| Cybersecurity |
| --- |
| Module 4 Challenge Submission File |

## **Linux Systems Administration**

Make a copy of this document to work in, and then for each step, add the solution commands below the prompt. Save and submit this completed file as your Challenge deliverable.

### **Step 1: Ensure/Double Check Permissions on Sensitive Files**

1. Permissions on /etc/shadow should allow only root read and write access.
   1. Command to inspect permissions:

| Ls -l /etc/shadow |
| --- |

* 1. Command to set permissions (if needed):

| Sudo chmod -rw------- /etc/shadow |
| --- |

1. Permissions on /etc/gshadow should allow only root read and write access.
   1. Command to inspect permissions:

| Ls -l /etc/gshadow |
| --- |

* 1. Command to set permissions (if needed):

| Sudo chmod -rw------- /etc/gshadow |
| --- |

1. Permissions on /etc/group should allow root read and write access, and allow everyone else read access only.
   1. Command to inspect permissions:

| Ls -l /etc/group |
| --- |

* 1. Command to set permissions (if needed):

| Sudo chmod -rw—r—-r—- /etc/group |
| --- |

1. Permissions on /etc/passwd should allow root read and write access, and allow everyone else read access only.
   1. Command to inspect permissions:

| Ls -l /etc/passwd |
| --- |

* 1. Command to set permissions (if needed):

| Sudo chmod -rw—r—-r—- /etc/passwdsu |
| --- |

### **Step 2: Create User Accounts**

1. Add user accounts for sam, joe, amy, sara, and admin1 with the useradd command.
   1. Command to add each user account (include all five users):

| Sudo adduser sam  Sudo adduser joe  Sudo adduser amy  Sudo adduser sara  Sudo adduser admin1 |
| --- |

1. Ensure that only the admin1 has general sudo access.
   1. Command to add admin1 to the sudo group:

| sudo adduser admin1 sudo |
| --- |

### **Step 3: Create User Group and Collaborative Folder**

1. Add an engineers group to the system.
   1. Command to add group:

| Sudo addgroup engineers |
| --- |

1. Add users sam, joe, amy, and sara to the managed group.
   1. Command to add users to engineers group (include all four users):

|  |
| --- |

1. Create a shared folder for this group at /home/engineers.
   1. Command to create the shared folder:

| Mkdir /home/engineers |
| --- |

1. Change ownership on the new engineers’ shared folder to the engineers group.
   1. Command to change ownership of engineers’ shared folder to engineers group:

| Sudo chown :engineers /home/engineers |
| --- |

### Step 4: Lynis Auditing

1. Command to install Lynis:

| Sudo install apt lynis |
| --- |

1. Command to view documentation and instructions:

| Man lynis |
| --- |

1. Command to run an audit:

| Sudo lynis audit system  (After running the command it was to big to screenshot and paste here so I copied and pasted it at the bottom of the page) |
| --- |

1. Provide a report from the Lynis output with recommendations for hardening the system.
   1. Screenshot of report output:

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\* This release is more than 4 months old. Check the website or GitHub to see if there is an update available. [LYNIS]

https://cisofy.com/lynis/controls/LYNIS/

\* Set a password on GRUB boot loader to prevent altering boot configuration (e.g. boot in single user mode without password) [BOOT-5122]

https://cisofy.com/lynis/controls/BOOT-5122/

\* Consider hardening system services [BOOT-5264]

- Details : Run '/usr/bin/systemd-analyze security SERVICE' for each service

https://cisofy.com/lynis/controls/BOOT-5264/

\* If not required, consider explicit disabling of core dump in /etc/security/limits.conf file [KRNL-5820]

https://cisofy.com/lynis/controls/KRNL-5820/

\* Run pwck manually and correct any errors in the password file [AUTH-9228]

https://cisofy.com/lynis/controls/AUTH-9228/

\* Check PAM configuration, add rounds if applicable and expire passwords to encrypt with new values [AUTH-9229]

https://cisofy.com/lynis/controls/AUTH-9229/

\* Configure password hashing rounds in /etc/login.defs [AUTH-9230]

https://cisofy.com/lynis/controls/AUTH-9230/

\* Install a PAM module for password strength testing like pam\_cracklib or pam\_passwdqc [AUTH-9262]

https://cisofy.com/lynis/controls/AUTH-9262/

\* When possible set expire dates for all password protected accounts [AUTH-9282]

https://cisofy.com/lynis/controls/AUTH-9282/

\* Look at the locked accounts and consider removing them [AUTH-9284]

https://cisofy.com/lynis/controls/AUTH-9284/

\* Configure minimum password age in /etc/login.defs [AUTH-9286]

https://cisofy.com/lynis/controls/AUTH-9286/

\* Configure maximum password age in /etc/login.defs [AUTH-9286]

https://cisofy.com/lynis/controls/AUTH-9286/

\* Default umask in /etc/login.defs could be more strict like 027 [AUTH-9328]

https://cisofy.com/lynis/controls/AUTH-9328/

\* To decrease the impact of a full /home file system, place /home on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* To decrease the impact of a full /tmp file system, place /tmp on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* To decrease the impact of a full /var file system, place /var on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* Disable drivers like USB storage when not used, to prevent unauthorized storage or data theft [USB-1000]

https://cisofy.com/lynis/controls/USB-1000/

\* Check DNS configuration for the dns domain name [NAME-4028]

https://cisofy.com/lynis/controls/NAME-4028/

\* Purge old/removed packages (2 found) with aptitude purge or dpkg --purge command. This will cleanup old configuration files, cron jobs and startup scripts. [PKGS-7346]

https://cisofy.com/lynis/controls/PKGS-7346/

\* Install debsums utility for the verification of packages with known good database. [PKGS-7370]

https://cisofy.com/lynis/controls/PKGS-7370/

\* Update your system with apt-get update, apt-get upgrade, apt-get dist-upgrade and/or unattended-upgrades [PKGS-7392]

https://cisofy.com/lynis/controls/PKGS-7392/

\* Install package apt-show-versions for patch management purposes [PKGS-7394]

https://cisofy.com/lynis/controls/PKGS-7394/

\* Determine if protocol 'dccp' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'sctp' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'rds' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'tipc' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Access to CUPS configuration could be more strict. [PRNT-2307]

https://cisofy.com/lynis/controls/PRNT-2307/

\* You are advised to hide the mail\_name (option: smtpd\_banner) from your postfix configuration. Use postconf -e or change your main.cf file (/etc/postfix/main.cf) [MAIL-8818]

https://cisofy.com/lynis/controls/MAIL-8818/

\* Disable the 'VRFY' command [MAIL-8820:disable\_vrfy\_command]

- Details : disable\_vrfy\_command=no

- Solution : run postconf -e disable\_vrfy\_command=yes to change the value

https://cisofy.com/lynis/controls/MAIL-8820/

\* Check iptables rules to see which rules are currently not used [FIRE-4513]

https://cisofy.com/lynis/controls/FIRE-4513/

\* Install Apache mod\_evasive to guard webserver against DoS/brute force attempts [HTTP-6640]

https://cisofy.com/lynis/controls/HTTP-6640/

\* Install Apache modsecurity to guard webserver against web application attacks [HTTP-6643]

https://cisofy.com/lynis/controls/HTTP-6643/

\* Add HTTPS to nginx virtual hosts for enhanced protection of sensitive data and privacy [HTTP-6710]

https://cisofy.com/lynis/controls/HTTP-6710/

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowTcpForwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : ClientAliveCountMax (set 3 to 2)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : LogLevel (set INFO to VERBOSE)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxAuthTries (set 6 to 3)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxSessions (set 10 to 2)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : Port (set 22 to )

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : TCPKeepAlive (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : X11Forwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowAgentForwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Enable logging to an external logging host for archiving purposes and additional protection [LOGG-2154]

https://cisofy.com/lynis/controls/LOGG-2154/

\* Check what deleted files are still in use and why. [LOGG-2190]

https://cisofy.com/lynis/controls/LOGG-2190/

\* If there are no xinetd services required, it is recommended that the daemon be removed [INSE-8100]

https://cisofy.com/lynis/controls/INSE-8100/

\* Add a legal banner to /etc/issue, to warn unauthorized users [BANN-7126]

https://cisofy.com/lynis/controls/BANN-7126/

\* Add legal banner to /etc/issue.net, to warn unauthorized users [BANN-7130]

https://cisofy.com/lynis/controls/BANN-7130/

\* Enable process accounting [ACCT-9622]

https://cisofy.com/lynis/controls/ACCT-9622/

\* Enable sysstat to collect accounting (no results) [ACCT-9626]

https://cisofy.com/lynis/controls/ACCT-9626/

\* Enable auditd to collect audit information [ACCT-9628]

https://cisofy.com/lynis/controls/ACCT-9628/

\* Determine if automation tools are present for system management [TOOL-5002]

https://cisofy.com/lynis/controls/TOOL-5002/

\* Consider restricting file permissions [FILE-7524]

- Details : See screen output or log file

- Solution : Use chmod to change file permissions

https://cisofy.com/lynis/controls/FILE-7524/

\* Double check the permissions of home directories as some might be not strict enough. [HOME-9304]

https://cisofy.com/lynis/controls/HOME-9304/

\* One or more sysctl values differ from the scan profile and could be tweaked [KRNL-6000]

- Solution : Change sysctl value or disable test (skip-test=KRNL-6000:<sysctl-key>)

https://cisofy.com/lynis/controls/KRNL-6000/

\* Harden compilers like restricting access to root user only [HRDN-7222]

https://cisofy.com/lynis/controls/HRDN-7222/

Follow-up:

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- Show details of a test (lynis show details TEST-ID)

- Check the logfile for all details (less /var/log/lynis.log)

- Read security controls texts (https://cisofy.com)

- Use --upload to upload data to central system (Lynis Enterprise users)

### 

### Optional Additional Challenge

1. Command to install chkrootkit:

| Sudo install apt chkrootkit |
| --- |

1. Command to view documentation and instructions:

| [Enter answer here] |
| --- |

1. Command to run expert mode:

| [Enter answer here] |
| --- |

1. Provide a report from the chrootkit output with recommendations for hardening the system.
   1. Screenshot of end of sample output:

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sudo lynis audit system

[ Lynis 3.0.9 ]

################################################################################

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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://cisofy.com/lynis/

Enterprise support available (compliance, plugins, interface and tools)

################################################################################

[+] Initializing program

------------------------------------

- Detecting OS... [ DONE ]

- Checking profiles... [ DONE ]

---------------------------------------------------

Program version: 3.0.9

Operating system: Linux

Operating system name: Ubuntu

Operating system version: 20.04

Kernel version: 5.15.0

Hardware platform: x86\_64

Hostname: vm-image-ubuntu-dev-1

---------------------------------------------------

Profiles: /etc/lynis/default.prf

Log file: /var/log/lynis.log

Report file: /var/log/lynis-report.dat

Report version: 1.0

Plugin directory: /usr/share/lynis/plugins

---------------------------------------------------

Auditor: [Not Specified]

Language: en

Test category: all

Test group: all

---------------------------------------------------

- Program update status... [ NO UPDATE ]

[+] System tools

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- Scanning available tools...

- Checking system binaries...

[+] Plugins (phase 1)

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Note: plugins have more extensive tests and may take several minutes to complete

- Plugins enabled [ NONE ]

[+] Boot and services

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- Service Manager [ systemd ]

- Checking UEFI boot [ ENABLED ]

- Checking Secure Boot [ DISABLED ]

- Checking presence GRUB2 [ FOUND ]

- Checking for password protection [ NONE ]

- Check running services (systemctl) [ DONE ]

Result: found 53 running services

- Check enabled services at boot (systemctl) [ DONE ]

Result: found 108 enabled services

- Check startup files (permissions) [ OK ]

- Running 'systemd-analyze security'

- ModemManager.service: [ MEDIUM ]

- NetworkManager.service: [ EXPOSED ]

- accounts-daemon.service: [ UNSAFE ]

- acpid.service: [ UNSAFE ]

- alsa-state.service: [ UNSAFE ]

- anacron.service: [ UNSAFE ]

- apache2.service: [ UNSAFE ]

- apport.service: [ UNSAFE ]

- atd.service: [ UNSAFE ]

- avahi-daemon.service: [ UNSAFE ]

- blueman-mechanism.service: [ UNSAFE ]

- chrony.service: [ EXPOSED ]

- cloud-init-hotplugd.service: [ UNSAFE ]

- colord.service: [ EXPOSED ]

- containerd.service: [ UNSAFE ]

- cron.service: [ UNSAFE ]

- cups-browsed.service: [ UNSAFE ]

- cups.service: [ UNSAFE ]

- dbus.service: [ UNSAFE ]

- dm-event.service: [ UNSAFE ]

- dmesg.service: [ UNSAFE ]

- docker.service: [ UNSAFE ]

- dovecot.service: [ EXPOSED ]

- emergency.service: [ UNSAFE ]

- gdm.service: [ UNSAFE ]

- getty@tty1.service: [ UNSAFE ]

- hddtemp.service: [ UNSAFE ]

- hv-fcopy-daemon.service: [ UNSAFE ]

- hv-kvp-daemon.service: [ UNSAFE ]

- hv-vss-daemon.service: [ UNSAFE ]

- irqbalance.service: [ MEDIUM ]

- iscsid.service: [ UNSAFE ]

- kerneloops.service: [ UNSAFE ]

- lvm2-lvmpolld.service: [ UNSAFE ]

- lxd-agent.service: [ UNSAFE ]

- multipathd.service: [ UNSAFE ]

- nessusd.service: [ UNSAFE ]

- networkd-dispatcher.service: [ UNSAFE ]

- nginx.service: [ UNSAFE ]

- nmbd.service: [ UNSAFE ]

- ondemand.service: [ UNSAFE ]

- open-vm-tools.service: [ UNSAFE ]

- plymouth-start.service: [ UNSAFE ]

- polkit.service: [ UNSAFE ]

- postfix@-.service: [ UNSAFE ]

- rc-local.service: [ UNSAFE ]

- rescue.service: [ UNSAFE ]

- resolvconf.service: [ UNSAFE ]

- rsync.service: [ UNSAFE ]

- rsyslog.service: [ UNSAFE ]

- rtkit-daemon.service: [ MEDIUM ]

- serial-getty@ttyS0.service: [ UNSAFE ]

- smbd.service: [ UNSAFE ]

- snap.lxd.daemon.service: [ UNSAFE ]

- snapd.aa-prompt-listener.service: [ UNSAFE ]

- snapd.service: [ UNSAFE ]

- ssh.service: [ UNSAFE ]

- switcheroo-control.service: [ EXPOSED ]

- systemd-ask-password-console.service: [ UNSAFE ]

- systemd-ask-password-plymouth.service: [ UNSAFE ]

- systemd-ask-password-wall.service: [ UNSAFE ]

- systemd-fsckd.service: [ UNSAFE ]

- systemd-initctl.service: [ UNSAFE ]

- systemd-journald.service: [ PROTECTED ]

- systemd-logind.service: [ PROTECTED ]

- systemd-networkd.service: [ PROTECTED ]

- systemd-resolved.service: [ PROTECTED ]

- systemd-rfkill.service: [ UNSAFE ]

- systemd-udevd.service: [ EXPOSED ]

- ubuntu-advantage.service: [ UNSAFE ]

- udisks2.service: [ UNSAFE ]

- unattended-upgrades.service: [ UNSAFE ]

- upower.service: [ PROTECTED ]

- user@1002.service: [ UNSAFE ]

- user@129.service: [ UNSAFE ]

- uuidd.service: [ PROTECTED ]

- vgauth.service: [ UNSAFE ]

- vncserver2@:1.service: [ UNSAFE ]

- vncserver@:1.service: [ UNSAFE ]

- vsftpd.service: [ UNSAFE ]

- walinuxagent.service: [ UNSAFE ]

- whoopsie.service: [ UNSAFE ]

- wpa\_supplicant.service: [ UNSAFE ]

- xinetd.service: [ UNSAFE ]

- xrdp-sesman.service: [ UNSAFE ]

- xrdp.service: [ UNSAFE ]

[+] Kernel

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- Checking default run level [ RUNLEVEL 5 ]

- Checking CPU support (NX/PAE)

CPU support: PAE and/or NoeXecute supported [ FOUND ]

- Checking kernel version and release [ DONE ]

- Checking kernel type [ DONE ]

- Checking loaded kernel modules [ DONE ]

Found 75 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 /etc/security/limits.conf [ DEFAULT ]

- 'soft' configuration in /etc/security/limits.conf [ DEFAULT ]

- Checking setuid core dumps configuration [ PROTECTED ]

- Check if reboot is needed [ NO ]

[+] Memory and Processes

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- Checking /proc/meminfo [ FOUND ]

- Searching for dead/zombie processes [ NOT FOUND ]

- Searching for IO waiting processes [ NOT FOUND ]

- Search prelink tooling [ NOT FOUND ]

[+] 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 [ SUGGESTION ]

- 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.d [ OK ]

- Permissions for: /etc/sudoers [ OK ]

- Permissions for: /etc/sudoers.d/README [ OK ]

- Permissions for: /etc/sudoers.d/90-cloud-init-users [ 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

- umask (/etc/profile) [ NOT FOUND ]

- umask (/etc/login.defs) [ SUGGESTION ]

- LDAP authentication support [ NOT ENABLED ]

- Logging failed login attempts [ ENABLED ]

[+] Shells

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- Checking shells from /etc/shells

Result: found 9 shells (valid shells: 9).

- Session timeout settings/tools [ NONE ]

- Checking default umask values

- Checking default umask in /etc/bash.bashrc [ NONE ]

- Checking default umask in /etc/profile [ NONE ]

[+] File systems

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- Checking mount points

- Checking /home mount point [ SUGGESTION ]

- Checking /tmp mount point [ SUGGESTION ]

- Checking /var mount point [ SUGGESTION ]

- Query swap partitions (fstab) [ NONE ]

- Testing swap partitions [ OK ]

- Testing /proc mount (hidepid) [ SUGGESTION ]

- Checking for old files in /tmp [ OK ]

- Checking /tmp sticky bit [ OK ]

- Checking /var/tmp sticky bit [ OK ]

- ACL support root file system [ ENABLED ]

- Mount options of / [ NON DEFAULT ]

- Mount options of /dev [ NON DEFAULT ]

- Mount options of /dev/shm [ PARTIALLY HARDENED ]

- Mount options of /run [ HARDENED ]

- Total without nodev:8 noexec:28 nosuid:19 ro or noexec (W^X): 16 of total 57

- Checking Locate database [ FOUND ]

- Disable kernel support of some filesystems

[+] USB Devices

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- Checking usb-storage driver (modprobe config) [ NOT DISABLED ]

- Checking USB devices authorization [ DISABLED ]

- Checking USBGuard [ NOT FOUND ]

[+] Storage

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

[+] NFS

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- Check running NFS daemon [ NOT FOUND ]

[+] Name services

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- Checking search domains [ FOUND ]

- Searching DNS domain name [ UNKNOWN ]

- Checking /etc/hosts

- Duplicate entries in hosts file [ NONE ]

- Presence of configured hostname in /etc/hosts [ FOUND ]

- Hostname mapped to localhost [ NOT FOUND ]

- Localhost mapping to IP address [ OK ]

[+] Ports and packages

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- Searching package managers

- Searching dpkg package manager [ FOUND ]

- Querying package manager

- Query unpurged packages [ FOUND ]

- Checking security repository in sources.list file [ OK ]

- Checking APT package database [ OK ]

- Checking vulnerable packages [ WARNING ]

[WARNING]: Test PKGS-7392 had a long execution: 20.116539 seconds

- Checking upgradeable packages [ SKIPPED ]

- Checking package audit tool [ INSTALLED ]

Found: apt-get

- Toolkit for automatic upgrades (unattended-upgrade) [ FOUND ]

[+] Networking

------------------------------------

- Checking IPv6 configuration [ ENABLED ]

Configuration method [ AUTO ]

IPv6 only [ NO ]

- Checking configured nameservers

- Testing nameservers

Nameserver: 8.8.8.8 [ OK ]

Nameserver: 127.0.0.53 [ OK ]

- DNSSEC supported (systemd-resolved) [ NO ]

- Checking default gateway [ DONE ]

- Getting listening ports (TCP/UDP) [ DONE ]

- Checking promiscuous interfaces [ OK ]

- Checking waiting connections [ OK ]

- Checking status DHCP client

- Checking for ARP monitoring software [ NOT FOUND ]

- Uncommon network protocols [ 0 ]

[+] Printers and Spools

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- Checking cups daemon [ RUNNING ]

- Checking CUPS configuration file [ OK ]

- File permissions [ WARNING ]

- Checking CUPS addresses/sockets [ FOUND ]

- Checking lp daemon [ NOT RUNNING ]

[+] Software: e-mail and messaging

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- Postfix status [ RUNNING ]

- Postfix configuration [ FOUND ]

- Postfix banner [ WARNING ]

- Dovecot status [ RUNNING ]

[+] Software: firewalls

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- Checking iptables kernel module [ FOUND ]

- Checking iptables policies of chains [ FOUND ]

- Checking for empty ruleset [ OK ]

- Checking for unused rules [ FOUND ]

- Checking host based firewall [ ACTIVE ]

[+] Software: webserver

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- 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-DoS/brute force [ NOT FOUND ]

mod\_reqtimeout/mod\_qos [ FOUND ]

ModSecurity: web application firewall [ NOT FOUND ]

- Checking nginx [ FOUND ]

- Searching nginx configuration file [ FOUND ]

- Found nginx includes [ 6 FOUND ]

- Parsing configuration options

- /etc/nginx/nginx.conf

- /etc/nginx/modules-enabled/50-mod-http-image-filter.conf

- /etc/nginx/modules-enabled/50-mod-http-xslt-filter.conf

- /etc/nginx/modules-enabled/50-mod-mail.conf

- /etc/nginx/modules-enabled/50-mod-stream.conf

- /etc/nginx/sites-enabled/default

- SSL configured [ NO ]

- Checking log file configuration

- Missing log files (access\_log) [ NO ]

- Disabled access logging [ NO ]

- Missing log files (error\_log) [ NO ]

- Debugging mode on error\_log [ NO ]

[+] 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: FingerprintHash [ OK ]

- OpenSSH option: GatewayPorts [ OK ]

- OpenSSH option: IgnoreRhosts [ OK ]

- OpenSSH option: LoginGraceTime [ OK ]

- OpenSSH option: LogLevel [ SUGGESTION ]

- OpenSSH option: MaxAuthTries [ SUGGESTION ]

- OpenSSH option: MaxSessions [ SUGGESTION ]

- OpenSSH option: PermitRootLogin [ OK ]

- OpenSSH option: PermitUserEnvironment [ OK ]

- OpenSSH option: PermitTunnel [ OK ]

- OpenSSH option: Port [ SUGGESTION ]

- OpenSSH option: PrintLastLog [ OK ]

- OpenSSH option: StrictModes [ OK ]

- OpenSSH option: TCPKeepAlive [ SUGGESTION ]

- OpenSSH option: UseDNS [ OK ]

- 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 ]

- 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 [ FILES FOUND ]

[+] Insecure services

------------------------------------

- Installed inetd package [ NOT FOUND ]

- Installed xinetd package [ FOUND ]

- xinetd status [ ACTIVE ]

- Configuration file (xinetd.conf) [ FOUND ]

- Checking xinetd (insecure services) [ OK ]

- Checking tcp\_wrappers installation [ SUGGESTION ]

- Installed rsh client package [ OK ]

- Installed rsh server package [ OK ]

- Installed telnet client package [ OK ]

- Installed telnet server package [ NOT FOUND ]

- Checking NIS client installation [ OK ]

- Checking NIS server installation [ OK ]

- 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 ]

- Checking atd status [ RUNNING ]

- Checking at users [ DONE ]

- Checking at jobs [ NONE ]

[+] Accounting

------------------------------------

- Checking accounting information [ NOT FOUND ]

- Checking sysstat accounting data [ NOT FOUND ]

- Checking auditd [ 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 [0/142] [ NONE ]

[WARNING]: Test CRYP-7902 had a long execution: 24.868108 seconds

- Found 0 encrypted and 0 unencrypted swap devices in use. [ OK ]

- Kernel entropy is sufficient [ YES ]

- HW RNG & rngd [ NO ]

- SW prng [ NO ]

- MOR variable not found [ WEAK ]

[+] Virtualization

------------------------------------

[+] Containers

------------------------------------

- Docker

- Docker daemon [ RUNNING ]

- Docker info output (warnings) [ NONE ]

- Containers

- Total containers [ 0 ]

- File permissions [ OK ]

[+] Security frameworks

------------------------------------

- Checking presence AppArmor [ FOUND ]

- Checking AppArmor status [ ENABLED ]

Found 257 unconfined processes

- Checking presence SELinux [ NOT FOUND ]

- Checking presence TOMOYO Linux [ NOT FOUND ]

- Checking presence grsecurity [ NOT FOUND ]

- Checking for implemented MAC framework [ OK ]

[+] Software: file integrity

------------------------------------

- Checking file integrity tools

- Tripwire [ FOUND ]

- dm-integrity (status) [ DISABLED ]

- dm-verity (status) [ DISABLED ]

- Checking presence integrity tool [ FOUND ]

[+] Software: System tooling

------------------------------------

- Checking automation tooling

- Automation tooling [ NOT FOUND ]

- Checking for IDS/IPS tooling [ NONE ]

[+] Software: Malware

------------------------------------

- Checking chkrootkit [ FOUND ]

- Malware software components [ FOUND ]

- Active agent [ NOT FOUND ]

- Rootkit scanner [ FOUND ]

[+] File Permissions

------------------------------------

- Starting file permissions check

File: /boot/grub/grub.cfg [ OK ]

File: /etc/at.deny [ SUGGESTION ]

File: /etc/crontab [ SUGGESTION ]

File: /etc/group [ OK ]

File: /etc/group- [ 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/passwd- [ 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 ]

[+] Home directories

------------------------------------

- Permissions of home directories [ WARNING ]

- Ownership of home directories [ OK ]

- Checking shell history files [ OK ]

[+] Kernel Hardening

------------------------------------

- 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) [ DIFFERENT ]

- kernel.ctrl-alt-del (exp: 0) [ OK ]

- kernel.dmesg\_restrict (exp: 1) [ OK ]

- kernel.kptr\_restrict (exp: 2) [ DIFFERENT ]

- kernel.modules\_disabled (exp: 1) [ DIFFERENT ]

- kernel.perf\_event\_paranoid (exp: 3) [ DIFFERENT ]

- kernel.randomize\_va\_space (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.bootp\_relay (exp: 0) [ OK ]

- net.ipv4.conf.all.forwarding (exp: 0) [ DIFFERENT ]

- 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) [ OK ]

- net.ipv4.conf.default.accept\_source\_route (exp: 0) [ DIFFERENT ]

- 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) [ OK ]

- net.ipv6.conf.all.accept\_source\_route (exp: 0) [ OK ]

- net.ipv6.conf.default.accept\_redirects (exp: 0) [ OK ]

- net.ipv6.conf.default.accept\_source\_route (exp: 0) [ OK ]

[+] Hardening

------------------------------------

- Installed compiler(s) [ FOUND ]

- Installed malware scanner [ FOUND ]

- Non-native binary formats [ FOUND ]

[+] Custom tests

------------------------------------

- Running custom tests... [ NONE ]

[+] Plugins (phase 2)

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================================================================================

-[ Lynis 3.0.9 Results ]-

Warnings (2):

----------------------------

! Found one or more vulnerable packages. [PKGS-7392]

https://cisofy.com/lynis/controls/PKGS-7392/

! Found some information disclosure in SMTP banner (OS or software name) [MAIL-8818]

https://cisofy.com/lynis/controls/MAIL-8818/

Suggestions (55):

----------------------------

\* This release is more than 4 months old. Check the website or GitHub to see if there is an update available. [LYNIS]

https://cisofy.com/lynis/controls/LYNIS/

\* Set a password on GRUB boot loader to prevent altering boot configuration (e.g. boot in single user mode without password) [BOOT-5122]

https://cisofy.com/lynis/controls/BOOT-5122/

\* Consider hardening system services [BOOT-5264]

- Details : Run '/usr/bin/systemd-analyze security SERVICE' for each service

https://cisofy.com/lynis/controls/BOOT-5264/

\* If not required, consider explicit disabling of core dump in /etc/security/limits.conf file [KRNL-5820]

https://cisofy.com/lynis/controls/KRNL-5820/

\* Run pwck manually and correct any errors in the password file [AUTH-9228]

https://cisofy.com/lynis/controls/AUTH-9228/

\* Check PAM configuration, add rounds if applicable and expire passwords to encrypt with new values [AUTH-9229]

https://cisofy.com/lynis/controls/AUTH-9229/

\* Configure password hashing rounds in /etc/login.defs [AUTH-9230]

https://cisofy.com/lynis/controls/AUTH-9230/

\* Install a PAM module for password strength testing like pam\_cracklib or pam\_passwdqc [AUTH-9262]

https://cisofy.com/lynis/controls/AUTH-9262/

\* When possible set expire dates for all password protected accounts [AUTH-9282]

https://cisofy.com/lynis/controls/AUTH-9282/

\* Look at the locked accounts and consider removing them [AUTH-9284]

https://cisofy.com/lynis/controls/AUTH-9284/

\* Configure minimum password age in /etc/login.defs [AUTH-9286]

https://cisofy.com/lynis/controls/AUTH-9286/

\* Configure maximum password age in /etc/login.defs [AUTH-9286]

https://cisofy.com/lynis/controls/AUTH-9286/

\* Default umask in /etc/login.defs could be more strict like 027 [AUTH-9328]

https://cisofy.com/lynis/controls/AUTH-9328/

\* To decrease the impact of a full /home file system, place /home on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* To decrease the impact of a full /tmp file system, place /tmp on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* To decrease the impact of a full /var file system, place /var on a separate partition [FILE-6310]

https://cisofy.com/lynis/controls/FILE-6310/

\* Disable drivers like USB storage when not used, to prevent unauthorized storage or data theft [USB-1000]

https://cisofy.com/lynis/controls/USB-1000/

\* Check DNS configuration for the dns domain name [NAME-4028]

https://cisofy.com/lynis/controls/NAME-4028/

\* Purge old/removed packages (2 found) with aptitude purge or dpkg --purge command. This will cleanup old configuration files, cron jobs and startup scripts. [PKGS-7346]

https://cisofy.com/lynis/controls/PKGS-7346/

\* Install debsums utility for the verification of packages with known good database. [PKGS-7370]

https://cisofy.com/lynis/controls/PKGS-7370/

\* Update your system with apt-get update, apt-get upgrade, apt-get dist-upgrade and/or unattended-upgrades [PKGS-7392]

https://cisofy.com/lynis/controls/PKGS-7392/

\* Install package apt-show-versions for patch management purposes [PKGS-7394]

https://cisofy.com/lynis/controls/PKGS-7394/

\* Determine if protocol 'dccp' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'sctp' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'rds' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Determine if protocol 'tipc' is really needed on this system [NETW-3200]

https://cisofy.com/lynis/controls/NETW-3200/

\* Access to CUPS configuration could be more strict. [PRNT-2307]

https://cisofy.com/lynis/controls/PRNT-2307/

\* You are advised to hide the mail\_name (option: smtpd\_banner) from your postfix configuration. Use postconf -e or change your main.cf file (/etc/postfix/main.cf) [MAIL-8818]

https://cisofy.com/lynis/controls/MAIL-8818/

\* Disable the 'VRFY' command [MAIL-8820:disable\_vrfy\_command]

- Details : disable\_vrfy\_command=no

- Solution : run postconf -e disable\_vrfy\_command=yes to change the value

https://cisofy.com/lynis/controls/MAIL-8820/

\* Check iptables rules to see which rules are currently not used [FIRE-4513]

https://cisofy.com/lynis/controls/FIRE-4513/

\* Install Apache mod\_evasive to guard webserver against DoS/brute force attempts [HTTP-6640]

https://cisofy.com/lynis/controls/HTTP-6640/

\* Install Apache modsecurity to guard webserver against web application attacks [HTTP-6643]

https://cisofy.com/lynis/controls/HTTP-6643/

\* Add HTTPS to nginx virtual hosts for enhanced protection of sensitive data and privacy [HTTP-6710]

https://cisofy.com/lynis/controls/HTTP-6710/

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowTcpForwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : ClientAliveCountMax (set 3 to 2)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : LogLevel (set INFO to VERBOSE)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxAuthTries (set 6 to 3)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxSessions (set 10 to 2)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : Port (set 22 to )

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : TCPKeepAlive (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : X11Forwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowAgentForwarding (set YES to NO)

https://cisofy.com/lynis/controls/SSH-7408/

\* Enable logging to an external logging host for archiving purposes and additional protection [LOGG-2154]

https://cisofy.com/lynis/controls/LOGG-2154/

\* Check what deleted files are still in use and why. [LOGG-2190]

https://cisofy.com/lynis/controls/LOGG-2190/

\* If there are no xinetd services required, it is recommended that the daemon be removed [INSE-8100]

https://cisofy.com/lynis/controls/INSE-8100/

\* Add a legal banner to /etc/issue, to warn unauthorized users [BANN-7126]

https://cisofy.com/lynis/controls/BANN-7126/

\* Add legal banner to /etc/issue.net, to warn unauthorized users [BANN-7130]

https://cisofy.com/lynis/controls/BANN-7130/

\* Enable process accounting [ACCT-9622]

https://cisofy.com/lynis/controls/ACCT-9622/

\* Enable sysstat to collect accounting (no results) [ACCT-9626]

https://cisofy.com/lynis/controls/ACCT-9626/

\* Enable auditd to collect audit information [ACCT-9628]

https://cisofy.com/lynis/controls/ACCT-9628/

\* Determine if automation tools are present for system management [TOOL-5002]

https://cisofy.com/lynis/controls/TOOL-5002/

\* Consider restricting file permissions [FILE-7524]

- Details : See screen output or log file

- Solution : Use chmod to change file permissions

https://cisofy.com/lynis/controls/FILE-7524/

\* Double check the permissions of home directories as some might be not strict enough. [HOME-9304]

https://cisofy.com/lynis/controls/HOME-9304/

\* One or more sysctl values differ from the scan profile and could be tweaked [KRNL-6000]

- Solution : Change sysctl value or disable test (skip-test=KRNL-6000:<sysctl-key>)

https://cisofy.com/lynis/controls/KRNL-6000/

\* Harden compilers like restricting access to root user only [HRDN-7222]

https://cisofy.com/lynis/controls/HRDN-7222/

Follow-up:

----------------------------

- Show details of a test (lynis show details TEST-ID)

- Check the logfile for all details (less /var/log/lynis.log)

- Read security controls texts (https://cisofy.com)

- Use --upload to upload data to central system (Lynis Enterprise users)

================================================================================

Lynis security scan details:

Hardening index : 64 [############ ]

Tests performed : 277

Plugins enabled : 0

Components:

- Firewall [V]

- Malware scanner [V]

Scan mode:

Normal [V] Forensics [ ] Integration [ ] Pentest [ ]

Lynis modules:

- Compliance status [?]

- Security audit [V]

- Vulnerability scan [V]

Files:

- Test and debug information : /var/log/lynis.log

- Report data : /var/log/lynis-report.dat

================================================================================

Lynis 3.0.9

Auditing, system hardening, and compliance for UNIX-based systems

(Linux, macOS, BSD, and others)

2007-2021, CISOfy - https://cisofy.com/lynis/

Enterprise support available (compliance, plugins, interface and tools)

================================================================================

[TIP]: Enhance Lynis audits by adding your settings to custom.prf (see /etc/lynis/default.prf for all settings)