

Network:

What is a network Interface?

A network interface is the point of interconnection between a computer and a private or public network. A network interface is generally a physical network interface card (NIC)

A network interface card (NIC) is a circuit board or card that is installed in a computer so that it can be connected to a network.

A network interface card provides the computer with a dedicated, full-time connection to a network. Personal computers and workstations on network typically contain a network interface card specifically designed for the LAN transmission technology

What is an IP address?

The IP stands for internet protocol address

An Internet Protocol address is a numerical label assigned to each device participating in a computer network that uses the Internet Protocol for communication. [Wikipedia](#)

In simple word a computer needs and IP address to connect to another computer and the other computer must also have an IP to listen to our communication

What is Subnet mask?

When you configure the TCP/IP protocol, an IP address, **subnet mask**, and usually a default gateway are required in the TCP/IP configuration settings. To configure TCP/IP correctly, it is necessary to understand how networks are addressed and divided into networks and subnetworks.

A complete article on subnet mask can be viewed from the following link:

<http://www.iplocation.net/tools/netmask.php>

What is Network Gateway?

In computer networking, a gateway is a node (a router) on a TCP/IP network that serves as an access point to another network. A default gateway is the node on the computer network that the network software uses when an IP address does not match any other routes in the routing table.

What is MAC address?

The MAC address is a unique value associated with a network adapter. MAC addresses are also known as hardware addresses or physical addresses. They uniquely identify an adapter on a LAN. MAC addresses are 12-digit hexadecimal numbers (48 bits in length). By convention, MAC addresses are usually written in one of the following two formats:

MM:MM:MM:SS:SS:SS

What is Static and DHCP IP?

Static as it sounds stays permanent where DHCP IP is a floating IP and changes every time the system reboots. For more information on difference between Status and DHCP visit the following link:

<http://www.differencebetween.net/technology/difference-between-dhcp-and-static-ip/>

LAN, MAN and WAN?

Local Area Network = Computer connected with one physical location

Metropolitan Area Network = Computers connected with one region to another (or state to state)

Wide Area Network = Country to country

Interface Status or Configuration:

To display current interface MAC address

```
ifconfig -a
```

To display current interfaces

```
ifconfig -a
```

To assign an IP address to interfaces

```
ifconfig eth0 192.168.1.2
```

To bring an interface down

```
ifconfig eth0 down
```

To bring an interface up

```
ifconfig eth0 up
```

Network Configuration Files:

Interface, Netmask and defaultgateway files

```
/etc/sysconfig/network-scripts/ifcfg-eth0 (Linux)
```

```
/etc/hosts
```

```
/etc/modprobe.conf (Linux)
```

```
/etc/resolv.conf (Both OS)
```

```
/etc/nsswitch.conf (Both OS)
```

Network Commands

ping = ping command allows to check the network status of another computer

ifconfig = This command allows you to check or assign IP address to an interface

netstat = Print network connections, routing tables, interface statistics, gateway information etc.

tcpdump = To view the incoming and outgoing on the system (`tcpdump -i eth0`)

Routes Setup:

Linux Machine

Adding a route

```
/sbin/route add -net 192.168.1.2 netmask 255.255.255.0 gw 192.168.1.1
```

Deleting a route

```
/sbin/route del -net 192.168.1.2 netmask 255.255.255.0 gw 192.168.1.1
```

Add a new interface

```
/sbin/ifconfig interface plumb
```

Bring up the new interface

```
/sbin/ifconfig interface up
```

Configure a new interface

```
/sbin/ifconfig interface 192.168.1.2
```