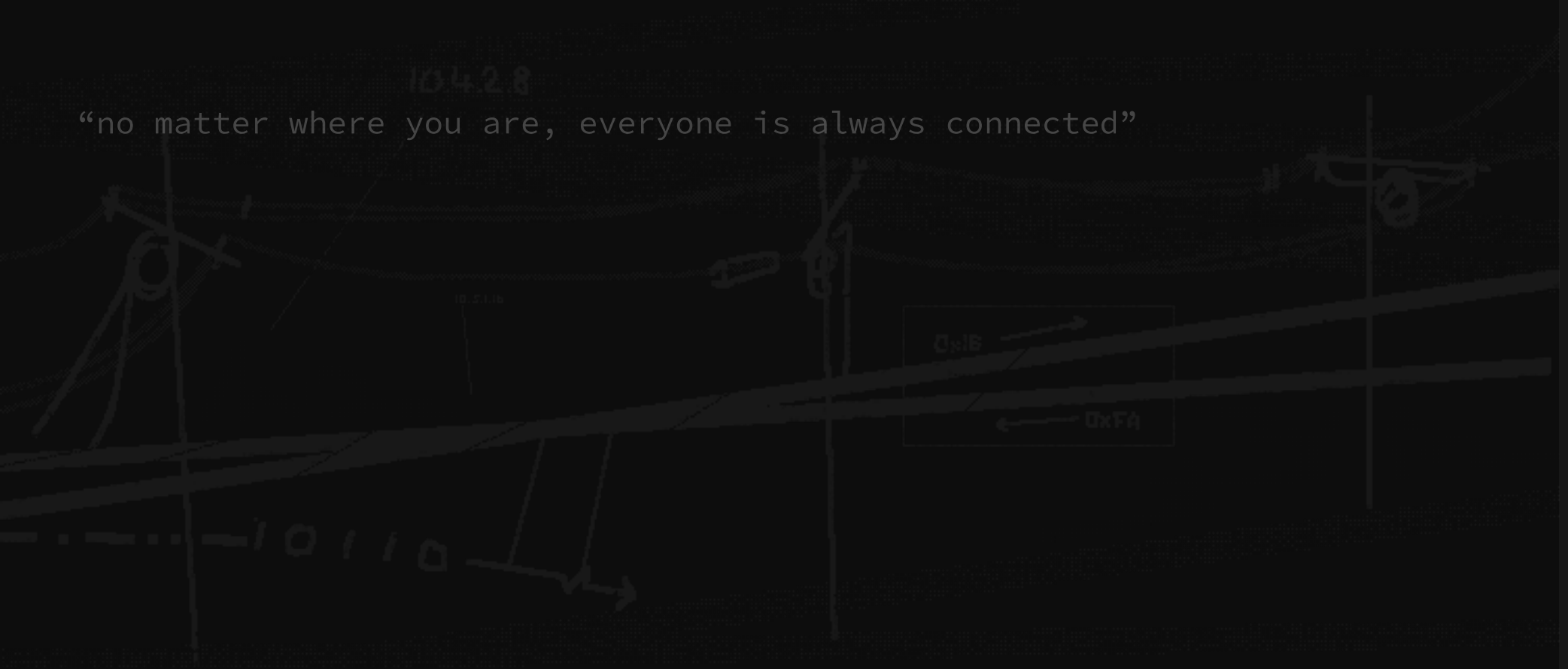
“no matter where you are, everyone is always connected”

06



Package Managers

Review *Chapter 05*

Remember These Files?
/etc/pam.d/common-password
/etc/security/pwquality.conf
/etc/sudoers

How do I require passwords when using *sudo*?

How do I require a minimum password length?

Installing Programs in Linux

Using package managers, you can track and manage the installation of software packages on Linux.

Each distribution may have its own package manager:
- APT for Debian-based systems
- YUM for Red Hat systems
- DNF for Fedora and similar
- A handful of others

Using APT

in terminal

```
# sudo apt -v
apt 2.4.13 (amd64)
```

APT will be the package manager you will most commonly use.

It is used in most Debian-based distributions which includes Ubuntu and Mint, and is what you will encounter in CyberPatriot.

What to APT for

APT will help you
- Update software on the system
- Add and remove software
- Discover which packages are installed

APT to Update Linux Software

in terminal

```
# sudo apt update
Get:1 http://repository.source.here/etc
.
.
.
86 packages can be upgraded. Run ‘apt l
# sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded
```

Here, we do two things. First, we synchronize the package index from the sources.

Then, we proceed to upgrade the packages where upgrades are available.

Note the difference between *update* and *upgrade*!

APT to Install Linux Software

in terminal

```
# sudo apt install openssh-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
.
.
.
After this operation, 6,050 kB of addit
Do you want to continue? [Y/n]
```

To install software with package name *package*, do *apt install package*.

You may need to look up the package name for each software you wish to install. For example, *openssh-server* is to install the SSH server.

APT to Remove Linux Software

in terminal

```
# sudo apt remove openssh-server
.
.
.
After this operation, 1,541 kB disk spa
Do you want to continue? [Y/n]
# sudo apt autoremove
.
.
.
After this operation, 4,509 kB disk spa
Do you want to continue? [Y/n]
```

Likewise, *apt remove* uninstalls the desired package on the system.

apt autoremove removes any spare packages that are no longer needed. This is also a good idea to run.

Removing Undesired Packages

Undesired software is present in almost every CyberPatriot image you will encounter. This can range from hacking tools, to unnecessary servers, etc.

Common “hacking tools” include
- wireshark
- ophcrack
- netcat
- deluge
- nmap

Among others…

On the Hunt

in terminal

```
# sudo apt list --installed
Listing... Done
accountsservice/jammy-updates,jammy-sec
acl/jammy,now 23.1-1 amd64 [installed,a
.
.
.
zlib1g/jammy-updates,jammy-security,now
zstd/jammy,now 1.4.8+dfsg-3build1 amd64
```

This command will list all installed packages in the system.

Look through the list to find anything malicious or services that are unnecessary.

From the Source

in file */etc/apt/sources.list.d/official-package-repositories.list*

```
deb http://packages.linuxmint.com vanessa main upstream import ba

deb http://archive.ubuntu.com/ubuntu jammy main restricted univer
deb http://archive.ubuntu.com/ubuntu jammy-updates main restricte
deb http://archive.ubuntu.com/ubuntu jammy-backports main restric

deb http://security.ubuntu.com/ubuntu/ jammy-security main restr
```

The *sources.list* file contains the sources of where the system installs packages from. Make sure this is correct for your system before running updates.

From the Source

When checking *sources.list*, remember
- Different distros and versions use different sources
- Look up the correct *sources.list* for your distro and version online.
- Though typically stored in /etc/apt/sources.list, in Linux Mint, APT sources are stored in

/etc/apt/sources.list.d/official-package-repositories.list

Remember to check *sources.list* before running *apt update*.

A Few Tips Regarding APT

Figuring out which packages to pick out and remove from *apt list --installed* will take a long time.

To search for a certain *“keyword”*, you can run

apt list --installed | grep “keyword”

or use a tool such as *fzf* to run a search as you would in a search bar

apt list --installed | fzf

Ultimately, knowing *what* to look for is a skill that comes with time…

Recap

You Learned How To
- Update packages in Linux using APT
- Add and remove packages in Linux
- Audit installed packages
- Update *sources.list*

Key Commands
apt install
    remove
    autoremove
    update
    upgrade
    list --installed