

ARYAMAN MISHRA

19BCE1027

LAB 12-Exploring Information Auditing Tool

Tool:Lynis

Lynis is an open source security tool. It helps with auditing systems running UNIX-alike systems (Linux, macOS, BSD), and providing guidance for system hardening and compliance testing. This document contains the basics to use the software.

By running 'lynis' the program is started and will provide the basic parameters available. If you manually extracted Lynis (or used Git), then use './lynis' to start the program from the local directory.

The most common command to start Lynis is using **audit system** command. This still start the security scan.

To run Lynis you should meet one requirement: have write access to **/tmp** (temporary files)

The Lynis tool requires a minimum amount of parameters to run. If you are using it for the first time, just run lynis and see what output it provides.

```
$ ./lynis
```

Without any commands, Lynis will display its status, together with suggestions on how to start.

Audit

The *audit* command tells Lynis to perform an audit.

Targets include:

- **system** - audit the host system
- **dockerfile** - audit a dockerfile

Show

The *show* command informs Lynis to share information, like help or the value of something.

Examples:

- **help** - show help and tips

- **profiles** - show discovered audit profiles
- **settings** - show active settings
- **version** - show Lynis version

Parameters

In the table below, the most commonly used parameters are listed.

Parameter	Abbreviated	Description
--auditor "Name"		Assign an auditor name to the audit (report)
--checkall	-c	Start the check
--check-update		Check if Lynis is up-to-date
--cronjob		Run Lynis as cronjob (includes -c -Q)
--help	-h	Shows valid parameters
--manpage		View man page
--nocolors		Do not use any colors
--pentest		Perform a penetration test scan (non-privileged)
--quick	-Q	Don't wait for user input, except on errors
--quiet		Only show warnings (includes --quick, but doesn't wait)
--reverse-colors		Use a different color scheme for light backgrounds
--version	-V	Check program version (and quit)

Installing Lynis on Kali Linux.

```
File Actions Edit View Help
└─(root㉿kali)-[~]
# sudo apt install lynis
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  menu
Suggested packages:
  apt-listbugs debsecscan tripwire samhain aide fail2ban menu-l10n gksu | kde-cli-tools | ktsuss
The following NEW packages will be installed:
  lynis menu
0 upgraded, 2 newly installed, 0 to remove and 1132 not upgraded.
Need to get 636 kB of archives.
After this operation, 3,171 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 lynis all 3.0.2-1 [261 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 menu amd64 2.1.48 [375 kB]
Fetched 636 kB in 8s (77.5 kB/s)
Selecting previously unselected package lynis.
(Reading database... 270768 files and directories currently installed.)
Preparing to unpack .../archives/lynis_3.0.2-1_all.deb ...
Unpacking lynis (3.0.2-1) ...
Selecting previously unselected package menu.
Preparing to unpack .../archives/menu_2.1.48_amd64.deb ...
Unpacking menu (2.1.48) ...
Setting up lynis (3.0.2-1) ...
Created symlink /etc/systemd/system/timers.target.wants/lynis.timer → /lib/systemd/system/lynis.timer.
lynis.service is a disabled or a static unit, not starting it.
Setting up menu (2.1.48) ...
Processing triggers for kali-menu (2021.1.4) ...
Processing triggers for desktop-file-utils (0.26-1) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for mailcap (3.68) ...
Processing triggers for menu (2.1.48) ...
```

Execute Lynis -h for command details

```
└─(root㉿kali)-[~]
# lynis -h
[ Lynis 3.0.2 ]

#####
# 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.
#
# 2007-2020, CISOfy - https://cisofy.com/lynis/
# Enterprise support available (compliance, plugins, interface and tools)
#####

[+] Initializing program

Usage: lynis command [options]

Command:
  audit
    audit system          : Perform local security scan
    audit system remote <host> : Remote security scan
    audit dockerfile <file>   : Analyze Dockerfile

  show
    show                  : Show all commands
    show version           : Show Lynis version
    show help               : Show help

  D&D
  update
    update info            : Show update details

Options:
  Alternative system audit modes
  --forensics             : Perform forensics on a running or mounted system
  --pentest                : Non-privileged, show points of interest for pentesting

  Layout options
  --no-colors              : Don't use colors in output
  --quiet (-q)              : No output
  --reverse-colors          : Optimize color display for light backgrounds
  --reverse-colours         : Optimize colour display for light backgrounds
```

```

Misc options
--debug : Debug logging to screen
--no-log : Don't create a log file
--profile <profile> : Scan the system with the given profile file
--view-manpage (--man) : View man page
--verbose : Show more details on screen
--version (-V) : Display version number and quit
--wait : Wait between a set of tests
--slow-warning <seconds> : Threshold for slow test warning in seconds (default 10)

Enterprise options
--plugindir <path> : Define path of available plugins
--upload : Upload data to central node

More options available. Run '/usr/sbin/lynis show options', or use the man page.

└─(root💀 kali)-[~]
  └─#

```

Lynis Audit System command execution:

```

└─(root💀 kali)-[~]
  └─# lynis audit system

[ Lynis 3.0.2 ]

#####
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.

2007-2020, CISOfy - https://ciscofy.com/lynis/
Enterprise support available (compliance, plugins, interface and tools)
#####

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

Program version: 3.0.2
Operating system: Linux
Operating system name: Kali Linux
Operating system version: kali-rolling
Kernel version: 5.10.0
Hardware platform: x86_64
Hostname: kali

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

- 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 [Not Installed]
- File System Checks:
 - DM-Crypt, Cryptsetup & Cryptmount:
 - Checking / on /dev/sda1 [NOT ENCRYPTED]
- Software:
 - apt-listbugs
 - apt-listchanges
 - needrestart
 - debsecan
 - debsums
 - fail2ban

]

[+] Boot and services

- Service Manager [systemd]
- Checking UEFI boot [DISABLED]
- Checking presence GRUB2 [FOUND]
 - Checking for password protection [NONE]
- Check running services (systemctl)
 - Result: found 20 running services [DONE]
- Check enabled services at boot (systemctl)
 - Result: found 19 enabled services [DONE]
- Check startup files (permissions) [OK]
- Running 'systemd-analyze security'
 - ModemManager.service: [MEDIUM]
 - NetworkManager.service: [EXPOSED]
 - colord.service: [EXPOSED]
 - cron.service: [UNSAFE]
 - dbus.service: [UNSAFE]
 - dm-event.service: [UNSAFE]
 - emergency.service: [UNSAFE]
 - getty@tty1.service: [UNSAFE]
 - haveged.service: [OK]
 - inetutils-inetd.service: [UNSAFE]
 - libvirtd.service: [UNSAFE]
 - lightdm.service: [UNSAFE]
 - lvm2-lvmpolld.service: [UNSAFE]
 - lynis.service: [UNSAFE]
 - mlocate.service: [EXPOSED]

- Service Manager	[systemd]
- Checking UEFI boot	[DISABLED]
- Checking presence GRUB2	[FOUND]
- Checking for password protection	[NONE]
- Check running services (<code>systemctl</code>)	[DONE]
Result: found 20 running services	
- Check enabled services at boot (<code>systemctl</code>)	[DONE]
Result: found 19 enabled services	
- Check startup files (permissions)	[OK]
- Running ' <code>systemd-analyze security</code> '	
- ModemManager.service:	[MEDIUM]
- NetworkManager.service:	[EXPOSED]
- colord.service:	[EXPOSED]
- cron.service:	[UNSAFE]
- dbus.service:	[UNSAFE]
- dm-event.service:	[UNSAFE]
- emergency.service:	[UNSAFE]
- getty@tty1.service:	[UNSAFE]
- haveged.service:	[OK]
- inetutils-inetd.service:	[UNSAFE]
- libvirtd.service:	[UNSAFE]
- lightdm.service:	[UNSAFE]
- lvm2-lvmpolld.service:	[UNSAFE]
- lynis.service:	[UNSAFE]
- mlocate.service:	[EXPOSED]
- plymouth-start.service:	[UNSAFE]
- polkit.service:	[UNSAFE]
- rc-local.service:	[UNSAFE]
- rescue.service:	[UNSAFE]
- rpc-gssd.service:	[UNSAFE]
- rpc-svcgssd.service:	[UNSAFE]
- rsync.service:	[EXPOSED]
- rsyslog.service:	[UNSAFE]
- rtkit-daemon.service:	[MEDIUM]
- smartmontools.service:	[UNSAFE]
- stunnel4.service:	[UNSAFE]
- 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:	[OK]
- systemd-logind.service:	[OK]
- systemd-machined.service:	[MEDIUM]
- systemd-networkd.service:	[OK]
- systemd-rfkill.service:	[UNSAFE]
- systemd-udevd.service:	[EXPOSED]
- udisks2.service:	[UNSAFE]
- upower.service:	[OK]
- user@0.service:	[UNSAFE]
- virtlockd.service:	[UNSAFE]
- virtlogd.service:	[UNSAFE]

[+] Kernel

- 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 77 active modules [DONE]
- 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 [DISABLED]
- Check if reboot is needed [NO]

[+] Memory and Processes

- 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 [OK]
- Password hashing methods [OK]
- Checking password hashing rounds [DISABLED]
- Query system users (non daemons) [DONE]
- NIS+ authentication support [NOT ENABLED]
- NIS authentication support [NOT ENABLED]
- Sudoers file(s)
 - Permissions for directory: /etc/sudoers.d [WARNING]
 - Permissions for: /etc/sudoers [OK]
 - Permissions for: /etc/sudoers.d/kali-grant-root [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)	[SUGGESTION]
- LDAP authentication support	[NOT ENABLED]
- Logging failed login attempts	[ENABLED]

[+] Shells

- Checking shells from /etc/shells	[NONE]
Result: found 11 shells (valid shells: 11).	
- 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	[SUGGESTION]
- Checking /home mount point	[SUGGESTION]
- Checking /tmp mount point	[SUGGESTION]
- Checking /var mount point	[SUGGESTION]
- Query swap partitions (fstab)	[OK]
- Testing swap partitions	[OK]
- Testing /proc mount (hidrepid)	[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	[HARDENED]
- Mount options of /dev/shm	[PARTIALLY HARDENED]
- Mount options of /run	[HARDENED]
- Total without nodev:6 noexec:7 nosuid:4 ro or noexec (w^X): 7 of total 23	
- Checking Locate database	[FOUND]
- Disable kernel support of some filesystems	
- Discovered kernel modules: freevxfs hfs hfsplus jffs2 squashfs udf	

[+] USB Devices

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

[+] Storage

- Checking firewire ohci driver (modprobe config)	[NOT DISABLED]
---	------------------

[+] NFS

- | | |
|---------------------------------|---------------|
| - Query rpc registered programs | [DONE] |
| - Query NFS versions | [DONE] |
| - Query NFS protocols | [DONE] |
| - Check running NFS daemon | [NOT FOUND] |

[+] Name services

- | | |
|---|---------------|
| - 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

- | | |
|--|-------------|
| - Searching package managers | [FOUND] |
| - Searching dpkg package manager | |
| - Querying package manager | [FOUND] |
| - Query unpurged packages | |
| - Checking security repository in sources.list file or directory | [WARNING] |
| - Checking vulnerable packages (apt-get only) | [DONE] |

[WARNING]: Test PKGS-7392 had a long execution: 1702.208100 seconds

- | | |
|----------------------------------|---------------|
| - Checking package audit tool | [INSTALLED] |
| Found: apt-get | |
| - Toolkit for automatic upgrades | [NOT FOUND] |

[+] Networking

- | | |
|---|---------------|
| - Checking IPv6 configuration | [ENABLED] |
| Configuration method | [AUTO] |
| IPv6 only | [NO] |
| - Checking configured nameservers | |
| - Testing nameservers | |
| Nameserver: 192.168.29.1 | [OK] |
| Nameserver: 2405:201:6008:30e3::c0a8:1d01 | [OK] |
| - Minimal of 2 responsive nameservers | [OK] |
| - DNSSEC supported (systemd-resolved) | [UNKNOWN] |
| - Checking default gateway | [DONE] |
| - Getting listening ports (TCP/UDP) | [SKIPPED] |
| - 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

- | | |
|------------------------|---------------|
| - Checking cups daemon | [NOT FOUND] |
|------------------------|---------------|

[+] Printers and Spools	
- Checking cups daemon	[NOT FOUND]
- Checking lp daemon	[NOT RUNNING]
[+] Software: e-mail and messaging	
File System	
[+] Software: firewalls	
- 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-DoS/brute force	[NOT FOUND]
mod_reqtimeout/mod_qos	[FOUND]
ModSecurity: web application firewall	[NOT FOUND]
- Checking nginx	[NOT FOUND]
[+] SSH Support	
- Checking running SSH daemon	[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	[FOUND]
- Checking PHP disabled functions	[FOUND]
- Checking expose_php option	[OFF]
- Checking enable_dl option	[OFF]
- Checking allow_url_fopen option	[ON]

[+] PHP Crash

- Checking PHP	[FOUND]
- Checking PHP disabled functions	[FOUND]
- Checking expose_php option	[OFF]
- Checking enable_dl option	[OFF]
- Checking allow_url_fopen option	[ON]
- Checking allow_url_include option	[OFF]
- Checking listen option	[OK]

[+] 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]
- Checking enabled inetd services	[OK]
- Installed xinetd package	[OK]
- - xinetd status	
- 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	[SUGGESTION]
- Checking TFTP server installation	[SUGGESTION]

[+] Banners and identification

- /etc/issue	[FOUND]
- - /etc/issue contents	[WEAK]
- /etc/issue.net	[FOUND]
- - /etc/issue.net contents	[WEAK]

```

* Harden the system by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
- Solution: Install a tool like rkhunter, chkrootkit, OSSEC
  https://ciscofy.com/lynis/controls/HRDN-7230/
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://ciscofy.com)
- Use --upload to upload data to central system (Lynis Enterprise users)

=====
Lynis security scan details:
Hardening index : 60 [#####
Tests performed : 265
Plugins enabled : 1

Components:
- Firewall [V]
- Malware scanner [X]

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 3.0.2
Auditing, system hardening, and compliance for UNIX-based systems
(Linux, macOS, BSD, and others)
2007-2020, CISOfy - https://ciscofy.com/lynis/
Enterprise support available (compliance, plugins, interface and tools)

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

└─# 

```

Executing lynis audit system --forensics

```

└─#(root㉿kali)-[~] tail a tool like rkhunter, chkrootkit, OSSEC
└─# lynis audit system --forensics
[ Lynis 3.0.2 ]

#####
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.

2007-2020, CISOfy - https://ciscofy.com/lynis/
Enterprise support available (compliance, plugins, interface and tools)
#####

Hardening index : 60 [#####
[+] Initializing program

- Detecting OS ... [ DONE ]
- Checking profiles ... [ DONE ]
  Firewall [V]

Program version: 3.0.2
Operating system: Linux
Operating system name: [ ] Kali Linux [ ] Pentest [ ]
Operating system version: kali-rolling
Kernel version: 5.10.0
Hardware platform: x86_64
Hostname: audit [kali]

Profiles: /etc/lynis/default.prf
Log file: /var/log/lynis.log
Report file: bug information /var/log/lynis-report.dat
Report version: 1.0 : /var/log/lynis-report.dat
Plugin directory: /etc/lynis/plugins

Auditor: [Not Specified]
Language: en
Test category: all
Test group: system hardening, all compliance for UNIX-based systems

- Program update status ... [ NO UPDATE ]
2007-2020, CISOfy - https://ciscofy.com/lynis/
[+] System tools
- Scanning available tools ...
- Checking system binaries ...

[+] Plugins (phase 1)

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

```

```

[+] Harden the system by installing at least one malware scanner, to perform periodic
- Plugin: debian install a tool like rkhunter, chkrootkit, OSSEC
  [ https://cisofy.com/lynis/controls/HRDN-7230/ ]

[+] Debian Tests

- Checking for system binaries that are required by Debian Tests ...
- Checking /bin ... test (lynis show details TEST-10) [ FOUND ]
- Checking /sbin ... for all details (less /var/log/lynis.log) [ FOUND ]
- Checking /usr/bin ... texts (https://cisofy.com) [ FOUND ]
- Checking /usr/sbin ... data to central system (Lynis Enter[ FOUND ]s)
- Checking /usr/local/bin ...
- Checking /usr/local/sbin ...
- Authentication:
  - PAM (Pluggable Authentication Modules):
    - libpam-tmpdir [ Not Installed ]
- File System Checks: [ FOUND ]
  - DM-Crypt, Cryptsetup & Cryptmount:
    - Checking / on /dev/sda1 [ NOT ENCRYPTED ]
- Software:
  - apt-listbugs [ Not Installed ]
  - apt-listchanges [ V ]
  - needrestart [ X ]
  - debsecan [ Not Installed ]
  - debsums [ Not Installed ]
  - fail2ban [ Not Installed ]
  - forensics [ ] Integration [ ] Pentest [ ]
]

[+] Lynis modules:
[+] Boot and services [ ? ]
- Service Manager [ V ] [ systemd ]
- Checking UEFI boot [ DISABLED ]
- Checking presence GRUB2 [ FOUND ]
  - Checking for password protection /var/log/lynis.log [ NONE ]
- Check running services (systemctl) [ var/log/lynis-report.da DONE ]
  Result: found 20 running services
- Check enabled services at boot (systemctl) [ DONE ]
  Result: found 19 enabled services
- Check startup files (permissions) [ OK ]
- Running 'systemd-analyze security'
  Audit: - ModemManager.service: nd compliance for UNIX-based sy [ MEDIUM ]
  (Linux) - NetworkManager.service: [ EXPOSED ]
  - colord.service: [ EXPOSED ]
  - cron.service: https://cisofy.com/lynis/ [ UNSAFE ]
  Enterprise - dbus.service: ailable (compliance, plugins, interface [ UNSAFE ])
  - dm-event.service: [ UNSAFE ]
  - emergency.service: [ UNSAFE ]
  - getty@tty1.service: [ UNSAFE ]
  - haveged.service: by adding your settings to custo [ OK ] see /etc/lynis/
  - inetutils-inetd.service: [ UNSAFE ]
  - libvirtd.service: [ UNSAFE ]
  - lightdm.service: [ UNSAFE ]
  - lvm2-lvmpolld.service: [ UNSAFE ]

```

```

[+] Services
  - So- lynis.service: a tool like rkhunter, chkrootkit, OSS [UNSAFE]
    - mlocate.service:lynis/controls/HDRN-7230/ [EXPOSED]
    - plymouth-start.service: [UNSAFE]
  Follow- polkit.service: [UNSAFE]
  _____- rc-local.service: [UNSAFE]
  - Show- rescue.service:t (lynis show details TEST-ID) [UNSAFE]
  - Check- rpc-gssd.service:ll details (less /var/log/lynis.log [UNSAFE]
  - Read- rpc-svcgssd.service:ts (https://cisofy.com) [UNSAFE]
  - Use - rsync.service:ad data to central system (Lynis Enterprise [EXPOSED])
    - rsyslog.service: [UNSAFE]
    - rtkit-daemon.service: [MEDIUM]
    - smartmontools.service: [UNSAFE]
  Lynis - stunnel4.service:[ts: [UNSAFE]
    - systemd-ask-password-console.service: [UNSAFE]
  Harden- systemd-ask-password-plymouth.service: [UNSAFE]
  Tests - systemd-ask-password-wall.service: [UNSAFE]
  Plugin- systemd-fsckd.service: [UNSAFE]
    - systemd-initctl.service: [UNSAFE]
  Component- systemd-journald.service: [OK]
  - Fire- systemd-logind.service: [OK]
  - Malware- systemd-machined.service: [MEDIUM]
    - systemd-networkd.service: [OK]
  Scan mode- systemd-rfkill.service: [UNSAFE]
  Normal- systemd-udevd.service:egration [ ] Pentest [ ] [EXPOSED]
    - udisks2.service: [UNSAFE]
  Lynis - upower.service: [OK]
  - Comp- user@0.service: [?]
  - Secu- virtlockd.service:[V] [UNSAFE]
  - Vuln- virtlogd.service:[V] [UNSAFE]
    - virtualbox-guest-utils.service: [UNSAFE]

  Files:
  [+] Kernel and debug information : /var/log/lynis.log
  [+] Configuration files : /var/log/lynis-report.dat
  - 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 compliance for UNIX-based systems [DONE]
    (Linux Found 82 active modules)
  - Checking Linux kernel configuration file [FOUND]
  - Checking default I/O kernel scheduler [NOT FOUND]
  - Checking for available kernel update, plugins, interface [OK] tools
  - Checking core dumps configuration
    - configuration in systemd conf files [DEFAULT]
    - configuration in etc/profile [DEFAULT]
    - 'hard' configuration in security/limits.conf to customize [DEFAULT]
      etc/limits.conf
    - 'soft' configuration in security/limits.conf [DEFAULT]
    - Checking setuid core dumps configuration [DISABLED]
  - Check if reboot is needed [NO]

```

```

[+] Plugins (phase 2) _____ now details TEST-ID)
- Check the logfile for all details (less /var/log/lynis.log)

User can upload to upload data to central system (Lynis Enterprise users)

-[ Lynis 3.0.2 Results ]-

Warnings (2):
! Can't find any security repository in /etc/apt/sources.list or sources.list.d directory [PKGS-7388]
  https://cisofy.com/lynis/controls/PKGS-7388/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt update' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

! iptables module(s) loaded, but no rules active [FIRE-4512]
  https://cisofy.com/lynis/controls/FIRE-4512/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'modprobe iptable[s]' to /etc/modprobe.d/blacklist.conf
        https://cisofy.com/lynis/controls/blacklist.conf

Components:
Suggestions (51):
★ This release is more than 4 months old. Check the website or GitHub to see if there is an update available. [LYNI
S] Lynis mode:
  Lynis security scan details: [10]
    - https://cisofy.com/lynis/controls/LYNIS/test [10]

★ Install libpam-tmpdir to set $TMP and $TMPDIR for PAM sessions [DEB-0280]
  C https://cisofy.com/lynis/controls/DEB-0280/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install libpam-tmpdir' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ Install apt-listbugs to display a list of critical bugs prior to each APT installation. [DEB-0810]
  https://cisofy.com/lynis/controls/DEB-0810/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install apt-listbugs' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ Install apt-listchanges to display any significant changes prior to any upgrade via APT. [DEB-0811]
  R https://cisofy.com/lynis/controls/DEB-0811/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install apt-listchanges' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ 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. [DEB-0831]
  Lynis security scan details: [10]
    - https://cisofy.com/lynis/controls/DEB-0831/
    - Security audit [10]
      - Solution : Add 'apt-get install needrestart' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ Install debsecan to generate lists of vulnerabilities which affect this installation. [DEB-0870]
  C https://cisofy.com/lynis/controls/DEB-0870/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install debsecan' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ Install debsums for the verification of installed package files against MD5 checksums. [DEB-0875]
  Ent https://cisofy.com/lynis/controls/DEB-0875/[...], interface and tools
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install debsums' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ Install fail2ban to automatically ban hosts that commit multiple authentication errors. [DEB-0880]
  https://cisofy.com/lynis/controls/DEB-0880/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install fail2ban' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

★ 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/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'GRUB_TIMEOUT=10' to /etc/default/grub
        https://cisofy.com/lynis/controls/default/grub

Consider hardening system services [BOOT-5264]rootkit, OSSEC
  - Details : Run '/usr/bin/systemd-analyze security SERVICE' for each service
    https://cisofy.com/lynis/controls/BOOT-5264/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'apt-get install ossec-hids' to /etc/apt/apt.conf.d/01autorepository
        https://cisofy.com/lynis/controls/01autorepository

If not required, consider explicit disabling of core dump in /etc/security/limits.conf file [KRNLL-5820]
  - S https://cisofy.com/lynis/controls/KRNLL-5820/[...]
  - Check the logfile for all details (less /var/log/lynis.log)
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'ulimit -c 0' to /etc/security/limits.conf
        https://cisofy.com/lynis/controls/limits.conf

Configure password hashing rounds in /etc/login.defs [AUTH-9230]
  U https://cisofy.com/lynis/controls/AUTH-9230/(Lynis Enterprise users)
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_MIN龙门' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Install a PAM module for password strength testing like pam_cracklib or pam_passwdqc [AUTH-9262]
  https://cisofy.com/lynis/controls/AUTH-9262/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_PASSWDQC' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

When possible set expire dates for all password protected accounts [AUTH-9282]
  https://cisofy.com/lynis/controls/AUTH-9282/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_EXPIRE_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Look at the locked accounts and consider removing them [AUTH-9284]
  https://cisofy.com/lynis/controls/AUTH-9284/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_LOCKED_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Configure minimum password age in /etc/login.defs [AUTH-9286]
  M https://cisofy.com/lynis/controls/AUTH-9286/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_MIN龙门' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Configure maximum password age in /etc/login.defs [AUTH-9286]
  N https://cisofy.com/lynis/controls/AUTH-9286/test [...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_MAX龙门' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Default umask in /etc/login.defs could be more strict like 027 [AUTH-9328]
  C https://cisofy.com/lynis/controls/AUTH-9328/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_UMASK_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

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)[...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_HOME_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

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)[...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_TMP_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

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)[...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_VAR_C' to /etc/login.defs
        https://cisofy.com/lynis/controls/login.defs

Consider disabling unused kernel modules [FILE-6430]
  A https://cisofy.com/lynis/controls(FILE-6430)[...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_MODULENAME_C' to /etc/modprobe.d/blacklist.conf
        https://cisofy.com/lynis/controls/blacklist.conf

Disable drivers like USB storage when not used, to prevent unauthorized storage or data theft [USB-1000]
  https://cisofy.com/lynis/controls/USB-1000/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_USB_C' to /etc/modprobe.d/blacklist.conf
        https://cisofy.com/lynis/controls/blacklist.conf

Disable drivers like firewire storage when not used, to prevent unauthorized storage or data theft [STRG-1846]
  https://cisofy.com/lynis/controls/STRG-1846/[...]
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_FIREWIRE_C' to /etc/modprobe.d/blacklist.conf
        https://cisofy.com/lynis/controls/blacklist.conf

Check DNS configuration for the dns domain name [NAME-4028]
  https://cisofy.com/lynis/controls/NAME-4028/
  Lynis security scan details: [10]
    - Security audit [10]
      - Solution : Add 'PAM_DNS_C' to /etc/modprobe.d/blacklist.conf
        https://cisofy.com/lynis/controls/blacklist.conf

```

```

    * 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://ciscofy.com/lynis/controls/PKGS-7346/
    * Install debsums utility for the verification of packages with known good database. [PKGS-7370]
      https://ciscofy.com/lynis/controls/PKGS-7370/
    * Consider using a tool to automatically apply upgrades [PKGS-7420]
      https://ciscofy.com/lynis/controls/PKGS-7420/ (Lynis Enterprise users)
    * Determine if protocol 'dccp' is really needed on this system [NETW-3200]
      https://ciscofy.com/lynis/controls/NETW-3200/
  Lynis security scan details:
    * Determine if protocol 'sctp' is really needed on this system [NETW-3200]
      https://ciscofy.com/lynis/controls/NETW-3200/
    * Determine if protocol 'rds' is really needed on this system [NETW-3200]
      https://ciscofy.com/lynis/controls/NETW-3200/
  Components:
    * Determine if protocol 'tipc' is really needed on this system [NETW-3200]
      https://ciscofy.com/lynis/controls/NETW-3200/
    * Install Apache mod_evasive to guard webserver against DoS/brute force attempts [HTTP-6640]
      https://ciscofy.com/lynis/controls/HTTP-6640/
    * Install Apache modsecurity to guard webserver against web application attacks [HTTP-6643]
      https://ciscofy.com/lynis/controls/HTTP-6643/
    * Change the allow_url_fopen line to: allow_url_fopen = Off, to disable downloads via PHP [PHP-2376]
      https://ciscofy.com/lynis/controls/PHP-2376/
  Plugins:
    * Enable logging to an external logging host for archiving purposes and additional protection [LOGG-2154]
      https://ciscofy.com/lynis/controls/LOGG-2154/is-report.dat
    * Check what deleted files are still in use and why. [LOGG-2190]
      https://ciscofy.com/lynis/controls/LOGG-2190/
  Lynis 3.0.2
  It is recommended that TFTP be removed, unless there is a specific need for TFTP (such as a boot server) [INSE-8318]
  https://ciscofy.com/lynis/controls/INSE-8318/
  Removing the atftpd package decreases the risk of the accidental (or intentional) activation of tftp services [INSE-8320]
  https://ciscofy.com/lynis/controls/INSE-8320/
  Add a legal banner to /etc/issue, to warn unauthorized users [BANN-7126]
  https://ciscofy.com/lynis/controls/BANN-7126/
  Add legal banner to /etc/issue.net, to warn unauthorized users [BANN-7130]
  https://ciscofy.com/lynis/controls/BANN-7130/
  Add legal banner to /etc/issue.net, to warn unauthorized users [BANN-7130]
  https://ciscofy.com/lynis/controls/BANN-7130/
  Enable process accounting [ACCT-9622]
  https://ciscofy.com/lynis/controls/ACCT-9622/
  Show details of a test (Lynis show details TEST-ID)
  * Enable sysstat to collect accounting (disabled) [ACCT-9626]
    https://ciscofy.com/lynis/controls/ACCT-9626/
  - Use --upload to upload data to central system (Lynis Enterprise users)
  * Enable auditd to collect audit information [ACCT-9628]
    https://ciscofy.com/lynis/controls/ACCT-9628/
  * Install a file integrity tool to monitor changes to critical and sensitive files [FINT-4350]
    https://ciscofy.com/lynis/controls/FINT-4350/
  * Determine if automation tools are present for system management [TOOL-5002]
    https://ciscofy.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://ciscofy.com/lynis/controls(FILE-7524/
  scan mode:
  * Double check the permissions of home directories as some might be not strict enough. [HOME-9304]
    https://ciscofy.com/lynis/controls/HOME-9304/
  system modules:
  * 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://ciscofy.com/lynis/controls/KRNL-6000/
  * Harden compilers like restricting access to root user only [HRDN-7222]
    - https://ciscofy.com/lynis/controls/HRDN-7222/.s.log
    - Report data : https://var/log/lynis-report.dat
  * Harden the system by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
    - Solution : Install a tool like rkhunter, chkrootkit, OSSEC
      https://ciscofy.com/lynis/controls/HRDN-7230/
  Lynis 3.0.2
  Follow-up:
  https://ciscofy.com/lynis/controls/ and compliance for UNIX-based systems
  - 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://ciscofy.com)
  - Use --upload to upload data to central system (Lynis Enterprise users)

  Lynis security scan details: Adding your settings to custom.cfg (see /etc/lynis/default.cfg for all settings)

  Hardening index : 60 [#####
  Tests performed : 265
  Plugins enabled : 1

```

```

Tests performed : 265
Plugins enabled : 1 by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
  - Solution : Install a tool like rkhunter, chkrootkit, OSSEC
Components: /ciscofy.com/Lynis/controls/HRDN-7230/
- Firewall [V]
- Malware scanner [X]

Scan mode: Details of a test (lynis show details TEST-ID)
Normal [V] Forensics [ ] Integration [s] Pentest [ ]s.log)
  Read security controls texts (https://ciscofy.com)

Lynis modules: to upload data to central system (Lynis Enterprise users)
- Compliance status [?]
- Security audit [V]
- Vulnerability scan [V]

Lynis security scan details:
Files:
- Test and debug information ::::: /var/log/lynis.log
- Report data :: 265 :: /var/log/lynis-report.dat
Lynis started : 1

Components:
Lynis 3.0.2 [V]
  - Malware scanner [X]
Auditing, system hardening, and compliance for UNIX-based systems
(Linux, macOS, BSD, and others)
Normal [V] Forensics [ ] Integration [ ] Pentest [ ]
2007-2020, CISOfy - https://ciscofy.com/lynis/
Enterprise support available (compliance, plugins, interface and tools)
- Compliance status [?]
- Security audit [V]
- Vulnerability scan [V]

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

```

Executing Lynis Audit system --pentest command:

```

[+] (root㉿kali)-[~]
# lynis audit system --pentest
  - Solution : Install a tool like rkhunter, chkrootkit, OSSEC
[Lynis 3.0.2] /ciscofy.com/Lynis/controls/HRDN-7230/
#####
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...
2007-2020, CISOfy - https://ciscofy.com/lynis/ (Lynis Enterprise users)
Enterprise support available (compliance, plugins, interface and tools)
#####

Lynis security scan details:
[+] Initializing program
  - Detecting OS ... 265 [ DONE ]
  - Checking profiles ... [ DONE ]

  Program version: 3.0.2
  Operating system: Linux
  Operating system name: Kali Linux
  Operating system version: kali-rolling
  Kernel version: 5.10.0
  Hardware platform: x86_64
  Hostname: localhost.kali

  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

  - Program update status ... and compliance for UNIX-based systems [ NO UPDATE ]
  (Linux, macOS, BSD, and others)
[+] System tools
  - Scanning available tools ... (compliance, plugins, interface and tools)
  - Checking system binaries ...

[+] Plugins (phase 1)
Note: plugins have more extensive tests and may take several minutes to complete
  - Plugin: debian
    [ ]

```

```

* Harden the system by installing at least one malware scanner, to perform periodic scans. (https://cisofy.com/tools/HRDN-7230)
[+] Debian Tests Install a tool like rkhunter, chkrootkit, OSSEC
  - Checking for system binaries that are required by Debian Tests ...
    - Checking /bin ... [ FOUND ]
    - Checking /sbin ... [ FOUND ]
    - Checking /usr/bin... (lynis show details TEST-ID) [ FOUND ]
    - Checking /usr/sbin... all details (less /var/log/lynis.log) [ FOUND ]
    - Checking /usr/local/bin ... (https://cisofy.com) [ FOUND ]
    - Checking /usr/local/sbin... to central system (Lynis Enter [ FOUND ]rs)
  - Authentication:
    - PAM (Pluggable Authentication Modules):
      - libpam-tmpdir [ Not Installed ]
  - File System Checks:
    - DM-Crypt, Cryptsetup & Cryptmount:
      - Checking /boot /dev/sda1 [ NOT ENCRYPTED ]
  - Software:
    - apt-listbugs: 1 [ Not Installed ]
    - apt-listchanges [ Not Installed ]
    - needrestart [ Not Installed ]
    - debsecan [ V ]
    - debsumscanner [ X ]
    - fail2ban [ Not Installed ]
] Scan mode:
  Normal [V] Forensics [ ] Integration [ ] Pentest [ ]
[+] Boot and services
  - Service Manager [ ? ] [ systemd ]
  - Checking UEFI boot [ V ] [ DISABLED ]
  - Checking presence GRUB2 [ V ] [ FOUND ]
    - Checking for password protection [ NONE ]
  - Check running services (systemctl) [ DONE ]
    Result: found 20 running services in /log/lynis.log
  - Check enabled services at boot (systemctl) [ lynnis-report.d ] [ DONE ]
    Result: found 19 enabled services
  - Check startup files (permissions) [ OK ]
  - Running 'systemd-analyze security'
    Lynis - ModemManager.service: [ MEDIUM ]
    - NetworkManager.service: [ EXPOSED ]
    Auditing colord.service: [ EXPOSED ]
    (Linux - cron.service: and others) [ UNSAFE ]
    - dbus.service: [ UNSAFE ]
    2007-2-2 dm-event.service: [ https://cisofy.com/lynis/ ] [ UNSAFE ]
    Enterprise emergency.service: [ UNSAFE ]
    - getty@tty1.service: [ UNSAFE ]
    - haveged.service: [ OK ]
    - inetutils-inetd.service: [ UNSAFE ]
    [ TIP ] - libvirtd.service: - by adding your settings to custom [ UNSAFE ] /etc/lyn
    - lightdm.service: [ UNSAFE ]
    - lvm2-lvmpolld.service: [ UNSAFE ]
    [ root ] - lynis.service: [ UNSAFE ]
    - mlocate.service: [ EXPOSED ]

```

```
- Sc - plymouth-start.service: ike rkhunter, chkrootkit, oss [ UNSAFE ]
  httpd.service: lnis/controls/HRDN-7230/ [ UNSAFE ]
  - rc-local.service: [ UNSAFE ]
Follow - rescue.service: [ UNSAFE ]
  - rpc-gssd.service: [ UNSAFE ]
- Show - rpc-svcgssd.service: nis show details TEST-ID) [ UNSAFE ]
- Chec - rsync.service: all details (less /var/log/lynis.log [ EXPOSED ]
- Read - rsyslog.service: texts (https://cisofy.com) [ UNSAFE ]
- Use - rtkit-daemon.service: to central system (Lynis Enter [ MEDIUM ]
  - smartmontools.service: [ UNSAFE ]
  - stunnel4.service: [ UNSAFE ]
  - systemd-ask-password-console.service: [ UNSAFE ]
  Lynis - systemd-ask-password-plymouth.service: [ UNSAFE ]
  - systemd-ask-password-wall.service: [ UNSAFE ]
Harder - systemd-fsckd.service: ##### [ UNSAFE ]
Tests - systemd-initctl.service: [ UNSAFE ]
Plugins - systemd-journald.service: [ OK ]
  - systemd-logind.service: [ OK ]
Components - systemd-machined.service: [ MEDIUM ]
  - Fire - systemd-networkd.service: [ OK ]
  - Malw - systemd-rfkill.service: [ UNSAFE ]
    - systemd-udevd.service: [ EXPOSED ]
Scan - udisks2.service: [ UNSAFE ]
Normal - upower.service: ] Integration [ ] Pentest [ ]
  - user@0.service: [ UNSAFE ]
Lynis - virtlockd.service: [ UNSAFE ]
  - Comp - virtlogd.service:[?]
  - Secur - virtualbox-guest-utils.service: [ UNSAFE ]
  - Vulnerability scan [V]
```

[+] Kernel

```
- Checking default run level : /var/log/lynis.log [ RUNLEVEL 5 ]
- Checking CPU support (NX/PAE) : /var/log/lynis-report.dat
  CPU support: PAE and/or NoExecute supported [ FOUND ]
- Checking kernel version and release [ DONE ]
- Checking kernel type [ DONE ]
- Checking loaded kernel modules
  Found 82 active modules [ DONE ]
- Checking Linux kernel configuration file for UNIX-based sy[ FOUND ]
- Checking default I/O kernel scheduler [ NOT FOUND ]
- Checking for available kernel update [ OK ]
- Checking core dumps configuration com/lynis/
  Environ - configuration in systemd conf filese, plugins, interface[ a 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 settings to custo[ DISABLED ]
  - Check if reboot is needed [ NO ]
```

[+] Memory and Processes

[+] Memory and Processes

- Checking /proc/meminfo tool like rkhunter, chkrootkit, OSS[FOUND]
- Searching for dead/zombie processes/HDRN-7230/ [NOT FOUND]
- Searching for IO waiting processes [NOT FOUND]
- Search prelink tooling [NOT FOUND]

[+] Users, Groups and Authentication

- Administrator accounts texts (<https://ciscofy.com>) [OK]
- Unique UIDs to upload data to central system (Lynis Enter[OK] users)
- Consistency of group files (grpck) [OK]
- Unique group IDs [OK]
- Unique group names [OK]
- Password file consistency [OK]
- Password hashing methods [OK]
- Checking password hashing rounds [DISABLED]
- Query system users (non daemons) [DONE]
- NIS+ authentication support [NOT ENABLED]
- NIS authentication support [NOT ENABLED]
- Sudoers file(s)
 - Permissions for directory: /etc/sudoers.d [FOUND]
 - Permissions for: /etc/sudoers [WARNING]
 - Permissions for: /etc/sudoers.d/kali-grant-root [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 modulesstatus [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) : /var/log/lynis-report.da[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

- Checking shells from /etc/shells
- Result: found 11 shells (valid shells: 11).
- 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

[+] File systems	
System by installing at least one malware scanner, to perform periodic scans. Recommended tools like rkhunter, chkrootkit, OSSEC	
- Checking mount points	[SUGGESTION]
- Checking /home mount point	[SUGGESTION]
- Checking /tmp mount point	[SUGGESTION]
- Checking /var mount point	[SUGGESTION]
- Query swap partitions (fstab) show details TEST-ID)	[OK]
- Testing swap partitions details (less /var/log/lynis.log)	[OK]
- Testing /proc mount (hidrepid) (https://cisofy.com)	[SUGGESTION]
- Checking for old files in /tmp central system (Lynis Enterprise users)	[OK]
- Checking /tmp sticky bit	[OK]
- Checking /var/tmp sticky bit	[OK]
- ACL support root file system	[ENABLED]
- Mount options of / details:	[NON DEFAULT]
- Mount options of /dev	[HARDENED]
- Mount options of /dev/shm	[PARTIALLY HARDENED]
- Mount options of /run	[HARDENED]
- Total without nodev:6 noexec:7 nosuid:4 ro or noexec (W^X): 7 of total 23	
- Checking Locate database	[FOUND]
- Disable kernel support of some filesystems	
- Discovered kernel modules: freevxfs hfs hfsplus jffs2 squashfs udf	
- Malware scanner	[X]
[+] USB Devices	
- Checking usb-storage driver (modprobe config)	[NOT DISABLED]
- Checking USB devices authorization	[ENABLED]
- Checking USBDGuard	[NOT FOUND]
- Compliance status	[?]
[+] Storage audit	
- Checking firewire ohci driver (modprobe config)	[NOT DISABLED]
[+] NFS and debug information	
- Checking NFS daemon configuration files	: /var/log/lynis.log
- Checking NFS daemon log files	: /var/log/lynis-report.dat
- Query rpc registered programs	[DONE]
- Query NFS versions	[DONE]
- Query NFS protocols	[DONE]
- Check running NFS daemon	[NOT FOUND]
[+] Name services	
System hardening, and compliance for UNIX-based systems	
- Searching DNS domain name	[UNKNOWN]
- Checking /etc/hosts	
- Duplicate entries in hosts file	
- Presence of configured hostname in /etc/hosts	[FOUND]
- Hostname mapped to localhost	[NOT FOUND]
- Localhost mapping to IP address	[OK]
[TIP]: Enhance Lynis audits by adding your settings to custom.prf (see /etc/lynis/default/prf.d)	
[+] Ports and packages	
- Searching package managers	
- Searching dpkg package manager	[FOUND]

```
[+] Ports and packages by installing at least one malware scanner, to perform periodic scans. Available tools like rkhunter, chkrootkit, OSSEC
- Searching package managers/controls/HRDN-7230/
  - Searching dpkg package manager [ FOUND ]
  Full - Querying package manager [ FOUND ]
  - Query unpurged packages [ FOUND ]
- Checking security repositories in sources.list file or directory [ WARNING ]
- Checking vulnerable packages (apt-get only) /log/lynis.log [ DONE ]
- Read security controls texts (https://cisofy.com)
[WARNING]: Test PKGS-7392 had a long execution: 11.672215 seconds (users)

- Checking package audit tool [ INSTALLED ]
  Found: apt-get
- Toolkit for automatic upgrades [ NOT FOUND ]

[+] Networking [ 60 / 100 ]
  - Checking IPv6 configuration [ ENABLED ]
    Configuration method: IPv6 only [ AUTO ]
    Comp [ NO ]
  - Checking configured nameservers [ ]
    - Testing nameservers [ X ]
      Nameserver: 192.168.29.1 [ OK ]
      Scan Nameserver: 2405:201:6008:30e3::c0a8:1d01 [ OK ]
      No Minimal of 2 responsive nameservers [ ] Pentest [ ]
      - DNSSEC supported (systemd-resolved) [ UNKNOWN ]
  - Checking default gateway [ DONE ]
  - Getting listening ports (TCP/UDP) [ SKIPPED ]
  - Checking promiscuous interfaces [ OK ]
  - Checking waiting connections [ OK ]
  - Checking status DHCP client [ ]
  - Checking for ARP monitoring software [ NOT FOUND ]
  - Uncommon network protocols : /var/log/lynis.log [ 0 ]
  - Report data : /var/log/lynis-report.dat [ ]

[+] Printers and Spools
  - Checking cups daemon [ NOT FOUND ]
  - Checking lp daemon [ NOT RUNNING ]

[+] Software: e-mail and messaging [ 0 / 100 ]
  - Checking for available compliance for UNIX-based systems [ ]

[+] Software: firewalls https://cisofy.com/lynis/
  - Checking iptables kernel module [ FOUND ]
  - Checking iptables policies of chains [ FOUND ]
  - Checking for empty ruleset [ WARNING ]
  - Checking for unused rules adding your settings to custom [ OK ]
  - Checking host based firewall [ ACTIVE ]
```

```
- Check the logfile for all details (less /var/log/lynis.log)
[+] Software: webserver
  - Checking Apache (binary /usr/sbin/apache2) [ FOUND ]
    Info: Configuration file found (/etc/apache2/apache2.conf)
    Info: No virtual hosts found
  Ly* Loadable modules details: [ FOUND (118) ]
    - Found 118 loadable modules
  Harden mod_evasive: anti-DoS/brute force [ NOT FOUND ]
  Test mod_reqtimeout/mod_qos [ FOUND ]
  Plugin ModSecurity: web application firewall [ NOT FOUND ]
  - Checking nginx [ NOT FOUND ]
  Components:
[+] SSH Support [V]
  - Checking running SSH daemon [ NOT FOUND ]
  Scan mode:
[+] SNMP Support [ ] Forensics [ ] Integration [ ] Pentest [ ]
  - Checking running SNMP daemon [ NOT FOUND ]
  - Compliance status [ ? ]
[+] Databases [V]
  - Vulnerability scan [ NOT FOUND ]
    No database engines found
  Files:
[+] LDAP Services
  - Checking information : /var/log/lynis.log
  - Report data : /var/log/lynis-report.dat
  - Checking OpenLDAP instance [ NOT FOUND ]
[+] PHP
  - Checking PHP [ FOUND ]
  - Checking PHP disabled functions compliance for UNIX-based systems [ FOUND ]
  - Checking expose_php option [ OFF ]
  - Checking enable_dl option [ OFF ]
  - Checking allow_url_fopen option [ ON ]
  - Checking allow_url_include option once, plugins, interface [ OFF ]
  - Checking listen option [ OK ]
[+] Squid Support
  - Checking running Squid daemon [ NOT FOUND ]
```

[+] Squid Support

- Checking running Squid daemon

[NOT FOUND]

Follow-up:

[+] Logging and files

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

- Checking for a running log daemon (less /var/log/lynis.log) [OK]
- Checking Syslog-NG status (<https://cisofy.com>) [NOT FOUND]
- Checking systemd journal status on central system (Lynis Enter [FOUND]rs)
- 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]

Components:

[+] Insecure services

- Installed inetd package [NOT FOUND]
- Checking enabled inetd services [OK]
- Installed xinetd package Integration [] Pentest [] [OK]
 - xinetd status
- 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 /var/log/lynis.log [SUGGESTION]
- Checking TFTP server installation /var/log/lynis-report.da[SUGGESTION]

[+] Banners and identification

- /etc/issue [FOUND]
 - /etc/issue contents [WEAK]
- /etc/issue.net hardening, and compliance for UNIX-based systems [FOUND]
 - (- /etc/issue.net contents) [WEAK]

[+] Scheduled tasks

- https://cisofy.com/lynis/ []
 - Envelope support available (compliance, plugins, interface and tools)
- Checking crontab and cronjob files [DONE]

[+] Accounting

For more information about accounting, see the section on accounting, or provide your settings to custom.prf (see /etc/lynis/)

- Checking accounting information [NOT FOUND]
- Checking sysstat accounting data [DISABLED]
- Checking auditd [NOT FOUND]

* Harden the system by installing at least one malware scanner, to perform periodic scans like rkhunter, chkrootkit, OSSEC
[+] **Time and Synchronization** [OK] like rkhunter, chkrootkit, OSSEC
<https://cisco.com/cis/cisso/controls/HRDN-7230/>

[+] **Cryptography**

- Checking for expired SSL certificates [0/132] [ST-ID] [**NONE**]
- Check the logfile for all details (less /var/log/lynis.log)
[WARNING]: Test CRYP-7902 had a long execution: 19.277655 seconds
- Use --upload to upload data to central system (Lynis Enterprise users)
- Found 0 encrypted and 1 unencrypted swap devices in use. [**OK**]
- Kernel entropy is sufficient [**YES**]
- HW RNG & rngd [**NO**]
- SW prng purity scan details: [**YES**]

[+] **Virtualization**: 60 [#####] [OK]

Plugins enabled : 1

[+] **Containers**

Components:

- Firewall [**V**]

[+] **Security frameworks** [X]

- Checking presence AppArmor [**FOUND**]
- Checking AppArmor status integration [] Pentest [] [**DISABLED**]
- Checking presence SELinux [**NOT FOUND**]
- Checking presence TOMOYO Linux [**NOT FOUND**]
- Checking presence grsecurity [**NOT FOUND**]
- Checking for implemented MAC framework [**NONE**]
- Vulnerability scan [**V**]

[+] **Software: file integrity**

- Checking file integrity tools : /var/log/lynis.log [**DISABLED**]
- dm-integrity (status) : /var/log/lynis-report.dat [**DISABLED**]
- dm-verity (status) [**NOT FOUND**]
- Checking presence integrity tool

[+] **Software: System tooling**

- Checking automation tooling and compliance for UNIX-based systems [**NOT FOUND**]
- Automation tooling (and others) [**NONE**]
- Checking for IDS/IPS tooling [**NONE**]

[+] **Software: Malware** available (compliance, plugins, interface and tools)

[+] **File Permissions**

- Starting file permissions check. You can change your settings to custom.prf (see /etc/lynis/permissions.d/)
- Starting file permissions check
 - File: /boot/grub/grub.cfg [**OK**]
 - File: /etc/crontab [**SUGGESTION**]
 - File: /etc/group [**OK**]

```
File: /etc/crontab [ SUGGESTION ]
File: /etc/group [ OK ] By installing at least one malware scanner like rkhunter, chkrootkit, OSSaudir, or Lynis, you can perform periodic audits to detect such changes.
File: /etc/group-all [ OK ] - all a tool like rkhunter, chkrootkit, OSSaudir, or Lynis, you can perform periodic audits to detect such changes.
File: /etc/hosts.allow [ OK ] nis/controls/HRDN-7230/
File: /etc/hosts.deny [ OK ] - nis/controls/HRDN-7230/
File: /etc/issue [ OK ] - nis/controls/HRDN-7230/
File: /etc/issue.net [ OK ] - nis/controls/HRDN-7230/
File: /etc/motd [ OK ] a test (lynis show details TEST-ID)
File: /etc/passwd [ OK ] for all details (less /var/log/lynis.log)
File: /etc/passwd-roles [ OK ] texts (https://cisofy.com)
File: /etc/ssh/sshd_config [ SUGGESTION ] By default, it connects to central system (Lynis Enterprise Edition)
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 ]
Tests performed : 265
```

[+] 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 [ DIFFERENT ]
- dev.tty.ldisc_autoload (exp: 0) [ DIFFERENT ]
- eofs.protected_fifo (exp: 2) [ DIFFERENT ]
- eofs.protected_hardlinks (exp: 1) [ OK ]
- eofs.protected_regular (exp: 2) [ OK ]
- fs.protected_symlinks (exp: 1) [ OK ]
File: fs.suid_dumpable (exp: 0) [ OK ]
- kernel.core_uses_pid (exp: 1) : /var/log/lynis.log [ DIFFERENT ]
- kernel.ctrl-alt-del (exp: 0) : /var/log/lynis-report.log [ OK ]
- kernel.dmesg_restrict (exp: 1) [ OK ]
- kernel.kptr_restrict (exp: 2) [ DIFFERENT ]
- kernel.modules_disabled (exp: 1) [ DIFFERENT ]
File: kernel.perf_event_paranoid (exp: 3) [ OK ]
- kernel.randomize_va_space (exp: 2) [ OK ]
File: kernel.sysrq (exp: 0) , and compliance for UNIX-based systems [ DIFFERENT ]
File: kernel.unprivileged_bpf_disabled (exp: 1) [ DIFFERENT ]
- kernel.yama.ptrace_scope (exp: 1 2 3) [ DIFFERENT ]
File: net.core.bpf_jit_harden (exp: 2) [ DIFFERENT ]
File: net.ipv4.conf.all.accept_redirects (exp: 0) , interface settings [ DIFFERENT ]
- 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) [ OK ]
- net.ipv4.conf.all.log_martians (exp: 1) , settings to customize [ 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.rp_filter (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.ipv4.conf.all.accept_source_route (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 [summary | scan details]
- Installed compiler(s) [ FOUND ]
- Installed malware scanner [ NOT FOUND ]

[+] Custom tests
- Running custom tests... [ NONE ]

[+] Plugins (phase 2)
[summary | integration | report | help]

-[ Lynis 3.0.2 Results ]-
Warnings (2):
  Can't find any security repository in /etc/apt/sources.list or sources.list.d directory [PKGS-7388]
    https://cisofy.com/lynis/controls/PKGS-7388/
  iptables module(s) loaded, but no rules active [FIRE-4512]
    https://cisofy.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://cisofy.com/lynis/controls/LYNIS/
  Install libpam-tmpdir to set $TMP and $TMPDIR for PAM sessions [DEB-0280]
    https://cisofy.com/lynis/controls/DEB-0280/
  Install apt-listbugs to display a list of critical bugs prior to each APT installation. [DEB-0810]
    https://cisofy.com/lynis/controls/DEB-0810/
  Install apt-listchanges to display any significant changes prior to any upgrade via APT. [DEB-0811]
    https://cisofy.com/lynis/controls/DEB-0811/
  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. [DEB-0831]
    https://cisofy.com/lynis/controls/DEB-0831/ rootkit, OSSEC
    https://cisofy.com/lynis/controls/OSSEC

  * Install debsecan to generate lists of vulnerabilities which affect this installation. [DEB-0870]
    https://cisofy.com/lynis/controls/DEB-0870/

  * Install debsums for the verification of installed package files against MD5 checksums. [DEB-0875]
    https://cisofy.com/lynis/controls/DEB-0875/ log/lynis.log
    Read security controls texts (https://cisofy.com/)

  * Install fail2ban to automatically ban hosts that commit multiple authentication errors. [DEB-0880]
    https://cisofy.com/lynis/controls/DEB-0880/

  * Set a password on GRUB boot loader to prevent altering boot configuration (e.g. boot in single user mode without password) [BOOT-5122]
    Lynis 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 [KRLN-5820]
    https://cisofy.com/lynis/controls/KRLN-5820/
    Malware scanner [OK]
  * Configure password hashing rounds in /etc/login.defs [AUTH-9230]
    https://cisofy.com/lynis/controls/AUTH-9230/
    Normal [V] Forensics [ ] Integration [ ] Pentest [ ]
  * Install a PAM module for password strength testing like pam_cracklib or pam_pwindqc [AUTH-9262]
    https://cisofy.com/lynis/controls/AUTH-9262/
    Compliance status [?]
  * 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]
    To https://cisofy.com/lynis/controls/AUTH-9284/is.log
    Report data https://cisofy.com/lynis/controls/AUTH-9284/var/log/lynis-report.dat
  * 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/
    Auditing, system hardening, and compliance for UNIX-based systems
  * Default umask in /etc/login.defs could be more strict like 027 [AUTH-9328]
    https://cisofy.com/lynis/controls/AUTH-9328/
    2007-2020, CISOFY - https://cisofy.com/lynis/
  * 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/ file system integrity (fsck), audit, rootkit detection, and all settings))

  * 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/ file system integrity (fsck), audit, rootkit detection, and all settings))

  * 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/ file system integrity (fsck), audit, rootkit detection, and all settings))

```

```

* Consider disabling unused kernel modules [FILE-6430]
  - Details : /etc/modprobe.d/blacklist.conf
  - Solution : Add 'install MODULENAME /bin/true' (without quotes)
    https://ciscofy.com/lynis/controls(FILE-6430)

* Disable drivers like USB storage when not used, to prevent unauthorized storage or data theft [USB-1000]
  https://ciscofy.com/lynis/controls(USB-1000)

* Disable drivers like firewire storage when not used, to prevent unauthorized storage or data theft [STRG-1846]
  https://ciscofy.com/lynis/controls(STRG-1846)

* Check DNS configuration for the dns domain name [NAME-4028]
  https://ciscofy.com/lynis/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://ciscofy.com/lynis/controls(PKGS-7346)

* Install debsums utility for the verification of packages with known good database. [PKGS-7370]
  https://ciscofy.com/lynis/controls(PKGS-7370)

* Consider using a tool to automatically apply upgrades [PKGS-7420]
  https://ciscofy.com/lynis/controls(PKGS-7420)

* Determine if protocol 'dccp' is really needed on this system [NETW-3200]
  https://ciscofy.com/lynis/controls(NETW-3200)

* Determine if protocol 'sctp' is really needed on this system [NETW-3200]
  https://ciscofy.com/lynis/controls(NETW-3200)

* Determine if protocol 'rds' is really needed on this system [NETW-3200]
  https://ciscofy.com/lynis/controls(NETW-3200)

* Determine if protocol 'tipc' is really needed on this system [NETW-3200]
  https://ciscofy.com/lynis/controls(NETW-3200)

* Install Apache mod_evasive to guard webserver against DoS/brute force attempts [HTTP-6640]
  https://ciscofy.com/lynis/controls(HTTP-6640)

* Install Apache modsecurity to guard webserver against web application attacks [HTTP-6643]
  https://ciscofy.com/lynis/controls(HTTP-6643)

* Change the allow_url_fopen line to: allow_url_fopen = Off, to disable downloads via PHP [PHP-2376]
  https://ciscofy.com/lynis/controls(PHP-2376)

* Enable logging to an external logging host for archiving purposes and additional protection [LOGG-2154]
  https://ciscofy.com/lynis/controls(LOGG-2154)

* Check what deleted files are still in use and why. [LOGG-2190]
  https://ciscofy.com/lynis/controls(LOGG-2190)

* It is recommended that TFTP be removed, unless there is a specific need for TFTP (such as a boot server) [INSE-8318]
  https://ciscofy.com/lynis/controls(INSE-8318)

* It is recommended that TFTP be removed, unless there is a specific need for TFTP (such as a boot server) [INSE-8318]
  https://ciscofy.com/lynis/controls(INSE-8318)

* Removing the atftpd package decreases the risk of the accidental (or intentional) activation of tftp services [INSE-8320]
  https://ciscofy.com/lynis/controls(INSE-8320)

* Add a legal banner to /etc/issue, to warn unauthorized users [BANN-7126]
  https://ciscofy.com/lynis/controls(BANN-7126)

* Add legal banner to /etc/issue.net, to warn unauthorized users [BANN-7130]
  https://ciscofy.com/lynis/controls(BANN-7130)

* Enable process accounting [ACCT-9622]
  https://ciscofy.com/lynis/controls(ACCT-9622)

* Enable sysstat to collect accounting (disabled) [ACCT-9626]
  https://ciscofy.com/lynis/controls(ACCT-9626)

* Enable auditd to collect audit information [ACCT-9628]
  https://ciscofy.com/lynis/controls(ACCT-9628)

* Install a file integrity tool to monitor changes to critical and sensitive files [FINT-4350]
  https://ciscofy.com/lynis/controls(FINT-4350)

* Determine if automation tools are present for system management [TOOL-5002]
  https://ciscofy.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://ciscofy.com/lynis/controls(FILE-7524)

* Double check the permissions of home directories as some might be not strict enough. [HOME-9304]
  https://ciscofy.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://ciscofy.com/lynis/controls(KRNL-6000)

* Harden compilers like restricting access to root user only [HRDN-7222]
  https://ciscofy.com/lynis/controls(HRDN-7222)

* Harden the system by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
  - Solution : Install a tool like rkhunter, chkrootkit, OSSEC id tools
    https://ciscofy.com/lynis/controls(HRDN-7230)

Follow-up:
  https://ciscofy.com/lynis/controls(FILE-7524) (See also https://ciscofy.com/lynis/controls(FILE-7524) for all settings)
  - 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://ciscofy.com)
  - Use --upload to upload data to central system (Lynis Enterprise users)

```

```
* Harden compilers like restricting access to root user only [HRDN-7222] rm periodic file system scans [HRDN-7230]
  - https://cisofy.com/lynis/controls/HRDN-7222/rootkit, OSSEC
    https://cisofy.com/lynis/controls/HRDN-7230/
* Harden the system by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
  - Solution : Install a tool like rkhunter, chkrootkit, OSSEC
    https://cisofy.com/lynis/controls/HRDN-7230/
  - Show details of a test (lynis show details TEST-ID)
Follow-up: logfile for all details (less /var/log/lynis.log)
  _____
  - Show details of a test (lynis show details TEST-ID) Enterprise users
  - 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 : 60 [#####
  Lynis security scan details:
  Plugins enabled : 1
  Hardening index : 60 [#####
  Tests performed : 265
  Plugins enabled : 1 [V]
  - Malware scanner [X]
Components:
  - Firewall [V]
  - Malware scanner [ ] [X] Integration [ ] Pentest [ ]
Scan mode: [es]
  Normal [ ] Forensics [ ] Integration [ ] Pentest [V] (running privileged)
  - Security audit [V]
Lynis modules: [V]
  - Compliance status [?]
  - Security audit [V]
  - Vulnerability scan [V] : /var/log/lynis.log
  - Report data : /var/log/lynis-report.dat
Files:
  - Test and debug information : /var/log/lynis.log
  - Report data : /var/log/lynis-report.dat
  Lynis 3.0.2
  _____
  Auditing, system hardening, and compliance for UNIX-based systems
  Lynis 3.0.20S, BSD, and others)
  _____
  Auditing, system hardening, and compliance for UNIX-based systems
  (Linux, macOS, BSD, and others) compliance, plugins, interface and tools)
  _____
  2007-2020, 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)
  _____
  [TIP]: Enhance Lynis audits by adding your settings to custom.prf (see /etc/lynis/default.prf for all settings)
```

* Harden the system by installing at least one malware scanner, to perform periodic scans.	
[+] Memory and Processes	a tool like rkhunter, chkrootkit, OSSEC
- Checking /proc/meminfo	[FOUND]
- Searching for dead/zombie processes	[NOT FOUND]
- Searching for IO waiting processes	[NOT FOUND]
- Search prelink tooling (lynis show details TEST-ID)	[NOT FOUND]
- Check the logfile for all details (less /var/log/lynis.log)	
[+] Users, Groups and Authentication	https://cisofy.com/lynis/
Use 'apt-get install lynis' to upload data to central system (Lynis Enterprise users)	
- Administrator accounts	[OK]
- Unique UIDs	[OK]
- Consistency of group files (grpck)	[OK]
- Unique group IDs [details]	[OK]
- Unique group names	[OK]
- Password file consistency [details]	[OK]
- Password hashing methods	[OK]
- Checking password hashing rounds	[DISABLED]
- Query system users (non daemons)	[DONE]
- NIS+ authentication support	[NOT ENABLED]
- NIS authentication support	[NOT ENABLED]
- Sudoers file(s) [X]	[FOUND]
- Permissions for directory: /etc/sudoers.d	[WARNING]
- Permissions for: /etc/sudoers	[OK]
- Permissions for: /etc/sudoers.d/kali-grant-root []	[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 [V]	[FOUND]
- LDAP module in PAM	[NOT FOUND]
- Accounts without expire date	[SUGGESTION]
- Accounts without password [: /var/log/lynis.log]	[OK]
- Locked accounts [: /var/log/lynis-report.log]	[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), and compliance for UNIX-based systems [: /etc/login.defs]	[NOT FOUND]
- umask (/etc/login.defs)	[SUGGESTION]
- LDAP authentication support	[NOT ENABLED]
- Logging failed login attempts [: /var/log/lynis/failed_logins.log]	[ENABLED]
Enterprise support available (compliance, plugins, interface and tools)	
[+] Shells	
- Checking shells from /etc/shells	
Result: found 11 shells (valid shells: 11). Settings to custom pref (see /etc/lynis/report.conf)	
- 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

- Note: This section can be improved by installing at least one malware scanner, to perform periodic scans.
- Checking mount points
 - Checking /home mount point [OK]
 - Checking /tmp mount point [OK]
 - Checking /var mount point [OK]
 - Query swap partitions (fstab) [SUGGESTION]
 - Testing swap partitions [OK]
 - Testing /proc mount (hidrepid) [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 [HARDENED]
 - Mount options of /dev/shm [PARTIALLY HARDENED]
 - Mount options of /run [HARDENED]
 - Total without nodev:6 noexec:7 nosuid:4 ro or noexec (W^X): 7 of total 23 [OK]
 - Checking Locate database [FOUND]
 - Disable kernel support of some filesystems

Discovered kernel modules: freevxfs hfs hfsplus jffs2 squashfs udf

- Firewall [V]

[+] USB Devices

None [X]

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

Lynis modules:

[+] Storage

None [?]

- Checking firewire ohci driver (modprobe config) [NOT DISABLED]

[+] NFS

None [?]

- Query rpc registered programs [/var/log/lynis.log] [/var/log/lynis-report.dat] [DONE]
- Query NFS versions [/var/log/lynis.log] [/var/log/lynis-report.dat] [DONE]
- Query NFS protocols [/var/log/lynis.log] [/var/log/lynis-report.dat] [DONE]
- Check running NFS daemon [/var/log/lynis.log] [/var/log/lynis-report.dat] [NOT FOUND]

Lynis 3.0.2

[+] Name services

- None [?]
- Searching DNS domain names [UNKNOWN]
 - Checking /etc/hosts [NONE]
 - Duplicate entries in hosts file [/etc/hosts] [/var/log/lynis.log] [FOUND]
 - Presence of configured hostname in /etc/hosts, interfaces [/etc/hosts, interfaces] [FOUND]
 - Hostname mapped to localhost [NOT FOUND]
 - Localhost mapping to IP address [OK]

[+] Ports and packages

None [?]

- Searching package managers [FOUND]
 - Searching dpkg package manager
 - Querying package manager

[+] Ports and packages

- Noticing the system by installing at least one malware scanner, to perform periodic scans.
- Searching package managers like rkhunter, chkrootkit, OSSEC [FOUND]
 - Searching dpkg package manager [FOUND]
 - Querying package manager [FOUND]
 - Query unpurged packages [FOUND]
 - Checking security repository in sources.list file or directory [WARNING]
- E: Could not get lock /var/lib/apt/lists/lock. It is held by process 38820 (apt-get)
- E: Unable to lock directory /var/lib/apt/lists/r/log/lynis.log
- Checking vulnerable packages (apt-get only) [DONE]
 - Checking package audit tool to central system (Lynis Enter) [INSTALLED]
 - Found: apt-get
 - Toolkit for automatic upgrades [NOT FOUND]

[+] Networking

Scan details:

- Checking IPv6 configuration [ENABLED]
- Test Configuration method [AUTO]
- IPv6 only [NO]
- Checking configured nameservers []
- Testing nameservers []
- First Nameserver: 192.168.29.1 [OK]
- Main Nameserver: 2405:201:6008:30e3::c0a8:1d01 [OK]
- Minimal of 2 responsive nameservers [OK]
- DNSSEC supported (systemd-resolved) [UNKNOWN]
- Checking default gateway Integration [] Pentest [] [DONE]
- Getting listening ports (TCP/UDP) [SKIPPED]
- Checking promiscuous interfaces [OK]
- Checking waiting connections [OK]
- Checking status DHCP client []
- Checking for ARP monitoring software [NOT FOUND]
- Uncommon network protocols [0]

Files:

[+] Printers and Spools

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

- Checking cups daemon [NOT FOUND]
- Checking lp daemon [NOT RUNNING]

[+] Software: e-mail and messaging

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

[+] Software: firewalls and others)

- Checking iptables kernel module [FOUND]
- Checking iptables policies of chains, plugins, interface [FOUND]
- Checking for empty ruleset [WARNING]
- Checking for unused rules [OK]
- Checking host based firewall [ACTIVE]

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

[+] Software: webserver

- Checking Apache (binary /usr/sbin/apache2) [FOUND]
- Info: Configuration file found (/etc/apache2/apache2.conf)

```
- Info: No virtual hosts found like rkhunter, chkrootkit, OSSEC [ FOUND (118) ]
* Loadable modules /usr/lib/lynis/controls/HRDN-7230/ [ FOUND (118) ]
  - Found 118 loadable modules
Follow mod_evasive: anti-DoS/brute force [ NOT FOUND ]
  mod_reqtimeout/mod_qos [ FOUND ]
- Show configuration of ModSecurity: web application firewall TEST-ID [ NOT FOUND ]
- Checking nginx file for all details (less /var/log/lynis.log) [ NOT FOUND ]
- Read security controls texts (https://cisofy.com)
[+] SSH Support to upload data to central system (Lynis Enterprise users)

- Checking running SSH daemon [ NOT FOUND ]

[+] SNMP Support scan details:
  - Checking running SNMP daemon ##### [ NOT FOUND ]
  Tests performed : 265

[+] Databases tested : 1
  - No database engines found
  - Firewall [V]
[+] LDAP Services [X]

- Checking OpenLDAP instance [ NOT FOUND ]
  Normal [V] Forensics [ ] Integration [ ] Pentest [ ]
[+] PHP
  - Checking PHP status [?]
  - Checking PHP disabled functions [ FOUND ]
  - Checking expose_php option [ OFF ]
  - Checking enable_dl option [ OFF ]
  Fix - Checking allow_url_fopen option [ ON ]
  - Checking allow_url_include option var/log/lynis.log [ OFF ]
  - Checking listen option : /var/log/lynis-report.da [ OK ]

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

[+] Logging and files rendering, and compliance for UNIX-based systems
  - Checking for a running log daemon [ OK ]
  - Checking Syslog-NG status cisofy.com/lynis/ [ NOT FOUND ]
  En - Checking systemd journal status lance, plugins, interface [ FOUND ]
  - Checking Metalog status [ NOT FOUND ]
  - Checking RSyslog status [ FOUND ]
  - Checking RFC 3195 daemon status [ NOT FOUND ]
  - Checking minilogd instances using your settings to customize lynis [ NOT FOUND ]
  - Checking logrotate presence [ OK ]
  - Checking remote logging [ NOT ENABLED ]
  - Checking log directories (static list) [ DONE ]
  - Checking open log files [ DONE ]
```

```
- Checking log directories (static list) [ DONE ]
- Checking openslog files installed at least one malware scanner [ DONE ] perform periodic scans
- Checking deleted files in use like rkhunter, chkrootkit, OSSSEC [ FILES FOUND ]
  https://cisofy.com/lynis/controls/HRDN-7230/
```

[+] Insecure services

```
- Installed inetd package [ NOT FOUND ]
- Checking enabled inetd services with details TEST-ID [ OK ]
- Installed xinetd package [ OK ]
- Checking xinetd status controls texts (https://cisofy.com)
- Installed rsync client package to central system (Lynis Enterprise users) [ 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 [ SUGGESTION ]
- Checking TFTP server installation [ SUGGESTION ]
```

Plugins enabled: 1

[+] Banners and identification

```
Components:
- /etc/issue [V] [ FOUND ]
- /etc/issue contents [X] [ WEAK ]
- /etc/issue.net [ FOUND ]
- /etc/issue.net contents [ WEAK ]
```

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

[+] Scheduled tasks

```
- Checking crontab and cronjob files [ DONE ]
- Security audit [V]
```

[+] Accounting

```
- Checking accounting information [ NOT FOUND ]
- Checking sysstat accounting data: /var/log/lynis.log [ DISABLED ]
- Checking auditd : /var/log/lynis-report.log [ NOT FOUND ]
```

[+] Time and Synchronization

Lynis 3.0.2

[+] Cryptography

Auditing custom hardened and compliant for UNIX-based systems

```
- Checking for expired SSL certificates [0/132] [ NONE ]
```

[WARNING]: Test CRYP-7902 had a long execution: 19.769443 seconds
Enterprise support available (compliance, plugins, interface and tools)

```
- Found 0 encrypted and 1 unencrypted swap devices in use. [ OK ]
- Kernel entropy is sufficient [ YES ]
- HW RNG & rngd [ NO ]
- SW prng [ YES ] see /etc/lynis/audit.conf
```

[+] Virtualization

```

[+] Harden the system by installing at least one malware scanner, to perform periodic scans. Visit https://ciscofy.com/lynis-controls/HRDN-7230/
[+] Virtualization install a tool like rkhunter, chkrootkit, OSSEC
[+] Containers
    - Show details of a test (lynis show details TEST-ID)
[+] Security frameworks or all details (less /var/log/lynis.log)
[+] System security controls (https://ciscofy.com/lynis-controls)
    - Checking presence AppArmor [rs] to central system (Lynis Enter [ FOUND ]rs)
        - Checking AppArmor status [ DISABLED ]
    - Checking presence SELinux [ NOT FOUND ]
    - Checking presence TOMOYO Linux [ NOT FOUND ]
    - Checking presence grsecurity [ NOT FOUND ]
    - Checking for implemented MAC framework [ NONE ]
    Hardening index : 60 [ ##### ]
[+] Software: file integrity
    - Checking file integrity tools [ ]
        - dm-integrity (status) [ DISABLED ]
        - dm-verity (status) [ V ]
        - Checking presence integrity tool [ NOT FOUND ]
[+] Software: System tooling
    - Checking automation tooling [ ]
        - Automation tooling [ NOT FOUND ]
        - Checking for IDS/IPS tooling [ NONE ]
        - Security audit [ V ]
[+] Software: Malware [ V ]
[+] File:
[+] File Permissions Information : /var/log/lynis.log
[+] File: /etc/hosts.allow [ ] : /var/log/lynis-report.dat
    - Starting file permissions check
    File: /boot/grub/grub.cfg [ OK ]
    File: /etc/crontab [ SUGGESTION ]
    File: /etc/group [ OK ]
    File: /etc/group- [ OK ]
    File: /etc/hosts.allowng, and compliance for UNIX-based systems [ OK ]
    File: /etc/hosts.deny others) [ OK ]
    File: /etc/issue [ OK ]
    File: /etc/issue.net [ OK ]
    File: /etc/motd available (compliance, plugins, interfaces, tools) [ OK ]
    File: /etc/passwd [ OK ]
    File: /etc/passwd- [ OK ]
    File: /etc/ssh/sshd_config [ SUGGESTION ]
    Directory: /root/.ssh [ OK ] -> adding your settings to custom config file
    Directory: /etc/cron.d [ SUGGESTION ]
    Directory: /etc/cron.daily [ SUGGESTION ]
    Directory: /etc/cron.hourly [ SUGGESTION ]
    Directory: /etc/cron.weekly [ SUGGESTION ]

```

[+] Home directories

- Permissions of home directories
 - Ownership of home directories
 - Checking shell history files

[**WARNING**]
[**OK**]
[**OK**]

[+] Kernel Hardening

- ```
- Comparing sysctl key pairs with scan profile
- dev.tty.ldisc_autoload (exp: 0)
- fs.protected_fifos (exp: 2)
- fs.protected_hardlinks (exp: 1)
- fs.protected_regular (exp: 2)
- fs.protected_symlinks (exp: 1)
- fs.suid_dumpable (exp: 0)
- kernel.core_uses_pid (exp: 1)
- kernel.ctrl-alt-del (exp: 0)
- kernel.dmesg_restrict (exp: 1)
- kernel.kptr_restrict (exp: 2)
- kernel.modules_disabled (exp: 1)
- kernel.perf_event_paranoid (exp: 3)
- kernel.randomize_va_space (exp: 2)
- kernel.sysrq (exp: 0)
- kernel.unprivileged_bpf_disabled (exp: 1)
- kernel.yama.ptrace_scope (exp: 1 2 3)
- net.core.bpf_jit_harden (exp: 2)
- net.ipv4.conf.all.accept_redirects (exp: 0)
- net.ipv4.conf.all.accept_source_route (exp: 0)
- net.ipv4.conf.all.bootp_relay (exp: 0)
- net.ipv4.conf.all.forwarding (exp: 0)
- net.ipv4.conf.all.log_martians (exp: 1)
- net.ipv4.conf.all.mc_forwarding (exp: 0)
- net.ipv4.conf.all.proxy_arp (exp: 0)
- net.ipv4.conf.all.rp_filter (exp: 1)
- net.ipv4.conf.all.send_redirects (exp: 0)
- net.ipv4.conf.default.accept_redirects (exp: 0)
- net.ipv4.conf.default.accept_source_route (exp: 0)
- net.ipv4.conf.default.log_martians (exp: 1)
- net.ipv4.icmp_echo_ignore_broadcasts (exp: 1)
- net.ipv4.icmp_ignore_bogus_error_responses (exp: 0)
- net.ipv4.tcp_syncookies (exp: 1)
- net.ipv4.tcp_timestamps (exp: 0 1)
- net.ipv6.conf.all.accept_redirects (exp: 0)
- net.ipv6.conf.all.accept_source_route (exp: 0)
- net.ipv6.conf.default.accept_redirects (exp: 0)
- net.ipv6.conf.default.accept_source_route (exp: 0)
```

```
[DIFFERENT]
[DIFFERENT]
[OK]
[OK]
[OK]
[OK]
[DIFFERENT]
[OK]
[OK]
[DIFFERENT]
[DIFFERENT]
[OK]
[OK]
[DIFFERENT]
[OK]
[OK]
[OK]
[DIFFERENT]
[OK]
[OK]
[DIFFERENT]
[OK]
[OK]
[OK]
[OK]
[DIFFERENT]
[OK](ots)
[DIFFERENT]
[OK]
```

## [+] Hardening

- Installed compiler(s)
  - Installed malware scanner

[ FOUND ]

- \* Enable sysstat to collect accounting (disabled) [ACCT-9626]  
<https://cisofy.com/lynis/controls/ACCT-9626/>
- \* Enable auditd to collect audit information [ACCT-9628]  
<https://cisofy.com/lynis/controls/ACCT-9628/>
- \* Install a file integrity tool to monitor changes to critical and sensitive files [FINT-4350]  
<https://cisofy.com/lynis/controls/FINT-4350/>
- \* 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/](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/>
- \* Harden the system by installing at least one malware scanner, to perform periodic file system scans [HRDN-7230]
  - Solution : Install a tool like rkhunter, chkrootkit, OSSEC  
<https://cisofy.com/lynis/controls/HRDN-7230/>

[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 : 60 [#####]  
Tests performed : 265  
Plugins enabled : 1

---

**Components:**

- Firewall [V]
- Malware scanner [X]

**Scan mode:**

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

## [+] Scheduled tasks

- 
- Checking crontab and cronjob files [ DONE ]

## [+] Accounting

- 
- Checking accounting information [ NOT FOUND ]
  - Checking sysstat accounting data [ DISABLED ]
  - Checking auditd [ NOT FOUND ]

## [+] Time and Synchronization

### [+] Cryptography

- 
- Checking for expired SSL certificates [ 0/132 ] [ NONE ]

[WARNING]: Test CRYP-7902 had a long execution: 20.065627 seconds

- Found 0 encrypted and 1 unencrypted swap devices in use. [ OK ]
- Kernel entropy is sufficient [ YES ]
- HW RNG & rngd [ NO ]
- SW prng [ YES ]

## [+] Virtualization

### [+] Containers

### [+] Security frameworks

- 
- Checking presence AppArmor [ FOUND ]
  - Checking AppArmor status [ DISABLED ]
  - Checking presence SELinux [ NOT FOUND ]
  - Checking presence TOMOYO Linux [ NOT FOUND ]
  - Checking presence grsecurity [ NOT FOUND ]
  - Checking for implemented MAC framework [ NONE ]

### [+] 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 [ NONE ]
  - Checking for IDS/IPS tooling

## [+] Software: Malware

---

### [+] File Permissions

---

|                                   |                |
|-----------------------------------|----------------|
| - Starting file permissions check | [ OK ]         |
| File: /boot/grub/grub.cfg         | [ SUGGESTION ] |
| File: /etc/crontab                | [ OK ]         |
| 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/motd                   | [ 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 | [ DIFFERENT ] |
| - dev.tty.ldisc_autoload (exp: 0)              | [ DIFFERENT ] |
| - fs.protected_fifos (exp: 2)                  | [ OK ]        |
| - fs.protected_hardlinks (exp: 1)              | [ OK ]        |
| - fs.protected_regular (exp: 2)                | [ OK ]        |
| - fs.protected_symlinks (exp: 1)               | [ OK ]        |
| - fs.suid_dumpable (exp: 0)                    | [ OK ]        |
| - 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)          | [ OK ]        |
| - 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)        | [ DIFFERENT ] |
| - net.core.bpf_jit_harden (exp: 2)             | [ DIFFERENT ] |

```
- 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) [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) [DIFFERENT]
- net.ipv4.conf.default.log_martians (exp: 1) [DIFFERENT]
- net.ipv4.icmp_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

|                             |               |
|-----------------------------|---------------|
| - Installed compiler(s)     | [ FOUND ]     |
| - Installed malware scanner | [ NOT FOUND ] |

#### [+] Custom tests

|                            |          |
|----------------------------|----------|
| - Running custom tests ... | [ NONE ] |
|----------------------------|----------|

#### [+] Plugins (phase 2)

-[ Lynis 3.0.2 Results ]-

#### Warnings (2):

! iptables module(s) loaded, but no rules active [FIRE-4512]  
<https://cisofy.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://cisofy.com/lynis/controls/LYNIS/>
- \* Consider using a tool to automatically apply upgrades [PKGS-7420]  
<https://cisofy.com/lynis/controls/PKGS-7420/>
- \* 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/>

```

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

* Consider using a tool to automatically apply upgrades [PKGS-7420]
 https://cisofy.com/lynis/controls/PKGS-7420/

* 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/

* 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/

* Change the allow_url_fopen line to: allow_url_fopen = Off, to disable downloads via PHP [PHP-2376]
 https://cisofy.com/lynis/controls/PHP-2376/

* 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/

* It is recommended that TFTP be removed, unless there is a specific need for TFTP (such as a boot server) [INSE-8318]
 https://cisofy.com/lynis/controls/INSE-8318/

* Removing the atftpd package decreases the risk of the accidental (or intentional) activation of tftp services [INSE-8320]
 https://cisofy.com/lynis/controls/INSE-8320/

* 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 (disabled) [ACCT-9626]

```

Remotely trying to access contents of phone on same network:

```

[~]# llynis audit system remote 192.168.29.142
How to perform a remote scan:
=====
Target : 192.168.29.142
Command : ./lynis audit system

* Step 1: Create tarball
 mkdir -p ./files && cd .. && tar czf ./lynis/files/lynis-remote.tar.gz --exclude=files/lynis-remote.tar.gz ./lynis && cd lynis
 Test and debug information: ./var/log/lynis.log
* Step 2: Copy tarball to target 192.168.29.142 ls-report.dat
 scp -q ./files/lynis-remote.tar.gz 192.168.29.142:~/tmp-lynis-remote.tgz

* Step 3: Execute audit command
 ssh 192.168.29.142 "mkdir -p ~/tmp-lynis && cd ~/tmp-lynis && tar xzf ..~/tmp-lynis-remote.tgz && rm ..~/tmp-lynis-remote.tgz && cd lynis && ./lynis audit system"

* Step 4: Clean up directory (not compliant for UNIX-based systems)
 ssh 192.168.29.142 "rm -rf ~/tmp-lynis"

* Step 5: Retrieve log and report
 scp -q 192.168.29.142:/tmp/lynis.log ./files/192.168.29.142-lynis.log
 scp -q 192.168.29.142:/tmp/lynis-report.dat ./files/192.168.29.142-lynis-report.dat

* Step 6: Clean up tmp files (when using non-privileged account)
 ssh 192.168.29.142 "rm /tmp/lynis.log /tmp/lynis-report.dat"

```

```
[root@kali:~] # sudo apt install apt-listbugs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apt-listbugs is already the newest version (0.1.35).
0 upgraded, 0 newly installed, 0 to remove and 1160 not upgraded.

[root@kali:~] # sudo apt install needrestart
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
needrestart is already the newest version (3.5-5).
0 upgraded, 0 newly installed, 0 to remove and 1160 not upgraded.

[root@kali:~] # sudo apt install apt-listchanges
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apt-listchanges is already the newest version (3.24).
0 upgraded, 0 newly installed, 0 to remove and 1160 not upgraded.
```

Executing suggestions:

```
[root@kali:/lynis] # sudo apt-get install -y libpam-tmpdir
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
 libpam-tmpdir
0 upgraded, 1 newly installed, 0 to remove and 1162 not upgraded.
Need to get 11.9 kB of archives.
After this operation, 54.3 kB of additional disk space will be used.
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 libpam-tmpdir amd64 0.09+b2 [11.9 kB]
Fetched 11.9 kB in 2s (5,106 B/s)
Selecting previously unselected package libpam-tmpdir.
(Reading database ... 271070 files and directories currently installed.)
Preparing to unpack .../libpam-tmpdir_0.09+b2_amd64.deb ...
Unpacking libpam-tmpdir (0.09+b2) ...
Setting up libpam-tmpdir (0.09+b2) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for kali-menu (2021.1.4) ...
```

```
[root@kali:~/lynis] # sudo apt install fail2ban
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
python3-systemd
Suggested packages:
mailx monit
The following NEW packages will be installed:
fail2ban python3-systemd
0 upgraded, 2 newly installed, 0 to remove and 1160 not upgraded.
Need to get 487 kB of archives.
After this operation, 2,337 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 fail2ban all 0.11.2-2 [451 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 python3-systemd amd64 234-3+b4 [36.4 kB]
Fetched 487 kB in 15s (31.6 kB/s)
Retrieving bug reports... Done
Parsing Found/Fixed information... Done
serious bugs of fail2ban (→ 0.11.2-2) <Forwarded>
 b1 - #991449 - fix for CVE-2021-32749 breaks systems with mail from bsd-mailx
Summary:
 fail2ban(1 bug)
Are you sure you want to install/upgrade the above packages? [Y/n/?/ ...] Y
Selecting previously unselected package fail2ban.
(Reading database... 273242 files and directories currently installed.)
Preparing to unpack .../fail2ban_0.11.2-2_all.deb...
Unpacking fail2ban (0.11.2-2)...
Selecting previously unselected package python3-systemd.
Preparing to unpack .../python3-systemd_234-3+b4_amd64.deb...
Unpacking python3-systemd (234-3+b4)...
Setting up fail2ban (0.11.2-2)...
update-rc.d: We have no instructions for the fail2ban init script.
update-rc.d: It looks like a network service, we disable it.
fail2ban.service is a disabled or a static unit, not starting it.
Setting up python3-systemd (234-3+b4)...
Processing triggers for man-db (2.9.3-2)...
Processing triggers for kali-menu (2021.1.4)...
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.

[root@kali:~/lynis] # sudo apt install debsecan
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
bsd-mailx exim4-base exim4-config exim4-daemon-light libgnutls-dane0 libidn12 liblockfile1 libunbound8
Suggested packages:
exim4-doc-html | exim4-doc-info eximon4 spf-tools-perl
The following NEW packages will be installed:
bsd-mailx debsecan exim4-base exim4-config exim4-daemon-light libgnutls-dane0 libidn12 liblockfile1 libunbound8
0 upgraded, 9 newly installed, 0 to remove and 1160 not upgraded.
Need to get 3,327 kB of archives.
After this operation, 6,648 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 exim4-config all 4.95-2 [335 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 exim4-base amd64 4.95-2 [1,187 kB]
Get:3 http://ftp.harukasan.org/kali kali-rolling/main amd64 libunbound8 amd64 1.13.1-1 [504 kB]
Get:4 http://ftp.harukasan.org/kali kali-rolling/main amd64 libgnutls-dane0 amd64 3.7.2-2 [404 kB]
Get:5 http://ftp.harukasan.org/kali kali-rolling/main amd64 libidn12 amd64 1.38-3 [83.3 kB]
Get:6 http://ftp.harukasan.org/kali kali-rolling/main amd64 exim4-daemon-light amd64 4.95-2 [674 kB]
Get:7 http://ftp.harukasan.org/kali kali-rolling/main amd64 liblockfile1 amd64 1.17-1+b1 [17.0 kB]
Get:8 http://ftp.harukasan.org/kali kali-rolling/main amd64 bsd-mailx amd64 8.1.2-0.20180807cvs-2 [88.6 kB]
Get:9 http://ftp.harukasan.org/kali kali-rolling/main amd64 debsecan all 0.4.20.1 [33.2 kB]
Fetched 3,327 kB in 1min 14s (45.2 kB/s)
Retrieving bug reports... Done
Parsing Found/Fixed information... Done
Preconfiguring packages...
Selecting previously unselected package exim4-config.
(Reading database... 273712 files and directories currently installed.)
Preparing to unpack .../0-exim4-config_4.95-2_all.deb...
Unpacking exim4-config (4.95-2)...
Selecting previously unselected package exim4-base.
Preparing to unpack .../1-exim4-base_4.95-2_amd64.deb...
Unpacking exim4-base (4.95-2)...
Selecting previously unselected package libunbound8:amd64.
Preparing to unpack .../2-libunbound8_1.13.1-1_amd64.deb...
Unpacking libunbound8:amd64 (1.13.1-1)...
Selecting previously unselected package libgnutls-dane0:amd64.
Preparing to unpack .../3-libgnutls-dane0_3.7.2-2_amd64.deb...
Unpacking libgnutls-dane0:amd64 (3.7.2-2)...
Selecting previously unselected package libidn12:amd64.
Preparing to unpack .../4-libidn12_1.38-3_amd64.deb...
Unpacking libidn12:amd64 (1.38-3)...
Selecting previously unselected package exim4-daemon-light.
Preparing to unpack .../5-exim4-daemon-light_4.95-2_amd64.deb...
Unpacking exim4-daemon-light (4.95-2)...
Selecting previously unselected package liblockfile1:amd64.
Preparing to unpack .../6-liblockfile1_1.17-1+b1_amd64.deb...
Unpacking liblockfile1:amd64 (1.17-1+b1)...
Selecting previously unselected package bsd-mailx.
```

```
Unpacking exim4-config (4.95-2) ...
Selecting previously unselected package exim4-base.
Preparing to unpack .../1-exim4-base_4.95-2_amd64.deb ...
Unpacking exim4-base (4.95-2) ...
Selecting previously unselected package libunbound8:amd64.
Preparing to unpack .../2-libunbound8_1.13.1-1_amd64.deb ...
Unpacking libunbound8:amd64 (1.13.1-1) ...
Selecting previously unselected package libgnutls-dane0:amd64.
Preparing to unpack .../3-libgnutls-dane0_3.7.2-2_amd64.deb ...
Unpacking libgnutls-dane0:amd64 (3.7.2-2) ...
Selecting previously unselected package libidn12:amd64.
Preparing to unpack .../4-libidn12_1.38-3_amd64.deb ...
Unpacking libidn12:amd64 (1.38-3) ...
Selecting previously unselected package exim4-daemon-light.
Preparing to unpack .../5-exim4-daemon-light_4.95-2_amd64.deb ...
Unpacking exim4-daemon-light (4.95-2) ...
Selecting previously unselected package liblockfile1:amd64.
Preparing to unpack .../6-liblockfile1_1.17-1+b1_amd64.deb ...
Unpacking liblockfile1:amd64 (1.17-1+b1) ...
Selecting previously unselected package bsd-mailx.
Preparing to unpack .../7-bsd-mailx_8.1.2-0.20180807cvs-2_amd64.deb ...
Unpacking bsd-mailx (8.1.2-0.20180807cvs-2) ...
Selecting previously unselected package debsecan.
Preparing to unpack .../8-debsecan_0.4.20.1_all.deb ...
Unpacking debsecan (0.4.20.1) ...
Setting up libunbound8:amd64 (1.13.1-1) ...
Setting up libidn12:amd64 (1.38-3) ...
Setting up debsecan (0.4.20.1) ...
Setting up exim4-config (4.95-2) ...
Adding system-user for exim (v4)
Setting up liblockfile1:amd64 (1.17-1+b1) ...
Setting up libgnutls-dane0:amd64 (3.7.2-2) ...
Setting up exim4-base (4.95-2) ...
exim: DB upgrade, deleting hints-db
update-rc.d: As per Kali policy, exim4 init script is left disabled.
Created symlink /etc/systemd/system/timers.target.wants/exim4-base.timer → /lib/systemd/system/exim4-base.timer.
exim4-base.service is a disabled or a static unit not running, not starting it.
Setting up exim4-daemon-light (4.95-2) ...
Setting up bsd-mailx (8.1.2-0.20180807cvs-2) ...
update-alternatives: using /usr/bin/bsd-mailx to provide /usr/bin/mailx (mailx) in auto mode
Processing triggers for libc-bin (2.31-9) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for kali-menu (2021.1.4) ...
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.
```

```
[root@kali:~/lynis]
└─# sudo apt install debsums
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
 libfile-fnmatch-perl
The following NEW packages will be installed:
 debsums libfile-fnmatch-perl
0 upgraded, 2 newly installed, 0 to remove and 1160 not upgraded.
Need to get 55.7 kB of archives.
After this operation, 155 kB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://ftp.harukasan.org/kali kali-rolling/main amd64 libfile-fnmatch-perl amd64 0.02-2+b8 [10.4 kB]
Get:2 http://ftp.harukasan.org/kali kali-rolling/main amd64 debsums all 3.0.2 [45.3 kB]
Fetched 55.7 kB in 3s (18.4 kB/s)
Retrieving bug reports... Done
Parsing Found/Fixed information... Done
Selecting previously unselected package libfile-fnmatch-perl.
(Reading database... 273948 files and directories currently installed.)
Preparing to unpack .../libfile-fnmatch-perl_0.02-2+b8_amd64.deb ...
Unpacking libfile-fnmatch-perl (0.02-2+b8) ...
Selecting previously unselected package debsums.
Preparing to unpack .../archives/debsums_3.0.2_all.deb ...
Unpacking debsums (3.0.2) ...
Setting up libfile-fnmatch-perl (0.02-2+b8) ...
Setting up debsums (3.0.2) ...
Processing triggers for man-db (2.9.3-2) ...
Processing triggers for kali-menu (2021.1.4) ...
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.
```

After installing all dependancies and installations,we will see this difference along with normal execution of all above executed commands:

```
[+] 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 [Installed and Enabled]
- File System Checks:
 - DM-Crypt, Cryptsetup & Cryptmount:
 - Checking / on /dev/sda1 [NOT ENCRYPTED]
- Software:
 - apt-listbugs [Installed and enabled for apt]
 - apt-listchanges [Installed and enabled for apt]
 - needrestart [Installed]
 - debsecan [Installed and enabled for cron]
 - debsums [Installed and enabled for cron]
 - fail2ban [Installed with jail.conf]
]
```