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CentOS

My Lynix reports, including any changes you made to each server and why you made those changes.

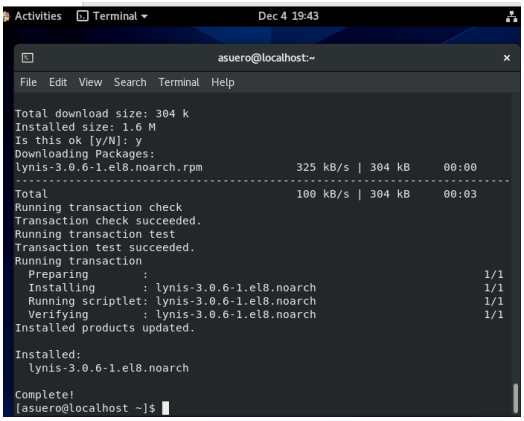
Lynis Installation

Lynis is an open-source security tool. It helps with security scanners on systems running Linux, macOS, and BSD.

To install lynis please type the following command:

yum install lynis

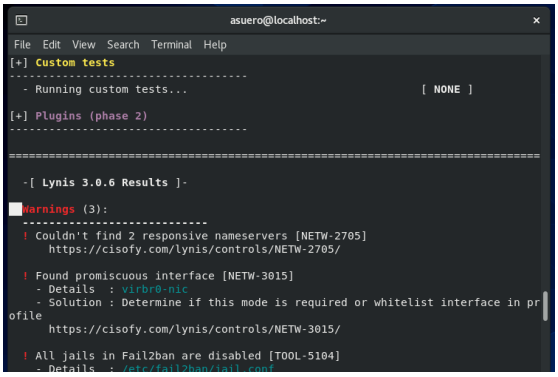
then hit enter, later you will be asked to confirm the download, type **y** for yes. Wait a few seconds depending on your system, and later you will be all set.

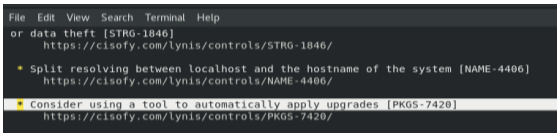


After you install lynis, you run it to scan your system by typing the following command

sudo lynis audit system -Q

when you run lynis, when the audit to your system is complete you will be suggested if needed with some advice, some warning, and fallow up lynis showed me some warning, and I will take them into consideration to keep my server safer from attackers. Below there are a couple of images with my warnings and suggestions.

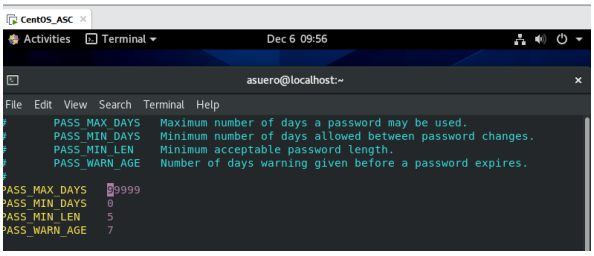




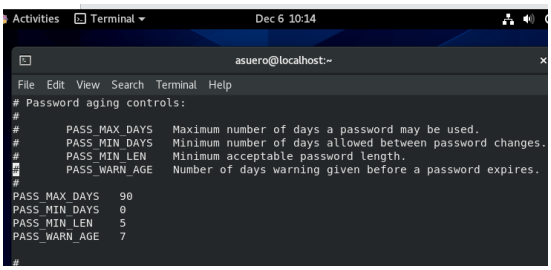
For my system I will fallow some suggestion and warnings, some of them are:

- Set up a tool for automatic update
- Work with my password security, for example, configure minimum password requirement.
- Install a malware scanner to periodically scan my system (for now, lynis is good for me)
- Enable the jail in fail2ban

For now, we are going to work with the password requirement, we are going to set up password length and password expiration. To change the password expiration time, we must go to the following file with the root privileges **vi /etc/login.defs**, without root privileges you won't be able to change anything in this file.

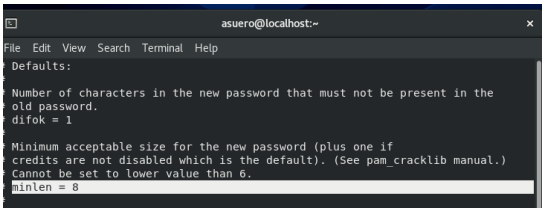


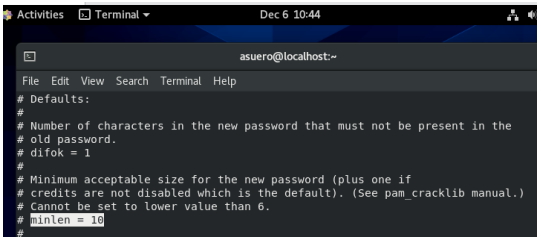
Type **sudo /etc/login.defs** later change the pax max days to 90. And **save and exit**. To save and exit you can hit the **key scape** and later type **:wq!**



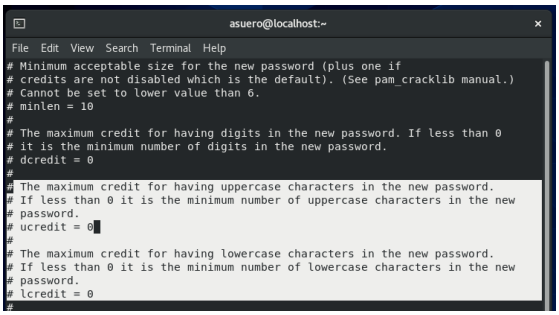
As we can see in the image below the password max day **was 99999**, we are going to change that to **90**

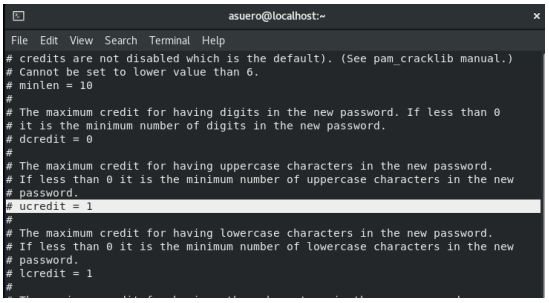
To change the password length please go to the following file **sudo vi /etc/security/quality.conf** it has an **8** minimum requirement we are going to change it to **10**.





Also, we are going to force the user to use at least one upper letter and at least one lower letter. So, change the 0 on the **#ucredit** = 0 to 1, and the same with the **#lcredit** = 0 change it to 1



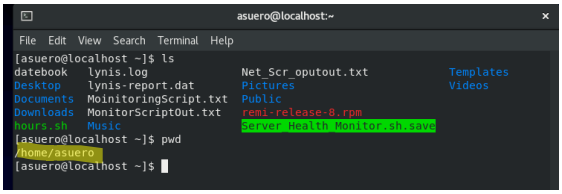


To run the script

- You need root privileges
- Also, you need to install sysstat

You may need to specify the full script path. Type the following command assuming you are on a Linux machine **ssh USER@HOST 'bash -s' < SCRIPT**. In my case, I am currently on a windows machine, and I used putty to run the script remotely.

My system health report is saved in the same place I created my script in my case is in my **home** directory.



What you picked, why you picked those commands and how they are used.

Commands:

Ifconfig: I used this command to get my IP address.

Hostname: I used this command to get my hostname.

Hostnamectl: I used this command to get my kernel version and my operative system information because I think a good health report should include that information about your system.

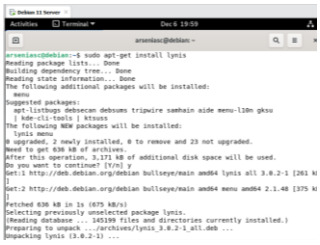
Iostat -c: I used this command to get the information about the CPU because it gave me the information, I need to use in my report such as the CPU used by the system, the CPU used by users, etc.

Ps: This command provides me information about the active process running in the system, it is good to know what is running on your server.

Debian

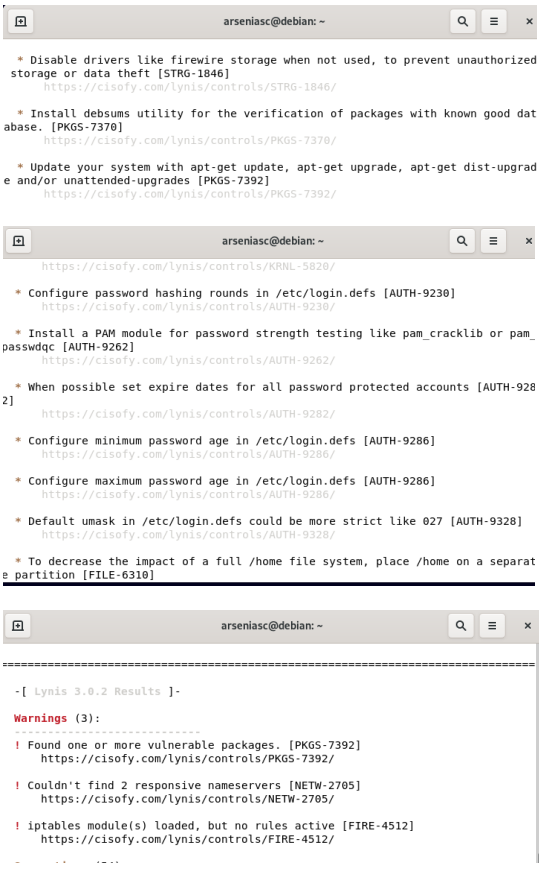
Installation the lynis

To install lynis on centos type the following command **sudo apt-get install lynis** and hit enter**.** Then you will be prompted to select **y/n** to confirm type **y** for yes.



To audit or check the status of your server type the following command: **lynis audit system**

Lynis suggestions and warnings to my system



For my system I will follow some suggestion and warnings, some of them are:

- Work with my password security, for example, configure minimum password requirement.
- Update my system

I have a few suggestions and I will work on some of them such as the password requirement set up and updating my system with the apt update.

To see the availables updates on system please type the following command **sudo apt-get update** on the command line.

```
arseniasc@debian: ~
arseniasc@debian:~$ sudo apt-get update
[sudo] password for arseniasc:
Hit:1 http://security.debian.org/debian-security bullseye-security InRelease
Hit:2 http://deb.debian.org/debian bullseye InRelease
Hit:3 http://deb.debian.org/debian bullseye-updates InRelease
Reading package lists... Done
arseniasc@debian:~$ sudo apt update
Hit:1 http://deb.debian.org/debian bullseye InRelease
Hit:2 http://security.debian.org/debian-security bullseye-security InRelease
Hit:3 http://deb.debian.org/debian bullseye-updates InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
23 packages can be upgraded. Run 'apt list --upgradable' to see them.
arseniasc@debian:~$
```

As we can see here, we have 23 packages that can be upgraded. To update the list, type the following command **sudo apt-get dist-upgrade**, and then when prompted type y to confirm the apps upgrades.

```
arseniasc@debian: ~
arseniasc@debian:~$ sudo apt-get dist-upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  linux-image-5.10.0-9-amd64
The following packages will be upgraded:
  bind9-dnsutils bind9-host bind9-libs gir1.2-javascriptcoregtk-4.0
  gir1.2-webkit2-4.0 libavcodec58 libavfilter7 libavformat58 libavresample4
  libavutil56 libjavascriptcoregtk-4.0-18 libldb2 libnss3 libpostproc55
  libsmbclient libswresample3 libswscale5 libwbclient0 libwebkit2gtk-4.0-37
  linux-image-amd64 python3-ldb samba-libs tzdata
23 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/92.5 MB of archives.
After this operation, 304 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Reading changelogs... Done
Preconfiguring packages ...
(Reading database ... 146503 files and directories currently installed.)
Preparing to unpack .../00-libsmbclient_2%3a4.13.13+dfsg-1~deb11u2_amd64.deb ...
Unpacking libsmbclient:amd64 (2:4.13.13+dfsg-1~deb11u2) over (2:4.13.5+dfsg-2) .
..
Preparing to unpack .../01-python3-ldb_2%3a2.2.3-2~deb11u1_amd64.deb ...
```

When it finished to install the packages, I ran the **sudo apt-get update** again it shows that all packages are up to date.

```
arseniasc@debian: ~
rseniasc@debian:~$ sudo apt update
it:1 http://deb.debian.org/debian bullseye InRelease
it:2 http://security.debian.org/debian-security bullseye-security InRelease
it:3 http://deb.debian.org/debian bullseye-updates InRelease
eading package lists... Done
uilding dependency tree... Done
eading state information... Done
ll packages are up to date.
rseniasc@debian:~$
```

Now, we are going to set up the password requirements.

First, install **sudo apt install libpam-pwquality** to install password quality checking library.

```
arseniasc@debian: ~
arseniasc@debian:~$ sudo apt install libpam-pwquality
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  libpam-pwquality
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 13.8 kB of archives.
After this operation, 42.0 kB of additional disk space will be used.
Get:1 http://deb.debian.org/debian bullseye/main amd64 libpam-pwquality amd64 1.
4.4-1 [13.8 kB]
Fetched 13.8 kB in 0s (65.1 kB/s)
Selecting previously unselected package libpam-pwquality:amd64.
(Reading database ... 151274 files and directories currently installed.)
Preparing to unpack .../libpam-pwquality_1.4.4-1_amd64.deb ...
Unpacking libpam-pwquality:amd64 (1.4.4-1) ...
Setting up libpam-pwquality:amd64 (1.4.4-1) ...
Processing triggers for man-db (2.9.4-2) ...
arseniasc@debian:~$
```

To change the password expiration, type the following **sudo vi /etc/login.defs**

```
arseniasc@debian: ~
UMASK           022

#
# Password aging controls:
#
#       PASS_MAX_DAYS   Maximum number of days a password may be used.
#       PASS_MIN_DAYS   Minimum number of days allowed between password changes.
#       PASS_WARN_AGE   Number of days warning given before a password expires.
#
PASS_MAX_DAYS   99999
PASS_MIN_DAYS   0
PASS_WARN_AGE   7
```

Change where says **PASS_MAX_DAYS** it has 99999 to 30 days

```
arseniasc@debian: ~
UMASK           022

#
# Password aging controls:
#
#       PASS_MAX_DAYS   Maximum number of days a password may be used.
#       PASS_MIN_DAYS   Minimum number of days allowed between password changes.
#       PASS_WARN_AGE   Number of days warning given before a password expires.
#
PASS_MAX_DAYS   30
PASS_MIN_DAYS   0
PASS_WARN_AGE   7
```

To set up a password length please go to the **sudo vi /etc/security/pwquality.conf**

Look for the line that says **#minlen** it was 8 before I changed it to 10

```
arseniasc@debian: ~
# Configuration for systemwide password quality limits
# Defaults:
#
# Number of characters in the new password that must not be present in the
# old password.
# difok = 1
#
# Minimum acceptable size for the new password (plus one if
# credits are not disabled which is the default). (See pam_cracklib manual.)
# Cannot be set to lower value than 6.
# minlen = 10
#
```

To force the user, use at least one upper letter modify where says **#ucredit** I set up it to 1

```
arseniasc@debian: ~
# minlen = 8
#
# The maximum credit for having digits in the new password. If less than 0
# it is the minimum number of digits in the new password.
# dcredit = 0
#
# The maximum credit for having uppercase characters in the new password.
# If less than 0 it is the minimum number of uppercase characters in the new
# password.
# ucredit = 1
#
```

To force the user, use at least one upper letter modify where says **#lcredit** I set up it to 1

```
arseniasc@debian: ~
# it is the minimum number of digits in the new password.
# dcredit = 0
#
# The maximum credit for having uppercase characters in the new password.
# If less than 0 it is the minimum number of uppercase characters in the new
# password.
# ucredit = 0
#
# The maximum credit for having lowercase characters in the new password.
# If less than 0 it is the minimum number of lowercase characters in the new
# password.
# lcredit =1
#
```

Are they different for each server? the same for both? Are the running instructions any different?

I created my script on CentOS, and when I ran the script, I had issues with the iostat command it did not find this command. I had to install **sudo apt-get install sysstat -y**

Also, I had problem with the **ifconfig**

I installed the **net-tools** and it says the same that the ifconfig command was not found, so when I executed the script with sudo it ran successfully.

If we have all the packages needed to run the script will be the same on both servers.

Script.

```
#!/bin/bash

#Script that will monitor the healt of my server.

#Print the hostname

 echo "

    ****************************************************************


                SERVER HEALTH MONITORING REPORT


    ****************************************************************"

#Print an space for a better look of the information

echo "


"

echo "--------------General Information--------------"

echo "

" > MoinitoringScript.txt

#get just the ip add with the command ifconfig

Ipadd=$( ifconfig | grep "broadcast" | cut -d " " -f 10 | uniq)

echo "IP Addresses : " $Ipadd
```

```
#Load average
Load=$(cat /proc/loadavg)
echo "Load Average : " $Load
Hostname=$(hostname)
echo "Hostname :  " $Hostname
#get just the kernel version
Kernel=$( hostnamectl | awk '/Kernel/{print $2 " " $3}')
echo "Kernel Version : " $Kernel
#get just the System name
OPname=$( hostnamectl | awk '/Operating System/{print $3 " " $4}')
echo "Operating System : " $OPname
echo "
"
#Print cpu statistics about the cpu
echo '--------------CPU Information----------------'
echo "
"
#Get just the information about the  user usage
cpuusedbyuser=$( iostat -c | awk '/    / {print $1}')
echo "Cpu Used by users: " $cpuusedbyuser

#Get just the information about the   system
cpuusedbysys=$( iostat -c | awk '/    / {print $3}')
echo "CPU Used By System :  " $cpuusedbysys

#Get just the information about the time when the server did not received any request
norequest=$( iostat -c | awk '/    / {print $6}')
```

```
echo "Cpu With no Request : " $norequest
echo "
"

echo '--------------Memory Information--------------'
echo "
"
#Get just  Total memory of the system
TotalMem=$( awk '/MemTotal/ {print $2}' /proc/meminfo)
echo "Total Memory: " $TotalMem

#Get just the free space on the memory
Freememo=$( awk '/MemFree/ {print $2}' /proc/meminfo)
echo "Free Memory : " $Freememo

#Get just the available space
AvailableSpa=$( awk '/MemAvailable/ {print $2}' /proc/meminfo)
echo "Available Space : " $AvailableSpa
echo "
"
echo "--------------Active Processes--------------"
#Shows the active processes
echo "
"
#get the result Of the PID
Process=$(ps | awk '{print $1}')
echo $Process
```

```
#Got bthe result of TTY
Process2=$(ps | awk '{print $2}')
echo $Process2
#Get the Result of  the Time
Process3=$(ps | awk '{print $3}')
echo $Process3
#Get the resul of the CMD
Process4=$(ps | awk '{print $4}')
echo $Process4
echo "
"
#print the infroamtion abaut the disk
echo "--------------Disk Information----------------"

echo "
"
Disk=$(df -h | awk '/Filesystem/{print $1,"\t",$2,"\t",$3,"\t",$4 }')
echo $Disk
Disk1=$(df -h | awk '/sda/{print $1,"\t",$2,"\t",$3,"\t",$4 }')
echo $Disk1
echo "
"
#Print the date, logged ussers, system uptime and if is  Online or Offiline
#Print loged user
echo "--Current Logged Users , System Uptime and Date--"
echo "
"
```

```
Who=$(who | awk '{print $1,"\t",$2 }')
echo "Logged User : " $Who
#print the system Uptime
Uptime=$(uptime | awk '{print $3}' | tr -d ",")
echo "System Up Time : " $Uptime
#Print the current date
Date=$(date | awk '{print $1,$2, $3,$4,$6}' | tr -d ",")
echo "Current Date : " $Date
Conection=$(ping -c1 youtube.com &>/dev/null && echo "online" || echo "offline")
echo "Conection Status : " $Conection
echo "
"
```

Link to my Script

https://github.com/elimelec19/Portafolio/blob/main/Server_Health_Monitor.sh

Sources:

https://www.youtube.com/watch?v=RWKD_5rKLnE&t=517s

https://www.tecmint.com/assign-linux-command-output-to-variable/

https://www.server-world.info/en/note?os=Debian_10&p=password