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# PROJECT LINUX FUNDAMENTALS

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Objective: To create an automated system displaying host's Linux information including Linux version, network addresses and other computer information.

Contents:

- Linux Version
- IP Address
- Default Gateway
- Hard Disk Information
- Directories and Sizes
- CPU Usage

## Linux Version

```
3 #Displaying the Linux Version.  
4  
5 echo "Your Linux Version: "  
6  
7 lsb_release -a  
8
```

Command `lsb_release` prints the linux-specific information. The flag `-a` shows all the related information.

```
(kali㉿kali)-[~]  
$ bash linuxproject.sh  
Your Linux Version:  
No LSB modules are available.  
Distributor ID: Kali  
Description:    Kali GNU/Linux Rolling  
Release:        2023.1  
Codename:       kali-rolling
```

## IP Address

```
9 #Displaying internal and broadcast IP Address.
10
11 echo "Your network information: "
12
13 ifconfig
14
```

Command `ifconfig` shows the network interface configuration including the internal IP address, subnet mask and broadcast IP address.

```
Your network information:
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.121.132 netmask 255.255.255.0 broadcast 192.168.121.255
    inet6 fe80::50ad:9ca:70eb:6f01 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:ed:2d:36 txqueuelen 1000 (Ethernet)
    RX packets 91 bytes 16007 (15.6 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 36 bytes 4460 (4.3 KiB)
    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 4 bytes 240 (240.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4 bytes 240 (240.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

## Default gateway

```
15 #Displaying default gateway.
16
17 echo "Your default gateway information: "
18
19 route
```

Command `route` shows the system's default gateway.

```
Your default gateway information:
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default 192.168.121.2 0.0.0.0 UG 100 0 0 eth0
192.168.121.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0
```

## Hard Disk Information

```
21 #Displaying hard disk information.
22
23 echo "Your hard disk information: "
24
25 df -h
26
```

Command `df` reports file system space usage. The `-h` flag prints the information sizes in powers of 1024.

```
Your hard disk information:
Filesystem      Size  Used Avail Use% Mounted on
udev            943M   0    943M   0% /dev
tmpfs           197M  1.2M   196M   1% /run
/dev/sda1       79G   17G   58G   23% /
tmpfs           983M   0    983M   0% /dev/shm
tmpfs           5.0M   0    5.0M   0% /run/lock
tmpfs           197M   80K   197M   1% /run/user/1000
```

## Directories and Sizes

```
26
27 #Displaying directories and sizes.
28
29 echo "Your directory information: "
30
31 du -h /home/kali | sort -h
32
```

The command `du` gives information on directories and their sizes. The `-h` option makes the data more readable in K, M and G. (Kilobytes, Megabytes and Gigabytes) Above is the directories in `/home/kali` folder and their sizes from smallest to biggest. Red box shows the top 5 biggest directories and `.` being kali folder itself.

```
Your directory information:
4.0K /home/kali/APT-Hunter/.git/branches
4.0K /home/kali/APT-Hunter/.git/objects/info
4.0K /home/kali/APT-Hunter/.git/refs/tags
4.0K /home/kali/.cache/doc
4.0K /home/kali/.cache/gvfs
4.0K /home/kali/.cache/gvfsd
4.0K /home/kali/.cache/keyring-E1PFD2
4.0K /home/kali/.cache/mesa_shader_cache
4.0K /home/kali/.cache/mozilla/firefox/c2rl0wx1.default
4.0K /home/kali/.cache/obexd
4.0K /home/kali/.cache/sessions
4.0K /home/kali/.cache/vmware/drag_and_drop/4yZ1VA
4.0K /home/kali/.config/freerdp/certs
4.0K /home/kali/.config/freerdp/server
4.0K /home/kali/.config/geany/tags
4.0K /home/kali/.config/geany/templates/files
4.0K /home/kali/.config/libreoffice/4/user/config/soffice.cfg/modules/scalc/images/Bitmaps
4.0K /home/kali/.config/libreoffice/4/user/config/soffice.cfg/modules/scalc/menubar
```

## CPU Usage

```
33 #Displaying CPU usage at intervals.
34
35 echo "CPU Usage: "
36
37 mpstat 10
```

The command `mpstat` shows the CPU usage. Add the intervals in seconds to automatically refresh the data. Ctrl + c to end the process.

CPU Usage:											
Linux 6.1.0-kali5-amd64 (kali) 01/11/2024 _x86_64_ (4 CPU)											
05:17:06 PM	CPU	%usr	%nice	%sys	%iowait	%irq	%soft	%steal	%guest	%gnice	%idle
05:17:16 PM	all	0.10	0.00	0.35	0.00	0.00	0.15	0.00	0.00	0.00	99.40
05:17:26 PM	all	0.05	0.00	0.65	0.00	0.00	0.15	0.00	0.00	0.00	99.14
05:17:36 PM	all	0.05	0.00	0.48	0.00	0.00	0.15	0.00	0.00	0.00	99.32
05:17:46 PM	all	0.10	0.00	0.70	0.03	0.00	0.18	0.00	0.00	0.00	99.00
05:17:56 PM	all	0.35	0.00	0.73	0.00	0.00	0.18	0.00	0.00	0.00	98.75
05:18:06 PM	all	2.21	0.00	0.98	0.00	0.00	0.35	0.00	0.00	0.00	96.45
05:18:16 PM	all	0.10	0.00	0.48	0.00	0.00	0.05	0.00	0.00	0.00	99.37
05:18:26 PM	all	0.08	0.00	0.43	0.00	0.00	0.10	0.00	0.00	0.00	99.40
05:18:36 PM	all	0.08	0.00	0.40	0.00	0.00	0.15	0.00	0.00	0.00	99.37

## References

<https://linuxconfig.org/how-to-check-kali-linux-version>

<https://www.hostinger.in/tutorials/vps/how-to-check-and-manage-disk-space-via-terminal>

<https://phoenixnap.com/kb/show-linux-directory-size>

<https://phoenixnap.com/kb/check-cpu-usage-load-linux>

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