custom tools or patching it too much. Fedora comes with the GNOME 3
desktop environment by default, although you can also get "spins" that come with other desktop
environments.
Fedora is sponsored by Red Hat, and is the foundation for the commercial Red Hat Enterprise Linux
project. Unlike RHEL, Fedora is bleeding edge and not supported for long. If you want a more stable
release that's supported for longer, Red Hat would prefer you use their Enterprise product.

CentOS / Red Hat Enterprise Linux

Red Hat Enterprise Linux is a commercial Linux distribution intended for servers and workstations. It's

based on the open-source Fedora project, but is designed to be a stable platform with long-term
support.
Red Hat uses trademark law to prevent their official Red Hat Enterprise Linux software from being
redistributed. However, the core software is free and open-source. CentOS is a community project that
takes the Red Hat Enterprise Linux code, removes all Red Hat's trademarks, and makes it available for
free use and distribution. It's a free version of RHEL, so it's good if you want a stable platform that will
be supported for a long time. CentOS and Red Hat recently announced they're collaborating, so CentOS
is now part of Red Hat itself.
openSUSE
openSUSE is a community-created Linux distribution sponsored by Novell. Novell purchased SuSE Linux in
2003, and they still create an enterprise Linux project known as SUSE Linux Enterprise. Where Red Hat
has the Fedora project that feeds into Red Hat Enterprise Linux, Novell has the openSUSE project that
feeds into SUSE Linux Enterprise.
Like Fedora, openSUSE is a more bleeding edge version of Linux. SUSE was once one of the great user-
friendly desktop Linux distributions, but Ubuntu eventually took that crow
Mandriva
Mageia is a fork of Mandriva Linux created in 2011. Mandriva — known as Mandrake before that — was
once one of the great user-friendly Linux distributions.
Like Fedora and openSUSE, this is a community-created project to create an open-source Linux
distribution. Mandriva SA no longer creates a consumer Linux distribution for desktop PCs, but their
business Linux server projects are based on Mageia code — just like how Fedora and openSUSE provide
code to their enterprise equivalentsArch Linux
Arch Linux is more old school than many of the other Linux distributions here. It's designed to be flexible,
lightweight, minimal, and to "Keep it Simple." Keeping it simple doesn't mean Arch provides tons of
graphical utilities and automatic configuration scripts to help you set up your system. Instead, it means

Arch dispenses with that stuff and gets out of your way.

You're in charge of configuring your system properly and installing the software you like. Arch doesn't

provide an official graphical interface for its package manager or complex graphical configuration tools.

Instead, it provides clean configuration files designed for easy editing. The installation disc dumps you at

a terminal, where you'll need to enter the appropriate commands to configure your system, partition

your disks, and install the operating system yourself.

Arch uses a "rolling release" model, which means any installation image is just a snapshot of the current

software. Every bit of software will be updated over time without you needing to upgrade to a new

"release" of Arch.

This distribution has a bit in common with Gentoo, which was popular at one time. Both Linux

distributions are designed for users who know how their systems work or who are at least willing to

learn. However, Arch uses binary packages while Gentoo had an (unnecessary) focus on compiling every

bit of software from source — this means it's quick to install software on Arch as you don't have to spend

CPU cycles and time waiting for software to compile.

Slackware Linux

Slackware is another institution. Founded in 1993, Slackware is the oldest Linux distribution that's still

maintained and putting out new releases today.

Its pedigree shows — like Arch, Slackware dispenses with all those unnecessary graphical tools and

automatic configuration scripts. There's no graphical installation procedure — you'll have to partition

your disk manually and then run the setup program. Slackware boots to a command-line environment by

default. It's a very conservative Linux distribution.

Puppy Linux

RELATED: Revive Your Old PC: The 3 Best Linux Systems For Old Computers

Puppy Linux is another fairly well-known Linux distribution. Previous versions have been built on Ubuntu,

but the latest is built on Slackware. Puppy is designed to be a small, lightweight operating system that

can run well on very old computers. The puppy ISO file is 161 MB, and Puppy can boot from that disc in a
live environment. Puppy can run on PCs with 256 MB or RAM, although it does recommend 512 MB for
the best experience.
Puppy isn't the most modern and doesn't have all the flashiest bells and whistles, but it can help
you revive an old PC.
How can we install linux operating SystemInstalling Linux using Virtual Machine
This is a popular method to install a Linux operating system. The virtual installation offers you the
freedom of running Linux on an existing OS already installed on your computer. This means if you have
Windows running, then you can just run Linux with a click of a button.
Virtual machine software like Oracle VM can install Ubuntu in easy steps. Let us look at them.
Here the brief steps
PART A) Download and Install Virtual Box
Download Virtual box using this link
Depending on your processor and OS, select the appropriate package. In our case, we have selected
Windows with AMD
Once the download is complete, Open setup file and follow the steps below:
Step-1) Click On nextStep-2) Select you're the directory to install VirtualBox and click on next
Step-3) Select Desktop icon and click on next, now click on yesStep-4) Click On install.
Step-5) Now installation of the virtual box will start. Once complete, click on Finish Button to start
Virtual BoxThe virtual box dashboard looks like this-
Object 1PART B) Download Ubuntu
Visit this link to download Ubuntu.You can select 32/64-bit versions as per your choice.
PART C) Create a Machine in Virtual Box
Step-1) Open Virtual box and click on new buttonStep-2) In next window, give the name of your OS which you are installing in virtual box. And select OS
like Linux and version as Ubuntu 32 bit. And click on nextStep-3) Now Allocate Ram Size To your Virtual OS. I recommended keeping 1024mb (1 GB) ram to run
Ubuntu better. And click on next.Step-4) Now To run OS in virtual box we have to create virtual hard disk, click on create a virtual hard
drive now and click on create button.
The virtual hard disk is where the OS installation files and data/applications you create/install in this

Ubuntu machine will resideStep-5) select VHD (virtual hard disk) option and click on next.Step-6) Click on dynamic allocated and click on next. This means that the size of the disk will increase
dynamically as per requirement.Step-7) Allocate memory to your virtual hard drive .8GB recommended. Click on create button.Step-8) Now you can see the machine name in left panelSo a Machine (PC) with 8GB Hardisk, 1GB RAM is ready.
PART D) Install Ubuntu on the Machine
Step 1) Select the Machine and Click on StartStep 2) Select the Folder OptionStep 3) Select the Ubuntu iso fileStep 4) Click StartStep-5) You have an option to Run Ubuntu WITHOUT installing. In this tutorial will install UbuntuStep-6) Click continue.Step-7) Select option to erase the disk and install Ubuntu and click on install now. This option installs
Ubuntu into our virtual hard drive which is we made earlier. It will not harm your PC or Windows
installationStep-8) Select your location for setting up time zone, and click on continueStep-9) Select your keyboard layout, by default English (US) is selected but if you want to change then,
you can select in the list. And click on continueStep-10) Select your username and password for your Ubuntu admin account. This information has been
needed for installing any software package into Ubuntu and also for login to your OS. Fill up your details
and tick on login automatically to ignore login attempt and click on continueStep-11) Installation process starts. May take up to 30 minutes. Please wait until installation process
completes.Step-12) After finishing the installation, you will see Ubuntu Desktop.

Discussion :

Choose a boot option
1. Step one: Download a Linux OS. (I recommend doing this, and all subsequent steps, on your current PC, not the destination system. ...
2. Step two: Create a bootable CD/DVD or USB flash drive.
3. Step three: Boot that media on the destination system, then make a few decisions regarding the installation.