

PROJECT

LINUX FUNDAMENTALS

Objective

Create automation to display the Linux operating system information.

1. Display the Linux version.

below command was and the following text manipulation
`hostnamectl | grep Kernel | cut -d ":" -f 2 | awk '{print $2}'`

Below is the break down of the build-up to getting the linux version.

```
root@kali: ~  
File Actions Edit View Help  
(root@kali)-[~]  
# hostnamectl  
Static hostname: kali  
Icon name: computer-vm  
Chassis: vm  
Machine ID: 81ee0b34b6484af7a90098a20ff704a5  
Boot ID: 35cb32662ab4466ea8349463140414a9  
Virtualization: vmware  
Operating System: Kali GNU/Linux Rolling  
Kernel: Linux 5.16.0-kali7-amd64  
Architecture: x86_64  
Hardware Vendor: VMware, Inc.  
Hardware Model: VMware Virtual Platform  
Firmware Version: 6.00  
(root@kali)-[~]  
# hostnamectl | grep Kernel  
Kernel: Linux 5.16.0-kali7-amd64  
(root@kali)-[~]  
# hostnamectl | grep Kernel | cut -d ":" -f 2  
Linux 5.16.0-kali7-amd64  
(root@kali)-[~]  
# hostnamectl | grep Kernel | cut -d ":" -f 2 | awk '{print $2}'  
5.16.0-kali7-amd64  
(root@kali)-[~]  
#
```

2. Display the private IP address, public IP address, and the default gateway.

Command used:

"Private IP: `$(ifconfig | head -n 2 | grep "inet" | awk '{print $(2)}')`"

"Public IP: `$(curl -s ifconfig.co)`"

"Default gateway: `$(ip r | grep "via" | awk '{print $(3)}')`"

A. `(ifconfig | head -n 2 | grep "inet" | awk '{print $(2)}')`

```
File Actions Edit View Help  
(root@kali)-[~]  
# ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.101.131 netmask 255.255.255.0 broadcast 192.168.101.2  
55  
inet6 fe80::20c:29ff:fee0:cb9c prefixlen 64 scopeid 0x20<link>  
ether 00:10:c2:9f:0c:b9 txqueuelen 1000 (Ethernet)  
RX packets 769571 bytes 838956278 (800.0 MiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 538997 bytes 51069189 (48.7 MiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
inet 127.0.0.1 netmask 255.0.0.0  
inet6 ::1 prefixlen 128 scopeid 0x10<host>  
loop txqueuelen 1000 (Local Loopback)  
RX packets 8734 bytes 3086201 (2.9 MiB)  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 8734 bytes 3086201 (2.9 MiB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
(root@kali)-[~]  
# ifconfig | head -n 2  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
inet 192.168.101.131 netmask 255.255.255.0 broadcast 192.168.101.2  
55  
(root@kali)-[~]  
# ifconfig | head -n 2 | grep "inet"  
inet 192.168.101.131 netmask 255.255.255.0 broadcast 192.168.101.2  
55  
(root@kali)-[~]  
# ifconfig | head -n 2 | grep "inet" | awk '{print $(2)}'  
192.168.101.131
```

B. `curl -s ifconfig.co`)

```
(root@kali)-[~]
# curl ifconfig.co
105.113.18.118

(root@kali)-[~]
# curl -s ifconfig.co
105.113.18.201

(root@kali)-[~]
#
```

C. `ip r | grep "via" | awk '{print $(3)}'`)

```
(root@kali)-[~]
# ip r
default via 192.168.101.2 dev eth0 proto dhcp src 192.168.101.131 metric 100
192.168.101.0/24 dev eth0 proto kernel scope link src 192.168.101.131 metric 100

(root@kali)-[~]
# ip route show default
default via 192.168.101.2 dev eth0 proto dhcp src 192.168.101.131 metric 100

(root@kali)-[~]
# ip r
default via 192.168.101.2 dev eth0 proto dhcp src 192.168.101.131 metric 100
192.168.101.0/24 dev eth0 proto kernel scope link src 192.168.101.131 metric 100

(root@kali)-[~]
# ip r | grep "via"
default via 192.168.101.2 dev eth0 proto dhcp src 192.168.101.131 metric 100

(root@kali)-[~]
# ip r | grep "via" | awk '{print $(3)}'
192.168.101.2

(root@kali)-[~]
#
```

3. Display the hard disk size; free and used space.

Command used:

```
echo -e "Size: $(df -H | grep -e "sd" -e "Filesystem" | awk '{print $2}' | tail -n1) \t Used: $(df -H | grep -e "sd" -e "Filesystem" | awk '{print $3}' | tail -n1) \t Free: $(df -H | grep -e "sd" -e "Filesystem" | awk '{print $4}' | tail -n1)"
```

Part 1 - Disk size

```
df -H | grep -e "sd" -e "Filesystem" | awk '{print $2}' | tail -n1
```

Part 2 - Used

```
df -H | grep -e "sd" -e "Filesystem" | awk '{print $3}' | tail -n1
```

Part 3 - Free

```
(df -H | grep -e "sd" -e "Filesystem" | awk '{print $4}' | tail -n1)
```

Note: All put together with produce this out put

```
(root@kali)-[~]
# echo -e "Size: $(df -H | grep -e "sd" -e "Filesystem" | awk '{print $2}' | tail -n1) \t
Used: $(df -H | grep -e "sd" -e "Filesystem" | awk '{print $3}' | tail -n1) \t Free: $(df -H
| grep -e "sd" -e "Filesystem" | awk '{print $4}' | tail -n1)"
Size: 83G      Used: 18G      Free: 61G

(root@kali)-[~]
#
```

4. Display the top five (5) directories and their size.

Command used:

```
du -sh /* 2>/dev/null | sort -rh | head -n5
```

Output:

```
File Actions Edit View Help
(root@kali)-[~]
# du -sh /* 2>/dev/null | sort -rh | head -n5
9.4G    /usr
3.5G    /root
2.3G    /var
1.2G    /home
185M    /opt

(root@kali)-[~]
#
```

du - Directory usage, -sh --- summarise \$ present human readable, 2>/dev/null - don't output error
And , | sort -rh | head -n5 - to sort in reverse order of hierarchy and highlight top five

5. Display the CPU usage; refresh every 10 seconds.

```
while true
do
    echo "CPU usage; Refreshes every 10seconds"
    echo "%CPU used: $(top -b -n 5 -d1 | grep "%Cpu(s)" | tail -n 1 | awk '{print $2}' | awk -F. '{print $1}')%"
    sleep 10
Done
```

Note: I did this by wrapping it in a function in my script check my .sh script for this project.

```
#5.
function CPUusage()
{
    while true
    do
        echo "CPU usage; Refreshes every 10seconds"
        echo "%CPU used: $(top -b -n 5 -d1 | grep "%Cpu(s)" | tail -n 1 | awk '{print $2}' | awk -F. '{print $1}')%"
        sleep 10
    done
}
CPUusage
```

```
(root@kali)-[~]
# top -b -n 5 -d1 | grep "%Cpu(s)" | tail -n 1 | awk '{print $2}' | awk -F. '{print $1}'
0

(root@kali)-[~]
# echo "%CPU used: $(top -b -n 5 -d1 | grep "%Cpu(s)" | tail -n 1 | awk '{print $2}' | awk -F. '{print $1}')%"
%CPU used: 0%

(root@kali)-[~]
#
```

Screenshot of all the command run in a bash .sh script

```
(root@kali)-[~/LinuxScripting/projectScript]
# ./Linux_Project.sh
The Linux Operating System Information for this machine

Version: 5.16.0-kali7-amd64

Ip addresses
Private IP: 192.168.101.131
Public IP: 105.113.18.71
Default gateway: 192.168.101.2

Hard Disk Details
Size: 83G          Used: 18G          Free: 61G

Top Five Directories and Sizes
9.4G    /usr
3.5G    /root
2.3G    /var
1.2G    /home
185M    /opt

CPU usage; Refreshes every 10seconds
%CPU used: 0%
CPU usage; Refreshes every 10seconds
%CPU used: 0%
CPU usage; Refreshes every 10seconds
%CPU used: 1%
CPU usage; Refreshes every 10seconds
%CPU used: 7%
CPU usage; Refreshes every 10seconds
%CPU used: 0%
CPU usage; Refreshes every 10seconds
%CPU used: 12%
^C
```

End