**Week 4 Homework Submission File: Linux Systems Administration**

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

1. Permissions on `/etc/shadow` should allow only `root` read and write access.

- Command to inspect permissions:

**Answer**: ls -l /etc/shadow

- Command to set permissions (if needed): ﻿

**Answer**: 1) sudo chmod 600 /etc/shadow

or

2) ﻿sudo chmod u=rw,g=,o= /etc/shadow

2. Permissions on `/etc/gshadow` should allow only `root` read and write access.

- Command to inspect permissions:

﻿ **Answer**: ls -l /etc/gshadow

- Command to set permissions (if needed):

**Answer**: 1) sudo chmod 600 /etc/gshadow

or

2) ﻿sudo chmod u=rw,g=,o= /etc/gshadow

3. Permissions on `/etc/group` should allow `root` read and write access, and allow everyone else read access only.

- Command to inspect permissions:

﻿  **Answer**: ﻿ls -l /etc/group

- Command to set permissions (if needed):

﻿ **Answer**: 1) sudo chmod 644 /etc/group

or

﻿ 2) sudo chmod u=rw,g=r,o=r /etc/group

4. Permissions on `/etc/passwd` should allow `root` read and write access, and allow everyone else read access only.

- Command to inspect permissions:

**Answer**: ﻿ls -l /etc/passwd

- Command to set permissions (if needed):

**Answer**: 1) sudo chmod 644 /etc/passwd

or

﻿ 2) sudo chmod u=rw,g=r,o=r /etc/passwd

**Step 2: Create User Accounts**

1. Add user accounts for `sam`, `joe`, `amy`, `sara`, and `admin`.

- Command to add each user account (include all five users):

**Answer: ﻿**

1. sudo adduser sam
2. ﻿sudo adduser joe
3. ﻿sudo adduser amy
4. ﻿sudo adduser sara
5. ﻿sudo adduser admin

2. Ensure that only the `admin` has general sudo access.

- Command to add `admin` to the `sudo` group:

**Answer: ﻿**sudo usermod -g sudo admin

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

1. Add an `engineers` group to the system.

- Command to add group:

﻿ **Answer:** sudo addgroup engineers

2. Add users `sam`, `joe`, `amy`, and `sara` to the managed group.

- Command to add users to `engineers` group (include all four users):

﻿ **Answer:** sudo usermod -g engineers sam

sudo usermod -g engineers joe

sudo usermod -g engineers amy

sudo usermod -g engineers sara

3. Create a shared folder for this group at `/home/engineers`.

- Command to create the shared folder:

﻿  **Answer:** sudo mkdir /home/engineers

4. Change ownership on the new engineers' shared folder to the `engineers` group.

- Command to change ownership of engineer's shared folder to engineer group:

﻿ **Answer:** sudo chown :engineers /home/engineers

**Step 4: Lynis Auditing**

1. Command to install Lynis:

﻿ **Answer:** sudo apt install Lynis

2. Command to see documentation and instructions:

﻿ **Answer:** man lynis

3. Command to run an audit:

**Answer:** ﻿sudo lynis audit system

4. Provide a report from the Lynis output on what can be done to harden the system.

- Screenshot of report output:

﻿ **Answer:**

[ Lynis 2.6.2 ]

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

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.

2007-2018, CISOfy - https://cisofy.com/lynis/

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

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

[+] Initializing program

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- Detecting OS... [ DONE ]

- Checking profiles... [ DONE ]

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Program version: 2.6.2

Operating system: Linux

Operating system name: Ubuntu Linux

Operating system version: 18.04

Kernel version: 5.0.0

Hardware platform: x86\_64

Hostname: UbuntuDesktop

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

Profiles: /etc/lynis/default.prf

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

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- Program update status... [ WARNING ]

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

Lynis update available

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

Current version is more than 4 months old

Current version : 262 Latest version : 304

Please update to the latest version.

New releases include additional features, bug fixes, tests, and baselines.

Download the latest version:

Packages (DEB/RPM) - https://packages.cisofy.com

Website (TAR) - https://cisofy.com/downloads/

GitHub (source) - https://github.com/CISOfy/lynis

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[+] 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

- Plugin: debian

[

[+] Debian Tests

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- 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 [ Not Installed ]

- libpam-usb [ Not Installed ]

- File System Checks:

- DM-Crypt, Cryptsetup & Cryptmount:

- Software:

- apt-listbugs [ Not Installed ]

- apt-listchanges [ Not Installed ]

- checkrestart [ Not Installed ]

- needrestart [ Not Installed ]

- debsecan [ Not Installed ]

- debsums [ Not Installed ]

- fail2ban [ Not Installed ]

]

[+] Boot and services

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- Service Manager [ systemd ]

- Checking UEFI boot [ DISABLED ]

- Checking presence GRUB2 [ FOUND ]

- Checking for password protection [ WARNING ]

- Check running services (systemctl) [ DONE ]

Result: found 44 running services

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

Result: found 70 enabled services

- Check startup files (permissions) [ OK ]

[+] 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 98 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 [ DISABLED ]

- 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 [ OK ]

- Searching for IO waiting processes [ OK ]

[+] 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 ]

- Query system users (non daemons) [ DONE ]

- NIS+ authentication support [ NOT ENABLED ]

- NIS authentication support [ NOT ENABLED ]

- sudoers file [ FOUND ]

- Check sudoers file permissions [ 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 [ OK ]

- Accounts without password [ OK ]

- Checking user password aging (minimum) [ DISABLED ]

- User password aging (maximum) [ DISABLED ]

- Checking expired passwords [ OK ]

- Checking Linux single user mode authentication [ WARNING ]

- 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 4 shells (valid shells: 4).

- 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) [ OK ]

- Testing swap partitions [ OK ]

- 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 ]

- Checking Locate database [ FOUND ]

- Disable kernel support of some filesystems

- Discovered kernel modules: cramfs freevxfs hfs hfsplus jffs2 udf

[+] USB Devices

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

- Checking USB devices authorization [ ENABLED ]

- 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

- Checking /etc/hosts (duplicates) [ OK ]

- Checking /etc/hosts (hostname) [ OK ]

- Checking /etc/hosts (localhost) [ OK ]

- Checking /etc/hosts (localhost to IP) [ 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 ]

- Checking upgradeable packages [ SKIPPED ]

- Checking package audit tool [ INSTALLED ]

Found: apt-get

[+] 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 ]

- Minimal of 2 responsive nameservers [ OK ]

- Checking default gateway [ DONE ]

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

\* Found 39 ports

- Checking promiscuous interfaces [ OK ]

- Checking waiting connections [ OK ]

- Checking status DHCP client [ RUNNING ]

- Checking for ARP monitoring software [ NOT FOUND ]

[+] 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 chain INPUT (table: filter, policy ) [ other ]

- 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 (114) ]

- Found 114 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 [ 7 FOUND ]

- Parsing configuration options

- /etc/nginx/nginx.conf

- /etc/nginx/modules-enabled/50-mod-http-geoip.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

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- Checking running SSH daemon [ FOUND ]

- Searching SSH configuration [ FOUND ]

- SSH option: AllowTcpForwarding [ SUGGESTION ]

- SSH option: ClientAliveCountMax [ SUGGESTION ]

- SSH option: ClientAliveInterval [ OK ]

- SSH option: Compression [ SUGGESTION ]

- SSH option: FingerprintHash [ OK ]

- SSH option: GatewayPorts [ OK ]

- SSH option: IgnoreRhosts [ OK ]

- SSH option: LoginGraceTime [ OK ]

- SSH option: LogLevel [ SUGGESTION ]

- SSH option: MaxAuthTries [ SUGGESTION ]

- SSH option: MaxSessions [ SUGGESTION ]

- SSH option: PermitRootLogin [ SUGGESTION ]

- SSH option: PermitUserEnvironment [ OK ]

- SSH option: PermitTunnel [ OK ]

- SSH option: Port [ SUGGESTION ]

- SSH option: PrintLastLog [ OK ]

- SSH option: Protocol [ NOT FOUND ]

- SSH option: StrictModes [ OK ]

- SSH option: TCPKeepAlive [ SUGGESTION ]

- SSH option: UseDNS [ OK ]

- SSH option: UsePrivilegeSeparation [ NOT FOUND ]

- SSH option: VerifyReverseMapping [ NOT FOUND ]

- SSH option: X11Forwarding [ SUGGESTION ]

- SSH option: AllowAgentForwarding [ SUGGESTION ]

- SSH option: AllowUsers [ NOT FOUND ]

- SSH option: AllowGroups [ NOT FOUND ]

[+] SNMP Support

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- Checking running SNMP daemon [ NOT FOUND ]

[+] Databases

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No database engines found

[+] LDAP Services

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- Checking OpenLDAP instance [ NOT FOUND ]

[+] PHP

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- Checking PHP [ NOT FOUND ]

[+] Squid Support

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- Checking running Squid daemon [ NOT FOUND ]

[+] Logging and files

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- 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 log directories (static list) [ DONE ]

- Checking open log files [ DONE ]

- Checking deleted files in use [ FILES FOUND ]

[+] Insecure services

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- Checking inetd status [ NOT ACTIVE ]

[+] Banners and identification

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- /etc/issue [ FOUND ]

- /etc/issue contents [ WEAK ]

- /etc/issue.net [ FOUND ]

- /etc/issue.net contents [ WEAK ]

[+] Scheduled tasks

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- Checking crontab/cronjob [ DONE ]

[+] Accounting

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- Checking accounting information [ NOT FOUND ]

- Checking sysstat accounting data [ NOT FOUND ]

- Checking auditd [ NOT FOUND ]

[+] Time and Synchronization

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[+] Cryptography

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- Checking for expired SSL certificates [0/4] [ NONE ]

[+] Virtualization

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[+] Containers

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- Docker

- Docker daemon [ RUNNING ]

- Docker info output (warnings) [ 1 ]

- Containers

- Total containers [ 0 ]

- File permissions [ OK ]

[+] Security frameworks

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

- Checking presence AppArmor [ FOUND ]

- Checking AppArmor status [ ENABLED ]

- Checking presence SELinux [ NOT FOUND ]

- Checking presence grsecurity [ NOT FOUND ]

- Checking for implemented MAC framework [ OK ]

[+] Software: file integrity

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- Checking file integrity tools

- Tripwire [ FOUND ]

- Checking presence integrity tool [ FOUND ]

[+] Software: System tooling

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- Checking automation tooling

- Ansible artifact [ FOUND ]

- Automation tooling [ FOUND ]

- Checking for IDS/IPS tooling [ NONE ]

[+] Software: Malware

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- Checking chkrootkit [ FOUND ]

[+] File Permissions

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- Starting file permissions check

[+] Home directories

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- Checking shell history files [ OK ]

[+] Kernel Hardening

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- Comparing sysctl key pairs with scan profile

- fs.protected\_hardlinks (exp: 1) [ 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) [ DIFFERENT ]

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

- kernel.randomize\_va\_space (exp: 2) [ OK ]

- kernel.sysrq (exp: 0) [ DIFFERENT ]

- kernel.yama.ptrace\_scope (exp: 1 2 3) [ OK ]

- 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) [ OK ]

- 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) [ 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) [ DIFFERENT ]

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

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

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

[+] Hardening

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- Installed compiler(s) [ FOUND ]

- Installed malware scanner [ FOUND ]

[+] Custom Tests

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- Running custom tests... [ NONE ]

[+] Plugins (phase 2)

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

-[ Lynis 2.6.2 Results ]-

Warnings (4):

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! Version of Lynis is very old and should be updated [LYNIS]

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

! No password set for single mode [AUTH-9308]

https://cisofy.com/controls/AUTH-9308/

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

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

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

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

Suggestions (52):

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\* Install libpam-tmpdir to set $TMP and $TMPDIR for PAM sessions [CUST-0280]

https://your-domain.example.org/controls/CUST-0280/

\* Install libpam-usb to enable multi-factor authentication for PAM sessions [CUST-0285]

https://your-domain.example.org/controls/CUST-0285/

\* Install apt-listbugs to display a list of critical bugs prior to each APT installation. [CUST-0810]

https://your-domain.example.org/controls/CUST-0810/

\* Install apt-listchanges to display any significant changes prior to any upgrade via APT. [CUST-0811]

https://your-domain.example.org/controls/CUST-0811/

\* Install debian-goodies so that you can run checkrestart after upgrades to determine which services are using old versions of libraries and need restarting. [CUST-0830]

https://your-domain.example.org/controls/CUST-0830/

\* Install needrestart, alternatively to debian-goodies, so that you can run needrestart after upgrades to determine which daemons are using old versions of libraries and need restarting. [CUST-0831]

https://your-domain.example.org/controls/CUST-0831/

\* Install debsecan to generate lists of vulnerabilities which affect this installation. [CUST-0870]

https://your-domain.example.org/controls/CUST-0870/

\* Install debsums for the verification of installed package files against MD5 checksums. [CUST-0875]

https://your-domain.example.org/controls/CUST-0875/

\* Install fail2ban to automatically ban hosts that commit multiple authentication errors. [DEB-0880]

https://cisofy.com/controls/DEB-0880/

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

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

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

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

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

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

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

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

\* Set password for single user mode to minimize physical access attack surface [AUTH-9308]

https://cisofy.com/controls/AUTH-9308/

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

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

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

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

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

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

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

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

\* Disable drivers like USB storage when not used, to prevent unauthorized storage or data theft [STRG-1840]

https://cisofy.com/controls/STRG-1840/

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

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

\* Purge old/removed packages (1 found) with aptitude purge or dpkg --purge command. This will cleanup old configuration files, cron jobs and startup scripts. [PKGS-7346]

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

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

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

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

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

\* Consider running ARP monitoring software (arpwatch,arpon) [NETW-3032]

https://cisofy.com/controls/NETW-3032/

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

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

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

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

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

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

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

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

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

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowTcpForwarding (YES --> NO)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : ClientAliveCountMax (3 --> 2)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : Compression (YES --> (DELAYED|NO))

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : LogLevel (INFO --> VERBOSE)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxAuthTries (6 --> 2)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : MaxSessions (10 --> 2)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : PermitRootLogin (WITHOUT-PASSWORD --> NO)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : Port (22 --> )

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : TCPKeepAlive (YES --> NO)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : X11Forwarding (YES --> NO)

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

\* Consider hardening SSH configuration [SSH-7408]

- Details : AllowAgentForwarding (YES --> NO)

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

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

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

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

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

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

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

\* Enable process accounting [ACCT-9622]

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

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

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

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

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

\* Run 'docker info' to see warnings applicable to Docker daemon [CONT-8104]

https://cisofy.com/controls/CONT-8104/

\* 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/controls/KRNL-6000/

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

https://cisofy.com/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)

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Lynis security scan details:

Hardening index : 57 [########### ]

Tests performed : 240

Plugins enabled : 1

Components:

- Firewall [V]

- Malware scanner [V]

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

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Notice: Lynis update available

Current version : 262 Latest version : 304

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Lynis 2.6.2

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

(Linux, macOS, BSD, and others)

2007-2018, 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)

**Bonus**

1. Command to install chkrootkit:

﻿ **Answer:﻿** sudo apt install chkrootkit

2. Command to see documentation and instructions:

﻿ **Answer: ﻿**man chkrootkit

3. Command to run expert mode:

﻿ **Answer: ﻿**sudo chkrootkit -x

4. Provide a report from the chrootkit output on what can be done to harden the system.

- Screenshot of end of sample output:

**Answer: ﻿**

﻿### Output of: ./ifpromisc

###

lo: not promisc and no packet sniffer sockets

enp0s3: PACKET SNIFFER(/sbin/dhclient[1130])

docker0: not promisc and no packet sniffer sockets

not infected

###

### Output of: ./chkwtmp -f /var/log/wtmp

###

not infected

not infected

###

### Output of: ./chklastlog -f /var/log/wtmp -l /var/log/lastlog

###

The tty of the following user process(es) were not found

in /var/run/utmp !

! RUID PID TTY CMD

! gdm 2007 tty1 /usr/bin/Xwayland :1024 -rootless -terminate -accessx -core -listen 4 -listen 5 -displayfd 6

! gdm 1939 tty1 /usr/lib/gdm3/gdm-wayland-session gnome-session --autostart /usr/share/gdm/greeter/autostart

! gdm 1944 tty1 /usr/lib/gnome-session/gnome-session-binary --autostart /usr/share/gdm/greeter/autostart

! gdm 1974 tty1 /usr/bin/gnome-shell

! gdm 2110 tty1 /usr/lib/gnome-settings-daemon/gsd-a11y-settings

! gdm 2112 tty1 /usr/lib/gnome-settings-daemon/gsd-clipboard

! gdm 2115 tty1 /usr/lib/gnome-settings-daemon/gsd-color

! gdm 2118 tty1 /usr/lib/gnome-settings-daemon/gsd-datetime

! gdm 2120 tty1 /usr/lib/gnome-settings-daemon/gsd-housekeeping

! gdm 2125 tty1 /usr/lib/gnome-settings-daemon/gsd-keyboard

! gdm 2130 tty1 /usr/lib/gnome-settings-daemon/gsd-media-keys

! gdm 2140 tty1 /usr/lib/gnome-settings-daemon/gsd-mouse

! gdm 2141 tty1 /usr/lib/gnome-settings-daemon/gsd-power

! gdm 2143 tty1 /usr/lib/gnome-settings-daemon/gsd-print-notifications

! gdm 2149 tty1 /usr/lib/gnome-settings-daemon/gsd-rfkill

! gdm 2156 tty1 /usr/lib/gnome-settings-daemon/gsd-screensaver-proxy

! gdm 2160 tty1 /usr/lib/gnome-settings-daemon/gsd-sharing

! gdm 2162 tty1 /usr/lib/gnome-settings-daemon/gsd-smartcard

! gdm 2168 tty1 /usr/lib/gnome-settings-daemon/gsd-sound

! gdm 2170 tty1 /usr/lib/gnome-settings-daemon/gsd-wacom

! gdm 2109 tty1 /usr/lib/gnome-settings-daemon/gsd-xsettings

! gdm 2066 tty1 ibus-daemon --xim --panel disable

! gdm 2069 tty1 /usr/lib/ibus/ibus-dconf

! gdm 2234 tty1 /usr/lib/ibus/ibus-engine-simple

! gdm 2073 tty1 /usr/lib/ibus/ibus-x11 --kill-daemon

! sysadmin 2931 tty2 /usr/lib/xorg/Xorg vt2 -displayfd 3 -auth /run/user/1000/gdm/Xauthority -background none -noreset -keeptty -verbose 3

! sysadmin 2929 tty2 /usr/lib/gdm3/gdm-x-session --run-script env GNOME\_SHELL\_SESSION\_MODE=ubuntu gnome-session --session=ubuntu

! sysadmin 2944 tty2 /usr/lib/gnome-session/gnome-session-binary --session=ubuntu

! sysadmin 3113 tty2 /usr/bin/gnome-shell

! sysadmin 3278 tty2 /usr/lib/gnome-settings-daemon/gsd-a11y-settings

! sysadmin 3280 tty2 /usr/lib/gnome-settings-daemon/gsd-clipboard

! sysadmin 3276 tty2 /usr/lib/gnome-settings-daemon/gsd-color

! sysadmin 3285 tty2 /usr/lib/gnome-settings-daemon/gsd-datetime

! sysadmin 3357 tty2 /usr/lib/gnome-disk-utility/gsd-disk-utility-notify

! sysadmin 3287 tty2 /usr/lib/gnome-settings-daemon/gsd-housekeeping

! sysadmin 3289 tty2 /usr/lib/gnome-settings-daemon/gsd-keyboard

! sysadmin 3298 tty2 /usr/lib/gnome-settings-daemon/gsd-media-keys

! sysadmin 3237 tty2 /usr/lib/gnome-settings-daemon/gsd-mouse

! sysadmin 3238 tty2 /usr/lib/gnome-settings-daemon/gsd-power

! sysadmin 3244 tty2 /usr/lib/gnome-settings-daemon/gsd-print-notifications

! sysadmin 3335 tty2 /usr/lib/gnome-settings-daemon/gsd-printer

! sysadmin 3245 tty2 /usr/lib/gnome-settings-daemon/gsd-rfkill

! sysadmin 3247 tty2 /usr/lib/gnome-settings-daemon/gsd-screensaver-proxy

! sysadmin 3249 tty2 /usr/lib/gnome-settings-daemon/gsd-sharing

! sysadmin 3253 tty2 /usr/lib/gnome-settings-daemon/gsd-smartcard

! sysadmin 3255 tty2 /usr/lib/gnome-settings-daemon/gsd-sound

! sysadmin 3259 tty2 /usr/lib/gnome-settings-daemon/gsd-wacom

! sysadmin 3265 tty2 /usr/lib/gnome-settings-daemon/gsd-xsettings

! sysadmin 3148 tty2 ibus-daemon --xim --panel disable

! sysadmin 3152 tty2 /usr/lib/ibus/ibus-dconf

! sysadmin 3447 tty2 /usr/lib/ibus/ibus-engine-simple

! sysadmin 3155 tty2 /usr/lib/ibus/ibus-x11 --kill-daemon

! sysadmin 3352 tty2 nautilus-desktop

! root 8652 pts/0 /bin/sh /usr/sbin/chkrootkit -x

! root 9085 pts/0 ./chkutmp

! root 9087 pts/0 ps axk tty,ruser,args -o tty,pid,ruser,args

! root 9086 pts/0 sh -c ps axk "tty,ruser,args" -o "tty,pid,ruser,args"

! root 8651 pts/0 sudo chkrootkit -x

! sysadmin 3778 pts/0 bash

chkutmp: nothing deleted

not tested