



Virtual Machines

Module 3

Module 3 Agenda

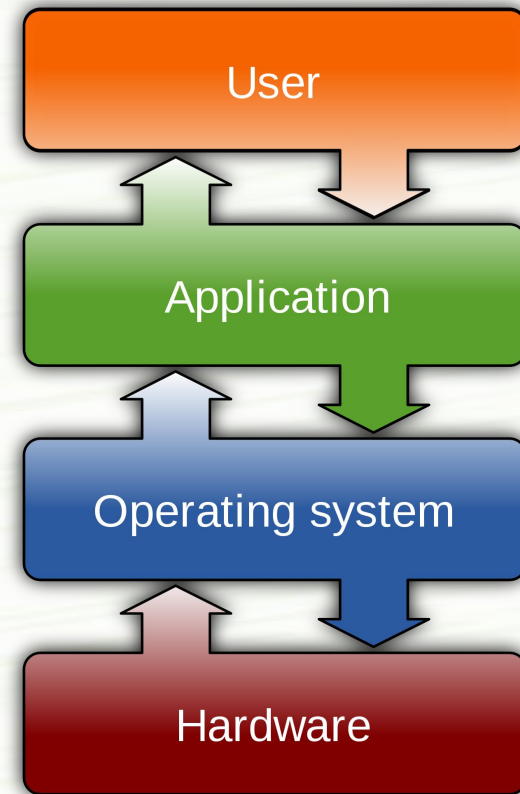
- Demystifying Computers
- VMs
- Virtual Machines in ISELab
- Virtual Machine Snapshots
- To Do

Demystifying Computers

Demystifying Computers

The Four Layers of Computers

- Hardware
- Operating System
- Applications/Software
- User(s)



Demystifying Computers

Hardware

- The physical components that make up the computer system
 - For example: motherboard, hard drive, DVD drive, mouse, monitor, keyboard, connection, etc.

Operating System

- A complex coded program embedded in computers
 - For Example: Windows OS, Mac OS X, Linux
- Controls all the operations of the computer and its interactions with user, hardware, and applications

Demystifying Computers

Applications/ Software

- Installed computer programs that offer specific functions
 - For Example: MS Word, Email, Google Chrome.

User

- You!
Or anyone else behind the computer.

Demystifying Computers

Watch the following [video](#) for a better understanding of computers. . .



<https://youtu.be/0EoY5bGSAtI>



The Internet and Virtual Machines

The Internet and VMs

- In the modern world, the internet is almost ever-present.
- A highly useful technological development in the area of computing has been the ability to simulate a computer within another computer.
- We are able to emulate and access additional machines through the internet without actually having to buy another physical computer.
- These computers within computers are known as virtual machines.
- In this module's activity you will learn how to set up your own VM. Within ISELab, the virtual playground.

The Internet and VMs

Why should we embrace virtual machines?

- More efficient use of hardware, this means allocating resources only where they are necessary.
- Greater power efficiency
- Virtual machines help us save physical space
- Reduced setup time, setting up duplicate virtual machines can be done easily!
- OS flexibility → Application flexibility

Virtual Machines

Virtual Machines

Virtual Machines in ISELab:

- You will soon begin to set up your own virtual machines in the ISELab testing environment.
- These machines will run a Linux distribution named Kali Linux
- Kali Linux is used by security professionals worldwide.
- This “flavor” of Linux contains a number of pre-installed tools for hackers.
- We will use Kali to apply our skills.

Virtual Machines

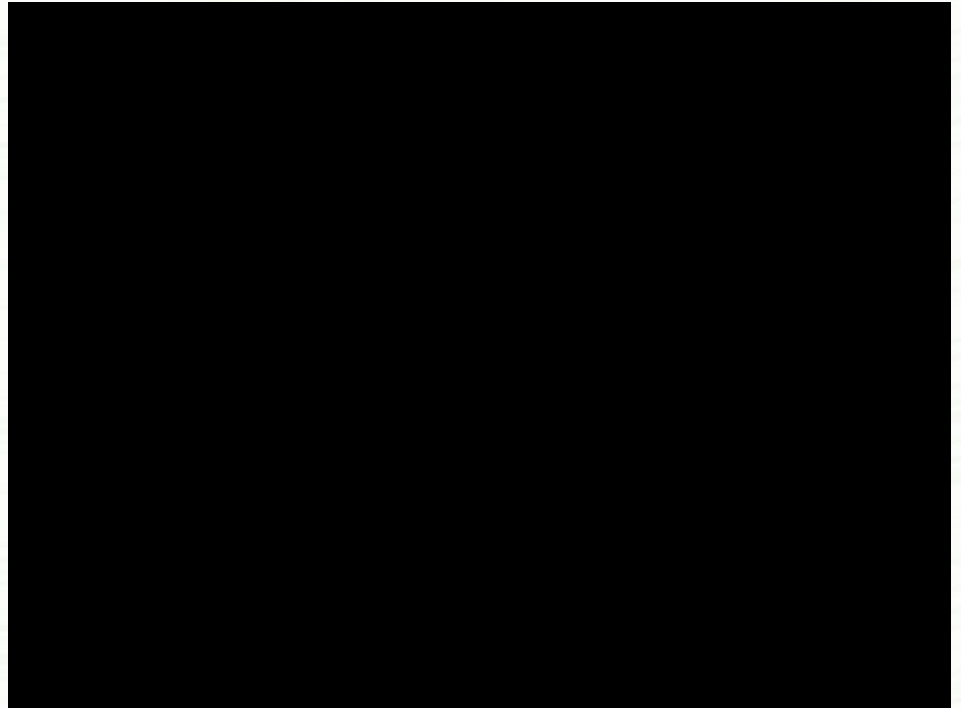
Teams

- It is recommended that you pair up with two other people in your club to form a mini team while working through the IT-Adventures modules and the activities.
- Some modules are more challenging than others, and it is always helpful to have a team of people working on a problem together than separately.
- During the cyber defense competition, your entire club will be its own team working to defend yourselves against the red team.

Virtual Machines

Setting up your VM:

- The following video has an overview of how to install a VM, for your reference.
- Follow the module activity for the most up-to-date guide.
- [Video](#)
- Watch it to get an idea of what you'll be doing.



Virtual Machine Snapshots

Virtual Machine Snapshots

- Taking a snapshot of your virtual machine is similar to taking a photograph. The event or memory is “frozen” in time forever for you to refer to in the future.
- Being able to revert back to a previous snapshot is an incredibly useful ability that saves us a lot of time and heartache. If something goes wrong, we do not always have to start from scratch.
- More on this in Module 3 Activity 2.

To Do

- ❑ Watch the video of how to set up a VM
- ❑ Complete Activity One
- ❑ Complete Activity Two
- ❑ Complete Module 3 Check your Knowledge! Worksheet

End of Module 3!

What questions do you have?

Next Module Topic:

Navigating the File System

Questions?

Contact IT-Adventures support staff!

email:

ita@iastate.edu

Your school's IP-Range can be found at:

<http://www.it-adventures.org/ip-ranges/>