

Creating Virtual Machines

Module 3 | Activity 1



Introduction

In this activity, your team will be configuring a virtual machine that will run Kali Linux, which is a Linux distribution designed for security professionals. Within your club or class, break up into teams. Each team will work together to configure a virtual machine that will be used throughout the semester for other modules and activities.

Getting Started

Logging In

Navigate to the ISELab environment, available [here](#).

Click on the blue [Launch vSphere Client](#) button.

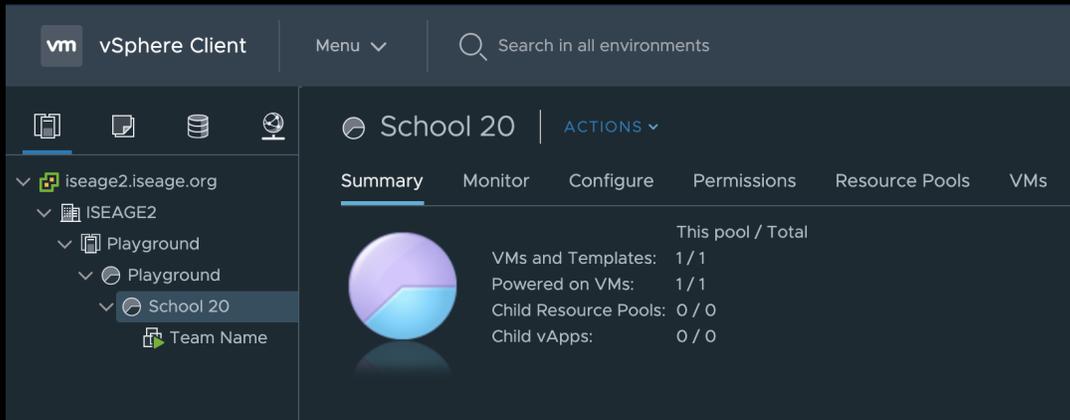
Enter your school's login information to continue.

Once you've been authenticated, find your school's resource pool

Refer to the image below to see what this looks like.

As a heads up, the following examples will use the School 20 account, but your school will have their own number. You might be School 19 or School 51.

Resource Pool



The screenshot shows the vSphere Client interface for the 'School 20' resource pool. The left sidebar shows a tree view with the following structure:

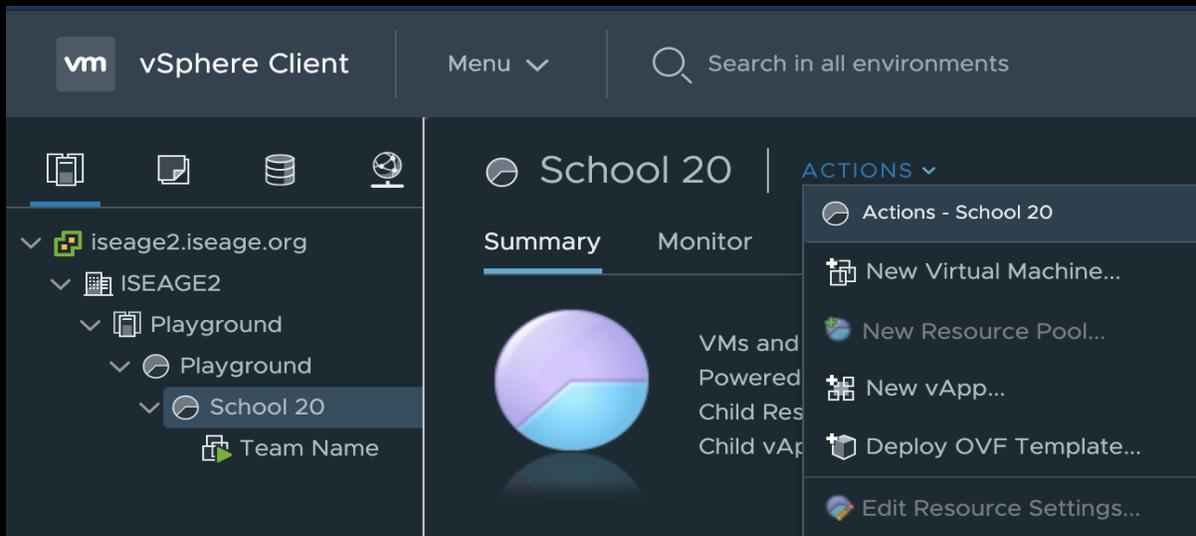
- iseage2.iseage.org
 - ISEAGE2
 - Playground
 - Playground
 - School 20
 - Team Name

The main content area shows the 'School 20' resource pool summary:

Summary		Monitor	Configure	Permissions	Resource Pools	VMs
		This pool / Total VMs and Templates: 1 / 1 Powered on VMs: 1 / 1 Child Resource Pools: 0 / 0 Child vApps: 0 / 0				

Creating a New Machine

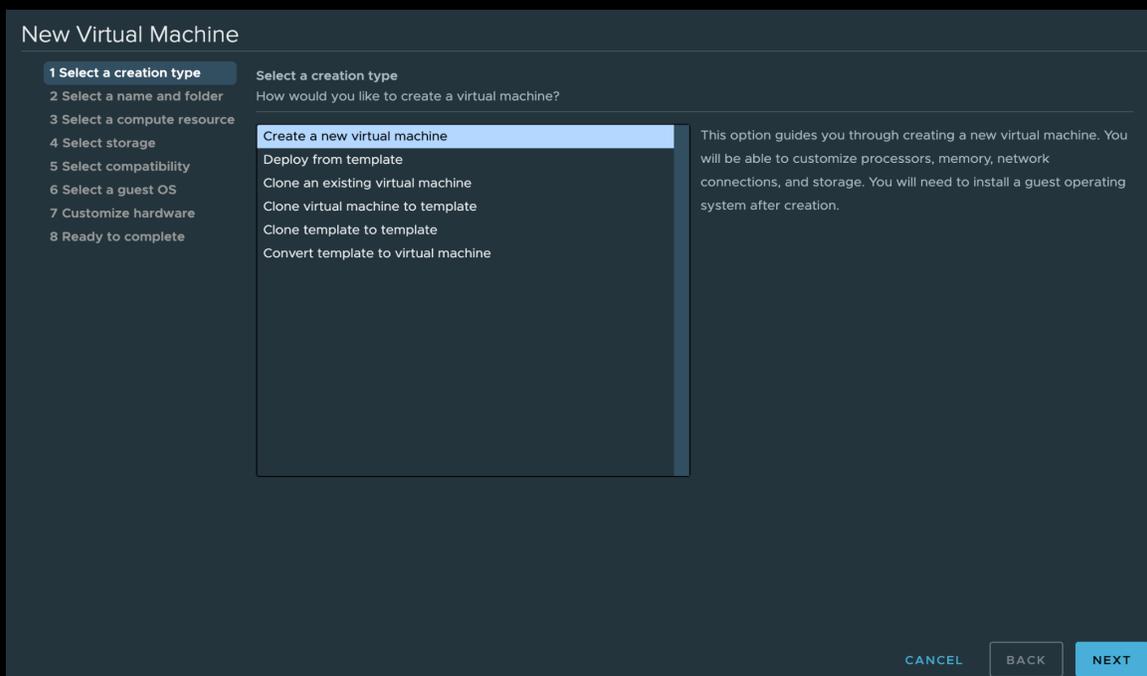
Under the Actions menu click on New Virtual Machine.



The screenshot shows the vSphere Client interface for the 'School 20' resource pool. The left sidebar shows the same tree view as the previous screenshot. The main content area shows the 'School 20' resource pool summary. The 'ACTIONS' menu is open, showing the following options:

- Actions - School 20
- New Virtual Machine...
- New Resource Pool...
- New vApp...
- Deploy OVF Template...
- Edit Resource Settings...

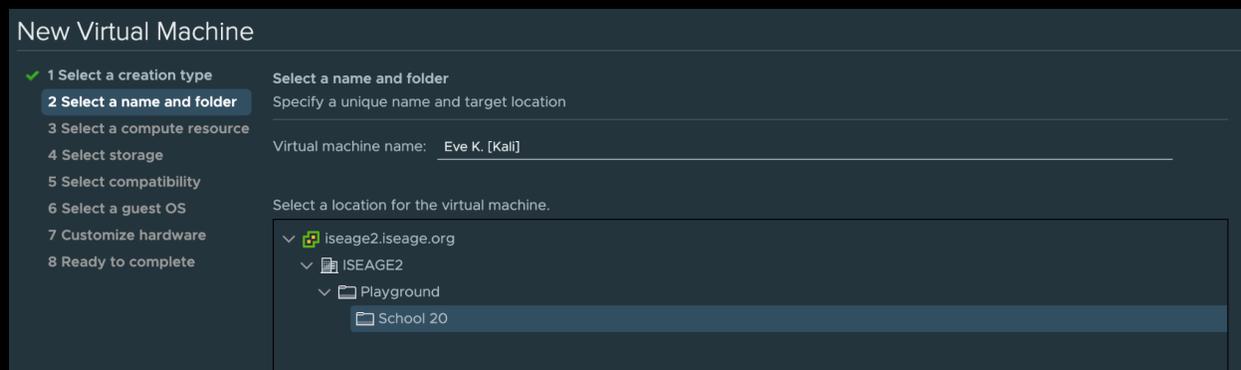
On this screen, simply click Next, while keeping the Create a New Virtual Machine option highlighted.



Step two requires you to name your machine and select the folder where it will be placed.

Please ensure that the name is unique and school appropriate. Attach the word Kali in brackets at the end to make it easily distinguishable from other machines you will be using in the future.

Select your school's folder and click Next.





Step three will ask you to select a compute resource or resource pool. Which is School 20, once selected click Next.

New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource**
- 4 Select storage
- 5 Select compatibility
- 6 Select a guest OS
- 7 Customize hardware
- 8 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

- ISEAGE2
 - Playground
 - Playground
 - School 20**

Please select the freenas-hs storage option in step four. Click Next.

New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Select storage**
- 5 Select compatibility
- 6 Select a guest OS
- 7 Customize hardware
- 8 Ready to complete

Select storage
Select the storage for the configuration and disk files

VM Storage Policy:

Name	Capacity	Provisioned	Free	Type	Cluster
freenas-hs	2.42 TB	1.61 TB	1.46 TB	VMFS 6	
highschool-forces-thin-p...	1.68 TB	2.35 TB	1.18 TB	NFS v3	
ISO Datastore	117.12 GB	105.01 GB	12.12 GB	NFS v3	

Select the latest VMware Hypervisor version ESXi 6.7 and later. Click Next.

New Virtual Machine

- 1 Select a creation type
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Select storage
- 5 Select compatibility**
- 6 Select a guest OS
- 7 Customize hardware
- 8 Ready to complete

Select compatibility
Select compatibility for this virtual machine depending on the hosts in your environment

The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the virtual machine.

Compatible with:

This virtual machine uses hardware version 14, which provides the best performance and latest features available in ESXi 6.7.

You will now select the guest OS. We are going to be running Linux, and since Kali Linux is Debian based, make the corresponding selections from the dropdown menu. Click Next.

New Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- 6 Select a guest OS**
- 7 Customize hardware
- 8 Ready to complete

Select a guest OS
Choose the guest OS that will be installed on the virtual machine.

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.

Guest OS Family:

Guest OS Version:

In step seven, click on the New Hard disk tab and select Thin Provision. Which is a memory-conserving configuration.

New Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- 7 Customize hardware**
- 8 Ready to complete

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

> CPU	1	▼	
> Memory	2	▼	GB ▼
▼ New Hard disk *	16	▼	GB ▼
Maximum Size	1.46 TB		
VM storage policy	▼		
Location	▼		
Disk Provisioning	Thick Provision Lazy Zeroed Thick Provision Eager Zeroed ✓ Thin Provision		
Sharing	Unspecified ▼		
Shares	Normal ▼	1000	
Limit - IOPs	Unlimited ▼		

Don't click the big blue Next button just yet!!!

We are still on step seven, but to change the network your machine is connected to, scroll down slightly and you will see a New Network sub-menu. Connect to the Playground network. If you don't see it, you might have to click the dropdown menu and click Browse before it becomes visible. Also ensure that the Status Connect At Power On is enabled.

New Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- 7 Customize hardware**
- 8 Ready to complete

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

ADD NEW DEVICE

> New SCSI controller *	VMware Paravirtual
∨ New Network *	Playground DVS
Status	<input checked="" type="checkbox"/> Connect At Power On
Adapter Type	VMXNET 3

Since we're not quite done we now need to select a download source for our operating system. Click on the dropdown menu for New CD/DVD Drive where it says Client Device and you will want to change that to Datastore ISO File.

New Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- 7 Customize hardware**
- 8 Ready to complete

Customize hardware
Configure the virtual machine hardware

Virtual Hardware VM Options

ADD NEW DEVICE

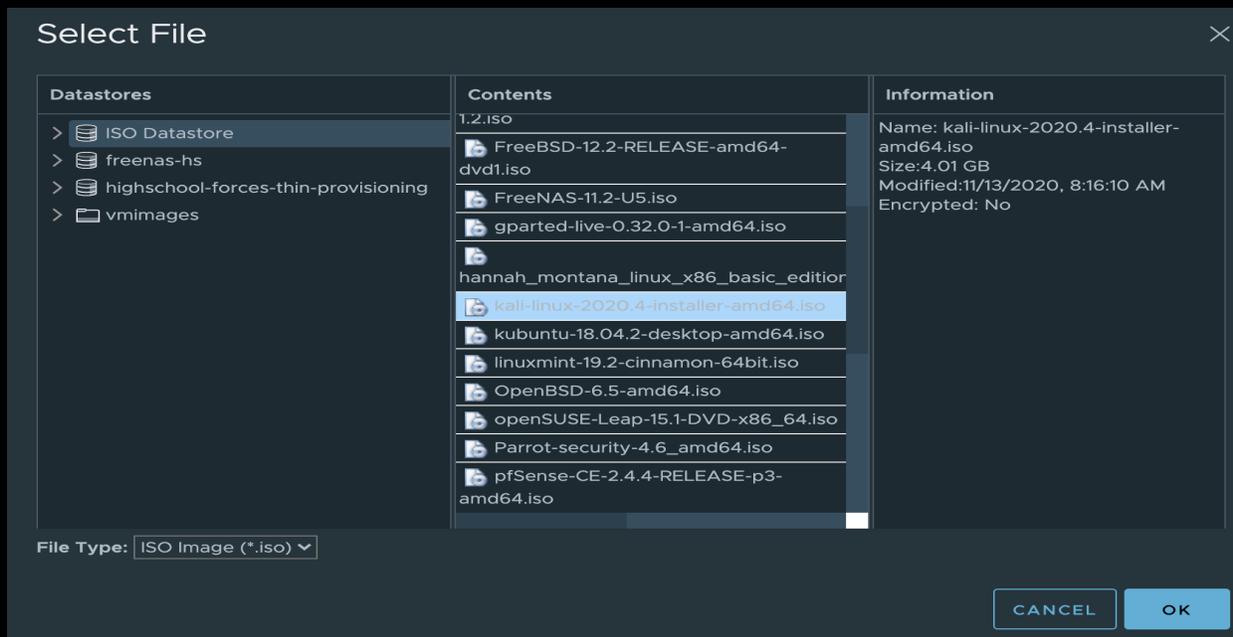
> New Network *	Playground DVS	<input checked="" type="checkbox"/> Connect...
∨ New CD/DVD Drive *	Client Device	
Status	<input type="checkbox"/> Connect At Power On	

Clicking on the Datastore ISO File option will take you to another menu that looks like the following. Under ISO Datastore, be sure to select the kali linux amd 64 option.

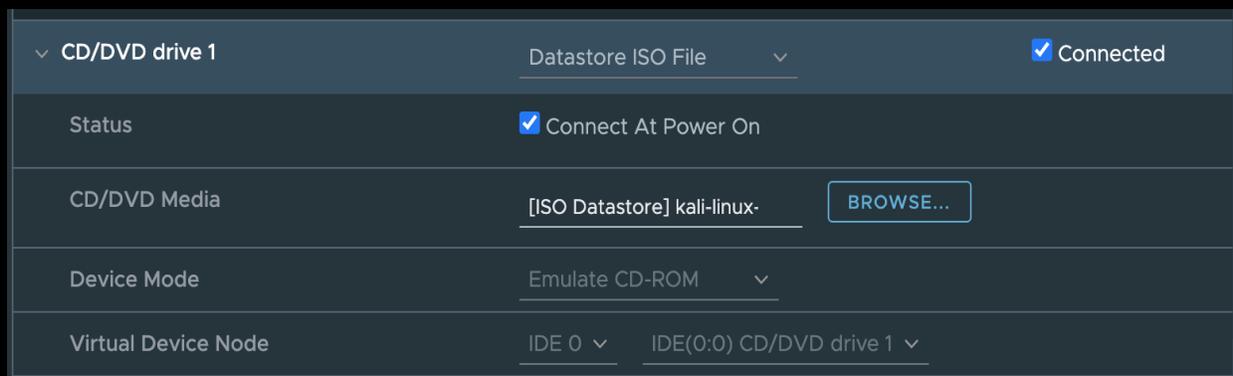
Yes, Hannah Montana Linux is a real thing.

Kinda cool, kinda weird.

Click OK.



Make sure you also check/enable Connect at Power On, for this change. As shown below.





In step eight, all you have to do is look through the summary page and click Finish.

New Virtual Machine

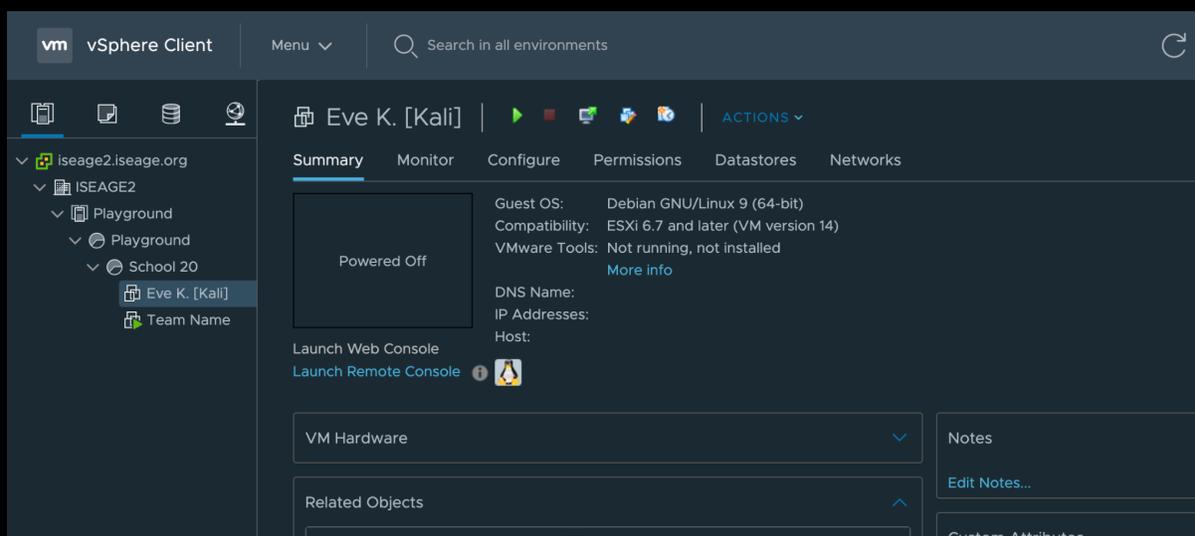
- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- ✓ 7 Customize hardware
- 8 Ready to complete**

Ready to complete
Click Finish to start creation.

Provisioning type	Create a new virtual machine
Virtual machine name	Eve K. [Kali]
Folder	School 20
Resource pool	School 20
Datastore	freenas-hs
Guest OS name	Debian GNU/Linux 9 (64-bit)
Virtualization Based Security	Disabled
CPUs	1
Memory	2 GB
NICs	1
NIC 1 network	Playground DVS (Infrastructure)
NIC 1 type	VMXNET 3
SCSI controller 1	VMware Paravirtual
Create hard disk 1	New virtual disk

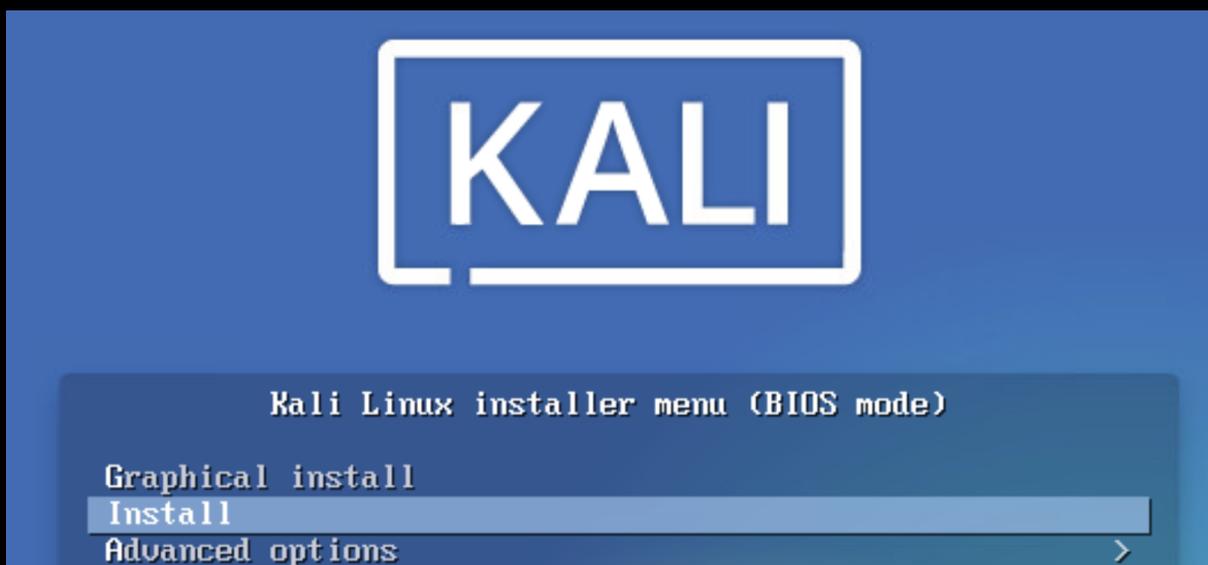
CANCEL BACK FINISH

Starting Your VM



Your Kali VM should now be visible on the main page of the playground. Now click on the green play button on your own machine and then click Launch Remote Console. This will open up a new window in your browser, and we will begin the installation process.

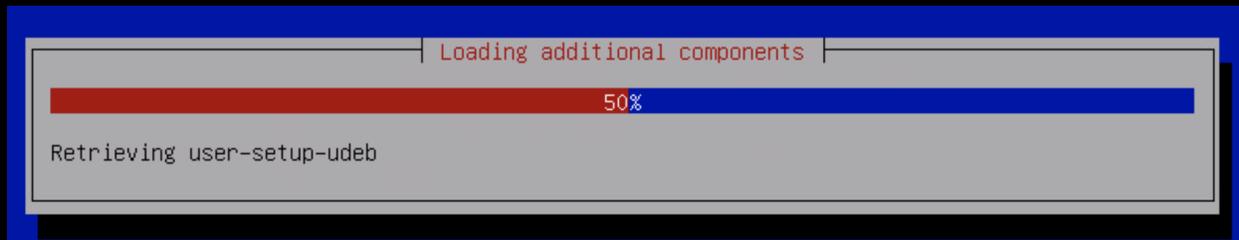
A blue menu is the first thing you should see, it is the Kali Linux installer menu. Use the arrow keys to move down to the Install option and press Enter.



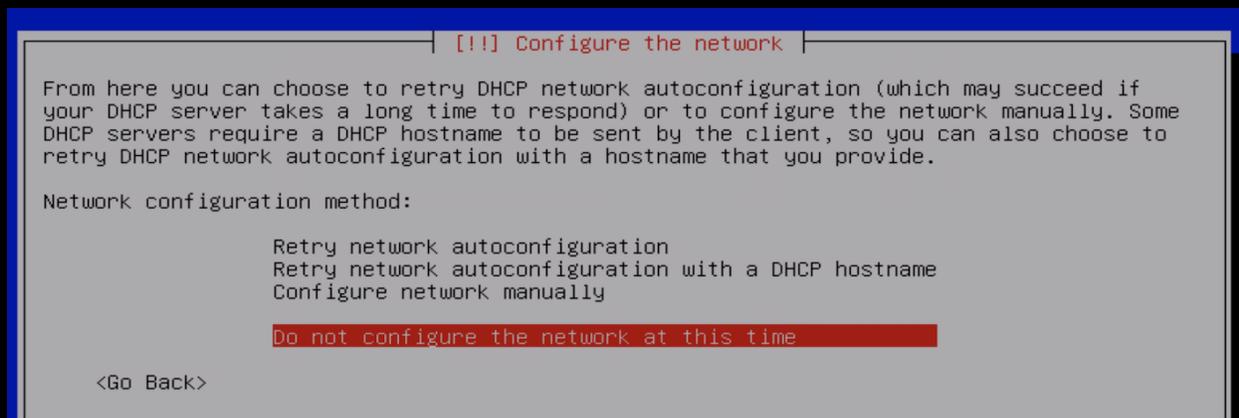


In the language select screen, select English and press Enter.
Select the United States as your geographic location.
Select the American English Keyboard layout and press Enter.

After those last three steps, you will see a loading screen similar to the following...



You will get an error stating that the network autoconfiguration failed. Which is OK. We will take care of this later. For now, simply press Enter. And then select the Do not configure... option in the following screen immediately after the error.





Choose a hostname for your Kali machine. Continue to the next step.

[!] Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

kali

<Go Back> <Continue>

In this step, enter a name for the new user. It's not important that you enter your full name.

[!!] Set up users and passwords

A user account will be created for you to use instead of the root account for non-administrative activities.

Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.

Full name for the new user:

Eve

<Go Back> <Continue>

Select a username and proceed to the next step.
Please write it down!

[!!] Set up users and passwords

Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.

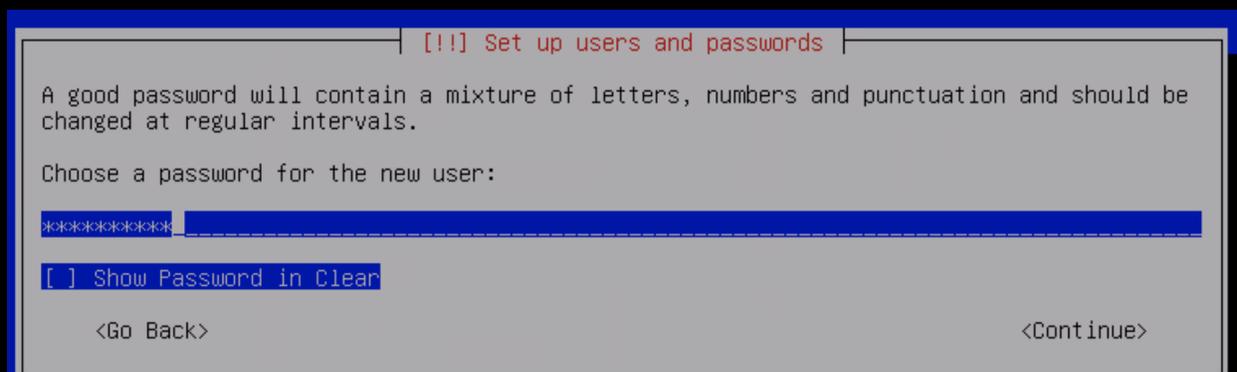
Username for your account:

eve

<Go Back> <Continue>



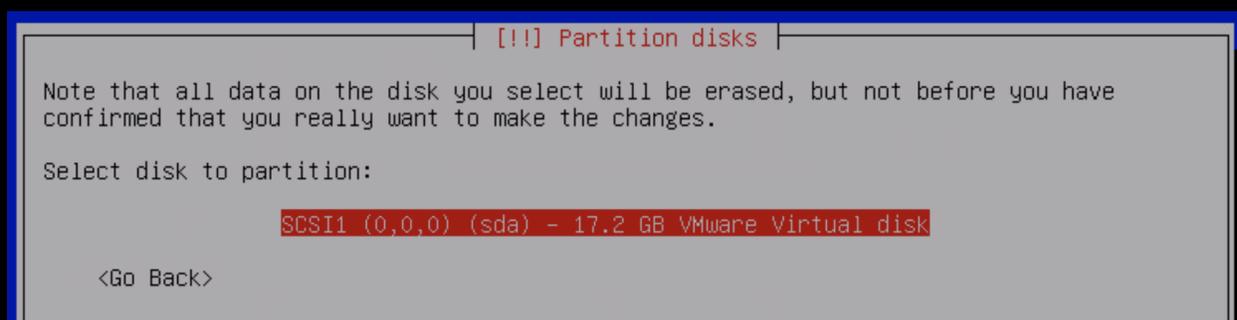
Enter a password you can remember.
You will need it soon. So make sure you scribble it down
somewhere!



The next step will ask you for your time zone.
After selecting central time, you will be asked about Partition
Disks. Select the option where you use the entire disk.



<Continue>, it's the only option available.





Select the best option for new users.

```
[!!] Partition disks

Selected for partitioning:

SCSI1 (0,0,0) (sda) - VMware Virtual disk: 17.2 GB

The disk can be partitioned using one of several different schemes. If you are unsure,
choose the first one.

Partitioning scheme:

All files in one partition (recommended for new users)
Separate /home partition

<Go Back>
```

Hold on a little bit longer, we're almost done! On this screen, write the new changes to the disk and press continue.

```
[!!] Partition disks

This is an overview of your currently configured partitions and mount points. Select a
partition to modify its settings (file system, mount point, etc.), a free space to create
partitions, or a device to initialize its partition table.

Guided partitioning
Configure software RAID
Configure the Logical Volume Manager
Configure encrypted volumes
Configure iSCSI volumes

SCSI1 (0,0,0) (sda) - 17.2 GB VMware Virtual disk
#1 primary 16.2 GB f ext4 /
#5 logical 1.0 GB f swap swap

Undo changes to partitions
Finish partitioning and write changes to disk

<Go Back>
```

Write the changes to disks? Yes.

```
[!!] Partition disks

If you continue, the changes listed below will be written to the disks. Otherwise, you
will be able to make further changes manually.

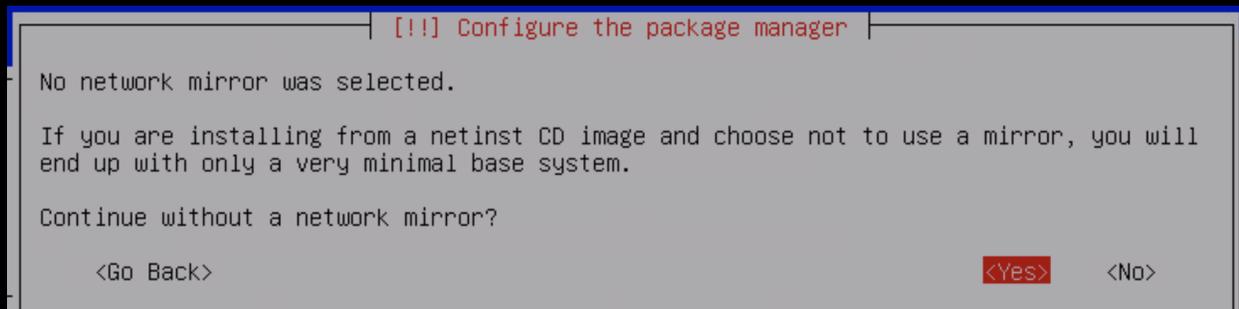
The partition tables of the following devices are changed:
SCSI1 (0,0,0) (sda)

The following partitions are going to be formatted:
partition #1 of SCSI1 (0,0,0) (sda) as ext4
partition #5 of SCSI1 (0,0,0) (sda) as swap

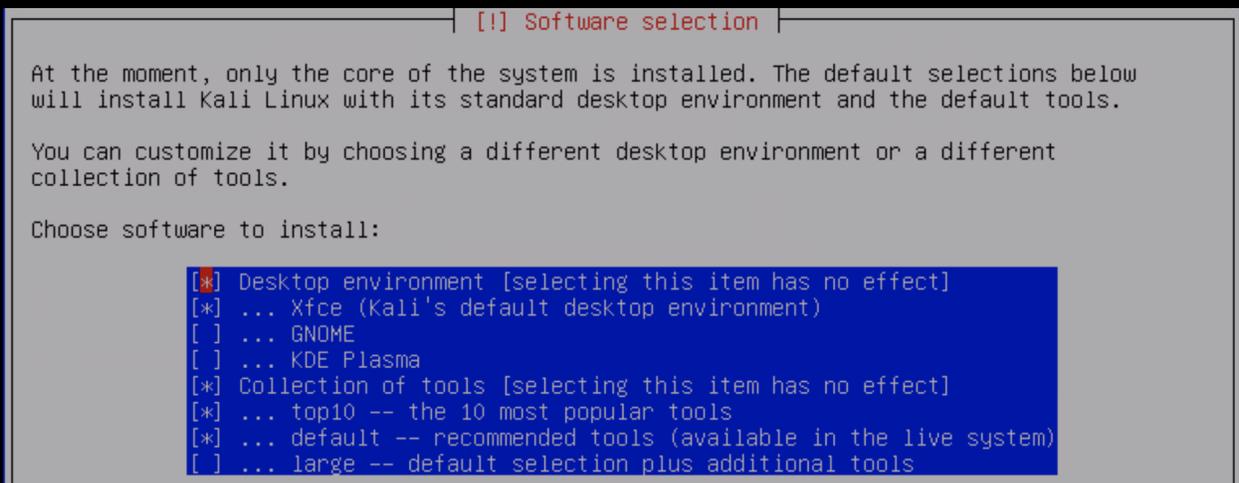
Write the changes to disks?

<Yes> <No>
```

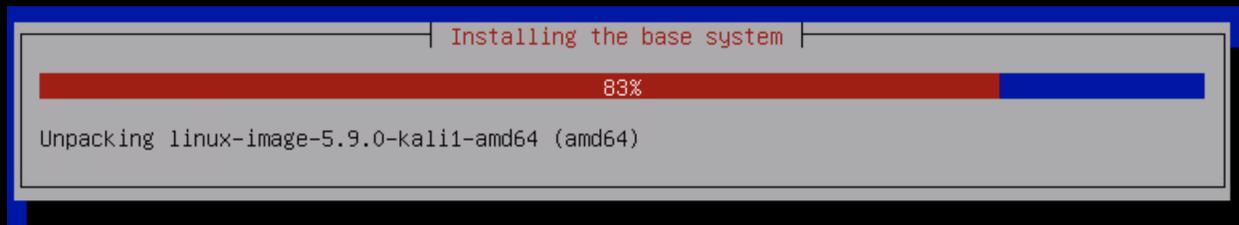
Configure the package manager to continue without a network mirror.



Keep the red bubble on the first option and continue.



The following screen will then show up and the installation process will take about 15-minutes to complete. Sowwy :(





Select Yes when asked if you want to install the GRUB boot loader to your primary device.

[!] Install the GRUB boot loader

It seems that this new installation is the only operating system on this computer. If so, it should be safe to install the GRUB boot loader to your primary drive (UEFI partition/boot record).

Warning: If your computer has another operating system that the installer failed to detect, this will make that operating system temporarily unbootable, though GRUB can be manually configured later to boot it.

Install the GRUB boot loader to your primary drive?

<Go Back> <Yes> <No>

Select the /dev/sda option.

[!] Install the GRUB boot loader

You need to make the newly installed system bootable, by installing the GRUB boot loader on a bootable device. The usual way to do this is to install GRUB to your primary drive (UEFI partition/boot record). You may instead install GRUB to a different drive (or partition), or to removable media.

Device for boot loader installation:

Enter device manually
/dev/sda

<Go Back>

Installation complete. Press Enter to continue. You will then be redirected to your machine's boot-screen prompts.

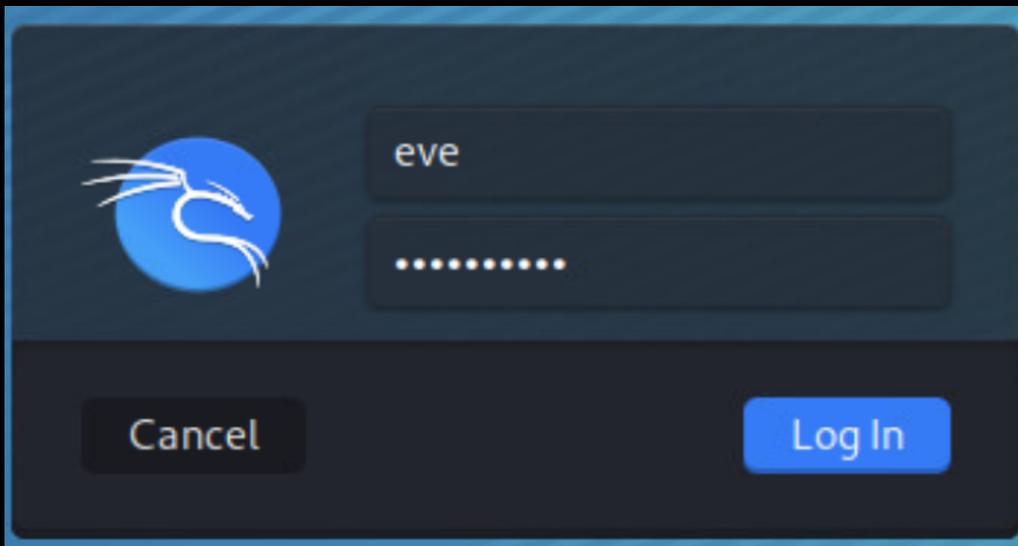
[!] Finish the installation

Installation complete

Installation is complete, so it is time to boot into your new system. Make sure to remove the installation media, so that you boot into the new system rather than restarting the installation.

<Go Back> <Continue>

Enter your credentials from before to log in.



Congratulations! Your team has successfully installed your very own Virtual Machine running Kali Linux, one of the world's leading security platforms. Feel free to look around and explore this Linux distribution.

Note: To search for a program that is not immediately on your screen, click on the blue dragon icon on the upper left corner to view a menu.

