

# USING IFCONFIG TO VIEW AND MODIFY NETWORK INFORMATION ON LINUX.

## TOOL: KALI LINUX

`ifconfig` is a command-line tool used to view and modify network interface configurations on Linux systems. Although it is gradually being replaced by `ip` in many distributions, `ifconfig` remains widely used. Below, are ways you can use `ifconfig` to view and modify network information:

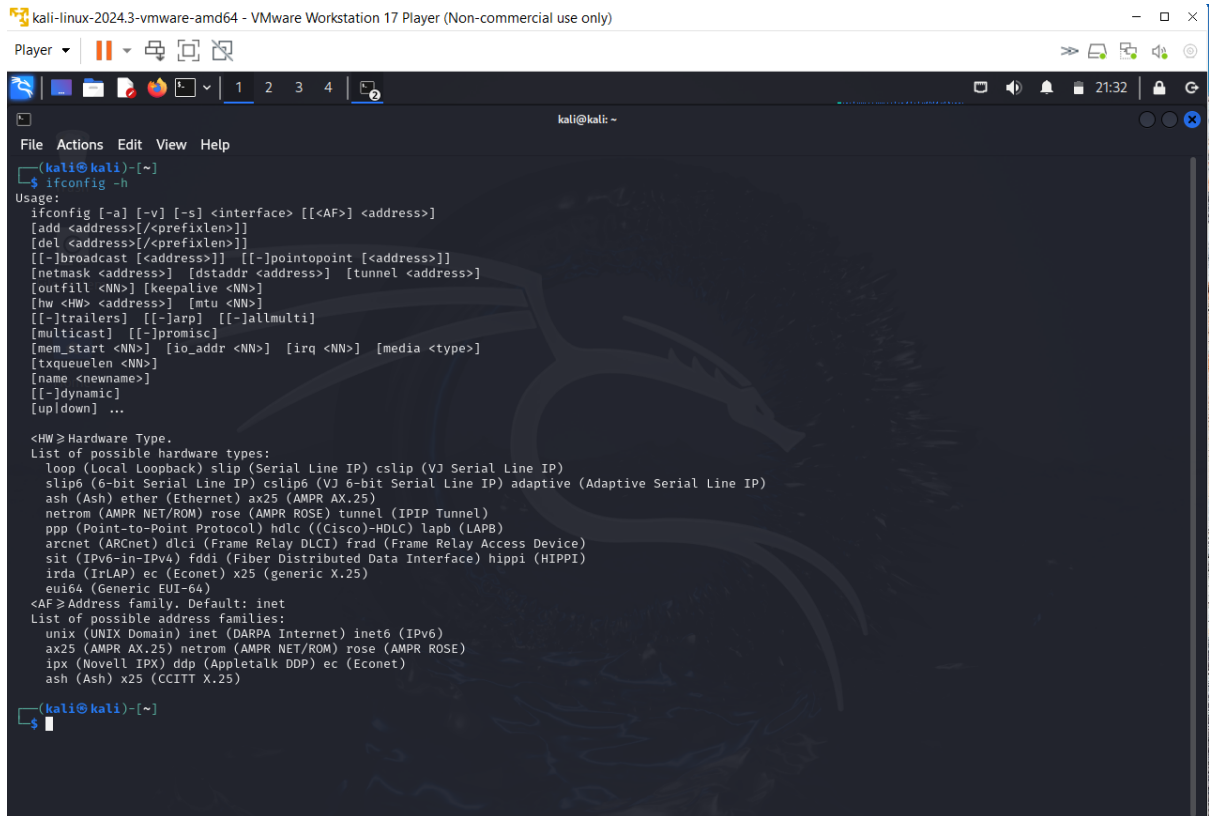
### 1. Viewing Network Information

To view the current network configuration, simply run:

```
ifconfig
```

This will display information about all active network interfaces. For each interface (such as `eth0`, `wlan0`, `lo`, etc.), you'll see details such as:

- **IP Address:** `inet`
- **MAC Address:** `ether`
- **Subnet Mask:** `netmask`
- **Broadcast Address:** `broadcast`
- **RX/TX bytes:** Data sent/received by the interface
- **MTU:** Maximum transmission unit

A screenshot of a Kali Linux terminal window. The window title is 'kali-linux-2024.3-vmware-amd64 - VMware Workstation 17 Player (Non-commercial use only)'. The terminal shows the command 'ifconfig -h' being executed. The output displays the usage of the ifconfig command, including options for adding, deleting, and configuring network interfaces. It also lists possible hardware types (HW) and address families (AF). The terminal background features a dark theme with a dragon logo.

```
kali@kali:~$ ifconfig -h
Usage:
ifconfig [-a] [-v] [-s] <interface> [[<AF>] <address>]
[add <address>[/<prefixlen>]]
[del <address>[/<prefixlen>]]
[[-]broadcast [<address>]] [[-]pointopoint [<address>]]
[netmask <address>] [dstaddr <address>] [tunnel <address>]
[outfill <NN>] [keepalive <NN>]
[hw <HW> <address>] [mtu <NN>]
[[-]trailers] [[-]jarp] [[-]allmulti]
[multicast] [[-]promisc]
[mem_start <NN>] [io_addr <NN>] [irq <NN>] [media <type>]
[txqueuelen <NN>]
[name <newname>]
[[-]dynamic]
[up|down] ...

<HW> Hardware Type.
List of possible hardware types:
loop (Local Loopback) slip (Serial Line IP) cslip (VJ Serial Line IP)
slip6 (6-bit Serial Line IP) cslip6 (VJ 6-bit Serial Line IP) adaptive (Adaptive Serial Line IP)
ash (Ash) ether (Ethernet) ax25 (AMPR AX.25)
netrom (AMPR NET/ROM) rose (AMPR ROSE) tunnel (IPIP Tunnel)
ppp (Point-to-Point Protocol) hdlc ((Cisco)-HDLC) lapb (LAPB)
arcnet (ARCnet) dlci (Frame Relay DLCI) frad (Frame Relay Access Device)
sit (IPv6-in-IPv4) fddi (Fiber Distributed Data Interface) hippi (HIPPI)
irda (IrLAP) ec (Econet) x25 (generic X.25)
eui64 (Generic EUI-64)

<AF> Address family. Default: inet
List of possible address families:
unix (UNIX Domain) inet (DARPA Internet) inet6 (IPv6)
ax25 (AMPR AX.25) netrom (AMPR NET/ROM) rose (AMPR ROSE)
ipx (Novell IPX) ddp (Appletalk DDP) ec (Econet)
ash (Ash) x25 (CCITT X.25)
```

If you want to see the details for a specific interface, specify its name:

```
ifconfig eth0
```

## 2. Activating/Deactivating an Interface

You can use `ifconfig` to bring an interface up or down.

- To bring an interface **up** (activate it):

```
sudo ifconfig eth0 up
```

- To bring an interface **down** (deactivate it):

```
sudo ifconfig eth0 down
```

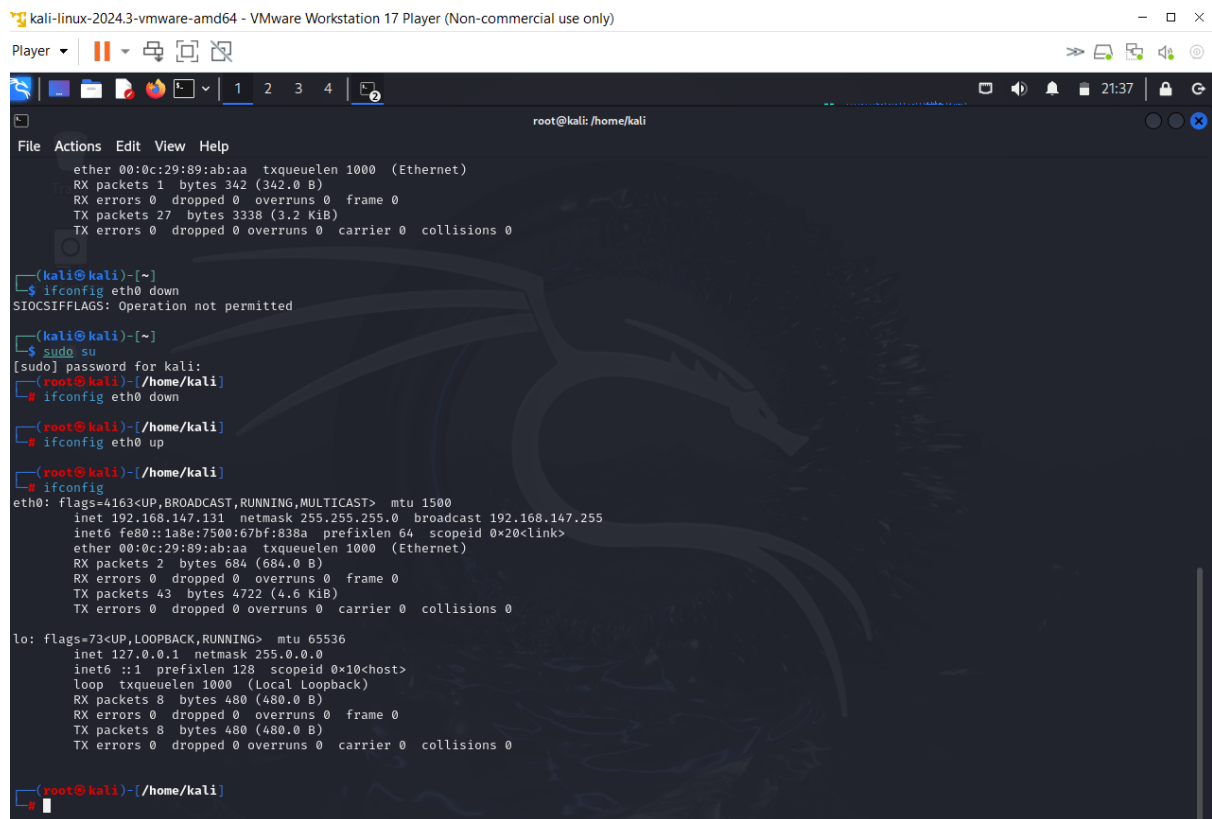
## 3. Assigning an IP Address

You can assign a static IP address to a network interface with `ifconfig`

```
sudo ifconfig eth0 192.168.1.100 netmask 255.255.255.0
```

This assigns the IP `192.168.1.100` to the `eth0` interface with the specified netmask. The broadcast address will be set automatically, but you can specify it as well if needed:

```
sudo ifconfig eth0 192.168.1.100 netmask 255.255.255.0 broadcast
192.168.1.255
```



```
kali@kali: /home/kali
File Actions Edit View Help
ether 00:0c:29:89:ab:aa txqueuelen 1000 (Ethernet)
RX packets 1 bytes 342 (342.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 27 bytes 3338 (3.2 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(kali@kali)-[~]
$ ifconfig eth0 down
SIOCSIFFLAGS: Operation not permitted

(kali@kali)-[~]
$ sudo su
[sudo] password for kali:
(root@kali)-[/home/kali]
# ifconfig eth0 down

(root@kali)-[/home/kali]
# ifconfig eth0 up

(root@kali)-[/home/kali]
# ifconfig
eth0: flags=4163<UP, BROADCAST, RUNNING, MULTICAST> mtu 1500
    inet 192.168.147.131 netmask 255.255.255.0 broadcast 192.168.147.255
    inet6 fe80::1a8e:7500:67bf:838a prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:89:ab:aa txqueuelen 1000 (Ethernet)
    RX packets 2 bytes 684 (684.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 43 bytes 4722 (4.6 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 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(root@kali)-[/home/kali]
#
```

## 4. Changing the MAC Address

To change the MAC address of a network interface, you can use the `hw` option:

```
sudo ifconfig eth0 hw ether 00:11:22:33:44:55
```

This changes the MAC address of `eth0` to `00:11:22:33:44:55`.

## 5. Setting MTU (Maximum Transmission Unit)

To change the MTU for an interface, use the following command:

```
sudo ifconfig eth0 mtu 1500
```

This sets the MTU of `eth0` to 1500 bytes.

## 6. Viewing Interface Statistics

For detailed statistics like the number of packets transmitted/received, errors, and drops:

```
ifconfig eth0
```

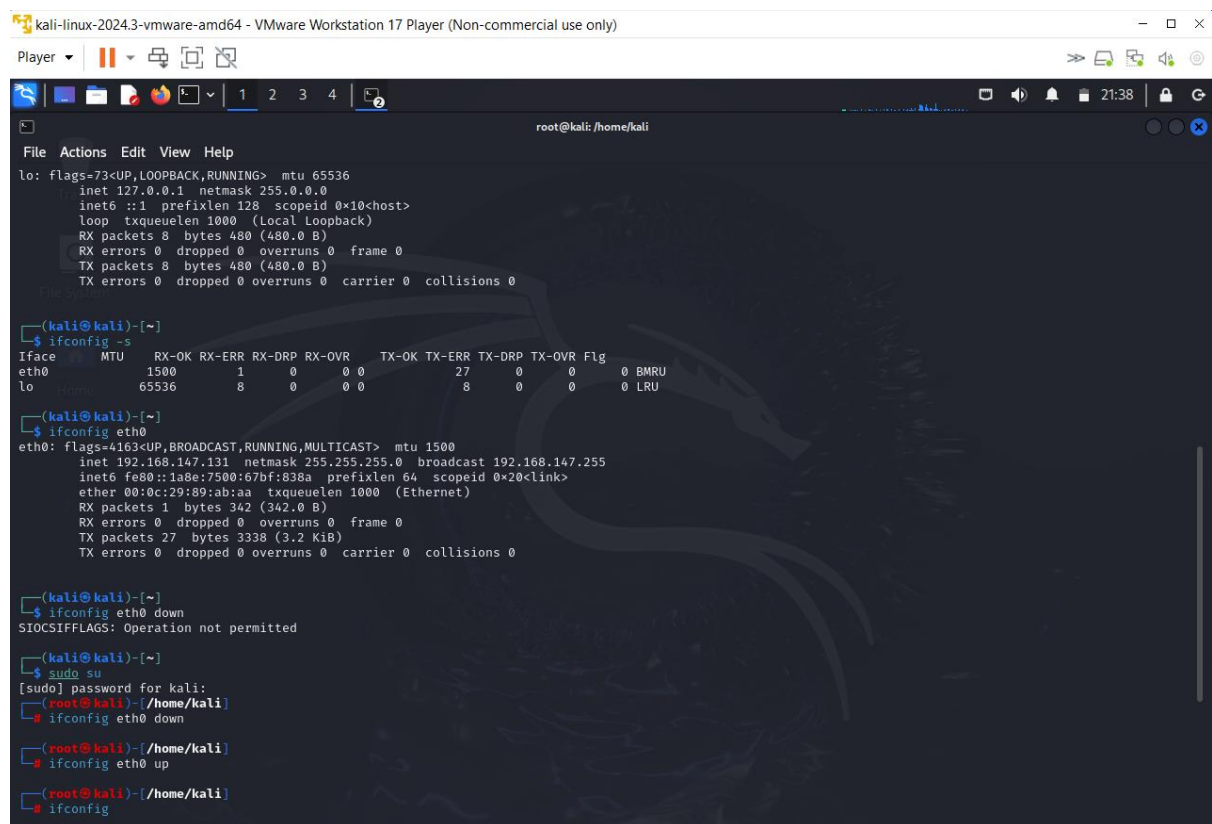
This will show information about packets sent and received, including any errors or collisions.

## 7. Displaying or Modifying IPv6 Address

You can also view or modify IPv6 addresses using `ifconfig`. To assign an IPv6 address

```
sudo ifconfig eth0 inet6 add 2001:0db8::1
```

This assigns the IPv6 address `2001:0db8::1` to the interface `eth0`.



```
kali-linux-2024.3-vmware-amd64 - VMware Workstation 17 Player (Non-commercial use only)
Player
root@kali: /home/kali

File Actions Edit View Help
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(kali@kali)-[~]
$ ifconfig -s
Iface MTU RX-OK RX-ERR RX-DRP RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flg
eth0 1500 1 0 0 0 27 0 0 0 BMRU
lo 65536 8 0 0 0 8 0 0 0 LRU

(kali@kali)-[~]
$ ifconfig eth0
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.147.131 netmask 255.255.255.0 broadcast 192.168.147.255
    inet6 fe80::1a8e:7500:67bf:838a prefixlen 64 scopeid 0<20<link>
    ether 00:0c:29:89:ab:aa txqueuelen 1000 (Ethernet)
    RX packets 1 bytes 342 (342.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 27 bytes 3338 (3.2 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

(kali@kali)-[~]
$ ifconfig eth0 down
SIOCSIFFLAGS: Operation not permitted

(kali@kali)-[~]
$ sudo su
[sudo] password for kali:
(root@kali)-[/home/kali]
# ifconfig eth0 down

(root@kali)-[/home/kali]
# ifconfig eth0 up

(root@kali)-[/home/kali]
# ifconfig
```

## 8. Adding or Removing Aliases (Virtual Interfaces)

If you need to add virtual interfaces (aliases) to a physical interface, you can use `ifconfig` like:

- To add an alias:

```
sudo ifconfig eth0:0 192.168.1.101
```

- To remove an alias:

```
sudo ifconfig eth0:0 down
```

## 9. Viewing Routing Information

Although `ifconfig` doesn't provide full routing information, you can use it to see the network interface associated with the default route:

```
ifconfig
```

For a more complete routing table, you would typically use the `route` or `ip route` commands.

## Summary

- **View network interfaces:** `ifconfig`
- **Activate interface:** `sudo ifconfig eth0 up`
- **Deactivate interface:** `sudo ifconfig eth0 down`
- **Set IP address:** `sudo ifconfig eth0 192.168.1.100 netmask 255.255.255.0`
- **Change MAC address:** `sudo ifconfig eth0 hw ether 00:11:22:33:44:55`
- **Change MTU:** `sudo ifconfig eth0 mtu 1500`