# INTRODUCTION

Linux, an open-source operating system renowned for its stability, flexibility, and security, offers a powerful foundation for various computing environments. Built upon the Linux kernel, it emphasizes modularity, a command-line interface (CLI), and user-level customization. The Linux kernel directly interacts with hardware, manages system resources, and facilitates software-hardware communication. With its prominent command-line interface, Linux empowers users with fine-grained control, task automation through shell scripting, and an extensive array of command-line tools and utilities. Its open-source nature fosters collaboration, resulting in continuous improvements, rapid bug fixes, and a diverse range of software options. Whether for beginners or experienced users, understanding the fundamentals of Linux is crucial for effectively utilizing this versatile operating system.

# SYSTEM INFORMATION

# TASKS

Find out the machine hardware name and submit it as the answer.

Use the command uname -a. ans X86\_64

What is the path to htb-student's home directory?

Use pwd. Ans /home/htb-student.

What is the path to the htb-student's mail?

The next we can use the env code to show these directories/var/mail/ htb-student

Which shell is specified for the htb-student user?

/bin/bash

Which kernel version is installed on the system?

Uname -r 4.15.0

What is the name of the network interface that MTU is set to 1500?

Ifconfig. ens192

# NAVIGATION

# TASKS

What is the name of the hidden "history" file in the htb-user's home directory?

Use ls -la to show hidden files. .bash\_history

What is the index number of the "sudoers" file in the "/etc" directory?

Use the ls and -I command to get the inode and grep it with sudoers. 147627

# **WORKING WITH FILES AND DIRECTORIES**

Here we have certain functions like creating, copying, moving, renaming, deleting of files and directories.

# TASKS

What is the name of the last modified file in the "/var/backups" directory?

apt.extended\_states.0

What is the inode number of the "shadow.bak" file in the "/var/backups" directory?

265293

# EDITING FILES

In Linux, finding files and directories is made efficient and flexible through powerful command-line tools. The primary tool for this task is the 'find' command. With 'find', users can search for files and directories based on various criteria such as name, size, type, and modification time. It allows for complex search patterns using logical operators and provides options to execute actions on the matched files or directories. Additionally, the 'locate' command provides a fast way to find files based on an indexed database, enabling quick searches even in large file systems. Another useful command is 'grep', which allows users to search for specific patterns within file contents. Together, these command-line tools provide powerful and versatile means for locating files and directories in Linux, empowering users to efficiently navigate and manage their file systems.

# TASKS

What is the name of the config file that has been created after 2020-03-03 and is smaller than 28k but larger than 25k?

00-mesa-defaults.conf

How many files exist on the system that have the ".bak" extension?

4

Submit the full path of the "xxd" binary.

/usr/bin/xxd

# **File Descriptors and Redirections**

In Linux, file descriptors and redirections are essential concepts for managing input and output streams in the command-line environment. File descriptors are numeric identifiers used by the operating system to represent open files, input sources, and output destinations. Redirections allow users to control where the input and output of commands are directed.

# TASKS

How many files exist on the system that have the ".log" file extension? 32

How many total packages are installed on the target system? 737

# **FILTER CONTENTS**

# TASKS

How many services are listening on the target system on all interfaces?

7

Determine what user the ProFTPd server is running under. Submit the username as the answer.

34

 Use cURL from your Pwnbox (not the target machine) to obtain the source code of the "https://www.inlanefreight.com" website and filter all unique paths of that domain.

proftpd

# **USER MANAGEMENT**

User management in Linux involves various operations to create, modify, and manage user accounts on the system. Overall, Linux provides a robust set of commands and utilities for user management, ensuring proper access control and security on the system.

# TASKS

Which option needs to be set to create a home directory for a new user using "useradd" command?

-m

Which option needs to be set to lock a user account using the "usermod" command?

--lock

Which option needs to be set to execute a command as a different user using the "su" command?

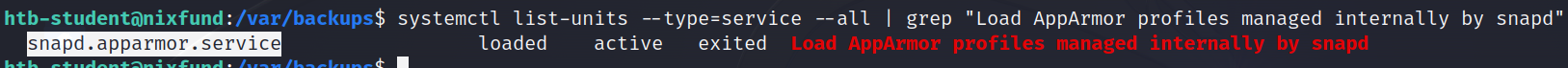
--command

# **SERVICE AND PROCESS MANAGEMENT**

Service and process management in Linux involves controlling and monitoring running services and processes on the system. Services are background processes that provide specific functionality or perform system tasks, while processes are individual instances of running programs. The 'systemctl' command is commonly used for managing services, allowing administrators to start, stop, restart, enable, or disable services.

# TASKS

Use the "systemctl" command to list all units of services and submit the unit name with the description "Load AppArmor profiles managed internally by snapd" as the answer. snapd.apparmor.service



# NETWORK SERVICES

Network services in Linux refer to software programs or daemons that provide network-related functionality or services. These services enable communication and data exchange between devices over a network. Examples of network services include web servers (such as Apache or Nginx), mail servers (such as Postfix or Sendmail), DNS servers (such as BIND), DHCP servers, FTP servers, SSH servers, and more.

# **WORKING WITH WEB SERVICES**

The exchange of information with the web servers is a further crucial element. On Linux operating systems, web servers may be set up in a variety of methods. In addition to IIS and Nginx, Apache is one of the most popular and widely used web servers.

# TASKS

Find a way to start a simple HTTP server inside Pwnbox or your local VM using "npm". Submit the command that starts the web server on port 8080

http-server -p 8080

Find a way to start a simple HTTP server inside Pwnbox or your local VM using "php". Submit the command that starts the web server on the localhost (127.0.0.1) on port 8080.

Php -s 127.0.0.1:8080

# **File System Management**

Data saved on a disk or other storage device must be organized and maintained as part of the Linux file system administration procedure. Ext2, Ext3, Ext4, XFS, Btrfs, NTFS, and many other file systems are supported by Linux, a robust operating system. The most appropriate option for each given circumstance will rely on the particular requirements of the program or user because each of these file systems has its own features and advantages.

# TASKS

What is the size in GiB of the "/dev/sda" disk in our Pwnbox?

# **FIREWALL SETUP**

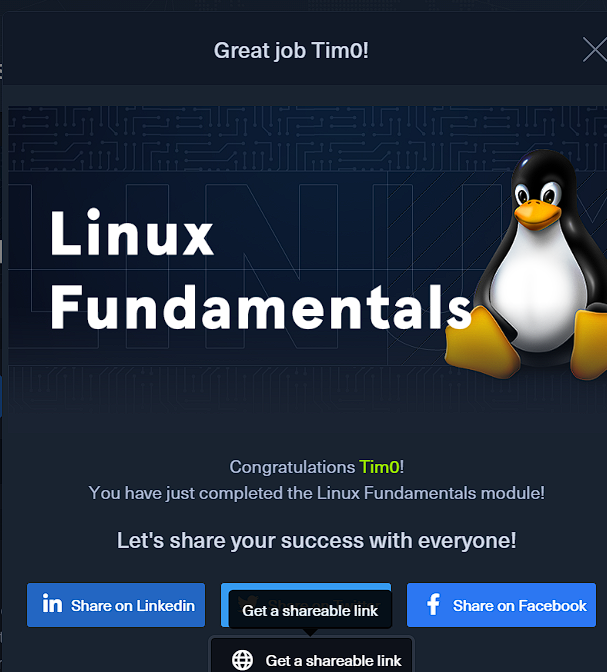
Firewall setup in Linux is crucial for enhancing system security and controlling network traffic. One commonly used tool for configuring a firewall is iptables. The setup typically involves several key steps. First, allowing established connections ensures that incoming traffic related to existing connections is accepted. Allowing loopback traffic on the localhost interface enables local communication. To allow specific incoming ports, rules can be defined based on the desired protocol (e.g., TCP, UDP) and port number.

# SYSTEM LOGS

System logs in Linux play a critical role in monitoring and troubleshooting system activities. They provide valuable information about various events, errors, and system activities, allowing administrators to identify and resolve issues. The logs are typically stored in the **/var/log** directory and are categorized into different files based on their purpose.

# CONCLUSION

In Linux, we explored fundamental concepts, including command-line navigation, finding files and directories using tools like "find" and "grep," and utilizing file descriptors and redirections for input and output manipulation. We also discussed the importance of network services, firewall setup, user management, and the significance of system logs for monitoring and troubleshooting. Overall, this report has provided a comprehensive overview of various aspects of operating systems, equipping us with knowledge on how to navigate, configure, secure, and manage Linux environment. Understanding these concepts is essential for efficient system administration, troubleshooting, and ensuring the smooth operation of computer systems. [**LINK**](https://academy.hackthebox.com/achievement/643478/18)

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