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.
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 $\rightarrow$ 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/