المؤسسة العامة للتدريب التقني والمهني
Technical and Vocational Training Corporation

AL KHABEER
معهد الخبير التربوي للتدريب

أمن المعلومات

Kali liunx

Course Outlines

✓ As **the course title states**, the focus of this course is to explore the skills of using kali Linux distribution for cybersecurity specialist.

In this course, you will do the following:

- Understand the need for cybersecurity.
- Understand virtual environments and virtual machines.
- Explore and understand the fundamentals of Kali Linux.
- How to setup your pen testing Lab using virtual systems.
- How to setup your portable pen testing Lab using Raspberry Pi.
- Explore different tools for system security testing on Kali.
- Understand of the basics of ethical hacking and penetration testing.

Attention !

THE CONTENTS OF THIS PRESENTATION FOR EDUCATION PURPOSE ONLY

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More Learn, More Power

The Real Experience = Hands On and Troubleshooting

No System is 100 % secure

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Introduction to Kali Linux

Kali Linux

- ✓ **Kali Linux** is a Debian-based Linux distribution aimed at advanced Penetration Testing and Security Auditing.
- ✓ **Kali Linux** contains several hundred tools which are geared towards various information security tasks, such as Penetration Testing, Security research, Digital Forensics and Reverse Engineering.
- ✓ **Kali Linux** is developed, funded and maintained by Offensive Security, a leading information security training company.

✓ Kali Linux is one of the best open-source security packages of an ethical hacker, containing a set of tools divided by categories.

✓ Kali Linux can be installed in a machine as an Operating System.

✓ Kali Linux was released on the 13th March 2013 as a complete, top-to-bottom rebuild of BackTrack Linux, adhering completely to Debian development standards.

✓ Kali Linux can run on a wide variety of hardware, is compatible with numerous wireless and USB devices, and also has support for ARM devices

✓ Kali Linux include several tools, for example, and not limited to:

- Metasploit for network penetration testing,
- Nmap for port and vulnerability scanning,
- Wireshark for monitoring network traffic,
- Aircrack-Ng for testing the security of wireless networks.

Customized Linux Distribution For Cybersecurity, Why?

- A **custom security distribution of Linux** can be created for security purpose with just the tools needed for testing.

  ✓Packet Capture (Wireshark)

  ✓Malware Analysis Tools

  ✓Intrusion Detection Systems (IDSs)

  ✓Firewalls

  ✓Penetration testing tools

Linux Operating System

- ## Understanding Linux
  - **Linux** is open source, fast, reliable and small and requires very little hardware resources to run.
  - **Linux** is part of several platforms; from wristwatches to supercomputers.
  - **Linux** distributions include the Linux kernel, plus a number of customized tools and software packages.
  - Debian, Red Hat, Ubuntu and Slackware are just a few examples of Linux distributions.
  - **Raspbian** is a Linux distribution based on Debian and created specifically for the Raspberry Pi.
- ## Accessing the Linux Shell
  - The Linux operating system can be divided into kernel and shell.
  - The shell is a command interpreter.
  - The shell is text based and also called CLI (command line interface

Linux Operating System (Cont.)

- **Accessing the CLI**
  - The CLI can be accessed directly through a shell in non-graphical systems.
  - A terminal emulator application can be used to access the CLI in graphical environments.
  - Popular terminal emulators on Linux are **Terminator**, **eterm**, **xterm**, **console**, and **gnome-terminal**.
- **Basic Linux Commands**
  - Linux commands are programs created to perform a specific task.
  - To invoke a command via shell, simply type its name.
  - **grep**, **ifconfig**, **iwconfig**, **passwd** and **pwd** are a few basic Linux commands.
  - Commands can be piped together, using the output of one as the input of the other.

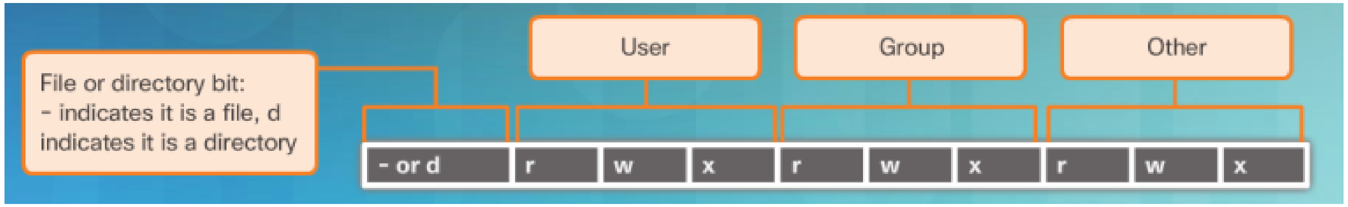
Linux Operating System (Cont.)

Process Managing Commands

- In Linux, a process is any task or command being executed by the system.
- PIDs are unique numbers assigned to processes for identification.
- **ps** and **kill** are commands used to manage processes.

File Permissions

- In Linux, most everything is treated as a file.
- File Permissions provide a mechanism to define permissions to files.
- Possible permissions rights are **Read**, **Write**, and **Execute** and can be defined for the user who owns the file, the group, and other system users.
- The root user can override file permissions.



File or directory bit:
– indicates it is a file, d indicates it is a directory

Working with Text Files

- There are many text editors available in Linux.
- Some text editors are for the CLI only, like vi, vim, and nano.
- Other text editors, like gedit, are GUI-based.
- CLI text editors allow system management remotely, such as via SSH.

Importance of Text Files in Linux

- In Linux, everything is treated as a file, this includes the memory, the disks, the monitor, the files, and the directories.
- The operating system as well as most programs are configured by editing the configuration files which are text files.
- Editing system or application configuration files requires super user (root) privileges. This can be accomplished with the sudo command.

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Basic of hacking concept for Penetration Testing

What is Cybersecurity?

✓ Protection of networked system and data from unauthorized use or harm.

Levels of Cybersecurity

❑ **Personal level**

✓ You need to safeguard your identity, your data, and your computing devices.

❑ **Corporate level**

✓ It is everyone’s responsibility to protect the organization’s reputation, data, and customers.

❑ **State level**

✓ National security, and the safety and well-being of the citizens are at stake.

Proactive and Reactive Security

There are two basic methods of dealing with security breaches:

- ❑ **Reactive Method** is **passive**; when a breach occurs, you respond to it, doing damage control at the same time **you track down how the intruder or attacker got in and cut off** that means of access so **it will not happen again**.

- ❑ **Proactive Method** is **active**; instead of waiting for the hackers to show you where you are vulnerable, **you put on your own hacker hat in relation to your own network** and **set out to find the vulnerabilities yourself**, before **anyone else discovers and exploits them**.

✓ **The best security strategy** employs both **reactive** and **proactive** mechanisms. **IDS**, for example, are **reactive in that they detect suspicious network activity so that you can respond to it appropriately.**

Attacks and Cybercrimes

✓ Cybercrimes is a term used to describe the criminal activity in which computers or networks are a tool, a target or a place of criminal activity.

✓ Cybercrime is defined as any illegal act involving a computer, its system, or its applications.

✓ Cybercrime Types:

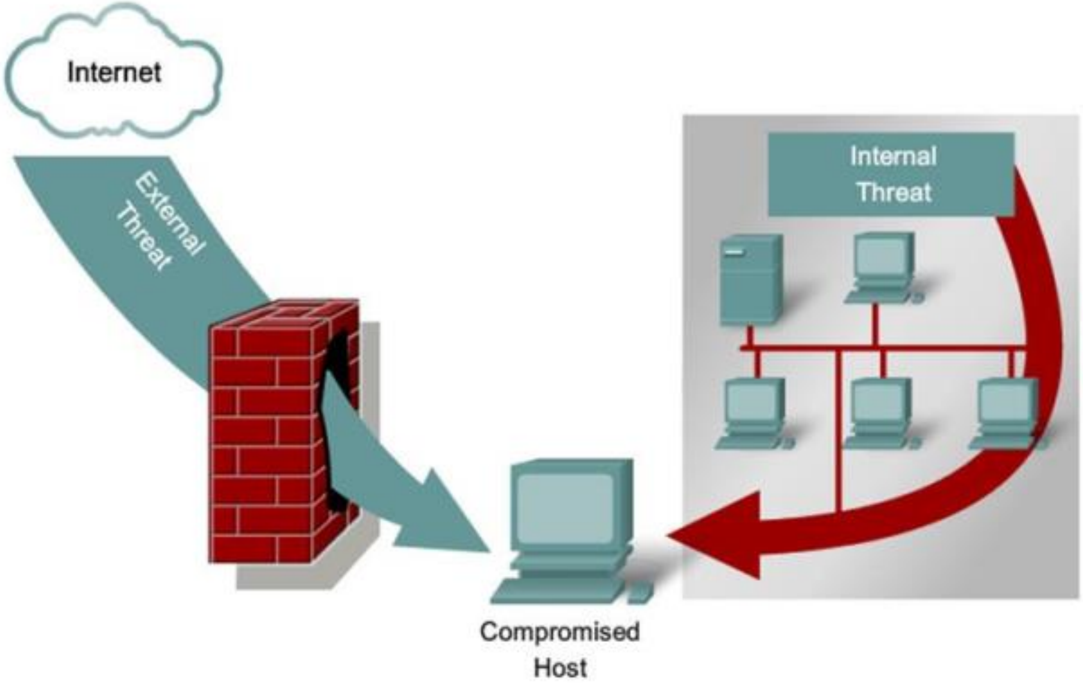
- ✓ Crime against a computer system
- ✓ Computer as a tool to commit the crime

Modes of Attacks

Cybercrimes can be classified based on the line of attack

1. Internal Attacks

2. External Attacks



Software Requirements for Testing Lab

- ✓ **Virtualization Software:** VMware Workstation/Oracle VirtualBox
- ✓ Kali Linux Virtual Machine (VM)
- ✓ Metasploitable VM (**optional**)
- ✓ Windows XP VM