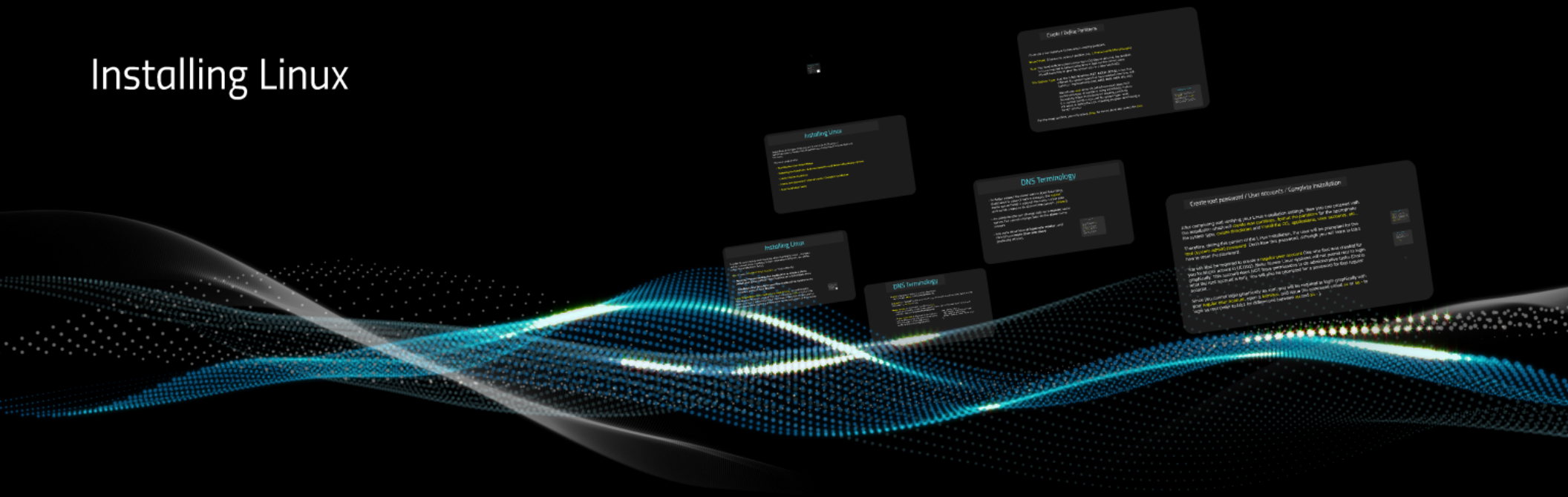
OPS235

Installing Linux



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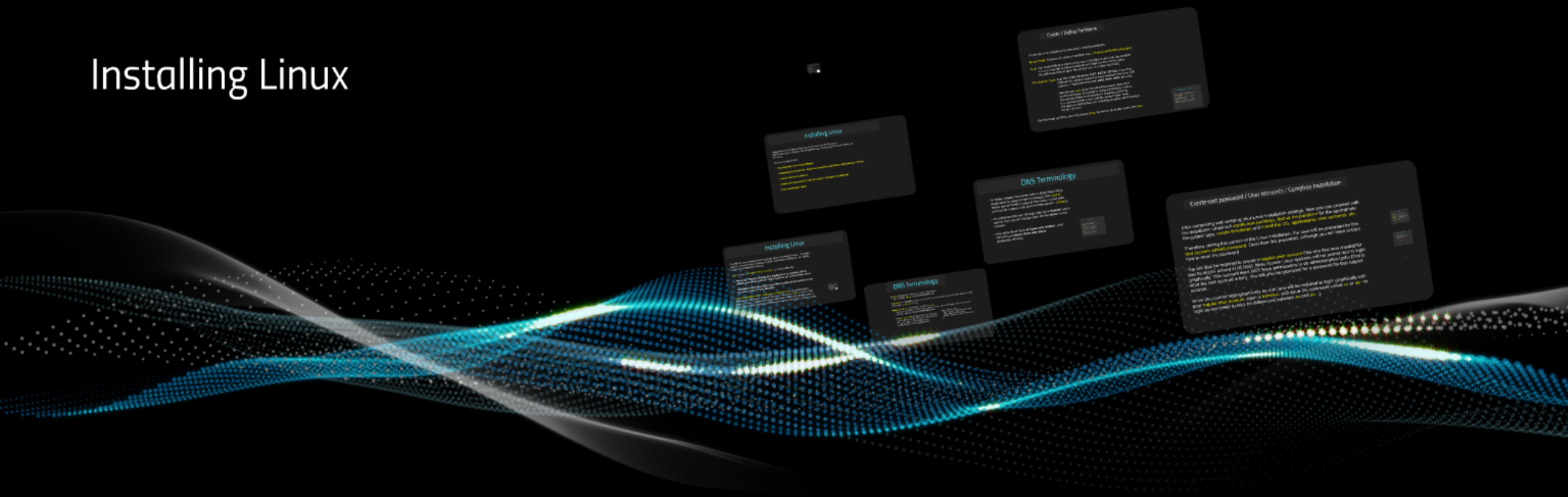


Installing Linux

In order to save money and resources when learning to install, manage, and to connect Linux machines to form networks in OPS235, we will be using Virtual Machines (VMs).

lab1: Create a Centos7 Host machine (c7host) either by:

- **Running VMware workstation Application to create a VM to install your Linux centos7 Host Machine on a Solid State Drive**
- **Installing Linux Directly to your Removable SATA Hard Drive to Create a centos7 Host Machine**

Lab2: Regardless of the method you used in lab1, you will install a Virtualisation Program on your host machine called KVM which will be used to create 3 remaining Virtual Machines (VMs) that will be used to learn about Linux system administration for the remainder of this course.

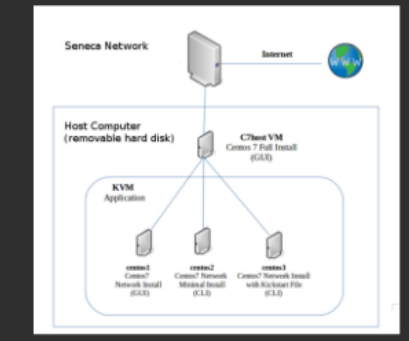
Installing Linux (SATA drive)

The previous Welcome to OPS235 course notes explained the purpose and advantages / limitations of using a removable SATA drive versus a Solid State USB drive.

Basically, these labs support both methods, so no need to worry...

If you are using a removable SATA drive,
you will install Linux on this hard-drive as host machine
(referred to as a bare metal machine) for lab1,
and then in lab2, you will be installing a virtualisation
application called KVM in order to install 3 virtual machines.

Double-click on the image to view the overall
relationship to your hostmachine and virtual machines
when using a removable SATA drive.



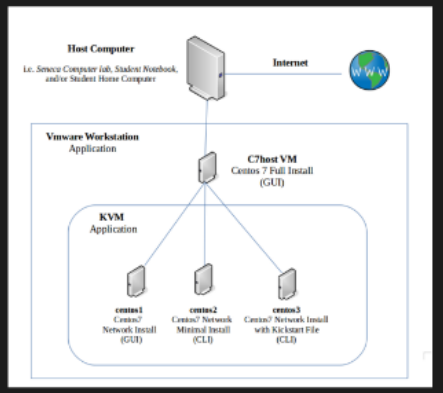
Installing Linux (Solid State Drive)

If you are using a Solid State Drive (SSD)
you will use the VMware Workstation application to
create a host VM for lab1.

In lab2, you will be installing another virtualisation
application called KVM in order to install
3 (nested) virtual machines.

It may seem weird when using SSDs to create a VM
as host, and then nest 3 other VMs, but at this time,
we cannot boot-off the SSD drive (i.e. no choice)

Double-click on the image to view the overall
relationship to your hostmachine and virtual machines
when using a Solid State Drive.



Installing Linux

Regardless of the type of lab you use (removable SATA drive or Solid State Drive), the process of performing a LInux install remains basically the same.

The main steps involve:

- **Booting the Linux install Image**
- **Selecting the Date/Time, Software Selection and Network/Hostname options**
- **Create / Define Partitions**
- **Create root password / User accounts / Complete Installation**
- **Post-Installation Tasks**

Booting the Linux install Image

You can boot and install Linux a number of ways including:

- Linux install DVD
- Download a Linux install image and install (eg. VM)
- Network install

If you are using a removable SATA drive, you obtain a Linux install DVD. You will then setup your machine to boot Linux from the DVD. You can refer to instructions on main OPS235 WIKI to learn how to create a Linux install DVD.

If you are using a Solid State USB drive, you are going to download the Linux install image and create a VM (in VM Workstation) to automatically boot and install Linux for your host machine.

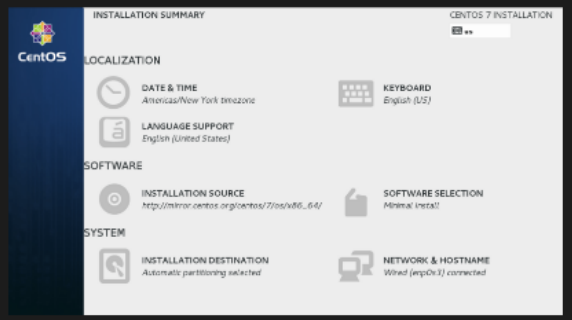
Installation Summary

After the Linux install image boots, it will run a program that will prompt the installer for information to create the Linux server.

First, the installer will prompt the installer for their preferred language to use for installation, and then an installation summary will appear. The installer then selects **sections** in the installation summary screen in order to customize their Linux installation.

Usually these sectons allow the user to specify options and then click or double-click on the done button to return to the main screen

Double-click on the image to view a typical installation summary screen.



Selecting the Date/Time, Software Selection and Network/Hostname

The Date / Time option allows the user to select the time zone for the server.

The software selection option allows the user to select the type of Linux server. Types such as minimal only allow for a text-based Linux server (no graphics). We are going to select the type desktop to provide a graphical server. Although it has graphics, it may lack certain development applications, but they can be installed afterwards.

The Network / Hostname option is VERY important. First of all, the user needs to select the network to be ON. If they don't the system will not automatically connect to the Internet when powered on and will cause problems for updating software, viewing lab instructions, etc!

Also, the user needs to specify the **hostname** c7host under the hostname section at the bottom. Not specifying the correct hostname would cause confusion when relating to hostname references in future labs and may not allow you to pass the lab1 checking script!

Create / Define Partitions

By default, the Linux installation program can automatically create partitions for you. This is NOT recommended for a Linux System Administrator since they may want to custom-design their own partitions.

For example, it is wise to create separate partitions for the Linux operating system (root (/) partition) and the data that is stored under regular user accounts (/home partition). Also, we will be creating a partition to separately store virtual machine images (/var/lib/libvirt/images) and a partition for virtual memory (swap).

Creating separate partitions is preferred for security (e.g. recovering operating system files without losing data, or helping to improve data read/write access)

Create / Define Partitions

There are a few important factors when creating partitions:

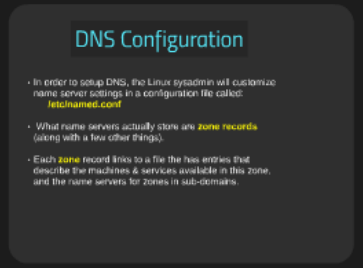
Mount Point: Directory to connect partition (eg. /, /home /var/lib/libvirt/images)

Size: You need sufficient size in order store OS files or data into the partition.
You are required to follow instructions in lab1 for the correct sizes.
We will learn how to grow file system size in a later lab (lab5).

File System Type: Just like in MS Windows (**FAT**, **FAT32**, **NTFS**), Linux has different file system types that have evolved over time with features / improvements (**ext**, **ext2**, **ext3**, **ext4**, **xfs**, etc).

We will use ext4 since xfs (which is newer) does NOT permit shrinkage of partitions using LVM (lab5). Failure to properly follow instructions for creating partitions (i.e. correct partition size and file system type: ext4) will result in failing the lab1 checking program and forcing a "re-do" of lab1!

For the swap partition, you only select swap for mount point and select the size.



Create root password / User accounts / Complete Installation

After completing and verifying your Linux installation settings, then you can proceed with the installation which will create new partitions, format the partitions for the appropriate file system type, create directories and install the OS, applications, user accounts, etc...

Therefore, during this portion of the Linux installation, the user will be prompted for the root (system admin) password. Don't lose this password, although you will learn in lab3 how to reset the password.

You will also be required to create a regular user account (like one that was created for you for Matrix acount in ULI101). Note: Newer Linux systems will not permit root to login graphically. This account does NOT have permissions to do administrative tasks (that is what the root account is for!). You will also be prompted for a password for that regular account.

Since you cannot login graphically as root, you will be required to login graphically with your regular user account, open a terminal, and issue the command called su or su - to login as root (refer to lab1 for differences between su and su -).

Post-Installation Tasks

After installing your Linux host, there are several things you should perform including:

- Turning off Locked Screensaver (i.e. an annoyance)
- Test for Connection to the Internet (eg. run Firefox and test-out)
- Launching a Bash Terminal
- Accessing Administrative Rights (eg. su or su -)
- Disable SELinux (to initially prevent networking "headaches")
- Running essential post-install commands:
    - uname, hostname, ps -ef, rpm, ifconfig, route, nslookup

- In the next slide show on lab1 (Bash Shell Scripting), we will demonstrate basic shell scripting techniques, and learn how to create a Linux System Information Report via a Bash Shell Script.