

WEB HOSTING ON LINUX OS ON A VM

TASK 1: Installing and Configuring Apache

1. Update the VM

```
sudo apt update
```

```
sudo apt install apache2
```

2. A Directory was created named webfolder (mkdir webfolder)

3. The web template files were downloaded

4. After downloading the template, the files were saved on the desktop.

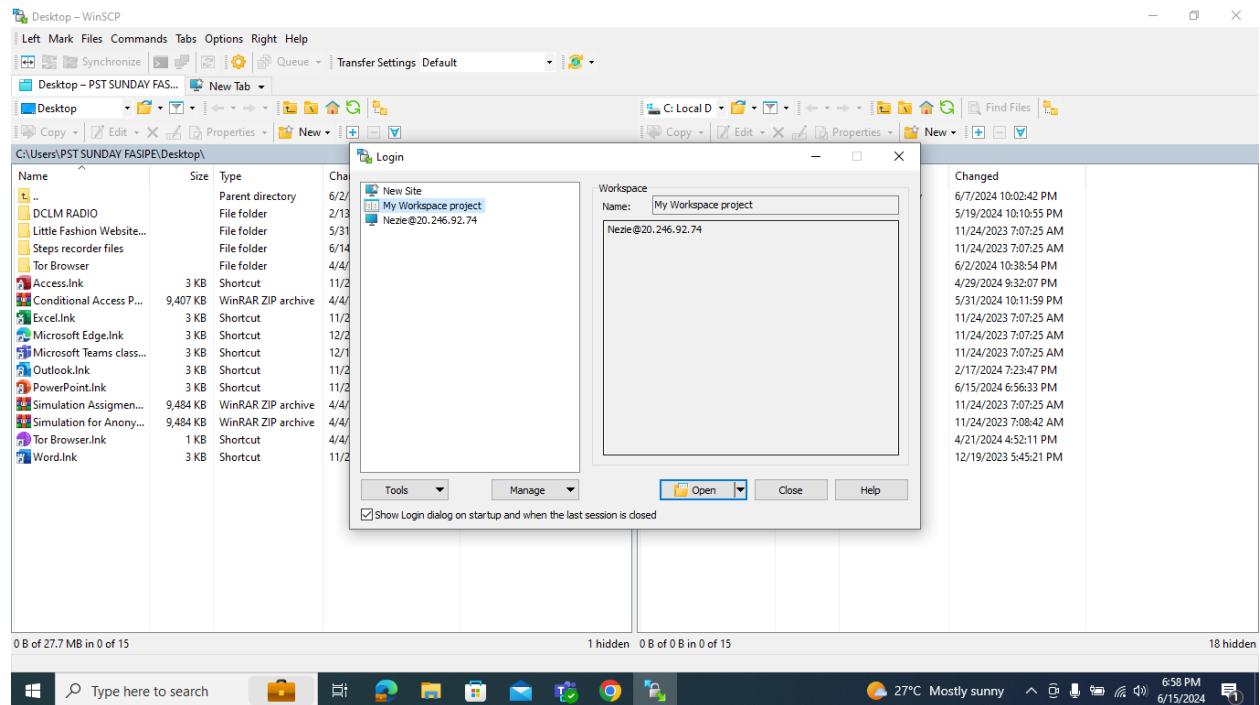
5. 'winscp' was downloaded from the browser and installed

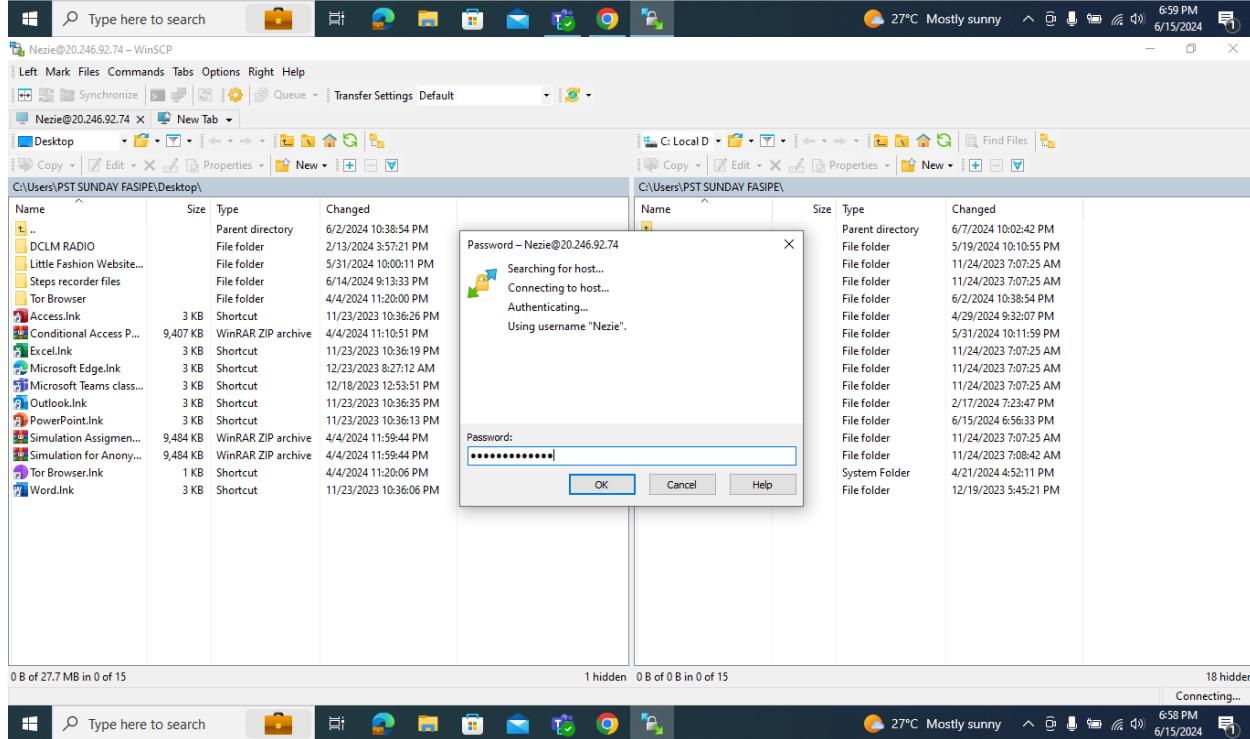
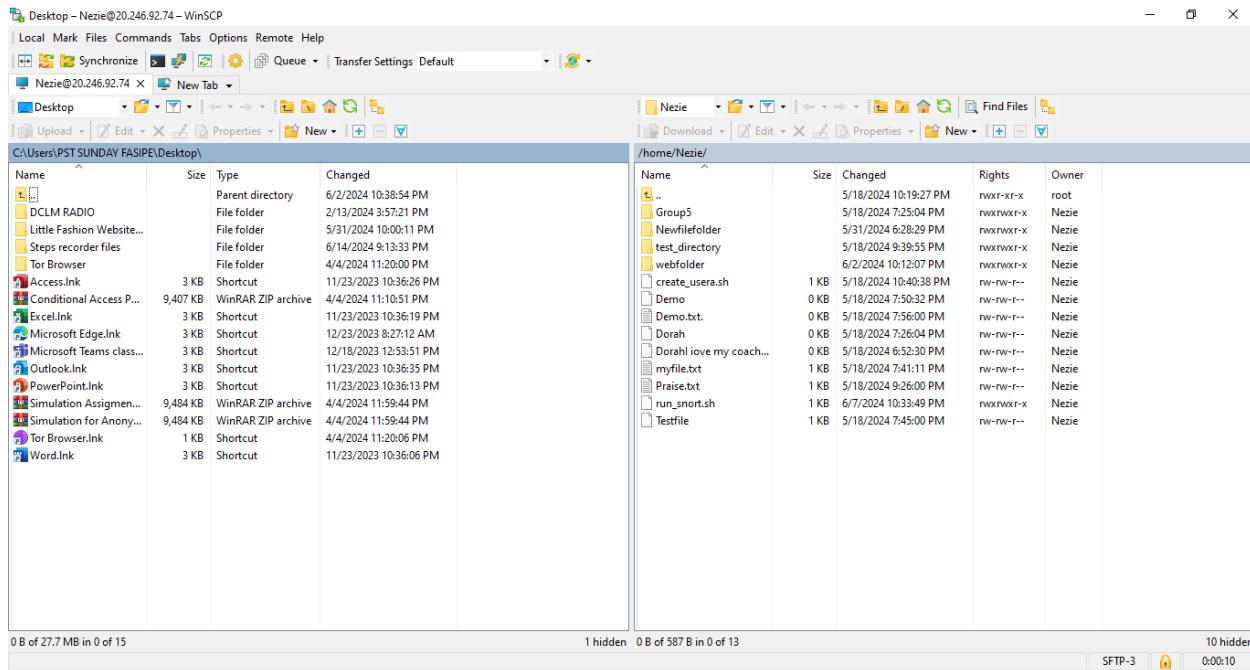
6. The installed winscp was opened and the IP address was entered as the host name, then the username accordingly.

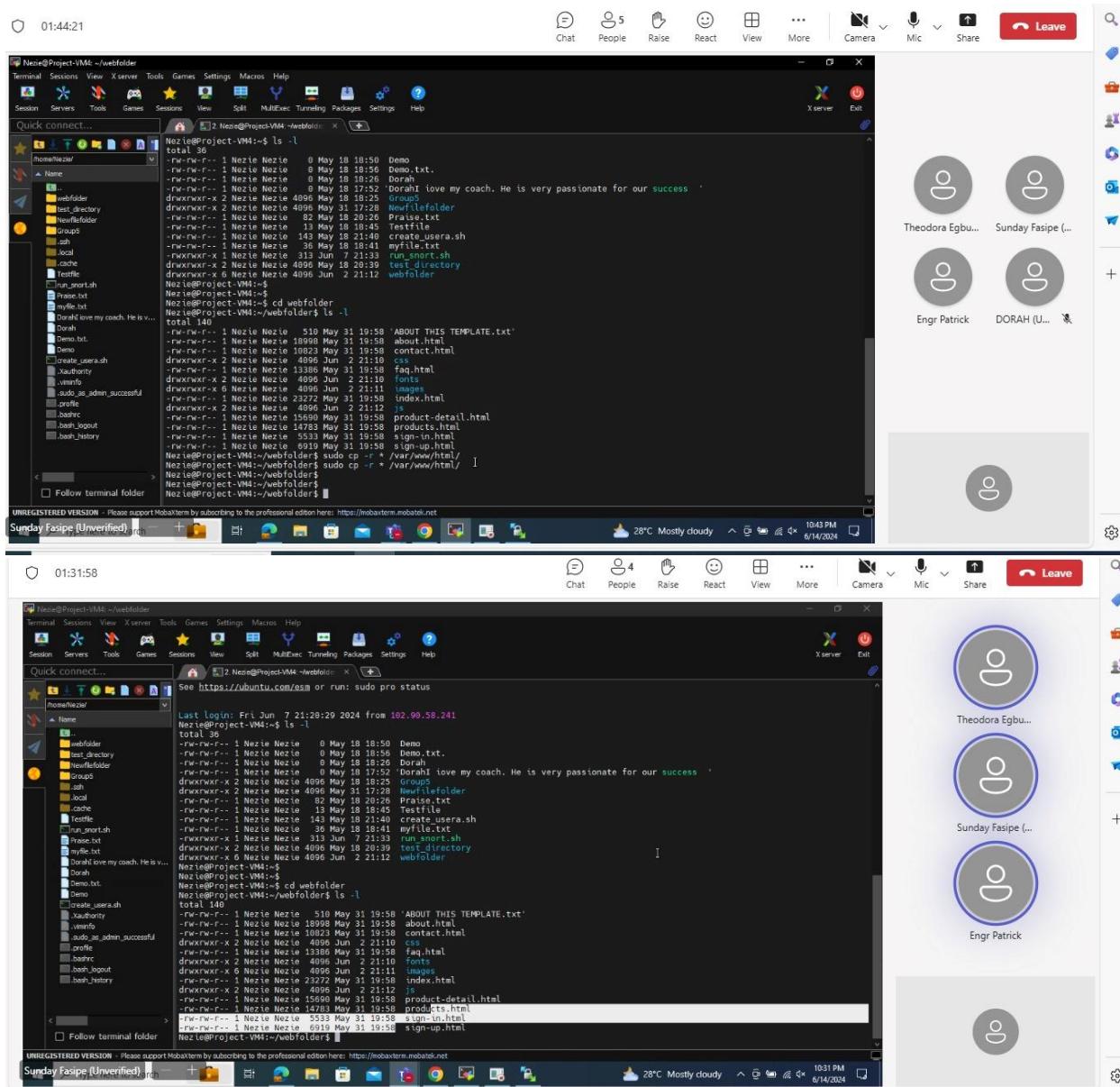
7. From the winscp, the downloaded web template files were moved to the webfolder created on the VM.

8. Then, we went back to the command line on VM to confirm the template files are already in the webfolder directory created with the command (ls -l).

9. We changed to the directory (cd webfolder) and run the command (sudo cp -r * /var/www/html/).





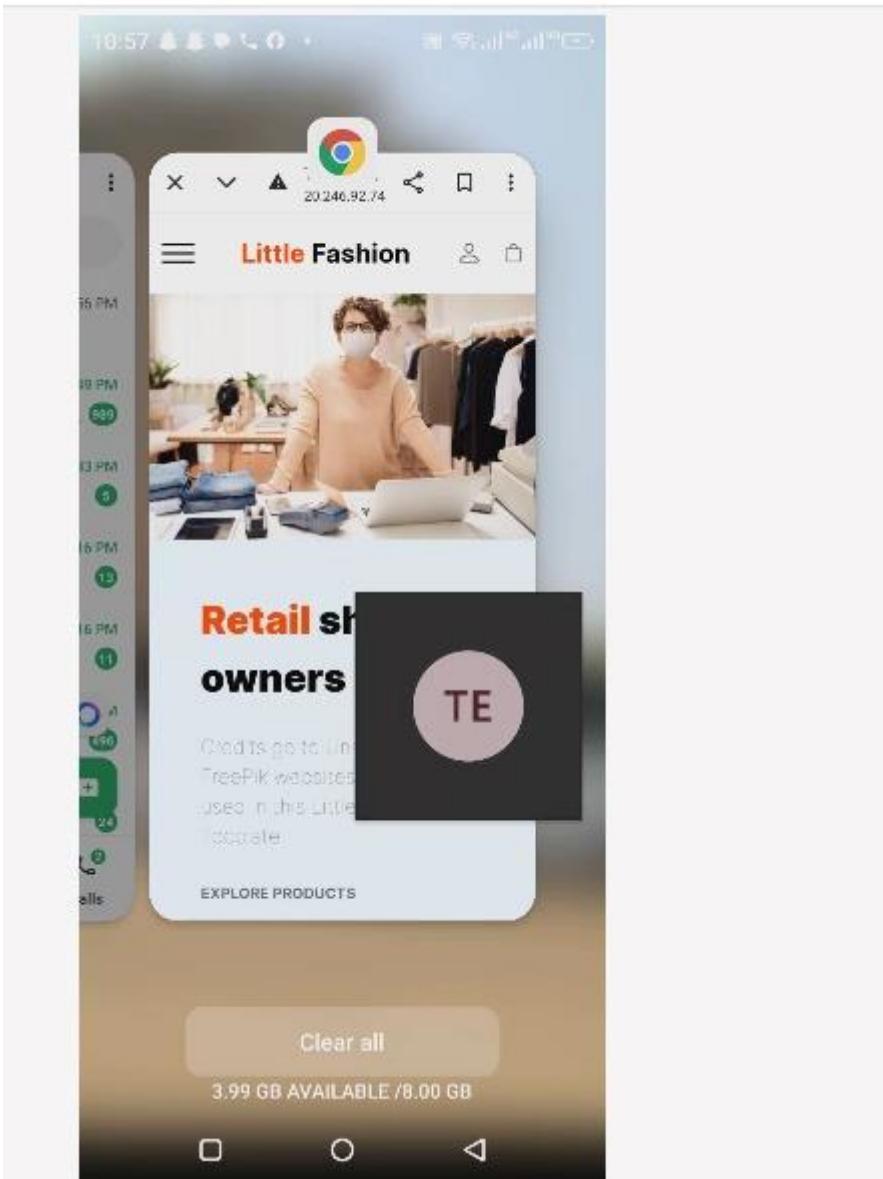


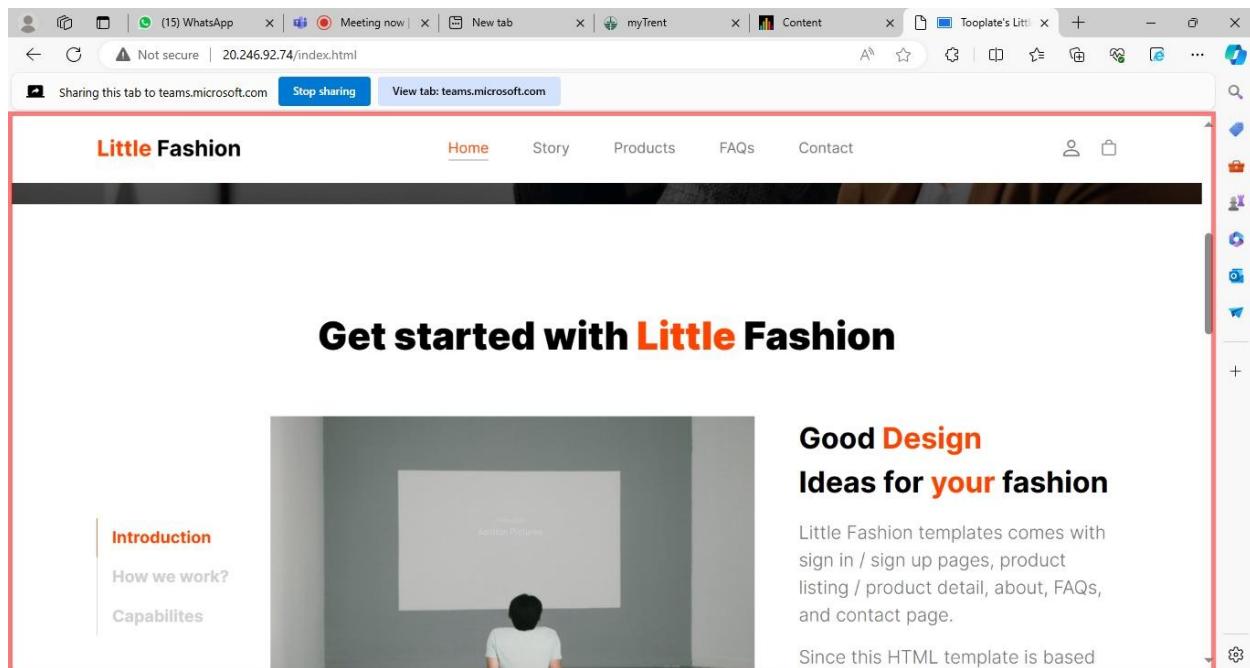
The screenshot shows two terminal sessions in Mobacterm. The top session, titled 'Sunday Fasipe (Unverified)', shows a file listing in the current directory (~/.webfolder). The bottom session, also titled 'Sunday Fasipe (Unverified)', shows the same file listing. Both sessions show the following terminal command and output:

```
Nezie@Project-VM4:~/.webfolder$ ls -l
total 146
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:50 Demo
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:56 Demo.txt
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:28 Dorah
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:25 Dorah
drwxrwxr-x 2 Nezie Nezie 4096 May 31 17:28 Newfileholder
-rw-r--r-- 1 Nezie Nezie 82 May 18 20:28 Praise.txt
-rw-r--r-- 1 Nezie Nezie 13808 May 31 19:58 Test
-rw-r--r-- 1 Nezie Nezie 143 May 18 21:40 Create_usera.sh
-rw-r--r-- 1 Nezie Nezie 36 May 18 18:41 myfile.txt
-rwxrwxr-x 3 Nezie Nezie 313 Jun 7 21:33 run_short.sh
drwxrwxr-x 2 Nezie Nezie 4096 May 18 20:39 test_directory
drwxrwxr-x 6 Nezie Nezie 4096 Jun 2 21:12 webfolder
Nezie@Project-VM4:~/.webfolder$ Nezie@Project-VM4:~/.webfolder$ cd webfolder
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ ls -l
total 146
-rw-r--r-- 1 Nezie Nezie 510 May 31 19:58 ABOUT THIS TEMPLATE.txt
-rw-r--r-- 1 Nezie Nezie 1023 May 31 19:58 about.html
-rw-r--r-- 1 Nezie Nezie 1023 May 31 19:58 contact.html
drwxrwxr-x 2 Nezie Nezie 4096 Jun 2 21:10 cse
-rw-r--r-- 1 Nezie Nezie 13380 May 31 19:58 faq.html
drwxrwxr-x 2 Nezie Nezie 4096 Jun 2 21:11 fonts
drwxrwxr-x 2 Nezie Nezie 4096 Jun 2 21:11 images
-rw-r--r-- 5 Nezie Nezie 23272 May 31 19:58 index.html
drwxrwxr-x 2 Nezie Nezie 4096 Jun 2 21:12 jsp
-rw-r--r-- 3 Nezie Nezie 1023 May 31 19:58 product-detail.html
-rw-r--r-- 3 Nezie Nezie 14783 May 31 19:58 products.html
-rw-r--r-- 3 Nezie Nezie 5533 May 31 19:58 sign-in.html
-rw-r--r-- 3 Nezie Nezie 6919 May 31 19:58 sign-up.html
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolders$
```

Both sessions also show a message at the bottom: "UNREGISTERED VERSION - Please support Mobacterm by subscribing to the professional edition here: <https://mobacterm.mobatok.net>". The desktop environment includes a sidebar with user icons for Theodora Egbu..., Sunday Fasipe (...), Engr Patrick, and DORAH (U...).

10. We then typed the IP address on the window browser to reload the webserver to confirm that the website is setup on the VM.



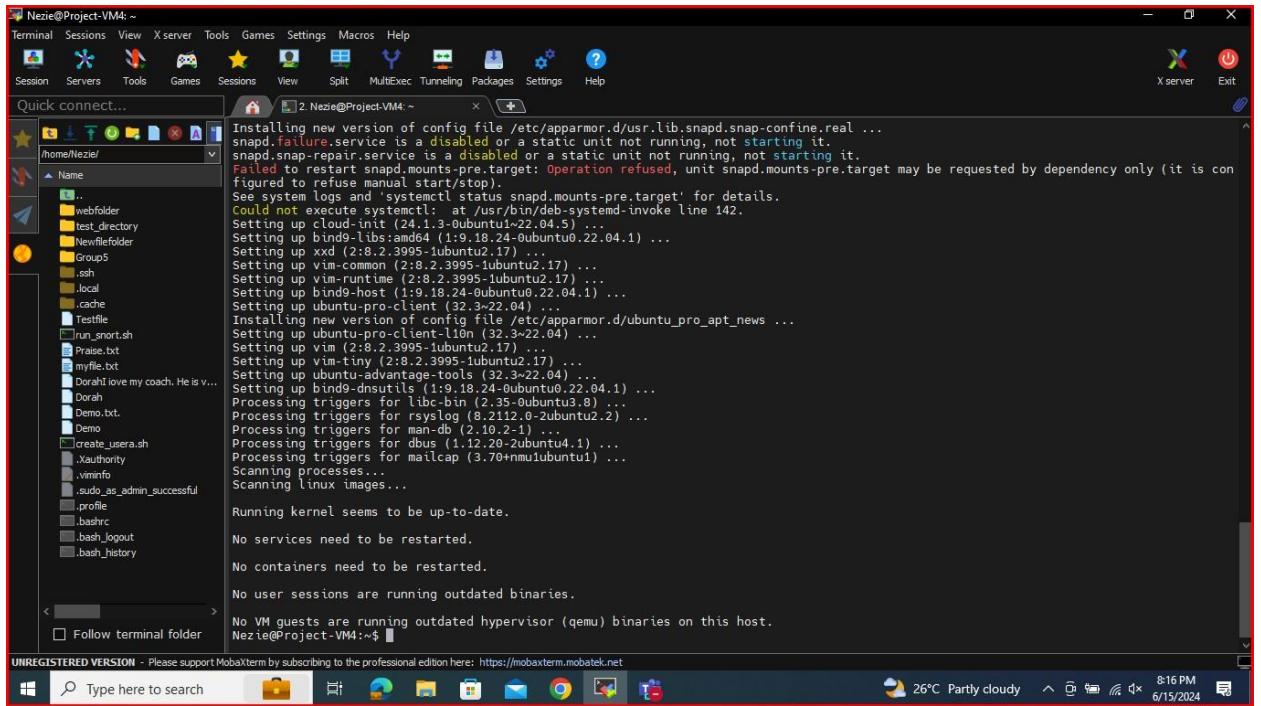


TASK 2: SECURITY AUDIT AND FILE INTEGRITY CHECK

In order to perform security audit, the following steps were followed.

Step 1: Initial Security Audit

1. System Update was carried out to ensure the system is up-to-date with the latest patches and security by running this command
Sudo apt update && sudo apt upgrade -y



2. Review of installed Packages: We reviewed all installed packages in order to remove unnecessary ones with this command `dpkg --list`

Nezie@Project-VM4: ~

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt .create_usera.sh .Xauthority .vmlininfo .sudo_as_admin_successful .profile .bashrc .bash_logout .bash_history
/home/Nezie/
ii ubuntu-keyring 2021.03.26 all
ii ubuntu-minimal 1.481.1 amd64
ii ubuntu-pro-client 32.3~22.04 amd64
ii ubuntu-pro-client-lion 32.3~22.04 amd64
ii ubuntu-release-upgrader-core 1:22.04.19 all
ii ubuntu-server 1.481.1 amd64
ii ucf 3.0043 all
ii udev 249.11~ubuntu3.12 amd64
ii ufw 0.36.1~ubuntu0.1 all
ii unattended-upgrades 2.8.0~22.04 all
ii update-manager-core 1:22.04.20 all
ii update-notifier-common 3.192.54.8 all
ii usb-modeswitch 2.6.1~3ubuntu2 amd64
ii usb-modeswitch-data 20191128.4 all
ii usb-ids 2022.04.02.1 all
ii usbutils 1:014~1build1 amd64
ii usmerge 25ubuntu2 all
ii util-linux 2.37.2~4ubuntu3.4 amd64
ii uid-runtime 2.37.2~4ubuntu3.4 amd64
ii vim 2:8.2.3995~ubuntu2.17 all
ii vim-common 2:8.2.3995~ubuntu2.17 all
ii vim-runtime 2:8.2.3995~ubuntu2.17 amd64
ii vim-tiny 2:8.2.3995~ubuntu2.17 all
ii walinuxagent 2.2.46~ubuntu5.1 amd64
ii wget 1.21.2~2ubuntu1 amd64
ii whiptail 0.52.21~5ubuntu2 amd64
ii xauth 1:1.1~1build2 amd64
ii xdg-user-dirs 0.17~ubuntu4 amd64
ii xfprogs 5.13.0~ubuntu2 amd64
ii xkb-data 2.33-1 all
ii xxd 2:8.2.3995~ubuntu2.17 amd64
ii xz-utils 5.2.5~2ubuntu1 amd64
ii zerofree 1.1.1~1build3 amd64
ii zlib1g:amd64 1:1.2.11.dfsg~2ubuntu9.2 amd64
ii zstd 1:4.8+dfsg~3build1 amd64
GnuPG keys of the Ubuntu archive
Minimal core of Ubuntu
Management tools for Ubuntu Pro
Translations for Ubuntu Pro Client
manage release upgrades
The Ubuntu Server system
Update Configuration File(s): preserve /dev/ and hotplug management daemon
program for managing a Netfilter firewall
automatic installation of security upgrades
management shared between update-notifier and mode switching tool for controlling "firmware" mode switching ID data for usb-modeswitch
USB ID Repository
Linux USB Utilities
Convert the system to the merged /usr directory
miscellaneous system utilities
runtime components for the Universally Usable Vi IMproved - enhanced vi editor
Vi IMproved - Common files
Vi IMproved - Runtime files
Vi IMproved - enhanced vi editor - compatibility
Windows Azure Linux Agent
retrieves files from the web
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tool to make (or reverse) a hex dump
XZ-format compression utilities
zero free blocks from ext2, ext3 and ext4
compression library - runtime
fast lossless compression algorithm

```

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Nezie@Project-VM4: ~

```

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/home/Nezie/
ii ubuntu-advantage-tools 32.3~22.04 all
ii ubuntu-keyring 2021.03.26 all
ii ubuntu-minimal 1.481.1 amd64
ii ubuntu-pro-client 32.3~22.04 amd64
ii ubuntu-pro-client-lion 32.3~22.04 amd64
ii ubuntu-release-upgrader-core 1:22.04.19 all
ii ubuntu-server 1.481.1 amd64
ii ucf 3.0043 all
ii udev 249.11~ubuntu3.12 amd64
ii ufw 0.36.1~ubuntu0.1 all
ii unattended-upgrades 2.8.0~22.04 all
ii update-manager-core 1:22.04.20 all
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ii usb-modeswitch-data 20191128.4 all
ii usb-ids 2022.04.02.1 all
ii usbutils 1:014~1build1 amd64
ii usmerge 25ubuntu2 all
ii util-linux 2.37.2~4ubuntu3.4 amd64
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ii vim-tiny 2:8.2.3995~ubuntu2.17 all
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ii wget 1.21.2~2ubuntu1 amd64
ii whiptail 0.52.21~5ubuntu2 amd64
ii xauth 1:1.1~1build2 amd64
ii xdg-user-dirs 0.17~ubuntu4 amd64
ii xfprogs 5.13.0~ubuntu2 amd64
ii xkb-data 2.33-1 all
ii xxd 2:8.2.3995~ubuntu2.17 amd64
ii xz-utils 5.2.5~2ubuntu1 amd64
ii zerofree 1.1.1~1build3 amd64
ii zlib1g:amd64 1:1.2.11.dfsg~2ubuntu9.2 amd64
ii zstd 1:4.8+dfsg~3build1 amd64
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Nezie@Project-VM4: ~

```

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/home/Nezie/
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ii ubuntu-keyring 2021.03.26 all
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ii ubuntu-pro-client-lion 32.3~22.04 amd64
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ii ubuntu-server 1.481.1 amd64
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```

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Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/Nezie/
Name Version Architecture Description
ii ubuntu-advantage-tools 32.3~22.04 all transitional dummy package for ubuntu-pro^
ii ubuntu-keyring 2021.03.26 all GnuPG keys of the Ubuntu archive
ii ubuntu-minimal 1.481.1 amd64 Minimal core of Ubuntu
ii ubuntu-pro-client 32.3~22.04 amd64 Management tools for Ubuntu Pro
ii ubuntu-release-upgrader-core 32.3~22.04 amd64 Translations for Ubuntu Pro Client
ii ubuntu-server 1:22.04.19 all manage release upgrades
ii ubuntu-standard 1.481.1 amd64 The Ubuntu Server system
ii ucf 3.0643 amd64 Update Configuration File(s): preserve u^
ii ufw 249.11~ubuntu3.12 all /dev/ and hotplug management daemon
ii unattended-upgrades 0.38~1.1~ubuntu0.1 all program for managing a Netfilter firewall
ii update-manager-core 1:22.04.20 all automatic installation of security upgrad^
ii update-notifier-common 3.192.54.8 all Files shared between update-notifier and
ii modswitch 2.6.1~ubuntu2 amd64 mode switching tool for controlling the f^
ii modswitch-data 20191129.4 all mode switching data for usb-modswitch
ii usb.ids 2022.04.02-1 all USB ID Repository
ii usbutils 1:014.1~build1 amd64 Linux USB utilities
ii usmerge 25ubuntu2 all Convert the system to the merged /usr di^
ii util-linux 2.37.2~ubuntu3.4 amd64 miscellaneous system utilities
ii uuid-runtime 2.37.2~ubuntu3.4 amd64 runtime components for the Universally U^
ii vim 2:8.2.3995~ubuntu2.17 amd64 Vi IMproved - enhanced vi editor
ii vim-common 2:8.2.3995~ubuntu2.17 all Vi IMproved - Common files
ii vim-runtime 2:8.2.3995~ubuntu2.17 all Vi IMproved - Runtime files
ii vim-tiny 2:8.2.3995~ubuntu2.17 amd64 Vi IMproved - enhanced vi editor - compa^
ii walinuxagent 2.2.46~ubuntu5.1 amd64 Windows Azure Linux Agent
ii wget 1.21.2~ubuntu1 amd64 retrieves files from the web
ii whiptail 0.52.21~ubuntu2 amd64 Displays user-friendly dialog boxes from
ii xauth 1:1.1~ubuntu2 amd64 X authentication utility
ii xdg-user-dirs 0.17~ubuntu4 amd64 tool to manage well known user directori^
ii xfsopts 5.13.0~ubuntu2 amd64 Utilities for managing the XFS filesystem
ii xkb-data 2.33-1 all X Keyboard Extension (XKB) configuration
ii xxd 2:8.2.3995~ubuntu2.17 amd64 tool to make (or reverse) a hex dump
ii xz-utils 5.2.5~ubuntu1 amd64 XZ-format compression utilities
ii zerofree 1.1.1~ubuntu3 amd64 zero free blocks from ext2, ext3 and ext^
ii zlib1g:amd64 1:1.2.11.dfsg-2ubuntu9.2 amd64 compression library - runtime
ii zstd 1:4.8+dfsg-3build1 amd64 fast lossless compression algorithm -- c^
Lines 666-702/702 (END)

```

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```

Desired=Unknown|Install|Remove|Purge|Hold
Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-await/Trig-pend
|| Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name Version Architecture Description

```

Name	Version	Architecture	Description
ii adduser	3.11ubuntu5	all	add and remove users and groups
ii apache2	2.4.52~ubuntu4.9	amd64	Apache HTTP Server
ii apache2-bin	2.4.52~ubuntu4.9	amd64	Apache HTTP Server (modules and other bi^
ii apache2-data	2.4.52~ubuntu4.9	all	Apache HTTP Server (common files)
ii apache2-utils	2.4.52~ubuntu4.9	amd64	Apache HTTP Server (utility programs for^
ii apparmor	3.0.4~2ubuntu2.3	amd64	user-space parser utility for AppArmor
ii apport	2.20.11~ubuntu20.5	all	automatically generate crash reports for^
ii apport-symptoms	0.3~1	all	symptom scripts for apport
ii apt	2.4.12	amd64	command-line package manager
ii apt-utils	2.4.12	amd64	package management related utility pro^
ii base-files	12ubuntu4.6	amd64	Debian base system: miscellaneous files
ii base-passwd	3.5.52~build1	amd64	Debian base system: master password and g^
ii bash	5.1~6ubuntu1.1	amd64	GNU Bourne Again Shell
ii bash-completion	1:2.11~ubuntu1	all	programmable completion for the bash she^
ii bc	1.07.1~build1	amd64	GNU bc arbitrary precision calculator ls^
ii bcache-tools	1.0.8~4ubuntu3	amd64	bcache userspace tools
ii bind9-dnsutils	1:9.18.24~ubuntu0.22.04.1	amd64	Clients provided with BIND 9
ii bind9-host	1:9.18.24~ubuntu0.22.04.1	amd64	DNS Lookup Utility
ii bind9-libs:amd64	1:9.18.24~ubuntu0.22.04.1	amd64	Shared Libraries used by BIND 9
ii binutils	2.38~4ubuntu2.6	amd64	GNU assembler, linker and binary utilit^
ii binutils-common:amd64	2.38~4ubuntu2.6	amd64	Common files for the GNU assembler, link^
ii binutils-x86_64-linux-gnu	2.38~4ubuntu2.6	amd64	GNU binary utilities, for x86-64-linux-g^
ii bolt	0.9.2-1	all	system daemon to manage thunderbolt 3 de^
ii bsdxtrautils	2.37.2~4ubuntu3.4	amd64	extra utilities from 4.4BSD-Lite
ii bsdtar	1:2.37.2~4ubuntu3.4	amd64	Checksumming Copy on Write Filesystem ut^
ii btrfs-progs	5.16.2-1	amd64	basic utilities from 4.4BSD-Lite
ii busybox-intramfs	1:1.30.1~7ubuntu3	amd64	Standalone shell setup for initramfs
ii busybox-static	1:1.30.1~7ubuntu3	amd64	Standalone rescue shell with tons of bus^
ii byobu	5.133-1	all	text window manager, shell multiplexer, >
ii bzip2	1.0.8~2build1	amd64	high-quality block-sorting file compress^
ii ca-certificates	20230311ubuntu0.22.04.1	all	Common CA certificates
ii chrony	4.2~2ubuntu2	amd64	Versatile implementation of the Network ^

Lines 1-37

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```

Desired=Unknown|Install|Remove|Purge|Hold
Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-await/Trig-pend
|| Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name Version Architecture Description

```

Name	Version	Architecture	Description
ii adduser	3.11ubuntu5	all	add and remove users and groups
ii apache2	2.4.52~ubuntu4.9	amd64	Apache HTTP Server
ii apache2-bin	2.4.52~ubuntu4.9	amd64	Apache HTTP Server (modules and other bi^
ii apache2-data	2.4.52~ubuntu4.9	all	Apache HTTP Server (common files)
ii apache2-utils	2.4.52~ubuntu4.9	amd64	Apache HTTP Server (utility programs for^
ii apparmor	3.0.4~2ubuntu2.3	amd64	user-space parser utility for AppArmor
ii apport	2.20.11~ubuntu20.5	all	automatically generate crash reports for^
ii apport-symptoms	0.3~1	all	symptom scripts for apport
ii apt	2.4.12	amd64	command-line package manager
ii apt-utils	2.4.12	amd64	package management related utility pro^
ii base-files	12ubuntu4.6	amd64	Debian base system: miscellaneous files
ii base-passwd	3.5.52~build1	amd64	Debian base system: master password and g^
ii bash	5.1~6ubuntu1.1	amd64	GNU Bourne Again Shell
ii bash-completion	1:2.11~ubuntu1	all	programmable completion for the bash she^
ii bc	1.07.1~build1	amd64	GNU bc arbitrary precision calculator ls^
ii bcache-tools	1.0.8~4ubuntu3	amd64	bcache userspace tools
ii bind9-dnsutils	1:9.18.24~ubuntu0.22.04.1	amd64	Clients provided with BIND 9
ii bind9-host	1:9.18.24~ubuntu0.22.04.1	amd64	DNS Lookup Utility
ii bind9-libs:amd64	1:9.18.24~ubuntu0.22.04.1	amd64	Shared Libraries used by BIND 9
ii binutils	2.38~4ubuntu2.6	amd64	GNU assembler, linker and binary utilit^
ii binutils-common:amd64	2.38~4ubuntu2.6	amd64	Common files for the GNU assembler, link^
ii binutils-x86_64-linux-gnu	2.38~4ubuntu2.6	amd64	GNU binary utilities, for x86-64-linux-g^
ii bolt	0.9.2-1	all	system daemon to manage thunderbolt 3 de^
ii bsdxtrautils	2.37.2~4ubuntu3.4	amd64	extra utilities from 4.4BSD-Lite
ii bsdtar	1:2.37.2~4ubuntu3.4	amd64	Checksumming Copy on Write Filesystem ut^
ii btrfs-progs	5.16.2-1	amd64	basic utilities from 4.4BSD-Lite
ii busybox-intramfs	1:1.30.1~7ubuntu3	amd64	Standalone shell setup for initramfs
ii busybox-static	1:1.30.1~7ubuntu3	amd64	Standalone rescue shell with tons of bus^
ii byobu	5.133-1	all	text window manager, shell multiplexer, >
ii bzip2	1.0.8~2build1	amd64	high-quality block-sorting file compress^
ii ca-certificates	20230311ubuntu0.22.04.1	all	Common CA certificates
ii chrony	4.2~2ubuntu2	amd64	Versatile implementation of the Network ^

Lines 1-37

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3. Checking for Open Ports: Open ports and associated services were identified by issuing these commands

```
sudo netstat -tulnp
sudo lsof -I -P -n
```

Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DorahI love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmminfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
# This allows running arbitrary commands, but so does ALL, and it means
# different sudoers have their choice of editor respected.
Defaults:ssudo env_keep += "EDITOR"

# Completely harmless preservation of a user preference.
Defaults:ssudo env_keep += "GREP_COLOR"

# While you shouldn't normally run git as root, you need to with etckeeper
Defaults:ssudo env_keep += "GIT_AUTHOR_* GIT_COMMITTER_"

# Per-user preferences; root won't have sensible values for them.
Defaults:ssudo env_keep += "EMAIL DEBEMAIL DEBUGFULLNAME"

# "sudo scp" or "sudo rsync" should be able to use your SSH agent.
Defaults:ssudo env_keep += "SSH_AGENT_PID SSH_AUTH_SOCK"

# Ditto for GPG agent
Defaults:ssudo env_keep += "GPG_AGENT_INFO"

# Host alias specification
# User alias specification
# Cmd alias specification
# User privilege specification
root    ALL=(ALL:ALL) ALL
# Members of the admin group may gain root privileges
%admin  ALL=(ALL) ALL
# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL
# See sudoers(5) for more information on "@include" directives:
@includedir /etc/sudoers.d
Nezie@Project-VM4:~/webfolder$ 

```

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Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DorahI love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmminfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
Peace:x:1002:
Okon:x:1003:
user1:x:1004:
user2:x:1005:
user3:x:1006:
user4:x:1007:
user5:x:1008:
snort:x:124:
cat: sudo: No such file or directory
cat: cat: No such file or directory
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults    env_reset
Defaults    mail_badpass
Defaults    secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/snap/bin"
Defaults    use_pty
#
# This preserves proxy settings from user environments of root
# equivalent users (group sudo)
#Defaults:ssudo env_keep += "http_proxy https_proxy ftp_proxy all_proxy no_proxy"
#
# This allows running arbitrary commands, but so does ALL, and it means
# different sudoers have their choice of editor respected.
Defaults:ssudo env_keep += "EDITOR"

# Completely harmless preservation of a user preference.
Defaults:ssudo env_keep += "GREP_COLOR"

# While you shouldn't normally run git as root, you need to with etckeeper
Defaults:ssudo env_keep += "GIT_AUTHOR_* GIT_COMMITTER_"

# Per-user preferences; root won't have sensible values for them.

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

Name

- ..
- webfolder
- test_directory
- Newfilefolder
- Group5
- .ssh
- .local
- .cache
- Testfile
- run_snort.sh
- Praise.txt
- myfile.txt
- Dorah love my coach. He is v...
- Dorah
- Demo.txt
- Demo
- create_usera.sh
- Xauthority
- .vmminfo
- .sudo_as_admin_successful
- .profile
- .lessht
- .bashrc
- .bash_logout
- .bash_history

```
irc:x:39:  
src:x:40:  
gnats:x:41:  
shadow:x:42:  
utmp:x:43:  
video:x:44:Nezie  
sasl:x:45:  
plugdev:x:46:Nezie  
staff:x:50:  
games:x:60:  
users:x:100:  
nogroup:x:10534:  
systemd-journal:x:101:  
systemd-network:x:102:  
systemd-resolve:x:103:  
crontab:x:104:  
messagebus:x:105:  
systemd-timesync:x:106:  
input:x:107:  
sgx:x:108:  
kvm:x:109:  
render:x:110:  
syslog:x:111:  
tss:x:112:  
uuid:x:113:  
tcpdump:x:114:  
ssh:x:115:  
landscape:x:116:  
fwupd-refresh:x:117:  
admin:x:118:  
netdev:x:119:Nezie  
lxd:x:120:Nezie  
sgx_prv:x:121:  
chrony:x:122:  
Nezie:x:1000:  
ssl-cert:x:123:  
Nina:x:1001:  
Peace:x:1002:
```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

Name

- ..
- webfolder
- test_directory
- Newfilefolder
- Group5
- .ssh
- .local
- .cache
- Testfile
- run_snort.sh
- Praise.txt
- myfile.txt
- Dorah love my coach. He is v...
- Dorah
- Demo.txt
- Demo
- create_usera.sh
- Xauthority
- .vmminfo
- .sudo_as_admin_successful
- .profile
- .lessht
- .bashrc
- .bash_logout
- .bash_history

```
Peace:x:1002:1002:/home/Peace:/bin/bash  
Okon:x:1003:1003:/home/Okon:/bin/bash  
user1:x:1004:1004:/home/user1:/bin/bash  
user2:x:1005:1005:/home/user2:/bin/bash  
user3:x:1006:1006:/home/user3:/bin/bash  
user4:x:1007:1007:/home/user4:/bin/bash  
user5:x:1008:1008:/home/user5:/bin/bash  
snort:x:114:124:Snort IDS:/var/log/snort:/usr/sbin/nologin  
cat: sudo: No such file or directory  
cat: cat: No such file or directory  
root:x:0:  
daemon:x:1:  
bin:x:2:  
sys:x:3:  
adm:x:4:syslog.Nenzie  
tty:x:5:  
disk:x:6:  
lp:x:7:  
mail:x:8:  
news:x:9:  
uucp:x:10:  
man:x:12:  
proxy:x:13:  
kmem:x:15:  
dialout:x:20:Nezie  
fax:x:21:  
voice:x:22:  
cdrom:x:24:Nezie  
floppy:x:25:Nezie  
tape:x:26:  
sudo:x:27:Nezie  
audio:x:29:Nezie  
dip:x:30:Nezie  
www-data:x:33:  
backup:x:34:  
operator:x:37:  
list:x:38:  
irc:x:39:
```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

Name

- ..
- webfolder
- test_directory
- Newfilefolder
- Group5
- .ssh
- .local
- .cache
- Testfile
- run_snort.sh
- Praise.txt
- myfile.txt
- Dorah love my coach. He is v...
- Dorah
- Demo.txt
- Demo
- create_usera.sh
- Xauthority
- .vmminfo
- .sudo_as_admin_successful
- .profile
- .lessht
- .bashrc
- .bash_logout
- .bash_history

```
Peace:x:1002:1002:/home/Peace:/bin/bash  
Okon:x:1003:1003:/home/Okon:/bin/bash  
user1:x:1004:1004:/home/user1:/bin/bash  
user2:x:1005:1005:/home/user2:/bin/bash  
user3:x:1006:1006:/home/user3:/bin/bash  
user4:x:1007:1007:/home/user4:/bin/bash  
user5:x:1008:1008:/home/user5:/bin/bash  
snort:x:114:124:Snort IDS:/var/log/snort:/usr/sbin/nologin  
cat: sudo: No such file or directory  
cat: cat: No such file or directory  
root:x:0:  
daemon:x:1:  
bin:x:2:  
sys:x:3:  
adm:x:4:syslog.Nenzie  
tty:x:5:  
disk:x:6:  
lp:x:7:  
mail:x:8:  
news:x:9:  
uucp:x:10:  
man:x:12:  
proxy:x:13:  
kmem:x:15:  
dialout:x:20:Nezie  
fax:x:21:  
voice:x:22:  
cdrom:x:24:Nezie  
floppy:x:25:Nezie  
tape:x:26:  
sudo:x:27:Nezie  
audio:x:29:Nezie  
dip:x:30:Nezie  
www-data:x:33:  
backup:x:34:  
operator:x:37:  
list:x:38:  
irc:x:39:
```

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```

Nezie@Project-VM4: ~/webfolder
ls -l /etc/passwd
total 36
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:50 Demo
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:56 Demo.txt
-rw-r--r-- 1 Nezie Nezie 0 May 18 18:26 Dorah
-rw-r--r-- 1 Nezie Nezie 0 May 18 17:52 DorahI love my coach. He is very passionate for our success
drwxrwxr-x 2 Nezie Nezie 4096 May 18 18:25 Group5
drwxrwxr-x 2 Nezie Nezie 4096 May 31 17:28 Newfilefolder
-rw-rw-r-- 1 Nezie Nezie 82 May 18 20:26 Praise.txt
-rw-rw-r-- 1 Nezie Nezie 13 May 18 18:45 Testfile
-rw-rw-r-- 1 Nezie Nezie 143 May 18 21:40 create_usera.sh
-rw-rw-r-- 1 Nezie Nezie 36 May 18 18:41 myfile.txt
-rw-rwxr-x 1 Nezie Nezie 313 Jun 7 21:33 run_snort.sh
drwxrwxr-x 2 Nezie Nezie 4096 May 18 20:39 test_directory
drwxrwxr-x 6 Nezie Nezie 4096 Jun 2 21:12 webfolder
Nezie@Project-VM4:~$ cd webfolder
Nezie@Project-VM4:~/webfolder$ sudo netstat -tulpn
Kernel Interface table
Iface MTU RX-OK RX-ERR RX-DRP RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flg
eth0 1500 94105 0 0 0 87236 0 0 0 BMRU
lo 65536 165 0 0 0 165 0 0 0 LRU

```

4. Audit System Accounts: Review all user accounts, especially those with root or sudo privileges

Commands used: `sudo cat /etc/passwd`
`sudo cat /etc/group`
`sudo cat /etc/sudoers`

Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
2. Nezie@Project-VM4: ~/webfolder X +
# While you shouldn't normally run git as root, you need to
#Defaults:%sudo env_keep += "GIT_AUTHOR_* GIT_COMMITTER_"
# Per-user preferences; root won't have sensible values for
#Defaults:%sudo env_keep += "EMAIL DEBEMAIL DEBFULLNAME"
# "sudo scp" or "sudo rsync" should be able to use your SSH
#Defaults:%sudo env_keep += "SSH_AGENT_PID SSH_AUTH_SOCK"
# Ditto for GPG agent
#Defaults:%sudo env_keep += "GPG_AGENT_INFO"
# Host alias specification
# User alias specification
# Cmnd alias specification
# User privilege specification
root    ALL=(ALL:ALL) ALL
# Members of the admin group may gain root privileges
%admin  ALL=(ALL) ALL
# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL
# See sudoers(5) for more information on "@include" directive
@include /etc/sudoers.d
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ ls -l /etc/passwd ls -l /etc
ls: cannot access 'ls': No such file or directory
-rw-r--r-- 1 root root 2236 Jun 2 20:19 /etc/passwd
-rw-r----- 1 root shadow 1585 Jun 2 20:19 /etc/shadow
Nezie@Project-VM4:~/webfolder$ █

```

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5. **Verify File Permissions:** Check permissions on sensitive files

Command: ls -l /etc/passwd

ls -l /etc/shadow

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...

Host alias specification
User alias specification
Cmnd alias specification
User privilege specification
root ALL=(ALL:ALL) ALL
Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL
Allow members of group sudo to execute any command
%sudo ALL=(ALL:ALL) ALL
See sudoers(5) for more information on "@include" directive
@include /etc/sudoers.d
Nezie@Project-VM4:~/webfolder\$
Nezie@Project-VM4:~/webfolder\$ Nezie@Project-VM4:~/webfolder\$ ls -l /etc/passwd ls -l /etc/
ls: cannot access 'ls': No such file or directory
-rw-r--r-- 1 root root 2236 Jun 2 20:19 /etc/passwd
-rw-r----- 1 root shadow 1585 Jun 2 20:19 /etc/shadow
Nezie@Project-VM4:~/webfolder\$ Nezie@Project-VM4:~/webfolder\$
Nezie@Project-VM4:~/webfolder\$ ls -l /etc/passwd
-rw-r--r-- 1 root root 2236 Jun 2 20:19 /etc/passwd
Nezie@Project-VM4:~/webfolder\$ ls -l /etc/shadow
-rw-r----- 1 root shadow 1585 Jun 2 20:19 /etc/shadow
Nezie@Project-VM4:~/webfolder\$ sudo apt install lynis
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lynis is already the newest version (3.0.7-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded
Nezie@Project-VM4:~/webfolder\$

Follow terminal folder

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6. **Check for Vulnerabilities:** Use vulnerability scanners to identify known vulnerabilities.

Commands: sudo apt install lynis

sudo lynis audit system

Nezie@Project-VM4: ~/webfolder

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Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

[+] USB Devices

- Checking usb-storage driver (modprobe config) [NOT DISABLED]
- Checking USB devices authorization [DISABLED]
- Checking USBGuard [NOT FOUND]

[+] Storage

- Checking firewire ohci driver (modprobe config) [DISABLED]

[+] NFS

- Check running NFS daemon [NOT FOUND]

[+] Name services

- Checking search domains [FOUND]
- Checking /etc/resolv.conf options [FOUND]
- Searching DNS domain name [FOUND]
Domain name: cybo32sqr2eia2frofiforlrb.cx.internal.cloudapp.net
- Checking /etc/hosts [NONE]
- Duplicate entries in hosts file [NOT FOUND]
- Presence of configured hostname in /etc/hosts [NOT FOUND]
- Hostname mapped to localhost [NOT FOUND]
- Localhost mapping to IP address [OK]

[+] Ports and packages

- Searching package managers [FOUND]
- Searching dpkg package manager
 - Querying package manager [OK]
 - Query unpurged packages [OK]
- Checking security repository in sources.list file [OK]
- Checking APT package database [OK]
- Checking vulnerable packages [OK]
- Checking upgradeable packages [SKIPPED]
- Checking package audit tool [INSTALLED]

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Nezie@Project-VM4: ~/webfolder

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Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

[+] Shells

- Checking shells from /etc/shells
Result: found 10 shells (valid shells: 10).
 - Session timeout settings/tools [NONE]
 - Checking default umask values [NONE]
 - Checking default umask in /etc/bash.bashrc [NONE]
 - Checking default umask in /etc/profile [NONE]

[+] File systems

- Checking mount points
 - Checking /home mount point [SUGGESTION]
 - Checking /tmp mount point [SUGGESTION]
 - Checking /var mount point [SUGGESTION]
 - Query swap partitions (fstab)
Total swap partitions: 0
 - Testing /proc mount (hidepid) [NONE]
 - Checking for old files in /tmp [SUGGESTION]
 - Checking /tmp sticky bit [OK]
 - Checking /var/tmp sticky bit [OK]
 - ACL support root file system [OK]
 - Mount options of / [NON DEFAULT]
 - Mount options of /dev [HARDENED]
 - Mount options of /dev/shm [PARTIALLY HARDENED]
 - Mount options of /run [HARDENED]
 - Total without nodev:7 noexec:14 nosuid:10 ro or noexec (W^X): 9 of total 31
 - Disable kernel support of some filesystems

[+] USB Devices

- Checking usb-storage driver (modprobe config) [NOT DISABLED]
- Checking USB devices authorization [DISABLED]
- Checking USBGuard [NOT FOUND]

[+] Storage

- Checking firewire ohci driver (modprobe config) [DISABLED]

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Nezie@Project-VM4: ~/webfolder

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X server Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

[+] Users, Groups and Authentication

- Administrator accounts [OK]
- Unique UIDs [OK]
- Consistency of group files (grpck) [OK]
- Unique group IDs [OK]
- Unique group names [OK]
- Password file consistency [OK]
- Password hashing methods [SUGGESTION]
- Checking password hashing rounds [DISABLED]
- Query system users (non daemons) [DONE]
- NIS authentication support [NOT ENABLED]
- NIS authentication support [NOT ENABLED]
- sudoers file(s) [FOUND]
- Permissions for directory: /etc/sudoers [OK]
- Permissions for: /etc/sudoers [OK]
- Permissions for: /etc/sudoers.d/990-cloud-init-users [OK]
- Permissions for: /etc/sudoers.d/README [OK]
- PAM password strength tools [SUGGESTION]
- PAM configuration files (pam.conf) [FOUND]
- PAM configuration files (pam.d) [FOUND]
- PAM modules [FOUND]
- LDAP module in PAM [NOT FOUND]
- Accounts without expire date [SUGGESTION]
- Accounts without password [OK]
- Locked accounts [FOUND]
- Checking user password aging (minimum) [DISABLED]
- User password aging (maximum) [DISABLED]
- Checking expired passwords [OK]
- Checking Linux single user mode authentication [OK]
- Determining default umask [NOT FOUND]
- umask (/etc/profile) [SUGGESTION]
- umask (/etc/login.defs) [NOT ENABLED]
- LDAP authentication support [NOT ENABLED]
- Logging failed login attempts [ENABLED]

[+] Shells

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Nezie@Project-VM4: ~/webfolder

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X server Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

[+] Kernel

- systemd-initctl.service: [UNSAFE]
- systemd-journal.service: [PROTECTED]
- systemd-logind.service: [PROTECTED]
- systemd-networkd.service: [PROTECTED]
- systemd-resolved.service: [PROTECTED]
- systemd-rfkill.service: [UNSAFE]
- systemd-udevd.service: [MEDIUM]
- ubuntu-advantage.service: [UNSAFE]
- unattended-upgrades.service: [UNSAFE]
- user@1000.service: [UNSAFE]
- uidd.service: [PROTECTED]
- vgauth.service: [UNSAFE]
- walinuxagent.service: [UNSAFE]

[+] Memory and Processes

- Checking default run level [RUNLEVEL 5]
- Checking CPU support (NX/PAE) [FOUND]
- CPU support: PAE and/or NoExecute supported [DONE]
- Checking kernel version and release [DONE]
- Checking kernel type [DONE]
- Checking loaded kernel modules
 - Found 45 active modules
 - Checking Linux kernel configuration file [FOUND]
 - Checking default I/O kernel scheduler [NOT FOUND]
 - Checking for available kernel update [OK]
 - Checking core dumps configuration
 - configuration in systemd conf files [DEFAULT]
 - configuration in etc/profile [DEFAULT]
 - 'hard' configuration in security/limits.conf [DEFAULT]
 - 'soft' configuration in security/limits.conf [DEFAULT]
 - Checking setuid core dumps configuration [PROTECTED]
 - Check if reboot is needed [NO]
- Searching for dead/zombie processes [FOUND]
- Searching for dead/zombie processes [NOT FOUND]

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Nezie@Project-VM4: ~/webfolder

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X server Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

- apache2.service: [ UNSAFE ]
- apport.service: [ UNSAFE ]
- chrony.service: [ PROTECTED ]
- cloud-init-hotplugd.service: [ UNSAFE ]
- cron.service: [ UNSAFE ]
- dbus.service: [ UNSAFE ]
- dm-event.service: [ UNSAFE ]
- dmesg.service: [ UNSAFE ]
- emergency.service: [ UNSAFE ]
- getty@tty1.service: [ UNSAFE ]
- hv-copy-daemon.service: [ UNSAFE ]
- hv-kvp-daemon.service: [ UNSAFE ]
- hv-vss-daemon.service: [ UNSAFE ]
- ironman.service: [ MEDIUM ]
- iscsid.service: [ UNSAFE ]
- lvm2-lvmpolld.service: [ UNSAFE ]
- lxd-agent.service: [ UNSAFE ]
- lynis.service: [ UNSAFE ]
- multipathd.service: [ UNSAFE ]
- networkd-dispatcher.service: [ UNSAFE ]
- open-vm-tools.service: [ UNSAFE ]
- packagekit.service: [ UNSAFE ]
- plymouth-start-service: [ UNSAFE ]
- polkit.service: [ UNSAFE ]
- rc-local.service: [ UNSAFE ]
- rescue.service: [ UNSAFE ]
- rsyslog.service: [ UNSAFE ]
- serial-getty@ttyS0.service: [ UNSAFE ]
- snap.lxd.daemon.service: [ UNSAFE ]
- snap.lxd.user.daemon.service: [ UNSAFE ]
- snapd.service: [ UNSAFE ]
- snort.service: [ UNSAFE ]
- ssh.service: [ UNSAFE ]
- systemd-ask-password-console.service: [ UNSAFE ]
- systemd-ask-password-plymouth.service: [ UNSAFE ]
- systemd-fsckd.service: [ UNSAFE ]
- systemd-initctl.service: [ UNSAFE ]

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

- DM-Crypt, Cryptsetup & CryptMount:
  - Checking / on /dev/sda1 [ NOT ENCRYPTED ]
  - Checking /snap/core20/2264 on /var/lib/snapd/snaps/core20_2264.snap [ NOT ENCRYPTED ]
  - Checking /snap/snappd/21465 on /var/lib/snapd/snaps/snappd_21465.snap [ NOT ENCRYPTED ]
  - Checking /snap/lxd/28373 on /var/lib/snapd/snaps/lxd_28373.snap [ NOT ENCRYPTED ]
  - Checking /snap/core20/2318 on /var/lib/snapd/snaps/core20_2318.snap [ NOT ENCRYPTED ]
  - Checking /snap/snappd/21759 on /var/lib/snapd/snaps/snappd_21759.snap [ NOT ENCRYPTED ]
  - Checking /boot/efi on /dev/sda1 [ NOT ENCRYPTED ]

- Software:
  - apt-listbugs [ Not Installed ]
  - apt-listchanges [ Not Installed ]
  - needrestart [ Installed ]
  - fail2ban [ Not Installed ]
]

[+] Boot and services -----
  - Service Manager [ systemd ]
  - Checking UEFI boot [ ENABLED ]
  - Checking Secure Boot [ DISABLED ]
  - Checking presence GRUB2 [ FOUND ]
  - Checking for password protection [ NONE ]
  - Check running services (systemctl)
    Result: found 24 running services [ DONE ]
  - Check enabled services at boot (systemctl)
    Result: found 54 enabled services [ DONE ]
  - check startup files (permissions) [ OK ]
  - Running 'systemctl-analyze security'
    - apache2.service: [ UNSAFE ]
    - apport.service: [ UNSAFE ]
    - chrony.service: [ PROTECTED ]
    - cloud-init-hotplugd.service: [ UNSAFE ]
    - cron.service: [ UNSAFE ]
    - dbus.service: [ UNSAFE ]
    - dm-event.service: [ UNSAFE ]
    - dmesg.service: [ UNSAFE ]
    - emergency.service: [ UNSAFE ]
    - getty@tty1.service: [ UNSAFE ]

```

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Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
[...]
Log file: /var/log/lynis.log
Report file: /var/log/lynis-report.dat
Report version: 1.0
Plugin directory: /etc/lynis/plugins
Auditor: [Not Specified]
Language: en
Test category: all
Test group: all
- Program update status... [ NO UPDATE ]
[+] System tools
- Scanning available tools...
- Checking system binaries...
[+] Plugins (phase 1)
Note: plugins have more extensive tests and may take several minutes to complete
- Plugin: debian
[+] Debian Tests
- Checking for system binaries that are required by Debian Tests...
- Checking /bin... [ FOUND ]
- Checking /sbin... [ FOUND ]
- Checking /usr/bin... [ FOUND ]
- Checking /usr/sbin... [ FOUND ]
- Checking /usr/local/bin... [ FOUND ]
- Checking /usr/local/sbin... [ FOUND ]
- Authentication:
  - PAM (Pluggable Authentication Modules):
    - libpam-tmpdir [ FOUND ]
- File System Checks:
  - DM-Crypt, Cryptsetup & Cryptmount:
    - Checking / on /dev/sda1 [ NOT ENCRYPTED ]
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Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
[...]
Nezie@Project-VM4:~/webfolder$ ls -l /etc/shadow
-rw-r----- 1 root shadow 1585 Jun 2 20:19 /etc/shadow
Nezie@Project-VM4:~/webfolder$ sudo apt install lynis
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lynis is already the newest version (3.0.7-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Nezie@Project-VM4:~/webfolder$ sudo lynis audit system
[ Lynis 3.0.7 ]
#####
Lynis comes with ABSOLUTELY NO WARRANTY. This is free software, and you are
welcome to redistribute it under the terms of the GNU General Public License.
See the LICENSE file for details about using this software.

2007-2021, CISOfy - https://cisoxy.com/lynis/
Enterprise support available (compliance, plugins, interface and tools)
#####

[+] Initializing program
- Detecting OS...
- Checking profiles... [ DONE ]

Program version: 3.0.7
Operating system: Linux
Operating system name: Ubuntu
Operating system version: 22.04
Kernel version: 6.5.0
Hardware platform: x86_64
Hostname: Project-VM4

Profiles: /etc/lynis/default.prf
Log file: /var/log/lynis.log
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```

The image shows two separate instances of the MobaXterm application running on a Windows host. Each instance has a title bar at the top with the MobaXterm logo, a toolbar with various icons, and a 'Quick connect...' sidebar on the left. The main area contains a terminal window with a blue header. The top terminal window is titled '2. Nezie@Project-VM4 ~/webfolder' and displays the output of a 'lynis' security audit. It includes sections for 'Follow-up', 'Lynis security scan details', and 'Lynis 3.0.7'. The bottom terminal window is also titled '2. Nezie@Project-VM4 ~/webfolder' and shows a list of tasks or findings from the 'lynis' command, such as 'Install package apt-show-versions for patch management purposes [PKGS-7394]' and 'Determine if protocol 'dccp' is really needed on this system [NETW-3200]'. Both terminals have a dark theme and show the system tray at the bottom.

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
[+] Name
  - Non-native binary formats [ FOUND ]
  [-] Custom tests
    - Running custom tests... [ NONE ]
  [-] Plugins (phase 2)
  =====
  -[ Lynis 3.0.7 Results ]-
  Warnings (2):
  ! Found promiscuous interface [NETW-3015]
    Details : eth0
    Solution : Determine if this mode is required or whitelist interface in profile
    https://ciscofy.com/lynis/controls/NETW-3015/
  ! iptables module(s) loaded, but no rules active [FIRE-4512]
    https://ciscofy.com/lynis/controls/FIRE-4512/
  Suggestions (51):
  * This release is more than 4 months old. Check the website or GitHub to see if there is an update available. [LYNIS]
    https://ciscofy.com/lynis/controls/LYNIS/
  * Install libpam-tmpdir to set $TMP and $TMPDIR for PAM sessions [DEB-0280]
    https://ciscofy.com/lynis/controls/DEB-0280/
  * Install apt-listchanges to display a list of critical bugs prior to each APT installation. [DEB-0810]
    https://ciscofy.com/lynis/controls/DEB-0810/
  * Install apt-listchanges to display any significant changes prior to any upgrade via APT. [DEB-0811]
    https://ciscofy.com/lynis/controls/DEB-0811/
  * Install fail2ban to automatically ban hosts that commit multiple authentication errors. [DEB-0880]
    https://ciscofy.com/lynis/controls/DEB-0880/
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```

Nezie@Project-VM4: ~/webfolder

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Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

- Comparing sysctl key pairs with scan profile

- dev.tty.ldisc_autoload (exp: 0) [DIFFERENT]
- fs_protected_fifos (exp: 2) [DIFFERENT]
- fs_protected_hardlinks (exp: 1) [OK]
- fs_protected_regular (exp: 2) [OK]
- fs_protected_symlinks (exp: 1) [OK]
- fs_suid_dumpable (exp: 0) [DIFFERENT]
- kernel.core_uses_pid (exp: 1) [OK]
- kernel.ctrl_alt_del (exp: 0) [OK]
- kernel.dmesg_restrict (exp: 1) [OK]
- kernel.kpti_restrict (exp: 2) [DIFFERENT]
- kernel.modules_disabled (exp: 1) [DIFFERENT]
- kernel.perf_event_paranoid (exp: 3) [DIFFERENT]
- kernel.sched_wakeup_granularity (exp: 2) [OK]
- kernel.sysrq (exp: 0) [DIFFERENT]
- kernel.unprivileged_bpf_disabled (exp: 1) [DIFFERENT]
- kernel.yama_ptrace_scope (exp: 1 2 3) [OK]
- net.core_bpf_jit_harden (exp: 2) [DIFFERENT]
- net.ipv4.conf.all.accept_redirects (exp: 0) [OK]
- net.ipv4.conf.all.accept_source_route (exp: 0) [OK]
- net.ipv4.conf.all.boot_relay (exp: 0) [OK]
- net.ipv4.conf.all.forwarding (exp: 0) [OK]
- net.ipv4.conf.all.log_martians (exp: 1) [DIFFERENT]
- net.ipv4.conf.all.mc_forwarding (exp: 0) [OK]
- net.ipv4.conf.all.proxy_arp (exp: 0) [OK]
- net.ipv4.conf.all.rp_filter (exp: 1) [DIFFERENT]
- net.ipv4.conf.all.send_redirects (exp: 0) [DIFFERENT]
- net.ipv4.conf.default.accept_redirects (exp: 0) [DIFFERENT]
- net.ipv4.conf.default.accept_source_route (exp: 0) [OK]
- net.ipv4.conf.default.log_martians (exp: 1) [DIFFERENT]
- net.ipv4.icmp_echo_ignore_broadcasts (exp: 1) [OK]
- net.ipv4.icmp_ignore_bogus_error_responses (exp: 1) [OK]
- net.ipv4.tcp_syncookies (exp: 1) [OK]
- net.ipv4.tcp_timestamps (exp: 0 1) [OK]
- net.ipv6.conf.all.accept_redirects (exp: 0) [DIFFERENT]
- net.ipv6.conf.default.accept_redirects (exp: 0) [OK]
- net.ipv6.conf.default.accept_source_route (exp: 0) [OK]

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Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

[+] Software: file integrity

- Checking file integrity tools [DISABLED]
- dm-integrity (status) [DISABLED]
- dm-verity (status) [NOT FOUND]
- Checking presence integrity tool

[+] Software: System tooling

- Checking automation tooling [NOT FOUND]
- Automation tooling [FOUND]
- Checking presence of Snort [FOUND]
- Checking for IDS/IPS tooling

[+] Software: Malware

- Malware software components [NOT FOUND]

[+] File Permissions

- Starting file permissions check
- File: /boot/grub/grub.cfg [SUGGESTION]
- File: /etc/crontab [SUGGESTION]
- File: /etc/group [OK]
- File: /etc/groupgroup [OK]
- File: /etc/hosts.allow [OK]
- File: /etc/hosts.deny [OK]
- File: /etc/issue [OK]
- File: /etc/issue.net [OK]
- File: /etc/passwd [OK]
- File: /etc/passwdwd [OK]
- File: /etc/ssh/sshd_config [SUGGESTION]
- Directory: /root/.ssh [OK]
- Directory: /etc/cron.d [SUGGESTION]
- Directory: /etc/cron.daily [SUGGESTION]
- Directory: /etc/cron.hourly [SUGGESTION]
- Directory: /etc/cron.weekly [SUGGESTION]
- Directory: /etc/cron.monthly [SUGGESTION]

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Nezie@Project-VM4: ~/webfolder

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Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

- Checking accounting information [ NOT FOUND ]
- Checking sysstat accounting data [ NOT FOUND ]
- Checking audtid [ NOT FOUND ]

[+] Time and Synchronization
- NTP daemon found: chronyd [ FOUND ]
- Checking for a running NTP daemon or client [ OK ]

[+] Cryptography
- Checking for expired SSL certificates [0/140] [ NONE ]
- Found 0 encrypted and 0 unencrypted swap devices in use. [ OK ]
- Kernel entropy is sufficient [ YES ]
- HW RNG & rngd [ NO ]
- SW rng [ NO ]
- MGR variable not found [ WEAK ]

[+] Virtualization

[+] Containers

[+] Security frameworks
- Checking presence AppArmor [ FOUND ]
  - Checking AppArmor status [ ENABLED ]
    - Found 44 unconfined processes
- Checking presence SELinux [ NOT FOUND ]
- Checking presence TOMOYO Linux [ NOT FOUND ]
- Checking presence grsecsecurity [ NOT FOUND ]
- Checking for implemented MAC framework [ OK ]

[+] Software: file integrity
- Checking file integrity tools [ DISABLED ]
- dm-integrity (status)

```

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Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

- Checking Metalog status [ NOT FOUND ]
- Checking RSyslog status [ FOUND ]
- Checking RFC 3195 daemon status [ NOT FOUND ]
- Checking minilogd instances [ NOT FOUND ]
- Checking logrotate presence [ OK ]
- Checking remote logging [ NOT ENABLED ]
- Checking log directories (static list) [ DONE ]
- Checking open log files [ DONE ]
- Checking deleted files in use [ DONE ]

[+] Insecure services
- Installed inetd package [ NOT FOUND ]
  - Installed xinetd package [ OK ]
    - xinetd status
- Installed rsh client package [ OK ]
  - Installed rsh server package
- Installed telnet client package [ OK ]
  - Installed telnet server package
- Checking NIS client installation [ NOT FOUND ]
  - Checking NIS server installation
- Checking TFTP client installation [ OK ]
  - Checking TFTP server installation [ OK ]

[+] Banners and identification
- /etc/issue [ FOUND ]
  - /etc/issue contents [ WEAK ]
- /etc/issue.net [ FOUND ]
  - /etc/issue.net contents [ WEAK ]

[+] Scheduled tasks
- Checking crontab and cronjob files [ DONE ]

[+] Accounting
- Checking accounting information [ NOT FOUND ]

```

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Nezie@Project-VM4: ~/webfolder

```

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Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
[+] Name
- OpenSSH option: PermitTunnel [ OK ]
- OpenSSH option: Port [ SUGGESTION ]
- OpenSSH option: PrintLastLog [ OK ]
- OpenSSH option: StrictModes [ OK ]
- OpenSSH option: TCPKeepAlive [ OK ]
- OpenSSH option: UseDNS [ SUGGESTION ]
- OpenSSH option: X11Forwarding [ SUGGESTION ]
- OpenSSH option: AllowAgentForwarding [ SUGGESTION ]
- OpenSSH option: AllowUsers [ NOT FOUND ]
- OpenSSH option: AllowGroups [ NOT FOUND ]

[+] SNMP Support
- Checking running SNMP daemon [ NOT FOUND ]

[+] Databases
- No database engines found

[+] LDAP Services
- Checking OpenLDAP instance [ NOT FOUND ]

[+] PHP
- Checking PHP [ NOT FOUND ]

[+] Squid Support
- Checking running Squid daemon [ NOT FOUND ]

[+] Logging and files
- Checking for a running log daemon [ OK ]
- Checking Syslog-NG status [ NOT FOUND ]
- Checking systemd journal status [ FOUND ]
- Checking Metalog status [ NOT FOUND ]
- Checking RSyslog status [ FOUND ]

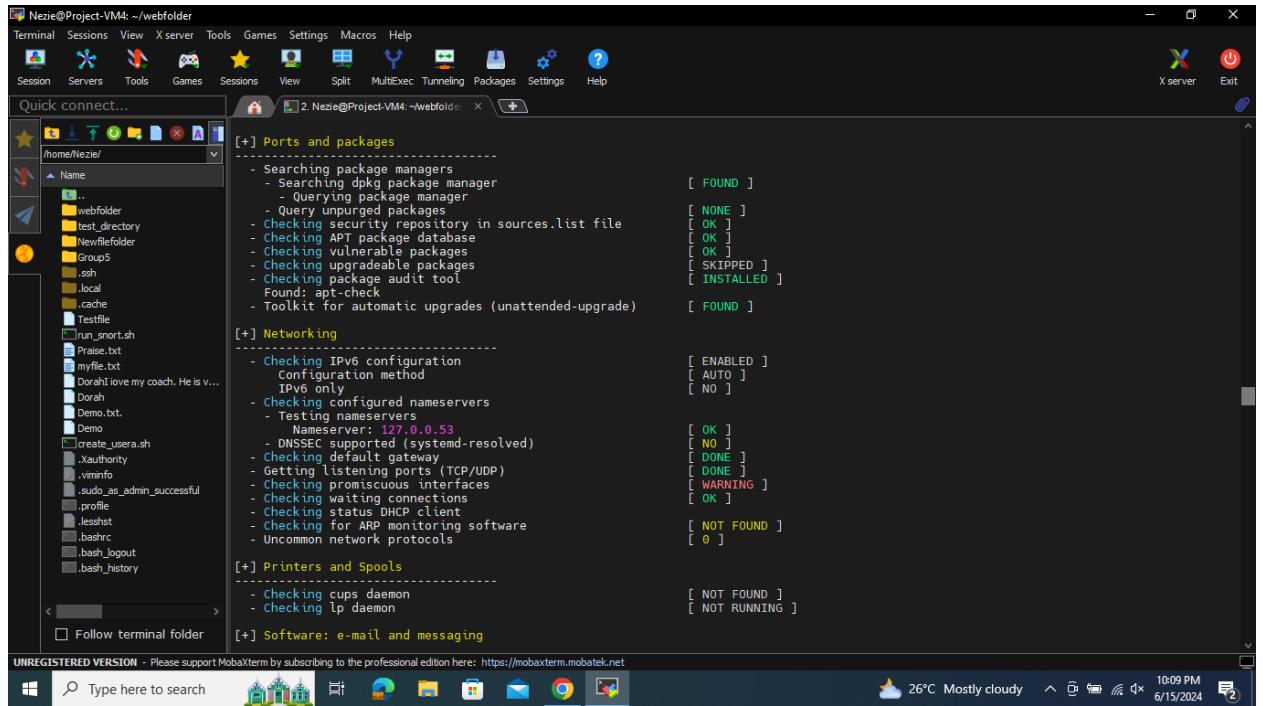
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Nezie@Project-VM4: ~/webfolder
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Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
Name
[+] Name
- Checking iptables kernel module [ FOUND ]
- Checking iptables policies of chains [ FOUND ]
- Checking for empty ruleset [ WARNING ]
- Checking for unused rules [ OK ]
- Checking host based firewall [ ACTIVE ]

[+] Software: webserver
- Checking Apache (binary /usr/sbin/apache2) [ FOUND ]
  Info: Configuration file found (/etc/apache2/apache2.conf)
  Info: No virtual hosts found
  * Loadable modules [ FOUND (118) ]
    . Found 118 loadable modules
      mod_evasive: anti-DDoS/brute force [ NOT FOUND ]
      mod_reqtimeout/mod_dos [ FOUND ]
      ModSecurity: web application firewall [ NOT FOUND ]
- Checking nginx [ NOT FOUND ]

[+] SSH Support
- Checking running SSH daemon [ FOUND ]
- Searching SSH configuration [ FOUND ]
- OpenSSH option: AllowTcpForwarding [ SUGGESTION ]
- OpenSSH option: ClientAliveCountMax [ SUGGESTION ]
- OpenSSH option: ClientAliveInterval [ OK ]
- OpenSSH option: Compression [ SUGGESTION ]
- OpenSSH option: FingerprintHash [ OK ]
- OpenSSH option: GatewayPorts [ OK ]
- OpenSSH option: IgnoreRhosts [ OK ]
- OpenSSH option: LoginGraceTime [ SUGGESTION ]
- OpenSSH option: LogLevel [ SUGGESTION ]
- OpenSSH option: MaxAuthTries [ SUGGESTION ]
- OpenSSH option: MaxSessions [ SUGGESTION ]
- OpenSSH option: PermitRootLogin [ OK ]

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```



Step 2: Enable Intrusion Detection and Prevention

1. Install and Configure an IDS/IPS:

Snort: Snort is an open-source IDS/IPS.

Commands:

```
sudo apt install snort
sudo snort -T -c /etc/snort/snort.conf
sudo systemctl start snort
sudo systemctl enable snort
```

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

```

2 byte states : 13.96
4 byte states : 0.00
[ Number of patterns truncated to 20 bytes: 1038 ]
==== Initialization Complete ====
-> Snort! <-
o... )~ Version 2.9.15.1 GRE (Build 15125)
By Martin Risch & The Snort Team: http://www.snort.org/contact#team
Copyright (C) 2014-2019 Cisco and/or its affiliates. All rights reserved.
Copyright (C) 1998-2019 Sourcefire, Inc., et al.
Using libpcap version 1.10.1 (with TPACKET_V3)
Using PCRE Version: 8.39 2016-06-14
Using ZLIB version: 1.2.11

Rules Engine: SF_SNORT_DETECTION_ENGINE Version 3.1 <Build 1>
Preprocessor Object: SF_REPUTATION Version 1.1 <Build 1>
Preprocessor Object: SF_POR Version 1.0 <Build 1>
Preprocessor Object: SF_DNP3 Version 1.1 <Build 1>
Preprocessor Object: SF_IMAP Version 1.0 <Build 1>
Preprocessor Object: appid Version 1.1 <Build 5>
Preprocessor Object: SF_DCERPC2 Version 1.0 <Build 3>
Preprocessor Object: SF_SMTP Version 1.1 <Build 9>
Preprocessor Object: SF_SDF Version 1.1 <Build 1>
Preprocessor Object: SF_MODBUS Version 1.1 <Build 1>
Preprocessor Object: SF_SSLPP Version 1.1 <Build 4>
Preprocessor Object: SF_SIP Version 1.1 <Build 1>
Preprocessor Object: SF_FTPTELNET Version 1.2 <Build 13>
Preprocessor Object: SF_DNS Version 1.1 <Build 4>
Preprocessor Object: SF_GTP Version 1.1 <Build 1>
Preprocessor Object: SF_SSH Version 1.1 <Build 3>

Snort successfully validated the configuration!
Snort exiting
snort.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable snort
Nezie@Project-VM4:~/webfolders$ 
```

Follow terminal folder

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Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

```

none
+-----[event-filter-local]-----
gen-id=1 sig-id=1991 type=lmt tracking=src count=1 seconds=60
gen-id=1 sig-id=2275 type=Threshold tracking=dst count=5 seconds=60
gen-id=1 sig-id=2523 type=Both tracking=dst count=10 seconds=10
gen-id=1 sig-id=2924 type=Threshold tracking=dst count=10 seconds=60
gen-id=1 sig-id=2923 type=Threshold tracking=dst count=10 seconds=60
gen-id=1 sig-id=2496 type=Both tracking=dst count=20 seconds=60
gen-id=1 sig-id=2495 type=Both tracking=dst count=20 seconds=60
gen-id=1 sig-id=2494 type=Both tracking=dst count=20 seconds=60
gen-id=1 sig-id=3273 type=Threshold tracking=src count=5 seconds=2
gen-id=1 sig-id=3152 type=Threshold tracking=src count=5 seconds=2

| none
+-----[suppression]-----

Rule application order: pass->drop->sdrop->reject->alert->log
Verifying Preprocessor Configurations
WARNING: flowbits key 'ms_sql_seen_dns' is checked but not ever set.
WARNING: flowbits key 'smb.tree.create.llsrpc' is set but not ever checked.
33 out of 1024 flowbits in use.

[ Port Based Pattern Matching Memory ]
+- [ Aho-Corasick Summary ]
| Storage Format : Full-Q
| Finite Automaton : DFA
| Alphabet Size : 256 Chars
| Sizof State : Variable (1,2,4 bytes)
| Instances : 215
| 1 byte states : 204
| 2 byte states : 11
| 4 byte states : 0
| Characters : 64755
| States : 31951
| Transitions : 863868
| State Density : 10.6%
| Patterns : 5041
| Match States : 3836
| Memory (MB) : 16.90


```

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Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

WARNING: /etc/snort/rules/community-web-php.rules(472) GID 1 SID 100000932 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-php.rules(473) GID 1 SID 100000933 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-php.rules(474) GID 1 SID 100000934 in rule duplicates previous rule. Ignoring old rule.

4057 Snort rules read
 3383 detection rules
  0 decoder rules
  0 preprocessor rules
3383 Option Chains linked into 932 Chain Headers
+-----[Rule Port Counts]-----
|   src      tcp    udp    icmp   ip
|   dst      151     18     0      0
|   any      3306    126    0      0
|   nc       383     48     52    22
|   s+d      27      8     15    20
+-----[detection-filter-config]
| memory-cap : 1048576 bytes
+-----[detection-filter-rules]
| none
+-----[rate-filter-config]
| memory-cap : 1048576 bytes
+-----[rate-filter-rules]
| none
+-----[event-filter-config]
| memory-cap : 1048576 bytes
+-----[event-filter-global]
| none

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

WARNING: /etc/snort/rules/community-sql-injection.rules(8) GID 1 SID 100000108 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(9) GID 1 SID 100000109 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(11) GID 1 SID 100000192 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(12) GID 1 SID 100000193 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(13) GID 1 SID 100000194 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(14) GID 1 SID 100000690 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(15) GID 1 SID 100000691 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(6) GID 1 SID 100000118 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(7) GID 1 SID 100000119 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(9) GID 1 SID 100000228 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(14) GID 1 SID 100000284 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(16) GID 1 SID 100000447 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(18) GID 1 SID 100000692 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(20) GID 1 SID 100000693 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-client.rules(23) GID 1 SID 100000864 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-iis.rules(7) GID 1 SID 100000138 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-iis.rules(8) GID 1 SID 100000139 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-iis.rules(9) GID 1 SID 100000173 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-web-iis.rules(10) GID 1 SID 100000174 in rule duplicates previous rule. Ignoring old rule.

```

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The image displays two side-by-side screenshots of the MobaXterm application interface. Both screens show a terminal window at the top with command-line output and a file explorer window below it. The left screen shows a terminal session for 'Nezie@Project-VM4: ~/webfolder' with the following command-line history:

```
Base64 Decoding: Enabled
Base64 Decoding Depth: Unlimited
Quoted-Printable Decoding: Enabled
Quoted-Printable Decoding Depth: Unlimited
Unix-to-Unix Decoding: Enabled
Unix-to-Unix Decoding Depth: Unlimited
Non-Encoded MIME attachment Extraction: Enabled
Non-Encoded MIME attachment Extraction Depth: Unlimited

POP Config:
Ports: 110
POP Memcap: 838860
MIME Max Mem: 838860
Base64 Decoding: Enabled
Base64 Decoding Depth: Unlimited
Quoted-Printable Decoding: Enabled
Quoted-Printable Decoding Depth: Unlimited
Unix-to-Unix Decoding: Enabled
Unix-to-Unix Decoding Depth: Unlimited
Non-Encoded MIME attachment Extraction: Enabled
Non-Encoded MIME attachment Extraction Depth: Unlimited

Modbus config:
Ports:
502
DNP3 config:
Memcap: 262144
Check Link-Layer CRCs: ENABLED
Ports:
2000
=====
Initializing rule chains...
WARNING: /etc/snort/rules/chat.rules(33) threshold (in rule) is deprecated; use detection_filter instead.
WARNING: /etc/snort/rules/community-sql-injection.rules(6) GID 1 SID 100000106 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(7) GID 1 SID 100000107 in rule duplicates previous rule. Ignoring old rule.
WARNING: /etc/snort/rules/community-sql-injection.rules(8) GID 1 SID 100000108 in rule duplicates previous rule. Ignoring old rule.
```

The right screen shows a similar terminal session for 'Nezie@Project-VM4: ~/webfolder' with a different command-line history:

```
Maximum SSL Heartbeat length: 0
Sensitive Data preprocessor config:
Global Alert Threshold: 25
Masked Output: DISABLED

SIP config:
Max number of sessions: 40000
Max number of dialogs in a session: 4 (Default)
Status: ENABLED
Ignore media channel: DISABLED
Max URI length: 512
Max Call ID length: 80
Max Request name length: 20 (Default)
Max From length: 256 (Default)
Max To length: 256 (Default)
Max Via length: 1024 (Default)
Max Contact length: 512
Max Content length: 2048
Ports:
5060 5061 5600
Methods:
invite cancel ack bye register options refer subscribe update join info message notify benotify do qauth sprack publish service
unsubscribe prack
IMAP Config:
Ports: 143
IMAP Memcap: 838860
MIME Max Mem: 838860
Base64 Decoding: Enabled
Base64 Decoding Depth: Unlimited
Quoted-Printable Decoding: Enabled
Quoted-Printable Decoding Depth: Unlimited
Unix-to-Unix Decoding: Enabled
Unix-to-Unix Decoding Depth: Unlimited
Non-Encoded MIME attachment Extraction: Enabled
Non-Encoded MIME attachment Extraction Depth: Unlimited

POP Config:
Ports: 110
POP Memcap: 838860
MIME Max Mem: 838860
```

Both screens also feature a 'Quick connect...' sidebar on the left and a Windows-style taskbar at the bottom with icons for search, file explorer, and system status.

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
Name
.. webfolder test_directory Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt Dorah love my coach. He is v... Dorah Demo.txt Demo create_usera.sh Xauthority .vmmrinfo .sudo_as_admin_successful .profile lessht bashrc bash_logout bash_history
Policy: WinXP
Detect ports (PAF)
SMB: 139 445
TCP: 135
UDP: 135
RPC over HTTP server: 593
RPC over HTTP proxy: None
Autodetect ports (PAF)
SMB: None
TCP: 1025-65535
RPC over HTTP server: 1025-65535
RPC over HTTP proxy: None
Invalid SMB shares: C$ D$ ADMIN$ Maximum SMB command chaining: 3 commands
SMB file inspection: Disabled
DNS config:
DNS Client rdata.txt Overflow Alert: ACTIVE
Obsolete DNS RR Types Alert: INACTIVE
Experimental DNS RR Types Alert: INACTIVE
Ports: 53
SSLPP config:
Encrypted packets: not inspected
Ports:
443 465 563 636 989
992 993 994 995 7801
7802 7900 7901 7902 7903
7904 7905 7906 7907 7908
7909 7910 7911 7912 7913
7914 7915 7916 7917 7918
7919 7920
Server side data is trusted
Maximum SSL Heartbeat length: 0
Sensitive Data preprocessor config:
Global Alert Threshold: 25
Masked Output: DISABLED
SIP config:
Max number of sessions: 40000
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Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
Name
.. webfolder test_directory Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt Dorah love my coach. He is v... Dorah Demo.txt Demo create_usera.sh Xauthority .vmmrinfo .sudo_as_admin_successful .profile lessht bashrc bash_logout bash_history
Ignore Data: No
Ignore TLS Data: No
Ignore SMTP Alerts: No
Max Command Line Length: 512
Max auth Command Line Length: 1000
Max Specific Command Line Length:
ATRN:255 AUTH:246 BDAT:255 DATA:246 DEBUG:255
EHLO:500 EMAIL:255 ESAM:255 ESN:255 ESM:255
ETRN:246 EVFY:255 EXPN:255 HELO:500 HELP:500
IDENT:255 MAIL:260 NOOP:255 ONEC:246 QUEU:246
QUIT:255 RCPT:300 RSET:246 SAMI:246 SEND:246
SIZE:255 STARTLS:246 SONM:246 TICK:246 TIME:246
TURN:246 TURNME:246 VERB:246 VRF:255 X-EXPS:246
XDR:246 XAUTH:246 XCR:246 XECH50:246 XEN:246
XLICENSE:246 X-LINK2STATE:246 XQUE:246 XSTA:246
XTRN:246
Max Header Line Length: 1000
Max Response Line Length: 512
X-Link2State Alert: Yes
Drop on X-link2state Alert: No
Alert on commands: None
Alert on unknown commands: No
SMTP Memcap: 838860
MIME Max Mem: 838860
Base64 Decoding: Enabled
Base64 Decoding Depth: Unlimited
Quoted-Printable Decoding: Enabled
Quoted-Printable Decoding Depth: Unlimited
Unix-to-Unix Decoding: Enabled
Unix-to-Unix Decoding Depth: Unlimited
Non-Encoded MIME attachment Extraction: Enabled
Non-Encoded MIME attachment Extraction Depth: Unlimited
Log Attachment filename: Enabled
Log MAIL FROM Address: Enabled
Log RCPT TO Addresses: Enabled
Log Email Headers: Enabled
Email Hdrs Log Depth: 1464
SSH config:
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```

```
Nezie@Project-VM4: ~/webfolder
alert_fragments: INACTIVE
alert_large_fragments: INACTIVE
alert_incomplete: INACTIVE
alert_multiple_requests: INACTIVE
FTPTelnet Config:
GLOBAL CONFIG
Inspection Type: stateful
Check for Encrypted Traffic: YES alert: NO
Continue to check encrypted data: YES
TELNET CONFIG:
Ports: 23
Are You There Threshold: 20
Normalize: YES
Detect Anomalies: YES
FTP CONFIG:
FTP Server: default
Ports (PAF): 21 2100 3535
Check for Telnet Cmds: YES alert: YES
Ignore Telnet Cmd Operations: YES alert: YES
Ignore open data channels: NO
FTP Client: default
Check for Bounce Attacks: YES alert: YES
Check for Telnet Cmds: YES alert: YES
Ignore Telnet Cmd Operations: YES alert: YES
Max Response Length: 256
SMTP Config:
Ports: 25 465 587 691
Inspection Type: Stateful
Normalize: ATRN AUTH BDAT DATA DEBUG EHLO EMAIL ESAM ESND ESOM ETRN EVFY EXPN HELO HELP IDENT MAIL NOOP ONEX QUEU QUIT RCPT RSET SAML
SEND STARTTLS 50ML TICK TIME TURN TURNME VERB VRFY X-EXPS XADR XAUTH XCIR XEXCH50 XGEN XLICENSE X-LINK2STATE XQUE XSTA XTRN XUSR CHUNKING
X-ADAT X-DRCP X-ERCP X-EXCH50
Ignore Data: NO
Ignore TLS Data: NO
Ignore SMTP Alerts: NO
Max Command Line Length: 512
Max auth Command Line Length: 1000
Max Specific Command Line Length:
ATRN:255 AUTH:246 BDAT:255 DATA:246 DEBUG:255

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```



```
Nezie@Project-VM4: ~/webfolder
Server profile: All
Ports (PAF): 80 81 311 383 591 593 901 1220 1414 1741 1830 2301 2381 2809 3037 3128 3702 4343 4848 5250 6988 7000 7001 7144 7145 75
10 7777 7779 8008 8014 8028 8085 8088 8090 8118 8123 8180 8181 8243 8280 8300 8800 8888 8899 9000 9060 9080 9096 9091 9443 9999
11371 34443 34444 41080 50002 55555
server Flow Depth: 0
Client Flow Depth: 0
Max Chunk Length: 500000
Small Chunk Length Evasion: chunk size <= 10, threshold >= 5 times
Max Header Field Length: 750
Max Number of Header Fields: 100
Max Number of Whitespace allowed with header folding: 200
Inspect Pipeline Requests: YES
URI Discovery Strict Mode: NO
Allow Proxy Usage: NO
Disable Alerting: NO
Oversize Dir Length: 500
Only inspect URI: NO
Normalize HTTP Headers: NO
Inspect HTTP Cookies: YES
Inspect HTTP Responses: YES
Extract Gzip from responses: YES
Decompress response files: YES
Unlimited decompression of gzip data from responses: YES
Normalize Javascripts in HTTP Responses: YES
Max Number of Whitespace allowed with Javascript Obfuscation in HTTP responses: 200
Normalize HTTP Cookies: NO
Enable XFF and True Client IP: NO
Log HTTP URI data: NO
Log HTTP Hostname data: NO
Extended ASCII code support in URI: NO
Ascii: YES alert: NO
Double Decoding: YES alert: NO
%U Encoding: YES alert: YES
Bare Byte: YES alert: NO
UTF 8: YES alert: NO
IIS Unicode: YES alert: NO
Multiple Slash: YES alert: NO
IIS Backslash: YES alert: NO

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```

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

Track IP sessions: INACTIVE
Log info if session memory consumption exceeds 1048576
Send up to 2 active responses
Wait at least 5 seconds between responses
Protocol Aware Flushing: ACTIVE
    Maximum Flush Point: 16000
Stream TCP Policy config:
    Bound Address: default
    Reassembly Policy: WINDOWS
    Timeout: 180 seconds
    Limit on TCP Overlaps: 10
    Maximum number of bytes to queue per session: 1048576
    Maximum number of segs to queue per session: 2621
    Options:
        Require 3-Way Handshake: YES
        3-Way Handshake Timeout: 180
        Detect Anomalies: YES
Reassembly Ports:
    21 client (Footprint)
    22 client (Footprint)
    23 client (Footprint)
    25 client (Footprint)
    42 client (Footprint)
    53 client (Footprint)
    79 client (Footprint)
    80 client (Footprint) server (Footprint)
    81 client (Footprint) server (Footprint)
    109 client (Footprint)
    110 client (Footprint)
    111 client (Footprint)
    113 client (Footprint)
    119 client (Footprint)
    135 client (Footprint)
    136 client (Footprint)
    137 client (Footprint)
    139 client (Footprint)
    143 client (Footprint)
    161 client (Footprint)
Follow terminal folder

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor//libsf_pop_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor//libsf_reputation_preproc.so... done
Finished Loading all dynamic preprocessor libs from /usr/lib/snort/snort_dynamicpreprocessor/
Log directory = /var/log/snort
WARNING: ip4 normalizations disabled because not inline.
WARNING: tcp normalizations disabled because not inline.
WARNING: icmp4 normalizations disabled because not inline.
WARNING: ip6 normalizations disabled because not inline.
WARNING: icmp6 normalizations disabled because not inline.
Frag3 global config:
    Max frags: 65536
    Fragment memory cap: 4194304 bytes
Frag3 engine config:
    Bound Address: default
    Target-based policy: WINDOWS
    Fragment timeout: 180 seconds
    Fragment in-ctl: 1
    Fragment Anomalies: Alert
    Overlap Limit: 10
    Min fragment Length: 100
    Max Expected Streams: 768
Stream global config:
    Track TCP sessions: ACTIVE
    Max TCP sessions: 262144
    TCP cache pruning timeout: 30 seconds
    TCP cache nominal timeout: 180 seconds
    Memcap (for reassembly packet storage): 8388608
    Track UDP sessions: ACTIVE
    Max UDP sessions: 131072
    UDP cache pruning timeout: 30 seconds
    UDP cache nominal timeout: 180 seconds
    Track ICMP sessions: INACTIVE
    Track IP sessions: INACTIVE
    Log info if session memory consumption exceeds 1048576
    Send up to 2 active responses
    Wait at least 5 seconds between responses
    Protocol Aware Flushing: ACTIVE
    Maximum Flush Point: 16000
Follow terminal folder

```

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Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
/home/Nezie/
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DarahI love my coach. He is v... Darah Demo.txt Demo create_usera.sh Xauthority .vmmrfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
Tagged Packet Limit: 256
Search-Method-Optimizations = enabled
Maximum pattern length = 20
Loading dynamic engine /usr/lib/snort/snort_dynamicengine/libsf_engine.so... done
Loading all dynamic detection libs from /usr/lib/snort/snort_dynamicrules...
WARNING: No dynamic libraries found in directory /usr/lib/snort/snort_dynamicrules.
Finished Loading all dynamic detection libs from /usr/lib/snort/snort_dynamicrules.
Loading all dynamic preprocessor libs from /usr/lib/snort/snort_dynamicpreprocessor...
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_ssh_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_gtp_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_ftptelnet_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_dns_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_asn1_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_modbus_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_smtp_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_dce2_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_dnp3_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_pop_preproc.so... done
Loading dynamic preprocessor library /usr/lib/snort/snort_dynamicpreprocessor/libsf_reputation_preproc.so... done
Finished Loading all dynamic preprocessor libs from /usr/lib/snort/snort_dynamicpreprocessor/
Log directory = /var/log/snort
WARNING: ip4 normalizations disabled because not inline.
WARNING: tcp normalizations disabled because not inline.
WARNING: icmp4 normalizations disabled because not inline.
WARNING: ip6 normalizations disabled because not inline.
WARNING: icmp6 normalizations disabled because not inline.
Frag3 global config:
  Max frags: 65536
  Fragment memory cap: 4194304 bytes
Frag3 engine config:
  Bound Address: default
  Target-based policy: WINDOWS
  Fragment timeout: 180 seconds
  Fragment min_ttl: 1

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```

Nezie@Project-VM4: ~/webfolder

```

Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
/home/Nezie/
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DarahI love my coach. He is v... Darah Demo.txt Demo create_usera.sh Xauthority .vmmrfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
Tagged Packet Limit: 256
Search-Method-Optimizations = AC-Full-0
Split Any/Any group = enabled
Search-Method-Optimizations = enabled
Maximum pattern length = 20
PortVar 'HTTP_PORTS' defined : [ 80:81 311 383 591 593 901 1220 1414 1741 1830 2301 2381 2809 3037 3128 3702 4343 4848 5250 6988 7000:7001 7145 7510 7777 7779 8000 8008 8014 8028 8080 8085 8088 8090 8118 8123 8180:8181 8243 8280 8300 8800 8888 8899 9000 9060 9080 9090 :9091 9443 9999 11371 34443:34444 41080 50002 55555 ]
PortVar 'SHELLCODE_PORTS' defined : [ 0:79 81:65535 ]
PortVar 'ORACLE_PORTS' defined : [ 1024:65535 ]
PortVar 'SSH_PORTS' defined : [ 22 ]
PortVar 'FTP_PORTS' defined : [ 21 2100 3535 ]
PortVar 'SIP_PORTS' defined : [ 5060:5061 5600 ]
PortVar 'FILE_DATA_PORTS' defined : [ 80:81 110 143 311 383 591 593 901 1220 1414 1741 1830 2301 2381 2809 3037 3128 3702 4343 4848 5250 6988 7000:7001 7144:7145 7510 7777 7779 8000 8008 8014 8028 8080 8085 8088 8090 8118 8123 8180:8181 8243 8280 8300 8800 8888 8899 9000 9060 9080 9090 :9090:9091 9443 9999 11371 34443:34444 41080 50002 55555 ]
PortVar 'GTP_PORTS' defined : [ 2123 2152 3386 ]
Detection:
  Search-Method = AC-Full-0
  Split Any/Any group = enabled
  Search-Method-Optimizations = enabled
  Maximum pattern length = 20
Tagged Packet Limit: 256
Loading dynamic engine /usr/lib/snort/snort/snort_dynamicengine/libsf_engine.so... done
Loading all dynamic detection libs from /usr/lib/snort/snort_dynamicrules...
WARNING: No dynamic libraries found in directory /usr/lib/snort/snort_dynamicrules.

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```

```

Nezie@Project-VM4: ~/webfolder
[2. Nezie@Project-VM4: ~/webfolder]
2 byte states : 13.96
4 byte states : 0.00
[ Number of patterns truncated to 20 bytes: 1038 ]
--- Initialization Complete ---
o'...~ -> Snort! <-
By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
Copyright (C) 2014-2019 Cisco and/or its affiliates. All rights reserved.
Copyright (C) 1998-2013 Sourcefire, Inc., et al.
Using libpcap version 1.10.1 (with TPACKET_V3)
Using PCRE version: 8.39 2016-06-14
Using ZLIB version: 1.2.11

Rules Engine: SF_SNORT_DETECTION_ENGINE Version 3.1 <Build 1>
Preprocessor Object: SF_REPUTATION Version 1.1 <Build 1>
Preprocessor Object: SF_POP Version 1.0 <Build 1>
Preprocessor Object: SF_DNP3 Version 1.1 <Build 1>
Preprocessor Object: SF_IMAP Version 1.0 <Build 1>
Preprocessor Object: appid Version 1.1 <Build 5>
Preprocessor Object: SF_DCERPC2 Version 1.0 <Build 3>
Preprocessor Object: SF_SMTP Version 1.1 <Build 9>
Preprocessor Object: SF_SDF Version 1.1 <Build 1>
Preprocessor Object: SF_MODBUS Version 1.1 <Build 1>
Preprocessor Object: SF_SSLPP Version 1.1 <Build 4>
Preprocessor Object: SF_SIP Version 1.1 <Build 1>
Preprocessor Object: SF_FTPTELNET Version 1.2 <Build 13>
Preprocessor Object: SF_DNS Version 1.1 <Build 4>
Preprocessor Object: SF_GTP Version 1.1 <Build 1>
Preprocessor Object: SF_SSH Version 1.1 <Build 3>

Snort successfully validated the configuration!
Snort exiting
snort.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable snort
Nezie@Project-VM4:~/webfolders$ 

```

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Suricata was installed: Suricata is an advanced IDS/IPS.

Commands: sudo apt install suricata

sudo suricata-update

sudo systemctl start suricata

sudo systemctl enable suricata

```

Nezie@Project-VM4: ~/webfolder
[2. Nezie@Project-VM4: ~/webfolder]
o"..."~ Version 2.9.15.1 GRE (Build 15125)
By Martin Roesch & The Snort Team: http://www.snort.org/contact#team
Copyright (C) 2014-2019 Cisco and/or its affiliates. All rights reserved.
Copyright (C) 1998-2013 Sourcefire, Inc., et al.
Using libpcap version 1.10.1 (with TPACKET_V3)
Using PCRE version: 8.39 2016-06-14
Using ZLIB version: 1.2.11

Rules Engine: SF_SNORT_DETECTION_ENGINE Version 3.1 <Build 1>
Preprocessor Object: SF_REPUTATION Version 1.1 <Build 1>
Preprocessor Object: SF_POP Version 1.0 <Build 1>
Preprocessor Object: SF_DNP3 Version 1.1 <Build 1>
Preprocessor Object: SF_IMAP Version 1.0 <Build 1>
Preprocessor Object: appid Version 1.1 <Build 5>
Preprocessor Object: SF_DCERPC2 Version 1.0 <Build 3>
Preprocessor Object: SF_SMTP Version 1.1 <Build 9>
Preprocessor Object: SF_SDF Version 1.1 <Build 1>
Preprocessor Object: SF_MODBUS Version 1.1 <Build 1>
Preprocessor Object: SF_SSLPP Version 1.1 <Build 4>
Preprocessor Object: SF_SIP Version 1.1 <Build 1>
Preprocessor Object: SF_FTPTELNET Version 1.2 <Build 13>
Preprocessor Object: SF_DNS Version 1.1 <Build 4>
Preprocessor Object: SF_GTP Version 1.1 <Build 1>
Preprocessor Object: SF_SSH Version 1.1 <Build 3>

Snort successfully validated the configuration!
Snort exiting
snort.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable snort
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ sudo apt install suricata
sudo suricata-update
sudo suricata-update
sudo systemctl start suricata
sudo systemctl enable suricata

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

2. Nezie@Project-VM4:~/webfolder

Name

- ..
- webfolder
- test_directory
- Newfilefolder
- Group5
- .ssh
- .local
- .cache
- Testfile
- run_snort.sh
- Praise.txt
- myfile.txt
- DorahI love my coach. He is v...
- Dorah
- Demo.txt
- Demo
- create_usera.sh
- Xauthority
- .vmmrc
- .sudo_as_admin_successful
- .profile
- .lesshst
- .bashrc
- .bash_logout
- .bash_history

Preprocessor Object: SF_DCERPC2 Version 1.0 <Build 3>
Preprocessor Object: SF_SMTP Version 1.1 <Build 9>
Preprocessor Object: SF_SDF Version 1.1 <Build 1>
Preprocessor Object: SF_MODBUS Version 1.1 <Build 1>
Preprocessor Object: SF_SSLPP Version 1.1 <Build 4>
Preprocessor Object: SF_SIP Version 1.1 <Build 1>
Preprocessor Object: SF_FPTTELNET Version 1.2 <Build 13>
Preprocessor Object: SF_DNS Version 1.1 <Build 4>
Preprocessor Object: SF_GTP Version 1.1 <Build 1>
Preprocessor Object: SF_SSH Version 1.1 <Build 3>

Snort successfully validated the configuration!

Snort exiting
snort.service is not a native service, redirecting to systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable snort

Nezie@Project-VM4:~/webfolders\$
Nezie@Project-VM4:~/webfolders\$
Nezie@Project-VM4:~/webfolders\$
Nezie@Project-VM4:~/webfolders\$

Nezie@Project-VM4:~/webfolders\$ sudo apt install suricata

sudo suricata-update
sudo systemctl start suricata
sudo systemctl enable suricata
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
libevent-2.1-7 libevent-pthreads-2.1-7 libhiredis0.14 libhtp2 libhyperscan5 libnet1 libnetfilter-log1 python3-simplejson
suricata-upgrade
Suggested packages:
libtcmalloc-minimal4
The following NEW packages will be installed:
libevent-2.1-7 libevent-pthreads-2.1-7 libhiredis0.14 libhtp2 libhyperscan5 libnet1 libnetfilter-log1 python3-simplejson suricata
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 5068 kB of archives.
After this operation, 24.7 MB of additional disk space will be used.

Do you want to continue? [Y/n] ■

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26°C Mostly cloudy 10:33 PM 6/15/2024

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

```

15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/dnp3-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/dns-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/http-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/https-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/kerberos-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/nfs-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/ntp-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/smb-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/smtp-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/stream-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/tls-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Ignoring file rules/emerging-deleted.rules
15/6/2024 -- 21:34:05 - <Info> -- Loaded 50192 rules.
15/6/2024 -- 21:34:05 - <Info> -- Disabled 14 rules.
15/6/2024 -- 21:34:05 - <Info> -- Enabled 0 rules.
15/6/2024 -- 21:34:05 - <Info> -- Modified 0 rules.
15/6/2024 -- 21:34:05 - <Info> -- Dropped 0 rules.
15/6/2024 -- 21:34:08 - <Info> -- Writing /var/lib/suricata/rules/suricata.rules: total: 50192; enabled: 38276; added: 50192; removed 0; modified: 0
15/6/2024 -- 21:34:08 - <Info> -- Writing /var/lib/suricata/rules/classification.config
15/6/2024 -- 21:34:08 - <Info> -- Backing up current rules.
15/6/2024 -- 21:34:08 - <Info> -- Testing with suricata -T.
15/6/2024 -- 21:34:46 - <Info> -- Done.
Synchronizing state of suricata.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable suricata
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ curl -o https://updates.atomicorp.com/installers/atomic
chmod +x atomic
sudo ./atomic
sudo yum install ossec-hids ossec-hids-server
sudo /var/ossec/bin/ossec-control start

```

Follow terminal folder

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26°C Mostly cloudy 10:38 PM 6/15/2024

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Xserver Exit

Quick connect...

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

2. Nezie@Project-VM4: ~/webfolder

```

No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
15/6/2024 -- 21:34:05 - <Info> -- Using data-directory /var/lib/suricata.
15/6/2024 -- 21:34:05 - <Info> -- Using Suricata configuration /etc/suricata/suricata.yaml
15/6/2024 -- 21:34:05 - <Info> -- Using /etc/suricata/rules for Suricata provided rules.
15/6/2024 -- 21:34:05 - <Info> -- Found Suricata version 6.0.4 at /usr/bin/suricata.
15/6/2024 -- 21:34:05 - <Info> -- Loading /etc/suricata/suricata.yaml
15/6/2024 -- 21:34:05 - <Info> -- Disabling rules for protocol http2
15/6/2024 -- 21:34:05 - <Info> -- Disabling rules for protocol modbus
15/6/2024 -- 21:34:05 - <Info> -- Disabling rules for protocol dnp3
15/6/2024 -- 21:34:05 - <Info> -- Disabling rules for protocol enip
15/6/2024 -- 21:34:05 - <Info> -- No sources configured, will use Emerging Threats Open
15/6/2024 -- 21:34:05 - <Info> -- Fetching https://rules.emergin...tar.gz.
100% 4314128/4314128
15/6/2024 -- 21:34:05 - <Info> -- Done.
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/app-layer-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/decoder-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/dhcp-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/dnp3-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/dns-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/files.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/http-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/https-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/kerberos-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/modbus-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/nfs-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/ntp-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/smb-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/smtp-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/stream-events.rules
15/6/2024 -- 21:34:05 - <Info> -- Loading distribution rule file /etc/suricata/rules/tls-events.rules
15/6/2024 -- 21:34:06 - <Info> -- Ignoring file rules/emerging-deleted.rules
15/6/2024 -- 21:34:07 - <Info> -- Loaded 50192 rules.
15/6/2024 -- 21:34:08 - <Info> -- Disabled 14 rules.
15/6/2024 -- 21:34:08 - <Info> -- Enabled 0 rules.
15/6/2024 -- 21:34:08 - <Info> -- Modified 0 rules.

```

Follow terminal folder

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USD/GBP +0.57% 10:36 PM 6/15/2024

```

Nezie@Project-VM4: ~/webfolder
Executing: /lib/systemd/systemd-sysv-install enable snort
Nezie@Project-VM4:~/webfolder$ 
Nezie@Project-VM4:~/webfolder$ 
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ sudo apt install suricata
sudo suricata-update
Building dependency tree... done
Reading package lists... done
The following additional packages will be installed:
  libevent-2.1-7 libevent-pthreads-2.1-7 libhiredis0.14 libhtp2 libhyperscan5 libnet1 libnetfilter-log1 python3-simplejson
Suggested packages:
  libtalloc-minimal4
The following NEW packages will be installed:
  libevent-2.1-7 libevent-pthreads-2.1-7 libhiredis0.14 libhtp2 libhyperscan5 libnet1 libnetfilter-log1 python3-simplejson suricata
  suricata-update
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 5068 kB of archives.
After this operation, 24.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 libhyperscan5 amd64 5.4.0-2 [2485 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-simplejson amd64 3.17.6-1build1 [54.7 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libevent-2.1-7 amd64 2.1.12-stable-1build3 [148 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libevent-pthreads-2.1-7 amd64 2.1.12-stable-1build3 [7642 B]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 libhiredis0.14 amd64 0.14.1-2 [32.8 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 libhtp2 amd64 1:0.5.39-1 [70.5 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libnet1 amd64 1.1.6+dfsg-3.1build3 [46.9 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 libnetfilter-log1 amd64 1.0.2-1 [13.5 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 suricata amd64 1:6.0.4-3 [2152 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 suricata-update amd64 1.2.3-1 [56.7 kB]
Fetched 5068 kB in 0s (28.3 MB/s)
Preconfiguring packages ...
Selecting previously unselected package libhyperscan5.
(Reading database ... 91223 files and directories currently installed.)

```

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2. Configure Alerts and Notifications: Configure your IDS/IPS to send alerts via email or other notification methods.

3. Enable and Configure a Firewall: Set up firewall rules to restrict access to necessary services only.

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/Nezie/
Name
+ webfolder
+ test_directory
+ Newfilefolder
+ Group5
+ .ssh
+ .local
+ .cache
+ Testfile
+ run_snort.sh
+ Praise.txt
+ myfile.txt
+ Dorah_love_my_coach_He_is_v...
+ Dorah
+ Demo.txt.
+ Demo
+ create_usera.sh
+ .Xauthority
+ .viminfo
+ .sudo_as_admin_successful
+ .profile
+ lessht
+ .bashrc
+ .bash_logout
+ .bash_history
Nezie@Project-VM4:~$ 
Nezie@Project-VM4:~$ 
Nezie@Project-VM4:~$ 
Nezie@Project-VM4:~$ cd webfolder
Nezie@Project-VM4:~/webfolder$ sudo ufw allow ssh
sudo ufw allow http
sudo ufw allow https
sudo ufw enable
sudo ufw status
Rules updated
Rules updated (v6)
Rules updated
Rules updated
Rules updated
Rules updated (v6)
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
Status: active
To          Action      From
--          ----      --
Apache        ALLOW     Anywhere
22/tcp       ALLOW     Anywhere
80/tcp       ALLOW     Anywhere
443          ALLOW     Anywhere
Apache (v6)   ALLOW     Anywhere (v6)
22/tcp (v6)  ALLOW     Anywhere (v6)
80/tcp (v6)  ALLOW     Anywhere (v6)
443 (v6)    ALLOW     Anywhere (v6)
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ 
Nezie@Project-VM4:~/webfolders$ sudo apt install logwatch
sudo logwatch --detail high --mailto your_email@example.com --service all --range today

```

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The screenshot displays two terminal sessions in the MobaXterm application.

Top Terminal Session:

- Terminal window title: 2. Nezie@Project-VM4 ~/webfolder
- File Explorer sidebar shows a directory tree under /home/Nezie/.
- Terminal command history:
 - cd webfolder
 - ls -l
 - sudo ufw allow ssh
 - sudo ufw status
 - Rules updated
 - Rules updated (v6)
 - Rules updated
 - Rules updated (v6)
 - Rules updated (v6)
 - Rules updated (v6)
 - Command may disrupt existing ssh connections. Proceed with operation (y/n)? y
 - Firewall is active and enabled on system startup
 - Status: active
- Output of 'ufw status':

To	Action	From
--	ALLOW	Anywhere
Apache	ALLOW	Anywhere
22/tcp	ALLOW	Anywhere
80/tcp	ALLOW	Anywhere
443	ALLOW	Anywhere
Apache (v6)	ALLOW	Anywhere (v6)
22/tcp (v6)	ALLOW	Anywhere (v6)
80/tcp (v6)	ALLOW	Anywhere (v6)
443 (v6)	ALLOW	Anywhere (v6)

Bottom Terminal Session:

- Terminal window title: 2. Nezie@Project-VM4 ~/webfolder
- File Explorer sidebar shows a directory tree under /home/Nezie/.
- Terminal command history:
 - Last login: Mon Jun 17 12:51:40 2024 from 82.9.92.181
 - pwd
 - ls -l
 - total 36
 - File listing (continues from previous session):
 - Demo
 - Demo.txt
 - Dorah
 - Dorah_love_my_coach
 - Group5
 - Newfilefolder
 - Testfile
 - Trun_snort.sh
 - Praise.txt
 - myfile.txt
 - Dorah_love_my_coach
 - Dorah
 - Demo.txt
 - Demo
 - Create_user.sh
 - Xauthority
 - Viminfo
 - Sudo_as_admin_successful
 - .profile
 - .lessht
 - .bashrc
 - .bash_logout
 - .bash_history

4. Log Management and Monitoring:

- **Syslog:** Centralized logging service.
 - **Logwatch:** Log analyzer and reporter.
 - **ELK Stack (Elasticsearch, Logstash, Kibana):** Powerful log management and analysis suite. Commands used: sudo apt install logwatch

- sudo logwatch --detail high --mailto your_email@example.com --service all --range today

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
[2. Nezie@Project-VM4:~/webfolder] cx.internal.cloudapp.net, , localhost
setting relayhost:
setting mailnetworks: 127.0.0.0/8 [::ffff:127.0.0.0]/104 [::1]/128
setting mailbox_size_limit: 0
setting recipient_delimiter: +
setting inet_interfaces: all
setting inet_protocols: all
/etc/aliases does not exist, creating it.
WARNING: /etc/aliases exists, but does not have a root alias.

Postfix (main.cf) is now set up with a default configuration. If you need to
make changes, edit /etc/postfix/main.cf (and others) as needed. To view
Postfix configuration values, see postconf(1).

After modifying main.cf, be sure to run 'systemctl reload postfix'.

Running newaliases
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /lib/systemd/system/postfix.service.
Setting up libdate-manip-perl (6.86-1) ...
Setting up logwatch (7.5.6-1ubuntu1) ...
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Rules updated for profile 'Apache'
Skipped reloading firewall
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for rsyslog (8.2112.0-2ubuntu2.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Nezie@Project-VM4:~/webfolders$
```

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Nezie@Project-VM4: ~/webfolder

Type here to search

2. Nezie@Project-VM4:~/webfolder cx.internal.cloudapp.net, , localhost

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...

cx.internal.cloudapp.net, , localhost

setting relayhost:

setting mailnetworks: 127.0.0.0/8 [::ffff:127.0.0.0]/104 [::1]/128

setting mailbox_size_limit: 0

setting recipient_delimiter: +

setting inet_interfaces: all

setting inet_protocols: all

/etc/aliases does not exist, creating it.

WARNING: /etc/aliases exists, but does not have a root alias.

Postfix (main.cf) is now set up with a default configuration. If you need to make changes, edit /etc/postfix/main.cf (and others) as needed. To view Postfix configuration values, see postconf(1).

After modifying main.cf, be sure to run 'systemctl reload postfix'.

Running newaliases

Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /lib/systemd/system/postfix.service.

Setting up libdate-manip-perl (6.86-1) ...

Setting up logwatch (7.5.6-1ubuntu1) ...

Processing triggers for ufw (0.36.1-4ubuntu0.1) ...

Rules updated for profile 'Apache'

Skipped reloading firewall

Processing triggers for man-db (2.10.2-1) ...

Processing triggers for rsyslog (8.2112.0-2ubuntu2.2) ...

Scanning processes...

Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

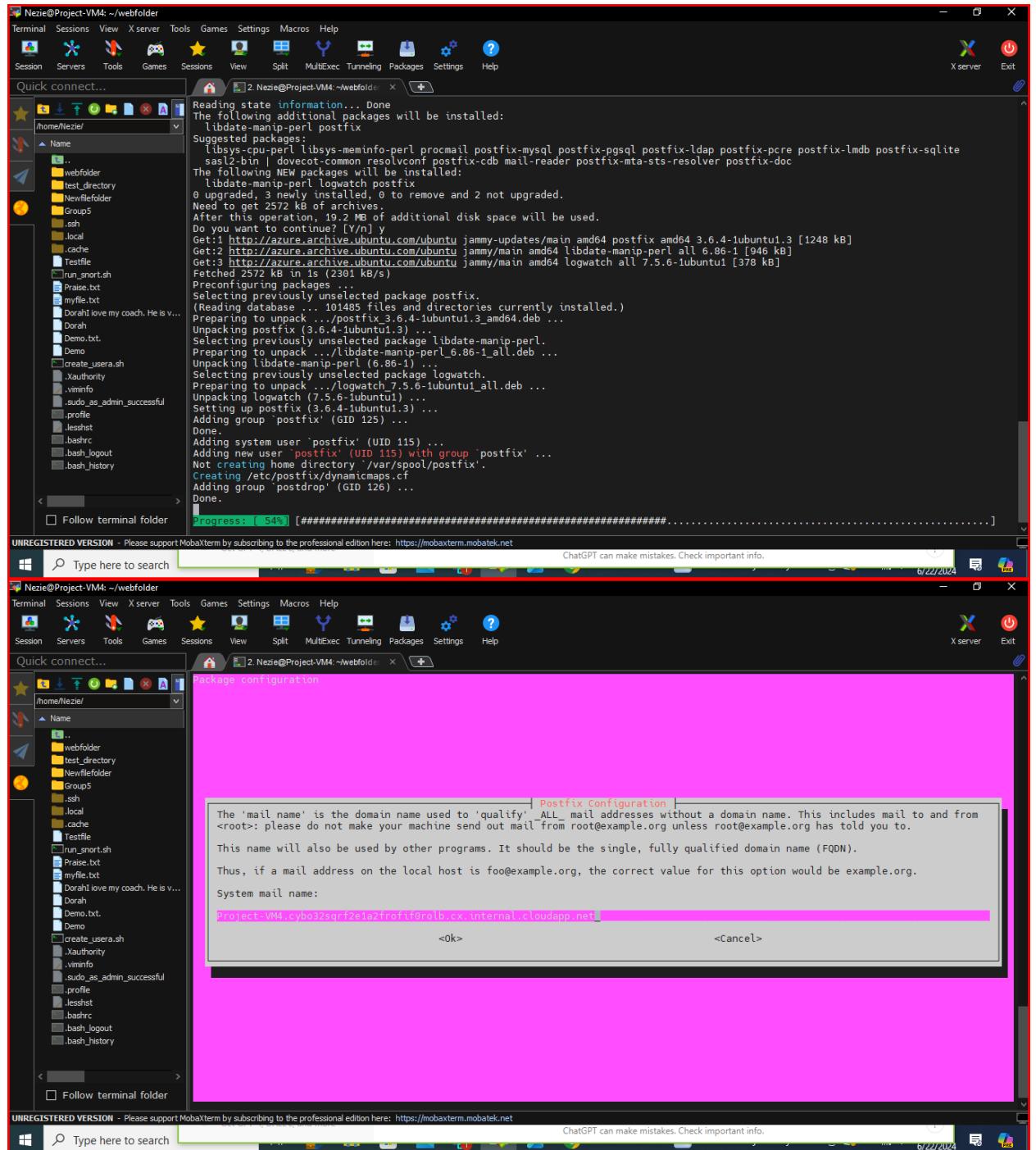
Nezie@Project-VM4:~/webfolders\$

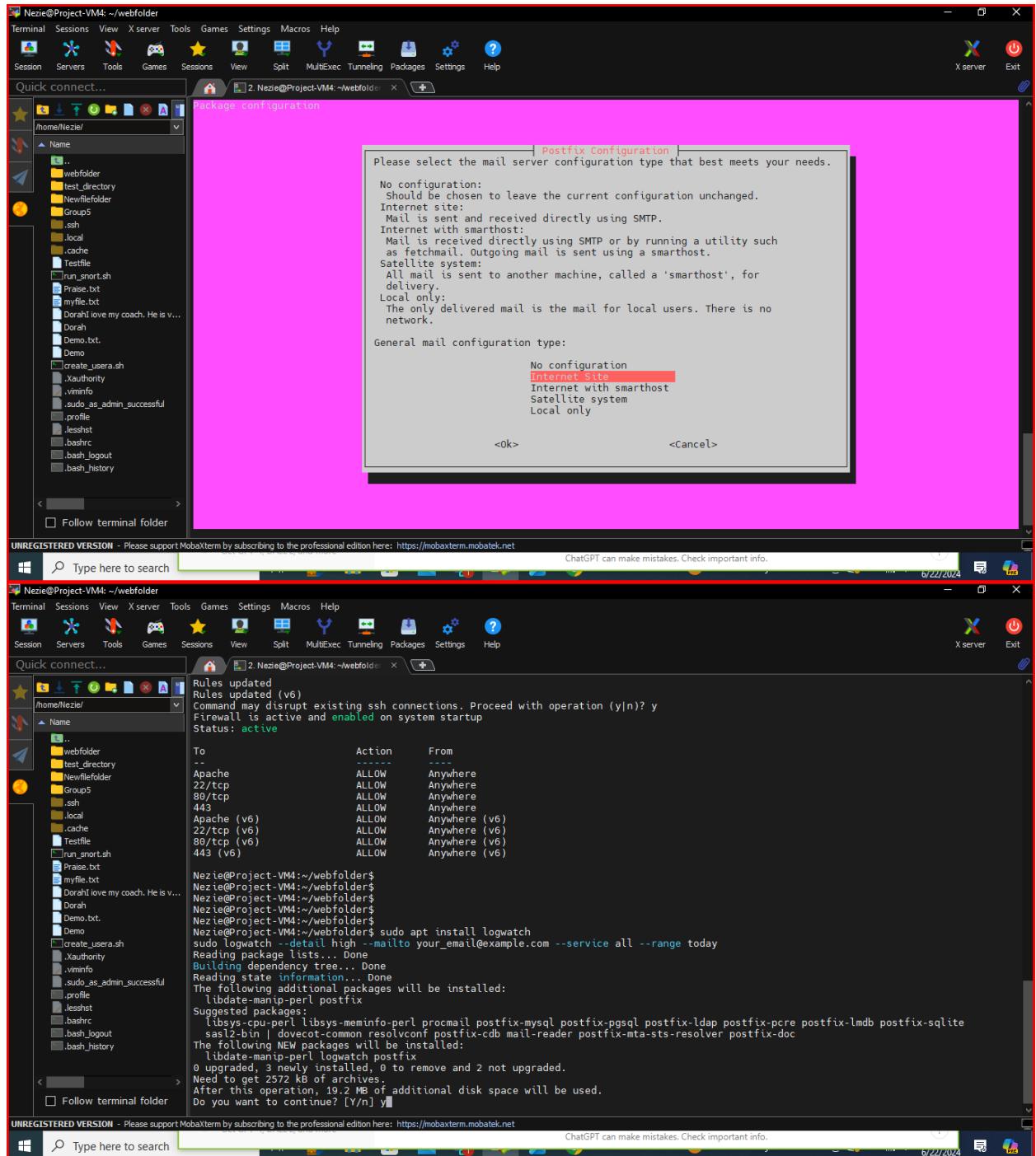
UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

Type here to search

ChatGPT can make mistakes. Check important info.

6/22/2024





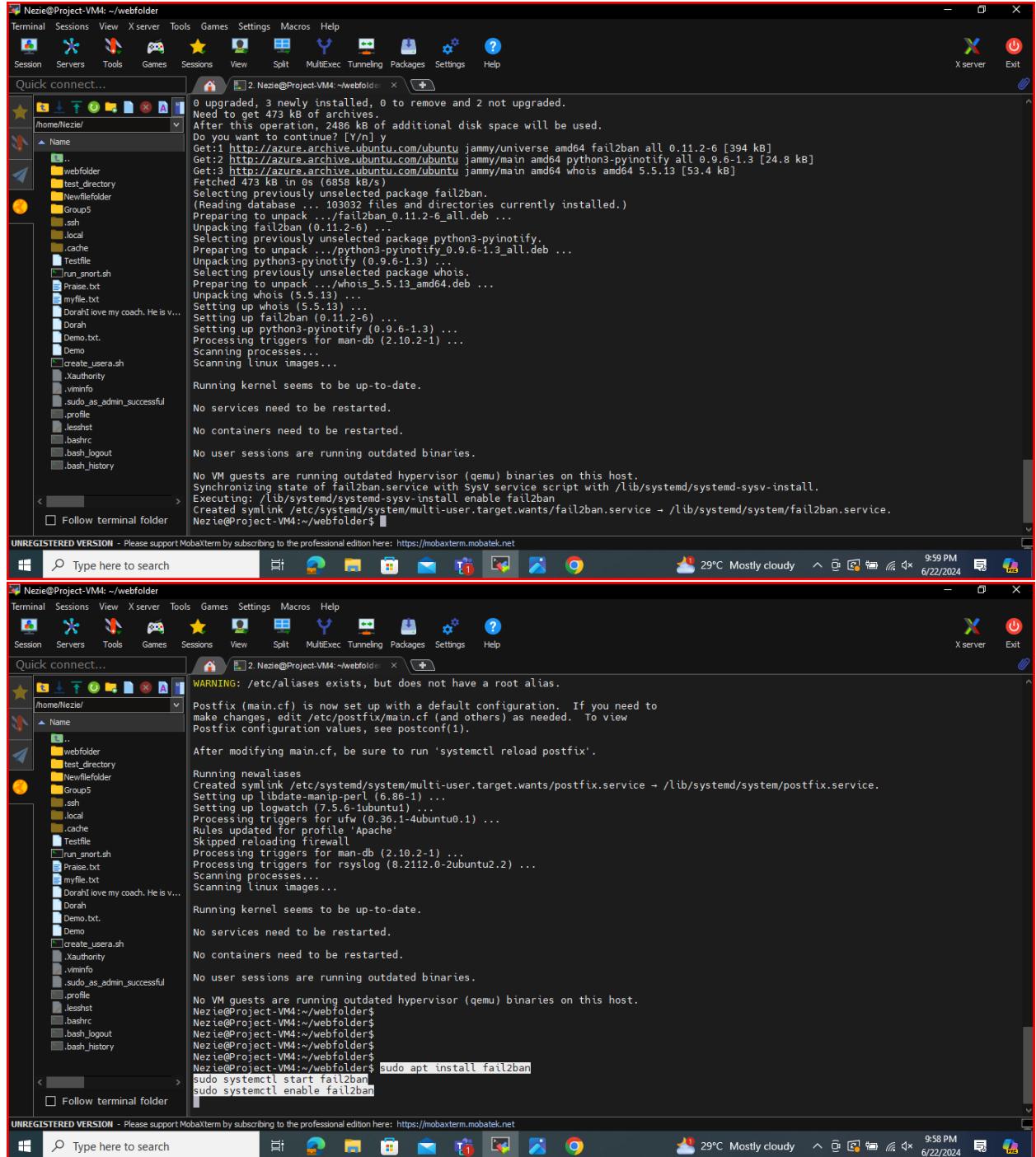
5. Install and Configure Fail2ban: Protect against brute-force attacks.

Commands used:

```
sudo apt install fail2ban
```

```
sudo systemctl start fail2ban
```

```
sudo systemctl enable fail2ban
```



The screenshot shows two terminal windows in MobaXterm. Both windows have the title 'Nezie@Project-VM4: ~/webfolder'. The top window shows the output of the 'fail2ban' package installation:

```
0 upgraded, 3 newly installed, 0 to remove and 2 not upgraded.  
Need to get 473 kB of archives.  
After this operation, 2486 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 fail2ban all 0.11.2-6 [394 kB]  
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-pyinotify all 0.9.6-1.3 [24.8 kB]  
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 whois amd64 5.5.13 [53.4 kB]  
Fetched 473 kB in 0s (6858 kB/s)  
Selecting previously unselected package fail2ban.  
(Reading database ... 103032 files and directories currently installed.)  
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...  
Unpacking fail2ban (0.11.2-6) ...  
Selecting previously unselected package python3-pyinotify.  
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...  
Unpacking python3-pyinotify (0.9.6-1.3) ...  
Selecting previously unselected package whois.  
Preparing to unpack .../whois_5.5.13_amd64.deb ...  
Unpacking whois (5.5.13) ...  
Setting up whois (5.5.13) ...  
Setting up fail2ban (0.11.2-6) ...  
Setting up python3-pyinotify (0.9.6-1.3) ...  
Processing triggers for man-db (2.10.2-1) ...  
Scanning processes...  
Scanning linux images...  
Running kernel seems to be up-to-date.  
No services need to be restarted.  
No containers need to be restarted.  
No user sessions are running outdated binaries.  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
Synchronizing state of fail2ban.service with SysV service script with /lib/systemd/systemd-sysv-install.  
Executing: /lib/systemd/systemd-sysv-install enable fail2ban  
Created symlink /etc/systemd/system/multi-user.target.wants/fail2ban.service → /lib/systemd/system/fail2ban.service.  
Nezie@Project-VM4:~/webfolders$
```

The bottom window shows the continuation of the command execution:

```
UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net  
Type here to search 29°C Mostly cloudy 9:59 PM 6/22/2024 X server Exit  
Nezie@Project-VM4: ~/webfolder Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help  
Quick connect... 2 Nezie@Project-VM4: ~/webfolder  
/home/Nezie/  
Name .. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DorahI love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .xauthORITY .vmmInfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history  
Follow terminal folder  
WARNING: /etc/aliases exists, but does not have a root alias.  
Postfix (main.cf) is now set up with a default configuration. If you need to make changes, edit /etc/postfix/main.cf (and others) as needed. To view Postfix configuration values, see postconf(1).  
After modifying main.cf, be sure to run 'systemctl reload postfix'.  
Running newaliases  
Created symlink /etc/systemd/system/multi-user.target.wants/postfix.service → /lib/systemd/system/postfix.service.  
Setting up libdate-manip-perl (6.86-1) ...  
Setting up logwatch (7.5.6-1ubuntu1) ...  
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...  
Rules updated for profile 'Apache'  
Skipped reloading firewall  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for rsyslog (8.2112.0-2ubuntu2.2) ...  
Scanning processes...  
Scanning linux images...  
Running kernel seems to be up-to-date.  
No services need to be restarted.  
No containers need to be restarted.  
No user sessions are running outdated binaries.  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ sudo apt install fail2ban  
sudo systemctl start fail2ban  
sudo systemctl enable fail2ban
```

6 Security Enhancements:

- **AppArmor/SELinux:** Mandatory access control frameworks.
- **ClamAV:** Antivirus for Linux.

Commands: sudo apt install clamav clamav-daemon

sudo freshclam

```
sudo systemctl start clamav-daemon
```

```
sudo systemctl enable clamav-daemon
```

```
Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultExec Tunnelling Packages Settings Help
X server Exit
Quick connect...
[2] Nezie@Project-VM4: ~webfolder x + [1] 
Need 0 upgraded, 3 newly installed, 0 to remove and 2 not upgraded.
Need to get 473 kB of archives.
After this operation, 1486 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 fail2ban all 0.11.2-6 [394 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-pyinotify all 0.9.6-1.3 [24.8 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 whois amd64 5.5.13 [53.4 kB]
Fetched 473 kB in 0s (6958 kB/s)
Selecting previously unselected package fail2ban.
(Reading database ... 103032 files and directories currently installed.)
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...
Unpacking fail2ban (0.11.2-6) ...
Selecting previously unselected package python3-pyinotify.
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...
Unpacking python3-pyinotify (0.9.6-1.3) ...
Selecting previously unselected package whois.
Preparing to unpack .../whois_5.5.13_amd64.deb ...
Unpacking whois (5.5.13) ...
Setting up whois (5.5.13) ...
Setting up fail2ban (0.11.2-6) ...
Setting up python3-pyinotify (0.9.6-1.3) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Synchronizing state of fail2ban.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable fail2ban
Created symlink /etc/systemd/system/multi-user.target.wants/fail2ban.service → /lib/systemd/system/fail2ban.service.
Nezie@Project-VM4:~/webfolder$
```

The screenshot shows a MobaXterm window titled 'Nezie@Project-VM4: ~/webfolder'. The terminal is running a command to install fail2ban:

```
sudo apt install fail2ban
```

The output of the command is as follows:

```
Reading package lists... Done
Building dependency tree... Done
The following additional packages will be installed:
  python3-pyinotify whois
Suggested packages:
  mailx monit sqlite3 python-pyinotify-doc
The following NEW packages will be installed:
  fail2ban python3-pyinotify whois
0 upgraded, 3 newly installed, 0 to remove and 2 not upgraded.
Need to get 473 kB of archives.
After this operation, 2480 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 fail2ban all 0.11.2-6 [394 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 python3-pyinotify all 0.9.6-1.3 [24.8 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 whois amd64 5.5.13 [53.4 kB]
Fetched 473 kB in 0s (6858 kB/s)
Selecting previously unselected package fail2ban.
(Reading database ... 103032 files and directories currently installed.)
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...
Unpacking fail2ban (0.11.2-6) ...
Selecting previously unselected package python3-pyinotify.
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...
Unpacking python3-pyinotify (0.9.6-1.3) ...
Selecting previously unselected package whois.
Preparing to unpack .../whois_5.5.13_amd64.deb ...
Unpacking whois (5.5.13) ...
Setting up whois (5.5.13) ...
Setting up fail2ban (0.11.2-6) ...
Setting up python3-pyinotify (0.9.6-1.3) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
```

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Xserver Exit
Quick connect...
[2. Nezie@Project-VM4:~/webfolder] + [ ]
Selecting previously unselected package clamdscan.
Preparing to unpack .../7-clamdscan_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamdscan (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up libtfm1:amd64 (0.13~4build2) ...
Setting up libltdl7:amd64 (2.4.6-1build2) ...
Setting up clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
id: 'clamav': no such user
Setting up libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/clamav-freshclam.service -> /lib/systemd/system/clamav-freshclam.service.
Setting up clamd (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ERROR: /var/log/clamav/freshclam.log is locked by another process
ERROR: Problem with internal logger (UpdateLogFile = /var/log/clamav/freshclam.log).
ERROR: initialize: libfreshclam init failed.
ERROR: Initialization error!
Synchronizing state of clamav-daemon.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable clamav-daemon
Nezie@Project-VM4:~/webfolder$ sudo systemctl enable clamav-daemon
Synchronizing state of clamav-daemon.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable clamav-daemon
Nezie@Project-VM4:~/webfolder$ 

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

Preconfiguring packages ...

```

Selecting previously unselected package clamav-base.
(Reading database ... 103501 files and directories currently installed.)
Preparing to unpack .../0-clamav-base_0.103.11+dfsg-0ubuntu0.22.04.1_all.deb ...
Unpacking clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package libltdl7:amd64.
Preparing to unpack .../1-libltdl7_2.4.6-15build2_amd64.deb ...
Unpacking libltdl7:amd64 (2.4.6-15build2) ...
Selecting previously unselected package libtfm1:amd64.
Preparing to unpack .../2-libtfm1_0.13-4build2_amd64.deb ...
Unpacking libtfm1:amd64 (0.13-4build2) ...
Selecting previously unselected package libclamav9:amd64.
Preparing to unpack .../3-libclamav9_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-freshclam.
Preparing to unpack .../4-clamav-freshclam_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav.
Preparing to unpack .../5-clamav_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-daemon.
Preparing to unpack .../6-clamav-daemon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-dæmon.
Preparing to unpack .../7-clamav-dæmon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-dæmon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up libltdl7:amd64 (0.13-4build2) ...
Setting up libltdl7:amd64 (2.4.6-15build2) ...
Setting up clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
id: 'clamav': no such user
Setting up libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/clamav-freshclam.service → /lib/systemd/system/clamav-freshclam.service.
Setting up clamdscan (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/clamav-daemon.service → /lib/systemd/system/clamav-daemon.service.
Setting up clamav (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Processing triggers for man-db (2.10.2-1) ...

```

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2. Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

Do you want to continue? [Y/n] y

```

Get:1 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-base all 0.103.11+dfsg-0ubuntu0.22.04.1 [79.3 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libltdl7 amd64 2.4.6-15build2 [39.6 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libtfm1 amd64 0.13-4build2 [69.9 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libclamav9:amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [80.0 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-freshclam amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [70.6 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [134 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-dæmon amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [217 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamdscan amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [51.2 kB]
Fetched 1537 kB in 304 kB/s
Preconfiguring packages
Selecting previously unselected package clamav-base.
(Reading database ... 103501 files and directories currently installed.)
Preparing to unpack .../0-clamav-base_0.103.11+dfsg-0ubuntu0.22.04.1_all.deb ...
Unpacking clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package libltdl7:amd64.
Preparing to unpack .../1-libltdl7_2.4.6-15build2_amd64.deb ...
Unpacking libltdl7:amd64 (2.4.6-15build2) ...
Selecting previously unselected package libtfm1:amd64.
Preparing to unpack .../2-libtfm1_0.13-4build2_amd64.deb ...
Unpacking libtfm1:amd64 (0.13-4build2) ...
Selecting previously unselected package libclamav9:amd64.
Preparing to unpack .../3-libclamav9_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-freshclam.
Preparing to unpack .../4-clamav-freshclam_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav.
Preparing to unpack .../5-clamav_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-daemon.
Preparing to unpack .../6-clamav-daemon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-dæmon.
Preparing to unpack .../7-clamav-dæmon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-dæmon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up libltdl7:amd64 (0.13-4build2) ...
Setting up libltdl7:amd64 (2.4.6-15build2) ...

```

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2. Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

Do you want to continue? [Y/n] y

```

Get:1 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-base all 0.103.11+dfsg-0ubuntu0.22.04.1 [79.3 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libltdl7 amd64 2.4.6-15build2 [39.6 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libtfm1 amd64 0.13-4build2 [69.9 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libclamav9:amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [80.0 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-freshclam amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [70.6 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [134 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamav-dæmon amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [217 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 clamdscan amd64 0.103.11+dfsg-0ubuntu0.22.04.1 [51.2 kB]
Fetched 1537 kB in 304 kB/s
Preconfiguring packages
Selecting previously unselected package clamav-base.
(Reading database ... 103501 files and directories currently installed.)
Preparing to unpack .../0-clamav-base_0.103.11+dfsg-0ubuntu0.22.04.1_all.deb ...
Unpacking clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package libltdl7:amd64.
Preparing to unpack .../1-libltdl7_2.4.6-15build2_amd64.deb ...
Unpacking libltdl7:amd64 (2.4.6-15build2) ...
Selecting previously unselected package libtfm1:amd64.
Preparing to unpack .../2-libtfm1_0.13-4build2_amd64.deb ...
Unpacking libtfm1:amd64 (0.13-4build2) ...
Selecting previously unselected package libclamav9:amd64.
Preparing to unpack .../3-libclamav9_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-freshclam.
Preparing to unpack .../4-clamav-freshclam_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav.
Preparing to unpack .../5-clamav_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-daemon.
Preparing to unpack .../6-clamav-daemon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamav-dæmon.
Preparing to unpack .../7-clamav-dæmon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-dæmon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up libltdl7:amd64 (0.13-4build2) ...
Setting up libltdl7:amd64 (2.4.6-15build2) ...

```

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Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

2. Nezie@Project-VM4:~/webfolder

```
Selecting previously unselected package clamav-daemon.
Preparing to unpack .../6-clamav-daemon_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Selecting previously unselected package clamdscan.
Preparing to unpack .../7-clamdscan_0.103.11+dfsg-0ubuntu0.22.04.1_amd64.deb ...
Unpacking clamdscan (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up libtfrm1:amd64 (0.13~4build2) ...
Setting up libltdl7:amd64 (2.4.6~1build2) ...
Setting up clamav-base (0.103.11+dfsg-0ubuntu0.22.04.1) ...
id: clamav no such user
Setting up libclamav9:amd64 (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up clamav-freshclam (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/clamav-freshclam.service -> /lib/systemd/system/clamav-freshclam.service.
Setting up clamd (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Setting up clamav-daemon (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/clamav-daemon.service -> /lib/systemd/system/clamav-daemon.service.
Setting up clamav (0.103.11+dfsg-0ubuntu0.22.04.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.8) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ERROR: /var/log/clamav/freshclam.log is locked by another process
ERROR: Problem with internal logger (UpdateLogFile = /var/log/clamav/freshclam.log).
ERROR: initialize: libfreshclam init failed.
ERROR: Initialization error!
Synchronizing state of clamav-daemon.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable clamav-daemon
Nezie@Project-VM4:~/webfolders$
```

Follow terminal folder

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2. Nezie@Project-VM4:~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

Quick connect...

2. Nezie@Project-VM4:~/webfolder

```
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Synchronizing state of fail2ban.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable fail2ban
Created symlink /etc/systemd/system/multi-user.target.wants/fail2ban.service -> /lib/systemd/system/fail2ban.service.
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ sudo apt install clamav clamav-daemon
sudo freshclam
sudo systemctl start clamav-daemon
sudo systemctl enable clamav-daemon
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  clamav-base clamav-freshclam clamdscan libclamav9 libltdl7 libtfrm1
Suggested packages:
  libclamunrar clamav-docs daemon libclamunrar9
The following NEW packages will be installed:
  clamav clamav-base clamav-daemon clamav-freshclam clamdscan libclamav9 libltdl7 libtfrm1
0 upgraded, 8 newly installed, 0 to remove and 2 not upgraded.
Need to get 1537 kB of archives.
After this operation, 5567 kB of additional disk space will be used.
Do you want to continue? [Y/n] $
```

Follow terminal folder

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Type here to search

2. Nezie@Project-VM4:~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

X server Exit

```
Preparing to unpack .../fail2ban_0.11.2-6_all.deb ...
Unpacking fail2ban (0.11.2-6) ...
Selecting previously unselected package python3-pyinotify.
Preparing to unpack .../python3-pyinotify_0.9.6-1.3_all.deb ...
Unpacking python3-pyinotify (0.9.6-1.3) ...
Selecting previously unselected package whois.
Preparing to unpack .../whois_5.5.13_amd64.deb ...
Unpacking whois (5.5.13) ...
Setting up whois (5.5.13) ...
Setting up fail2ban (0.11.2-6) ...
Setting up python3-pyinotify (0.9.6-1.3) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Synchronizing state of fail2ban.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable fail2ban
Created symlink /etc/systemd/system/multi-user.target.wants/fail2ban.service → /lib/systemd/system/fail2ban.service.

Nezie@Project-VM4:~/webfolders$ sudo apt install clamav clamav-daemon
Nezie@Project-VM4:~/webfolders$ sudo freshclam
Nezie@Project-VM4:~/webfolders$ sudo systemctl start clamav-daemon
Nezie@Project-VM4:~/webfolders$ sudo systemctl enable clamav-daemon
```

File Integrity Check

Using Tripwire

Commands used: sudo apt update

sudo apt install tripwire

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:5 https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
Ign:6 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy InRelease
Err:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release
  404  Not Found [IP: 185.125.190.80:443]
Ign:8 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
Hit:9 https://updates.atomicorp.com/channels/atomic/ubuntu jammy Release
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
W: https://packages.microsoft.com/ubuntu/22.04/prod/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
tripwire is already the newest version (2.4.3.7-4).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease

```

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29°C Mostly cloudy 10:32 PM 6/22/2024

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

sudo apt install tripwire
sudo apt update
sudo apt install tripwire
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
Ign:6 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
Ign:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy InRelease
Err:8 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release
  404  Not Found [IP: 185.125.190.80:443]
Hit:9 https://updates.atomicorp.com/channels/atomic/ubuntu jammy Release
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
W: https://packages.microsoft.com/ubuntu/22.04/prod/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  tripwire
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 1849 kB of archives.
After this operation, 11.7 MB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 tripwire amd64 2.4.3.7-4 [1849 kB]
Fetched 1849 kB in 0s (12.9 MB/s)
Preconfiguring packages ...
Selecting previously unselected package tripwire.
(Reading database ... 103622 files and directories currently installed.)
Preparing to unpack .../tripwire_2.4.3.7-4_amd64.deb ...
Unpacking tripwire (2.4.3.7-4) ...
Setting up tripwire (2.4.3.7-4) ...
Generating site key (this may take several minutes)...
Generating local key (this may take several minutes)...
Processing triggers for man-db (2.10.2-1) ...

```

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Nezie@Project-VM4: ~/webfolder

The following NEW packages will be installed:
tripwire
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 1849 kB of archives.
After this operation, 11.7 MB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/universe amd64 tripwire amd64 2.4.3.7-4 [1849 kB]
Fetched 1849 kB in 0s (12.9 kB/s)
Preconfiguring packages ...
Selecting previously unselected package tripwire.
(Reading database ... 103622 files and directories currently installed.)
Preparing to unpack .../tripwire_2.4.3.7-4_amd64.deb ...
Unpacking tripwire (2.4.3.7-4) ...
Setting up tripwire (2.4.3.7-4) ...
Generating /etc/key (this may take several minutes)...
Generating local key (this may take several minutes)...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:5 https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
Ign:6 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy InRelease
Err:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release
404 Not Found [IP: 185.125.190.80 443]
Ign:8 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
0% [Waiting for headers]

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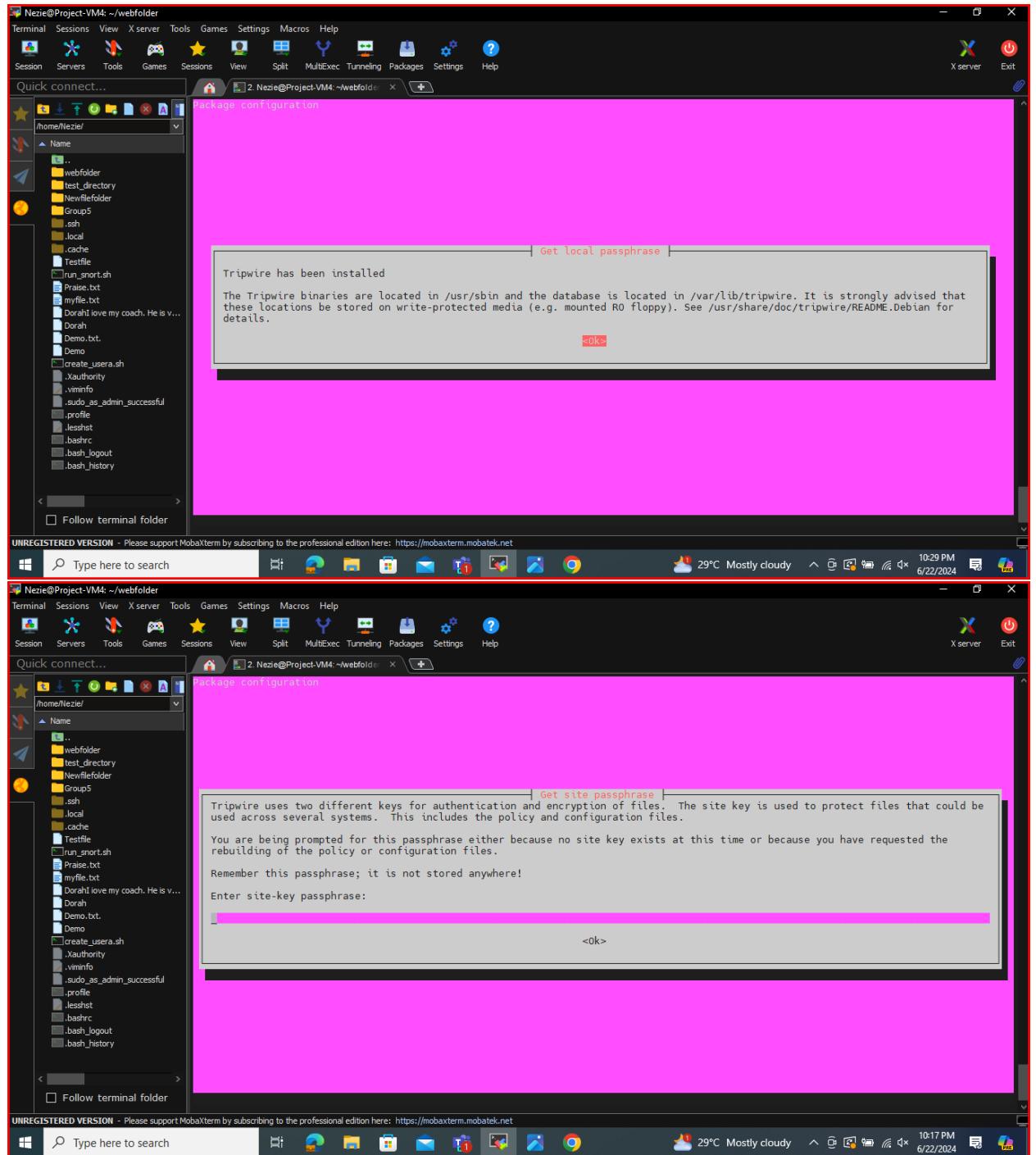
Nezie@Project-VM4: ~/webfolder

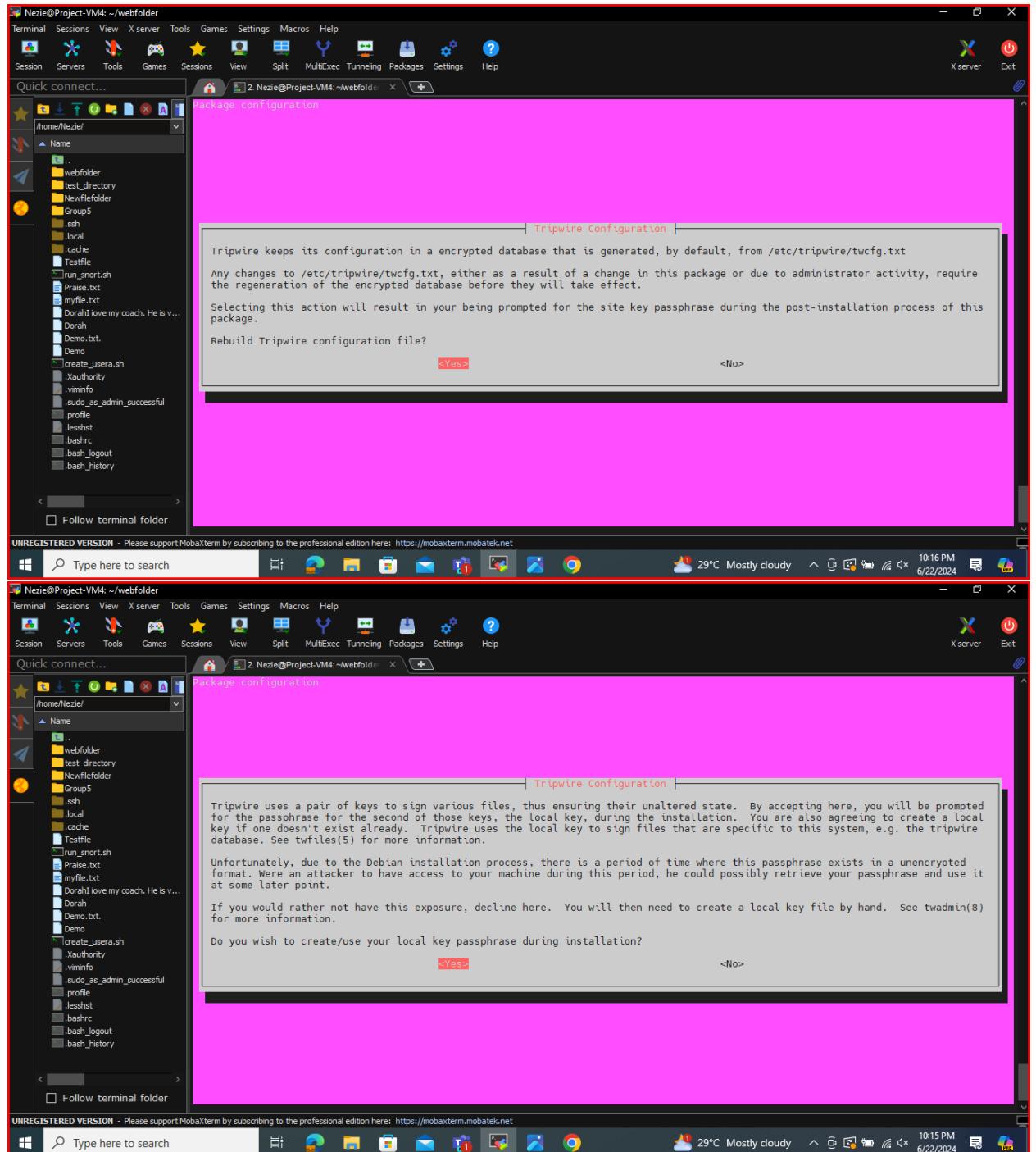
Package configuration

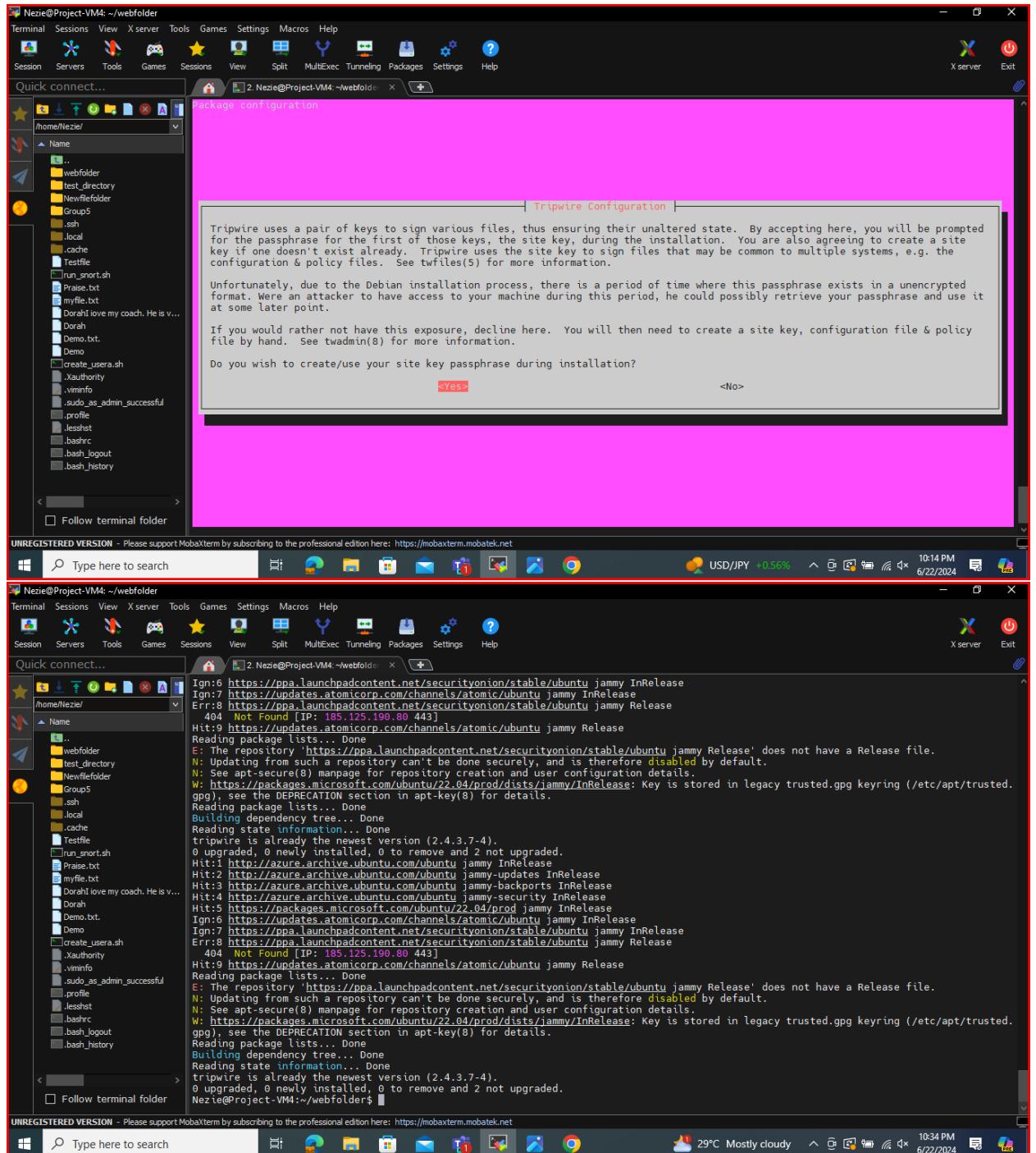
Tripwire has been installed
The Tripwire binaries are located in /usr/sbin and the database is located in /var/lib/tripwire. It is strongly advised that these locations be stored on write-protected media (e.g. mounted RO floppy). See /usr/share/doc/tripwire/README.Debian for details.

<ok>

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The screenshot shows a terminal window titled "2. Nezie@Project-VM4 ~/webfolder". The terminal displays a list of package URLs and their descriptions. The list includes:

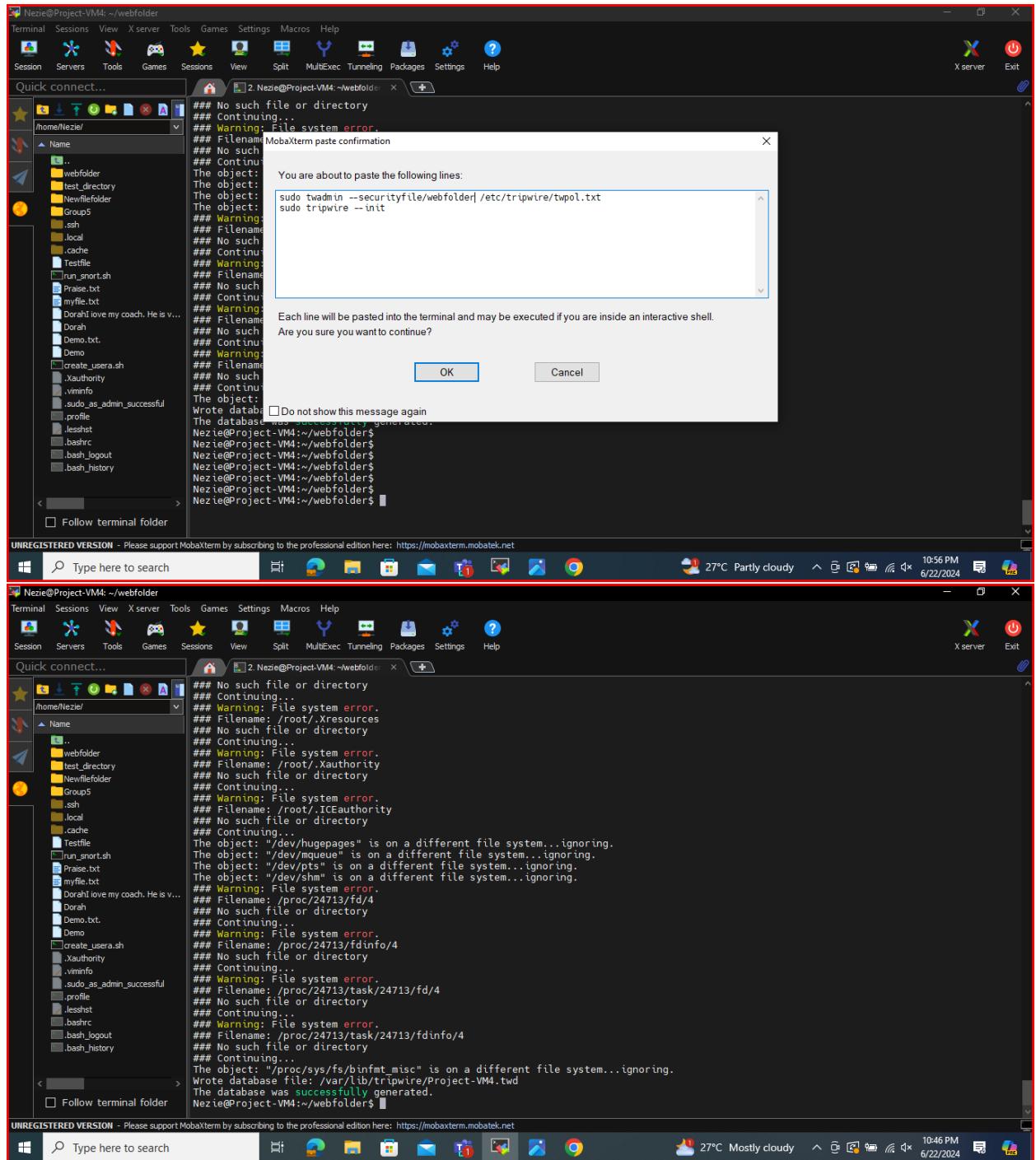
- No VM guests are running under hypervisor (qemu) binaries on this host.
- Hitt:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
- Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
- Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
- Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
- Ign: https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
- Err:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release
404 Not Found [IP: 185.125.190.80 443]
- Ign:8 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
- Hit: https://updates.atomicorp.com/channels/atomic/ubuntu jammy Release
- Reading package lists... Done
- E: The repository 'https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release' does not have a Release file.
- N: Updating from such a repository can't be done securely, and is therefore **disabled** by default.
- N: See apt-secure(8) manpage for repository creation and user configuration details.
- W: https://packages.microsoft.com/ubuntu/22.04/prod/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.
- Reading package lists... Done
- Building dependency tree... Done
- Reading state information... Done
- tripwire is already the newest version (2.4.3.7-4).
- 0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
- Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
- Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
- Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
- Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
- Hit:5 https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
- Ign:6 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
- Ign:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy InRelease
404 Not Found [IP: 185.125.190.80 443]
- Hit:9 https://updates.atomicorp.com/channels/atomic/ubuntu jammy Release
- Reading package lists... Done
- E: The repository 'https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release' does not have a Release file.
- N: Updating from such a repository can't be done securely, and is therefore **disabled** by default.
- N: See apt-secure(8) manpage for repository creation and user configuration details.
- W: https://packages.microsoft.com/ubuntu/22.04/prod/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.

At the bottom, there is a status bar with "UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net". The system tray shows icons for battery (29°C), network (Mostly cloudy), and system status.

2. Initialize Tripwire

Command used: sudo tripwire –init

```
Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
File 2 Nezie@Project-VM4 ~webfolder X
/home/Nezie/
  + Name
    - ..
      - webfolder
      - test_directory
      - Newfilefolder
      - Group5
      - .ssh
      - .local
      - .cache
      - Testfile
      - run_short.sh
      - Praise.txt
      - myfile.txt
      - DorahI love my coach. He is v...
      - Dorah
      - Demo.txt
      - Demo
      - Create_usera.sh
      - Xauthality
      - .vmlinr
      - .sudo_as_admin_successful
      - .profile
      - .lessht
      - .bashrc
      - .badz_logout
      - .bash_history
    - # No such file or directory
    - ## Continuing...
    - ## Warning: File system error.
    - ## Filename: /root/.ICEauthority
    - ## No such file or directory
    - ## Continuing...
    - The object: "/dev/hugepages" is on a different file system...ignoring.
    - The object: "/dev/mqueue" is on a different file system...ignoring.
    - The object: "/dev/pts" is on a different file system...ignoring.
    - The object: "/dev/shm" is on a different file system...ignoring.
    - ## Warning: File system error.
    - ## Filename: /proc/24713/fd/4
    - ## No such file or directory
    - ## Continuing...
    - ## Warning: File system error.
    - ## Filename: /proc/24713/fdinfo/4
    - ## No such file or directory
    - ## Continuing...
    - ## Warning: File system error.
    - ## Filename: /proc/24713/task/24713/fd/4
    - ## No such file or directory
    - ## Continuing...
    - ## Warning: File system error.
    - ## Filename: /proc/24713/task/24713/fdinfo/4
    - ## No such file or directory
    - ## Continuing...
    - The object: "/proc/sys/fs/binfmt_misc" is on a different file system...ignoring.
    Wrote database file: '/var/lib/tripwire/Project-VM4.twd'
    The database was successfully generated.
Nezie@Project-VM4:~/webfolder$ sudo twadmin --securityfile/webfolder /etc/tripwire/twpol.txt
Nezie@Project-VM4:~/webfolder$ sudo tripwire --init
```



```
Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/Nezie/
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DoraH love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmminfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
## File: /root/.bash_logout
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.bash_history
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.amandahosts
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.addressbook.lu
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.addressbook
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.Xresources
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.Xauthority
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.ICEauthority
## No such file or directory
## Continuing...
The object: "/dev/hugepages" is on a different file system...ignoring.
The object: "/dev/mqueue" is on a different file system...ignoring.
The object: "/dev/pts" is on a different file system...ignoring.
The object: "/dev/shm" is on a different file system...ignoring.
## Warning: File system error.
## File: /proc/24713/fd/4
## No such file or directory

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Type here to search 27°C Mostly cloudy 10:46 PM 6/22/2024 X server Exit

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
/home/Nezie/
Name
.. webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DoraH love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmminfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
## File: /root/.pinerc
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.mc
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.gnome_private
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.gnome_desktop
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.gnome
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.esd_auth
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.elm
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.cshrc
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.bash_profile
## No such file or directory
## Continuing...
## Warning: File system error.
## File: /root/.bash_logout
## No such file or directory

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Type here to search 27°C Mostly cloudy 10:46 PM 6/22/2024 X server Exit
```

The screenshot shows two terminal sessions in MobaXterm. The top session is running on a Linux system (Ubuntu) and displays Tripwire error messages while processing the database. The bottom session is running on a Windows host and shows the command-line interface for building a dependency tree, which is part of the Tripwire setup process.

```

Nezie@Project-VM4: ~/webfolder
Please enter your local passphrase:
Parsing policy file: /etc/tripwire/tw.pol
Generating the database...
*** Processing Unix File System ***
### Warning: File system error.
### Filename: /var/lib/Tripwire/Project-VM4.twd
### No such file or directory
### Continuing...
### Warning: File system error.
### Filename: /etc/rc.boot
### No such file or directory
### Continuing...
The object: "/boot/efi" is on a different file system...ignoring.
Warning: File system error.
### Filename: /root/mail
### No such file or directory
### Continuing...
Warning: File system error.
### Filename: /root/Mail
### No such file or directory
### Continuing...
Warning: File system error.
### Filename: /root/.xsession-errors
### No such file or directory
### Continuing...
Warning: File system error.
### Filename: /root/.xauth
### No such file or directory
### Continuing...
Warning: File system error.
### Filename: /root/.tcschr
### No such file or directory
### Continuing...
Warning: File system error.
### Filename: /root/.sawfish
### No such file or directory
### Continuing...
Warning: File system error.

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Nezie@Project-VM4: ~/webfolder
Building dependency tree... Done
Reading state information... Done
tripwire is already the newest version (2.4.3.7-4).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://packages.microsoft.com/ubuntu/22.04/prod jammy InRelease
Ign:6 https://updates.atomicorp.com/channels/atomic/ubuntu jammy InRelease
Ign:7 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy InRelease
Err:8 https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy Release
  404  Not Found [IP: 180.125.190.80:443]
Hit:9 https://updates.atomicorp.com/channels/atomic/ubuntu jammy Release
Reading package lists... Done
E: The repository 'https://ppa.launchpadcontent.net/securityonion/stable/ubuntu jammy' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
W: https://packages.microsoft.com/ubuntu/22.04/prod/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
tripwire is already the newest version (2.4.3.7-4).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$ sudo tripwire --init
Please enter your local passphrase:
Incorrect local passphrase.
Please enter your local passphrase:
Parsing policy file: /etc/tripwire/tw.pol
Generating the database...
*** Processing Unix File System ***

```

3. Configure Tripwire Policies

```
sudo twadmin --create-polfile /etc/tripwire/twpol.txt
```

```
sudo tripwire --init
```

The image displays two side-by-side screenshots of the MobaXterm application interface. Both screenshots show a terminal window and a file browser window. The terminal window in both cases is running a 'tripwire --check' command, which outputs numerous 'Warning: File system error.' messages. In the top screenshot, the error list is longer, indicating more issues. The file browser shows a directory structure under '/home/Nezie/'. A taskbar at the bottom of each screenshot includes icons for various applications like Xserver, Macros, and Help, along with a system tray showing battery level, signal strength, and the date/time (11:12 PM, 6/22/2024).

```

Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect...
[home/Nezie] 2. Nezie@Project-VM4:~/webfolder x + 
Name
... webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DoraH love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmmrinfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history
## No such file or directory
## Continuing...
## Warning: File system error.
## Filename: /root/.Xauthority
## No such file or directory
## Continuing...
## Warning: File system error.
## Filename: /root/.ICEauthority
## No such file or directory
## Continuing...
The object: '/dev/hugepages' is on a different file system...ignoring.
The object: '/dev/queue' is on a different file system...ignoring.
The object: '/dev/pts' is on a different file system...ignoring.
The object: '/dev/shm' is on a different file system...ignoring.
## Warning: File system error.
## Filename: /proc/27288/fd/4
## No such file or directory
## Continuing...
## Warning: File system error.
## Filename: /proc/27288/fdinfo/4
## No such file or directory
## Continuing...
## Warning: File system error.
## Filename: /proc/27288/task/27288/fd/4
## No such file or directory
## Continuing...
## Warning: File system error.
## Filename: /proc/27288/task/27288/fdinfo/4
## No such file or directory
## Continuing...
The object: '/proc/sys/fs/binfmt_misc' is on a different file system...ignoring.
Wrote database file: /var/lib/tripwire/Project-VM4.twd
The database was successfully generated.
Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolders$ Nezie@Project-VM4:~/webfolders$
```

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Type here to search

Record high 11:11 PM 6/22/2024

Nezie@Project-VM4: ~/webfolder Terminal Sessions View Xserver Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect... [home/Nezie] 2. Nezie@Project-VM4:~/webfolder x + Name ... webfolder test_directory Newfilefolder Group5 .ssh .local .cache Testfile run_snort.sh Praise.txt myfile.txt DoraH love my coach. He is v... Dorah Demo.txt Demo create_usera.sh .Xauthority .vmmrinfo .sudo_as_admin_successful .profile .lessht .bashrc .bash_logout .bash_history ## No such file or directory ## Continuing... ## Warning: File system error. ## Filename: /root/.Xresources ## No such file or directory ## Continuing... ## Warning: File system error. ## Filename: /root/.Xauthority ## No such file or directory ## Continuing... ## Warning: File system error. ## Filename: /root/.ICEauthority ## No such file or directory ## Continuing... The object: '/dev/hugepages' is on a different file system...ignoring. The object: '/dev/queue' is on a different file system...ignoring. The object: '/dev/pts' is on a different file system...ignoring. The object: '/dev/shm' is on a different file system...ignoring. ## Warning: File system error. ## Filename: /proc/27288/fd/4 ## No such file or directory ## Continuing... ## Warning: File system error. ##Filename: /proc/27288/fdinfo/4 ## No such file or directory ## Continuing... ## Warning: File system error. ##Filename: /proc/27288/task/27288/fd/4 ## No such file or directory ## Continuing... ## Warning: File system error. ##Filename: /proc/27288/task/27288/fdinfo/4 ## No such file or directory ## Continuing... The object: '/proc/sys/fs/binfmt_misc' is on a different file system...ignoring. Wrote database file: /var/lib/tripwire/Project-VM4.twd The database was successfully generated. Nezie@Project-VM4:~/webfolder\$ Nezie@Project-VM4:~/webfolder\$ Nezie@Project-VM4:~/webfolders\$ Nezie@Project-VM4:~/webfolders\$

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Type here to search

Result 11:07 PM 6/22/2024

4. Integrity Checks

To check the integrity of our files, the following command was used: sudo tripwire --check

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

23. File system error.
    Filename: /root/.Xauthority
    No such file or directory
24. File system error.
    Filename: /root/.ICEauthority
    No such file or directory
25. File system error.
    Filename: /proc/27683/fd/3
    No such file or directory
26. File system error.
    Filename: /proc/27683/fdinfo/3
    No such file or directory
27. File system error.
    Filename: /proc/27683/task/27683/fd/3
    No such file or directory
28. File system error.
    Filename: /proc/27683/task/27683/fdinfo/3
    No such file or directory

*** End of report ***

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for details use --version. This is free software which may be redistributed or modified only under certain conditions; see COPYING for details.
All rights reserved.
Integrity check complete.

Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolder$ Nezie@Project-VM4:~/webfolders$ sudo crontab -e

```

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27°C Partly cloudy 11:17 PM 6/22/2024

Nezie@Project-VM4: ~/webfolder

Terminal Sessions View Xserver Tools Games Settings Macros Help

Sessions View Split MultiExec Tunneling Packages Settings Help

Xserver Exit

Quick connect...

2. Nezie@Project-VM4: ~/webfolder

```

20. File system error.
    Filename: /root/.addressbook.lu
    No such file or directory
21. File system error.
    Filename: /root/.addressbook
    No such file or directory
22. File system error.
    Filename: /root/.Xresources
    No such file or directory
23. File system error.
    Filename: /root/.Xauthority
    No such file or directory
24. File system error.
    Filename: /root/.ICEauthority
    No such file or directory
25. File system error.
    Filename: /proc/27683/fd/3
    No such file or directory
26. File system error.
    Filename: /proc/27683/fdinfo/3
    No such file or directory
27. File system error.
    Filename: /proc/27683/task/27683/fd/3
    No such file or directory
28. File system error.
    Filename: /proc/27683/task/27683/fdinfo/3
    No such file or directory

*** End of report ***

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for details use --version. This is free software which may be redistributed or modified only under certain conditions; see COPYING for details.
All rights reserved.
Integrity check complete.

Nezie@Project-VM4:~/webfolder$ 
```

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Type here to search

27°C Partly cloudy 11:17 PM 6/22/2024

TASK 3: Swap File Configuration

Create a Swap File

1. Create a swap file of 6GB size.

Command used: sudo dd if=/dev/zero of=/swapfile bs=1M count=6144

- ## **2. Setting of correct permissions for the swap file:**

Command used: sudo chmod 600 /swapfile

- ### 3. The file was marked as swap space:

Command used: sudo mkswap /swapfile

- #### **4. Enabling the swap file:**

Command used: **sudo swapon /swapfile**

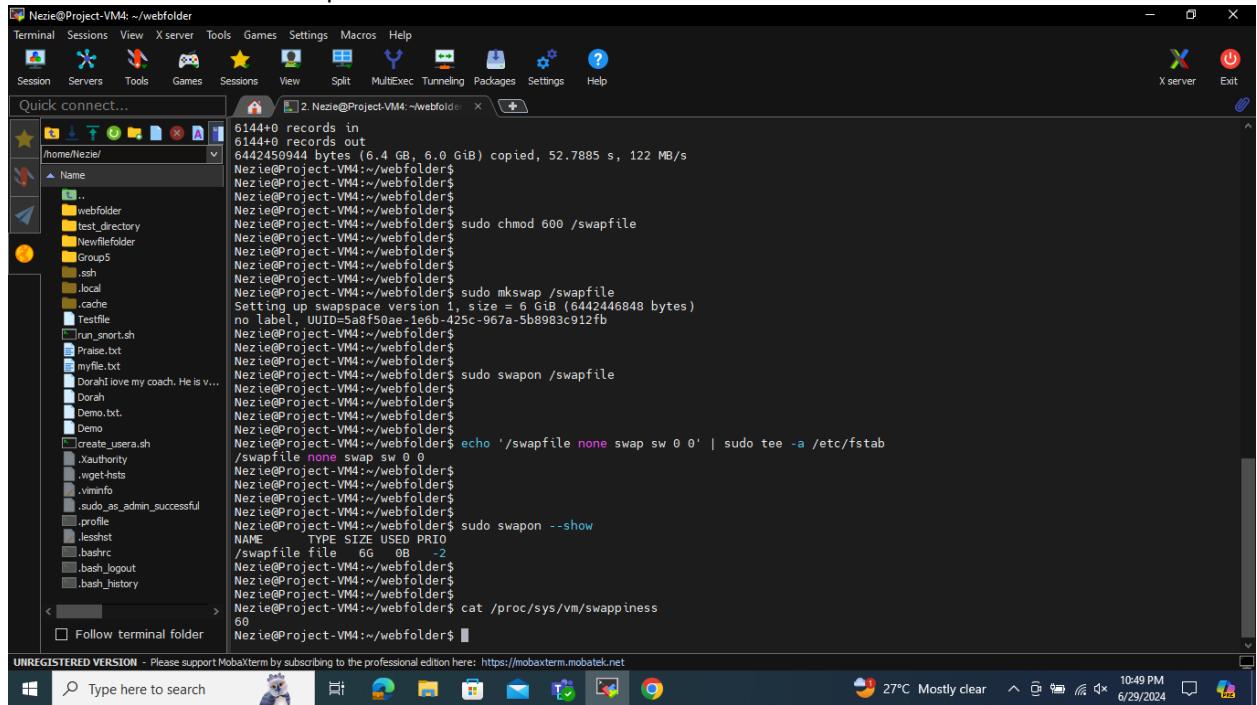
5. Make the swap file permanent by adding it to /etc/fstab:

Command used: echo '/swapfile none swap sw 0 0' | sudo tee -a /etc/fstab

- #### 6. Verify that the swap file is active:

Command used: sudo swapon –show

```
Nezie@Project-VM4: ~/webfolder
Terminal Sessions View Xserver Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultExec Tunneling Packages Settings Help
Quick connect...
[ 2. Nezie@Project-VM4: ~/webfolder ] + [ 3. Nezie@Project-VM4: ~/ ]
/home/Nezie/
  ▲ Name
  ▾ ..
  ▾ webfolder
  ▾ test_directory
  ▾ Newfilefolder
  ▾ Group5
  ▾ .ssh
  ▾ .local
  ▾ .cache
  ▾ Testfile
  ▾ run_snort.sh
  ▾ Praise.txt
  ▾ myfile.txt
  ▾ DorahI love my coach. He is v...
  ▾ Dorah
  ▾ Demo.txt
  ▾ Demo
  ▾ Create_usera.sh
  ▾ Xauthority
  ▾ wget-lists
  ▾ viminfo
  ▾ sudo_as_admin_successful
  ▾ .profile
  ▾ .lesshist
  ▾ .bashrc
  0144+0 records in
  0144+0 records out
  6442450944 bytes (6.4 GB, 6.0 GiB) copied, 52.7885 s, 122 MB/s
Nezie@Project-VM4: ~/webfolder$ sudo chmod 600 /swapfile
Nezie@Project-VM4: ~/webfolder$ sudo mkswap /swapfile
Setting up swapspace version 1, size = 6 GiB (6442446848 bytes)
no label, UUID=5abf50ae-1e6b-425c-967a-5b8983c912fb
Nezie@Project-VM4: ~/webfolders$ sudo swapon /swapfile
Nezie@Project-VM4: ~/webfolders$ echo '/swapfile none swap sw 0 0' | sudo tee -a /etc/fstab
Nezie@Project-VM4: ~/webfolders$ /swapfile none swap sw 0 0
Nezie@Project-VM4: ~/webfolders$ sudo swapon -show
NAME      TYPE    SIZE   USED   PRIO
/swafile  file    6G     0B    -2
```



The image displays two side-by-side windows of the MobaXterm application. Each window has a title bar with the text "Nezie@Project-VM4: ~/webfolder". The left pane of each window is a file explorer showing the contents of the "/home/Nezie/" directory. The right pane is a terminal window. In the top terminal window, the user runs a script to create a swapfile. The output shows the creation of a 6 GB swapfile, its chmodding to 600, and its addition to the fstab file. The bottom terminal window shows the same process being repeated. The taskbar at the bottom of the screen includes icons for File Explorer, Task View, Start, and several pinned applications. The system tray shows the date as 6/29/2024, the time as 10:47 PM, and the weather as 27°C Mostly clear.

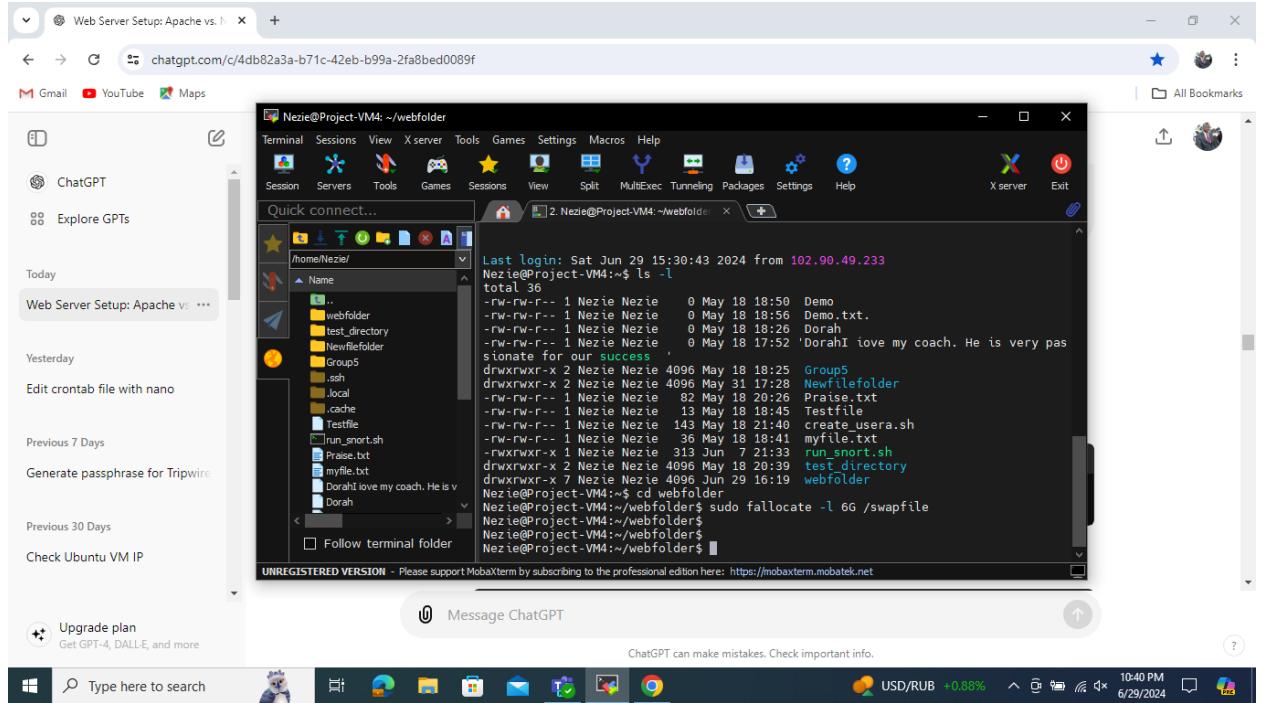
The image displays two nearly identical screenshots of the Mobaxterm application interface. Both screenshots show a dual-terminal setup on a Windows host. The top terminal window is titled '2. Nezie@Project-VM4 ~/webfolder' and the bottom one is also titled '2. Nezie@Project-VM4 ~/webfolder'. Both terminals are running on the user 'Nezie' on a VM named 'Project-VM4'.

In the top terminal, the user has navigated to the directory '/home/Nezie/'. A file browser sidebar on the left lists files and folders such as 'Name', 'webfolder', 'test_directory', 'Newfilefolder', 'Group5', '.ssh', '.local', '.cache', 'Testfile', '.run_snort.sh', 'Praise.txt', 'myfile.txt', 'DorahI love my coach. He is v...', 'Demo.txt', 'Demo', 'Create_usera.sh', '.Xauthority', '.wget-hsts', '.vmlinu', '.sudo_as_admin_successful', '.profile', '.lessht', '.bashrc', '.bash_logout', '.bash_history', and 'Follow terminal folder'. The terminal window shows the following command history:

```
-rw-rw-r-- 1 Nezie Nezie 0 May 18 17:52 'DorahI love my coach. He is very pas  
sionate for our success'  
drwxrwxr-x 2 Nezie Nezie 4096 May 18 18:25 Group5  
drwxrwxr-x 2 Nezie Nezie 4096 May 31 17:28 Newfilefolder  
-rw-rw-r-- 1 Nezie Nezie 92 May 18 20:26 Praise.txt  
-rw-rw-r-- 1 Nezie Nezie 13 May 18 18:45 Testfile  
-rw-rw-r-- 1 Nezie Nezie 143 May 18 21:40 create_usera.sh  
-rw-rw-r-- 1 Nezie Nezie 36 May 18 18:41 myfile.txt  
-rwxrwxr-x 1 Nezie Nezie 313 Jun 7 21:33 run_snort.sh  
drwxrwxr-x 2 Nezie Nezie 4096 May 18 20:39 test_directory  
drwxrwxr-x 7 Nezie Nezie 4096 Jun 29 16:19 webfolder  
Nezie@Project-VM4:~$ cd webfolder  
Nezie@Project-VM4:~/webfolder$ sudo fallocate -l 6G /swapfile  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$ sudo dd if=/dev/zero of=/swapfile bs=1M count=614  
4  
6144+0 records in  
6144+0 records out  
6442450944 bytes (6.4 GB, 6.0 GiB) copied, 52.7885 s, 122 MB/s  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$ sudo chmod 600 /swapfile  
Setting up swapspace version 1, size = 6 GB (6442446848 bytes)  
no label, UUID=5abf50ae-1e6b-425c-967a-5b8983c912fb  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$ sudo swapon /swapfile  
Nezie@Project-VM4:~/webfolder$  
Nezie@Project-VM4:~/webfolder$
```


In the bottom terminal, the user has performed the same actions, resulting in identical command history and file listing. Both terminals are running on a Windows host, as indicated by the taskbar icons at the bottom of each screenshot.

The screenshot displays two separate instances of the MobaXterm application running on a Windows host. Each instance has a title bar at the top with the application name and a system tray icon. The interface includes a toolbar with various icons for session management, file operations, and system tools. On the left side of each instance, there is a file browser window showing the contents of the user's home directory (~). On the right side, there is a terminal window showing a command-line session. In the terminal session of the bottom instance, a web browser window is also open, displaying a page from https://ubuntu.com/engage/secure-kubernetes-at-the-edge. The terminal output shows standard Linux commands like 'ls', 'cd', 'sudo', and file manipulation, along with some explanatory text about swapfiles and security updates.



Step 2

Optimize Swap Settings:

1. Adjust Swappiness

Command used to check the current swappiness value
`cat /proc/sys/vm/swappiness`

To temporarily set swappiness to a new value (e.g., 10):
`sudo sysctl vm.swappiness=10`

To make this change permanent: `sudo nano /etc/sysctl.conf`

It was modified by adding the following line

`vm.swappiness=10`

The file was saved and closed. The changes were then applied by using this command

sudo sysctl -p

The screenshot shows a MobaXterm window with a terminal session titled "Nezie@Project-VM4: ~/webfolder". The terminal displays the output of the command "sudo sysctl -p", which lists various kernel parameters. The window also includes a file explorer sidebar showing the directory structure of the user's home folder, and a status bar at the bottom with system information like weather and time.

```
GNU nano 6.2                               /etc/sysctl.conf
vm.swappiness=10

# /etc/sysctl.conf - Configuration file for setting system variables
# See /etc/sysctl.d/ for additional system variables.
# See sysctl.conf (5) for information.
# vm.swappiness=10

kernel.domainname = example.com

# Uncomment the following to stop low-level messages on console
kernel.printk = 3 4 1 3

#####
# Functions previously found in netbase
#
# Uncomment the next two lines to enable Spoof protection (reverse-path filter)
# Turn on Source Address Verification in all interfaces to
# prevent some spoofing attacks
#net.ipv4.conf.default.rp_filter=1
#net.ipv4.conf.all.rp_filter=1

# Uncomment the next line to enable TCP/IP SYN cookies
# See http://lwn.net/Articles/277146/
# Note: This may impact IPv6 TCP sessions too
#net.ipv4.tcp_syncookies=1

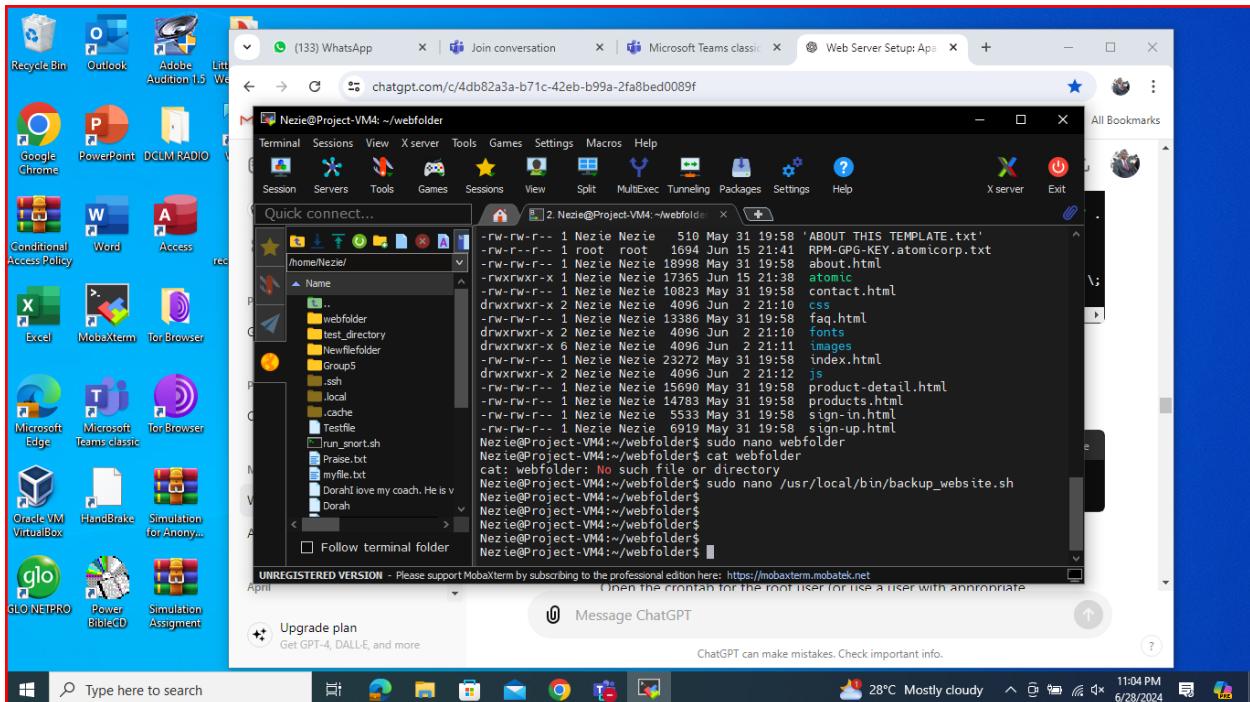
# Uncomment the next line to enable packet forwarding for IPv4
#net.ipv4.ip_forward=1

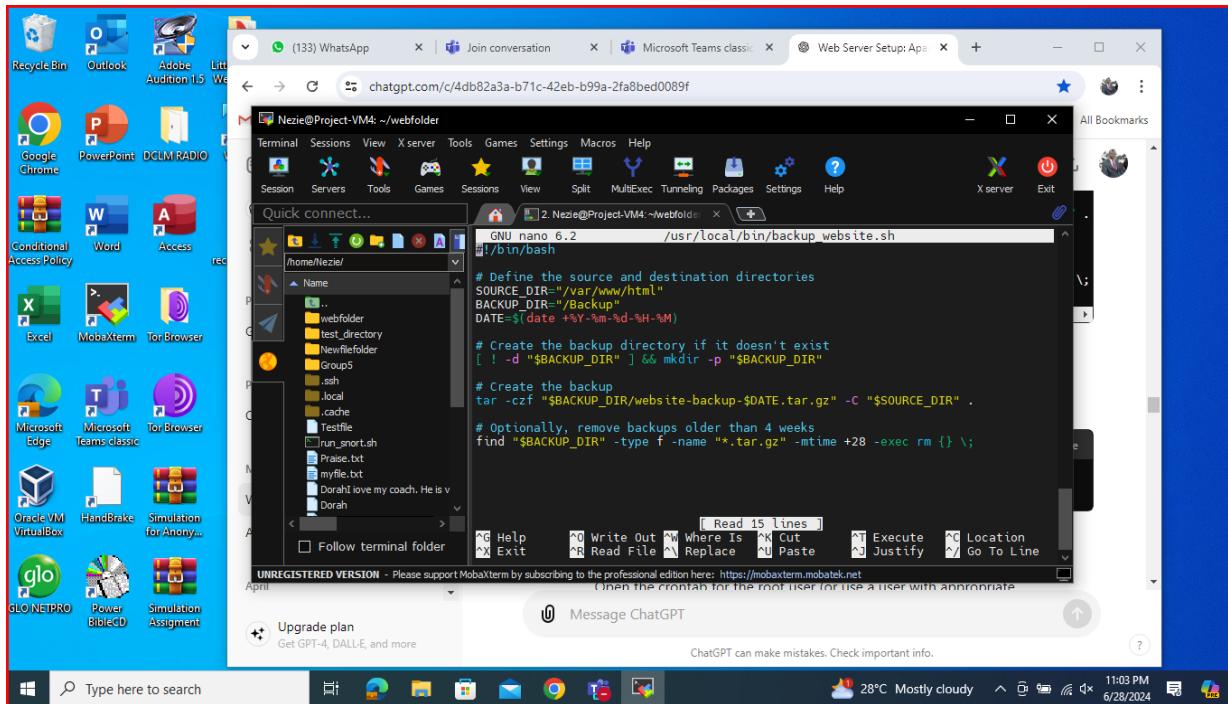
# Uncomment the next line to enable packet forwarding for IPv6
# Enabling this option disables Stateless Address Autoconfiguration
# based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1
```


TASK 4: Automated Backup and Updates

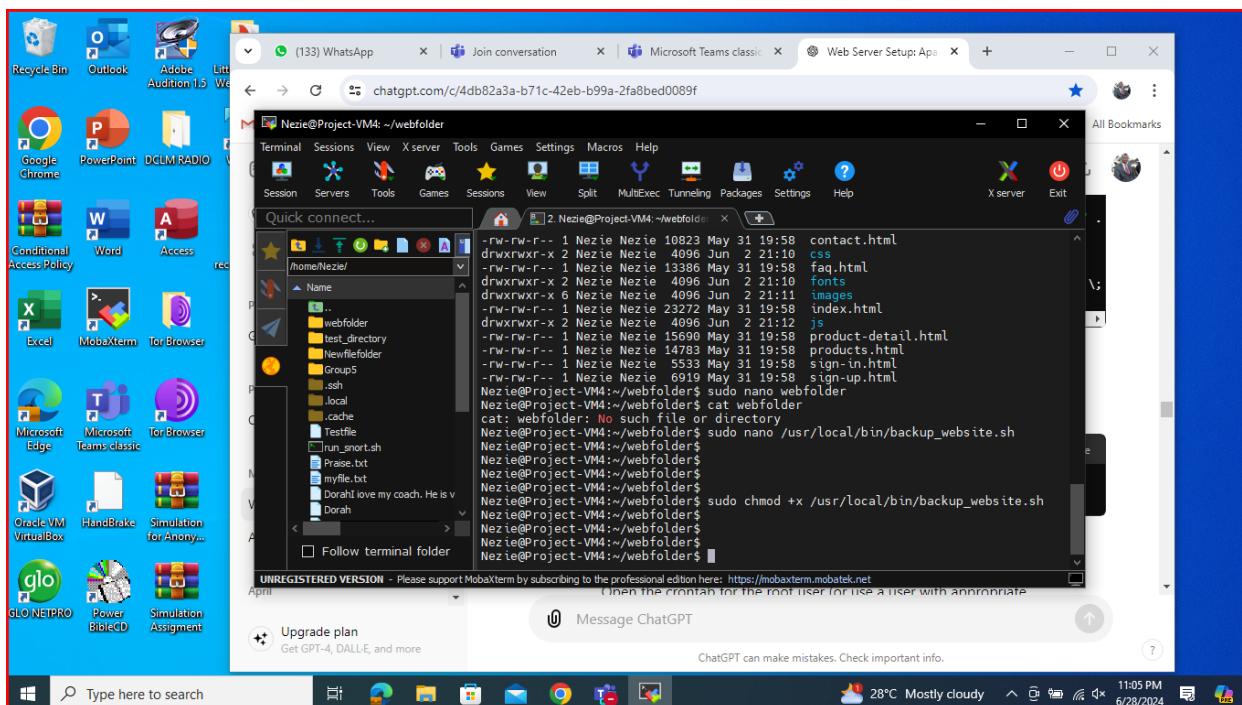
The following steps were followed to set up a cron job to create regular backups of the website directory and save them to the /Backup directory:

1. Creating the Backup Script with this command: `sudo nano /usr/local/bin/backup_website.sh`

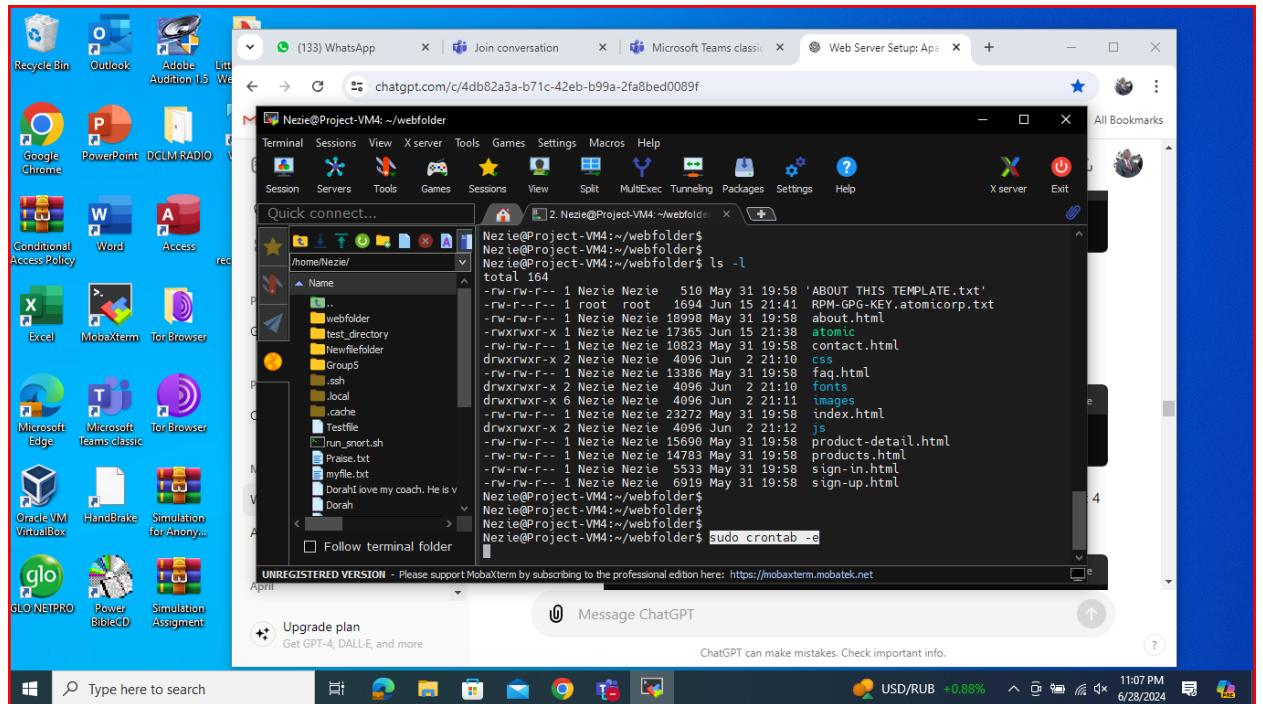




2. The Script was made Executable with this command: `sudo chmod +x /usr/local/bin/backup_website.sh`

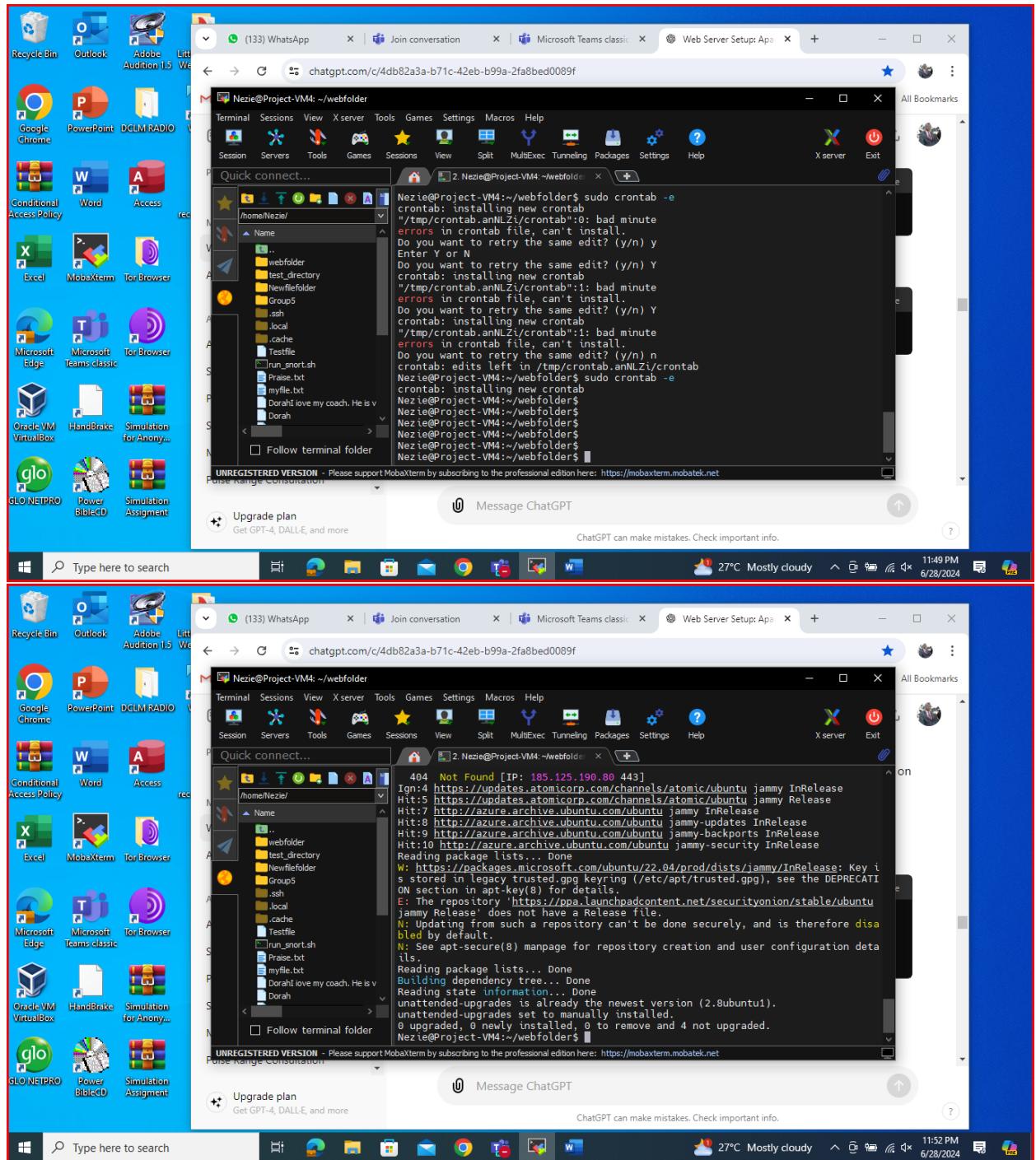


3. Creating a Cron Job for Regular Backups: `sudo crontab -e`



The following line was added to schedule the backup script to run every Sunday at 4 p.m.:

0 16 * * 0 /usr/local/bin/backup_website.sh



Configuring Automatic System Updates

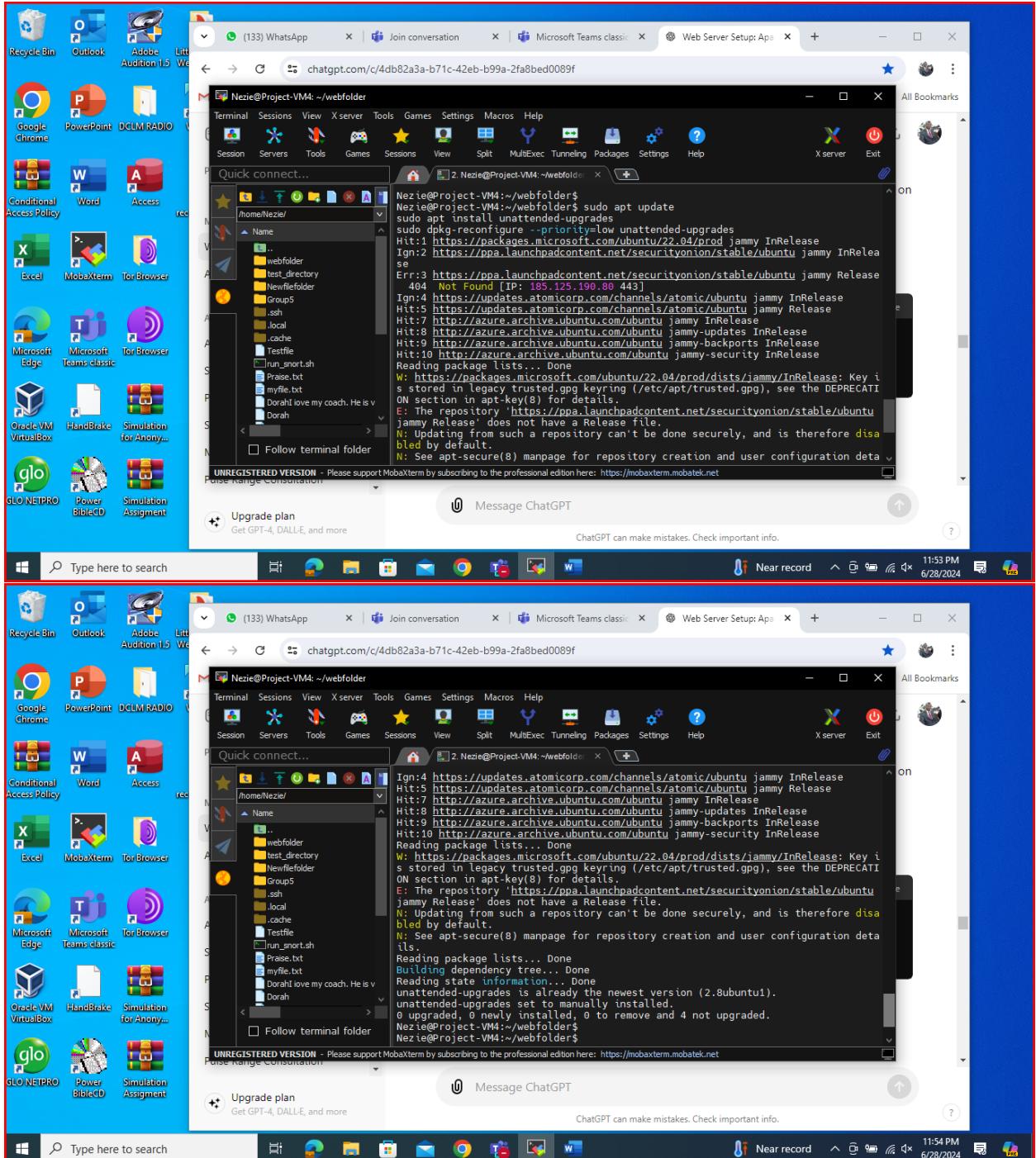
For automatic system updates, the `unattended-upgrades` package on Debian/Ubuntu-based systems was used. Here's how it was set up to run every Sunday at 3 p.m.

1. Unattended Upgrades were installed:

sudo apt update

```
sudo apt install unattended-upgrades
```

```
sudo dpkg-reconfigure --priority=low unattended-upgrades
```



2. Configure the Updates Schedule:

Creating the following script: sudo nano /etc/apt/apt.conf.d/20auto-upgrades

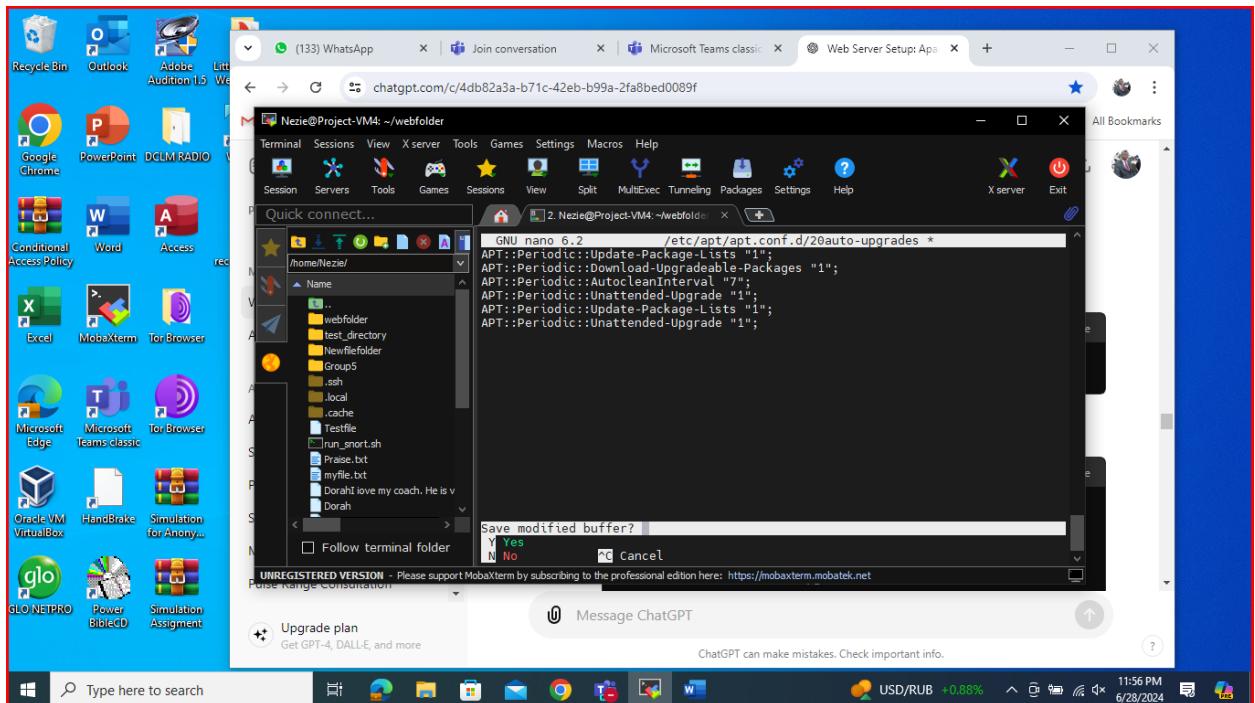
And the following lines were added

```
APT::Periodic::Update-Package-Lists "1";
```

```
APT::Periodic::Download-Upgradeable-Packages "1";
```

```
APT::Periodic::AutocleanInterval "7";
```

```
APT::Periodic::Unattended-Upgrade "1";
```



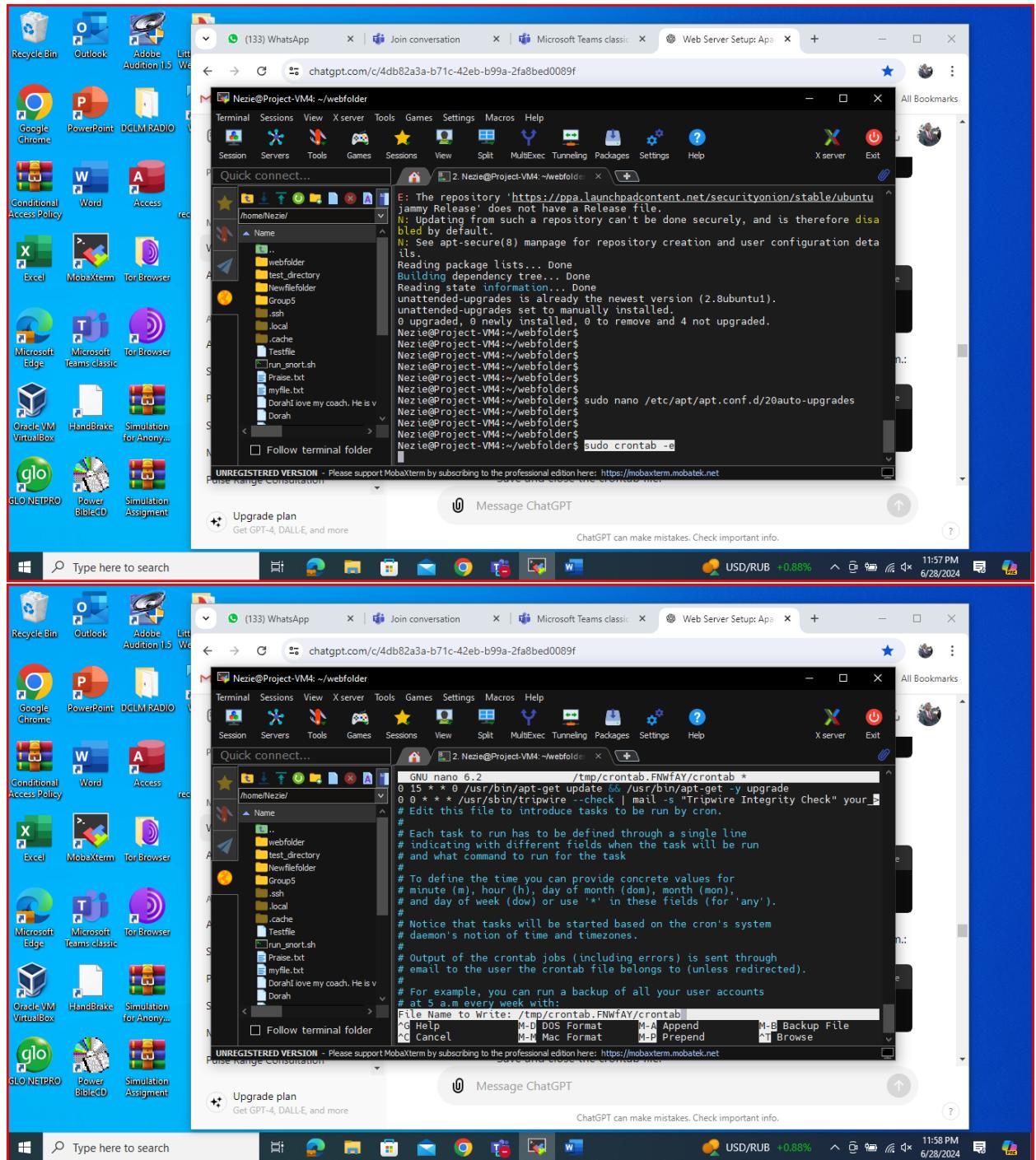
Create a Cron Job for Automatic Updates:

The root user's crontab was opened:

```
sudo crontab -e
```

The following line was added to schedule the updates to run every Sunday at 3 p.m.:

```
0 15 * * 0 /usr/bin/apt-get update && /usr/bin/apt-get -y upgrade
```



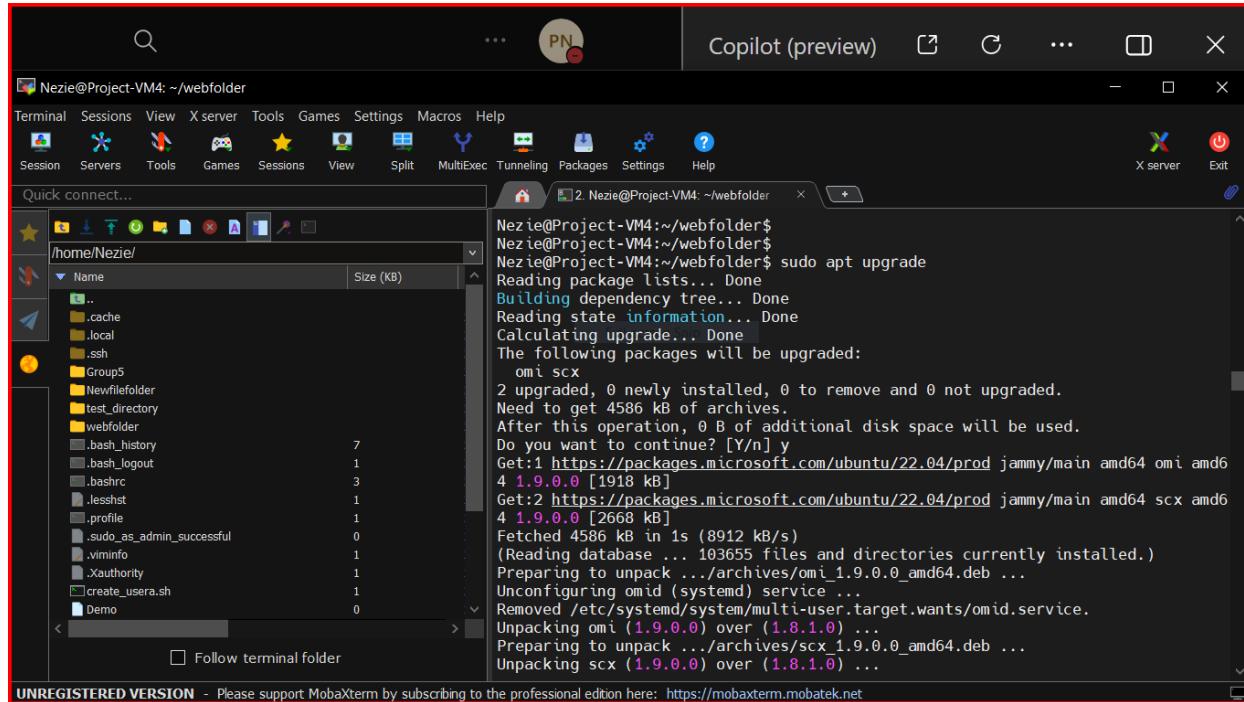
TASK 5: Monitoring Linux Web Server with Nagios

The following steps were taken:

1. Install and Configure Nagios:

1. Install Required Packages:

Updating the system: `sudo apt update`



A screenshot of the MobaXterm application window. The title bar shows "Nezie@Project-VM4: ~/webfolder". The interface includes a file manager on the left and a terminal window on the right. The terminal window displays the command `sudo apt update` and its output. The output shows the package list is being read, dependencies are being built, state information is being read, and the upgrade calculation is being performed. It lists 2 upgraded packages, 0 newly installed, 0 to remove, and 0 not upgraded. The total size of packages to get is 4586 kB. After the operation, 0 B of additional disk space will be used. The user is prompted with "Do you want to continue? [Y/n] y". The process continues with package downloads from <https://packages.microsoft.com/ubuntu/22.04/prod>, configuration of services like omid and scx, and unpacking of deb files.

```
Nezie@Project-VM4:~/webfolder$ sudo apt update
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
  omi scx
2 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 4586 kB of archives.
After this operation, 0 B of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 https://packages.microsoft.com/ubuntu/22.04/prod jammy/main amd64 omi amd64 4 1.9.0.0 [1918 kB]
Get:2 https://packages.microsoft.com/ubuntu/22.04/prod jammy/main amd64 scx amd64 4 1.9.0.0 [2668 kB]
Fetched 4586 kB in 1s (8912 kB/s)
(Reading database ... 103655 files and directories currently installed.)
Preparing to unpack .../archives/omi_1.9.0.0_amd64.deb ...
Unconfiguring omid (systemd) service ...
Removed /etc/systemd/system/multi-user.target.wants/omid.service.
Unpacking omi (1.9.0.0) over (1.8.1.0) ...
Preparing to unpack .../archives/scx_1.9.0.0_amd64.deb ...
Unpacking scx (1.9.0.0) over (1.8.1.0) ...
```

Installing necessary packages:

```
sudo apt install wget unzip curl openssl build-essential libgd-dev libssl-dev
libapache2-mod-php php-gd php apache2 -y
```

A screenshot of the MobaXterm application window. The title bar shows "Copilot (preview)" and the session name "Nezie@Project-VM4: ~/webfolder". The main interface includes a top menu bar with "Terminal", "Sessions", "View", "X server", "Tools", "Games", "Settings", "Macros", and "Help". Below the menu is a toolbar with icons for "Session", "Servers", "Tools", "Games", "Sessions", "View", "Split", "MultiExec", "Tunneling", "Packages", "Settings", and "Help". On the left, there's a "Quick connect..." dropdown and a file browser window titled "/home/Nezie/". The file browser lists various files and folders in the current directory. A terminal window on the right shows a series of commands being run, starting with "Nezie@Project-VM4:~/webfolder\$". The commands include "sudo apt install wget unzip curl openssl build-essential libgd-dev libssl-dev libapache2-mod-php php-gd php apache2 -y", followed by dependency building and state information. It also mentions that curl is already installed and set to manual installation. The terminal concludes with a note about additional packages to be installed, listing several library names.

2. Downloading Nagios Core

Download the latest Nagios Core setup files:

```
wget https://github.com/NagiosEnterprises/nagioscore/releases/download/nagios-4.5.1/nagios-4.5.1.tar.gz
```

The screenshot shows a MobaXterm window with a terminal session titled "Copilot (preview)". The terminal output is as follows:

```
Nezie@Project-VM4:~/webfolder$ wget https://github.com/NagiosEnterprises/nagioscore/releases/download/nagios-4.5.1/nagios-4.5.1.tar.gz
--2024-06-29 16:13:52-- https://github.com/NagiosEnterprises/nagioscore/releases/download/nagios-4.5.1/nagios-4.5.1.tar.gz
Resolving github.com (github.com)... 140.82.114.3
Connecting to github.com (github.com)|140.82.114.3|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119670/82d8553f-aedf-4d09-91c7-593c86bdcfaa?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=releaseassetproduction%2F20240629%2Fus-east-1%2Fs%2Faws4_request&X-Amz-Date=20240629T161353Z&X-Amz-Expires=300&X-Amz-Signature=d64af36527025b3ab289871ef1d32620703c846d05ebad2176d7efbd41ead64298c-X-Amz-SignedHeaders=host&actor_id=0&key_id=0&repo_id=16119670&response-content-disposition=attachment%3B%20filename=%3Dnagios-4.5.1.tar.gz&response-content-type=application%2Foctet-stream [following]
--2024-06-29 16:13:53-- https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119670/82d8553f-aedf-4d09-91c7-593c86bdcfaa?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=releaseassetproduction%2F20240629%2Fus-east-1%2Fs%2Faws4_request&X-Amz-Date=20240629T161353Z&X-Amz-Expires=300&X-Amz-Signature=d64af36527025b3ab289871ef1d32620703c846d05ebad2176d7efbd41ead64298c-X-Amz-SignedHeaders=host&actor_id=0&key_id=0&repo_id=16119670&response-content-disposition=attachment%3B%20filename=%3Dnagios-4.5.1.tar.gz&response-content-type=application%2Foctet-stream [following]
```

The file list on the left shows the following contents:

Name	Size (KB)
..	7
.cache	1
.local	1
.ssh	1
Groups	1
Newfilefolder	1
test_directory	1
webfolder	1
.bash_history	7
.bash_logout	1
.bashrc	3
.lessht	1
.profile	1
.sudo_as_admin_successful	0
.vmlinu	1
.xauthority	1
create_user.sh	1
Demo	0

Extracting the downloaded files:

```
sudo tar -zxvf nagios-4.5.1.tar.gz
```

3. Configure Nagios Core:

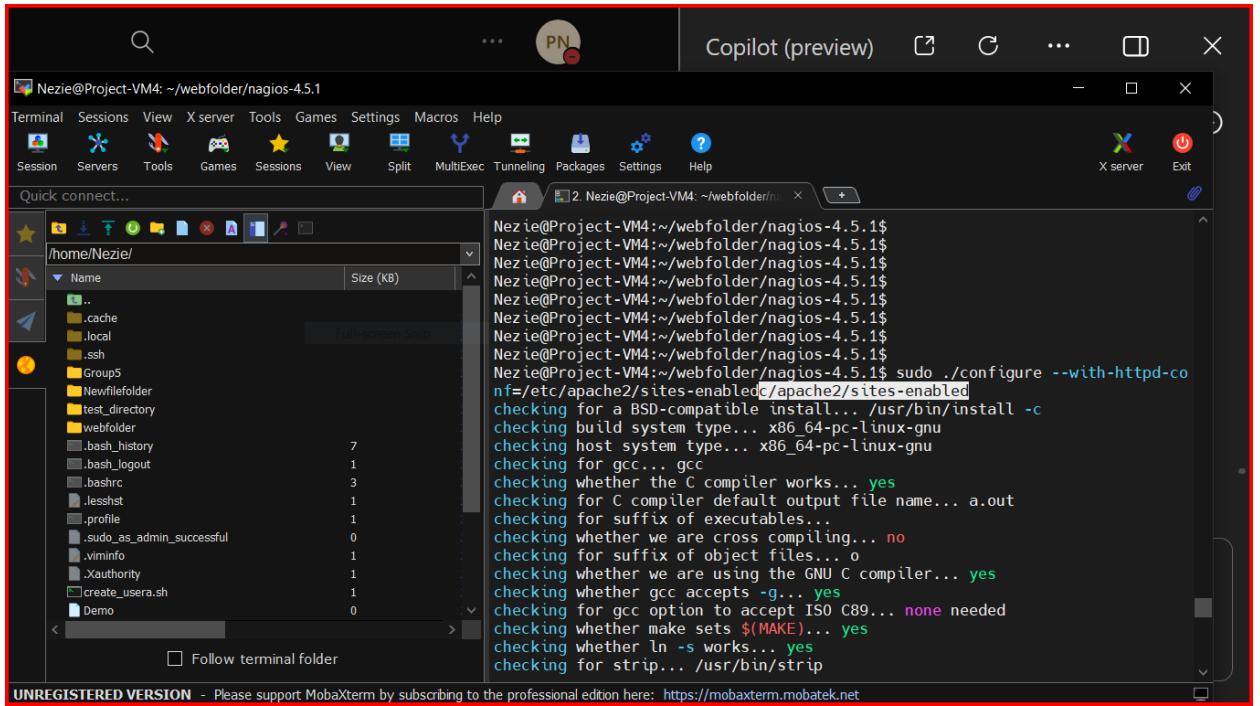
Navigate to the extracted directory:

```
cd nagios-4.5.1
```

The screenshot shows a MobaXterm window with two terminal sessions. Terminal session 1 (top) displays the command 'ls' in the directory '/home/Nenzie/'. Terminal session 2 (bottom) shows the output of 'cd nagios-4.5.1' followed by several 'nagios-4.5.1/xdata...' entries. A file explorer sidebar on the left lists files like '.cache', '.local', '.ssh', 'Group5', 'Newfilefolder', 'test_directory', 'webfolder', and various log and configuration files. The status bar at the bottom indicates 'UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net'.

```
nagios-4.5.1/xdata/.gitignore
nagios-4.5.1/xdata/Makefile.in
nagios-4.5.1/xdata/xdndefault.c
nagios-4.5.1/xdata/xdndefault.h
nagios-4.5.1/xdata/xodtemplate.c
nagios-4.5.1/xdata/xodtemplate.h
nagios-4.5.1/xdata/xpddefault.c
nagios-4.5.1/xdata/xpddefault.h
nagios-4.5.1/xdata/xrddefault.c
nagios-4.5.1/xdata/xrddefault.h
nagios-4.5.1/xdata/xsddefault.c
nagios-4.5.1/xdata/xsddefault.h
Nezie@Project-VM4:~/.bash_history
Nezie@Project-VM4:~/.bash_logout
Nezie@Project-VM4:~/.bashrc
Nezie@Project-VM4:~/.Jessht
Nezie@Project-VM4:~/.profile
Nezie@Project-VM4:~/.sudo_as_admin_successful
Nezie@Project-VM4:~/.viminfo
Nezie@Project-VM4:~/.Xauthority
Nezie@Project-VM4:~/.create_usera.sh
Nezie@Project-VM4:~/.Demo
Nezie@Project-VM4:~/.Follow terminal folder
```

Execute the configure script: `sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled`



The screenshot shows a MobaXterm window titled "Nezie@Project-VM4: ~/webfolder/nagios-4.5.1". The terminal session is executing the command `sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled`. The output of the command is displayed in the terminal window, showing various checks and configurations being performed.

```
Nezie@Project-VM4:~/webfolder/nagios-4.5.1$ sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled
checking for a BSD-compatible install... /usr/bin/install -c
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether make sets $(MAKE)... yes
checking whether ln -s works... yes
checking for strip... /usr/bin/strip
```

4. Compile and Install Nagios:

```
sudo make all
sudo make install
sudo make install-init
sudo make install-commandmode
sudo make install-config
sudo make install-webconf
```

```
Nezie@Project-VM4: ~/webfolder/nagios-4.5.1
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunnelling Packages Settings Help
Copilot (preview) ... X
Nezie@Project-VM4: ~/webfolder/nagios-4.5.1$ sudo make all
sudo make install
sudo make install-init
sudo make install-commandmode
sudo make install-config
sudo make install-webconf
cd ./base && make
make[1]: Entering directory '/home/Nezie/webfolder/nagios-4.5.1/base'
gcc -Wall -I.. -I../lib -I../include -I../include -g -O2 -DHAVE_CONF
IG_H -DNSCORE -c -o nagios.o ./nagios.c
./nagios.c: In function 'main':
./nagios.c:611:25: warning: ignoring return value of 'asprintf' declared with at
tribute 'warn_unused_result' [-Wunused-result]
    611 |             asprintf(&mac->x[MACRO_PROCESSSTARTTIME], "%llu"
, (unsigned long long)program_start);
|
```

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5. Create Nagios Admin User:

Set the Nagios admin password:

```
sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
```