Difference Between MAC Address and IP Address

MAC and IP Addresses are essential to a computer network and internet setup. MAC address is associated with the computer, whereas the IP address is associated with the internet used by the computer. They are used to locate a device on the internet.

Key Differences Between MAC Address and IP Address

MAC Address	IP Address
MAC Address means Media Access Control Address.	IP Address means Internet Protocol Address.
Media Access Control (MAC) Address is a six-byte hexadecimal address.	Internet Protocol (IP) Address is either a four-byte (IPv4) address or a sixteen-byte (IPv6) address.
The computer attached with MAC Address can recover by ARP protocol.	The computer attached with IP Address can recover by RARP protocol.
Network Interface Controller/ Card's Manufacturer gives the MAC Address	Internet Service Provider gives the IP Address.
MAC Address provides the physical address of a computer/device.	IP Address gives the logical address of the computer/device.
It operates in the data link layer.	It operates in the network layer.
This Address helps in identifying the device.	This Address identifies the connection of a connected device on the network.
MAC Address of a device cannot be changed with time and condition.	The IP Address of a device modifies with the time and condition.
Third-party can't find the MAC Addresses easily.	Third-party can find the IP Addresses easily
This is a 48-bit address that consists of 6 groups of 2 hexadecimal digits, separated by either colons(.) or hyphens (-). Example: 00:FF:FF:AB:BB:AA or 00-FF-FF-AB-BB-AA	This IPv4 uses 32-bit addresses with dotted notations, while IPv6 uses 128-bit addresses with hexadecimal notations. Example: IPv4 192.168.1.1 and IPv6 FFFF:F200:3204:0B00
In MAC addressing, no classes are used.	The classes used in IPv4 are A, B, C, D, and E for IP addressing.
Sharing is not allowed in MAC Addresses.	Multiple devices can share the IP address.

What is MAC Address?

The Media Access Control (MAC) address refers to a unique identifier assigned to a Network Interface Controller/ Card (NIC). It contains a 48-bit or 64-bit address linked and connected with the network adapter. The MAC address can have in hexadecimal format. A MAC address generally exists in six sets of two digits/characters separated using colons.

Examples of MAC Address

00:FF:FF:AB:BB: AA or 00-FF-FF-AB-BB-AA (In these examples, The first half of the address is typically used as a manufacturer ID, while the second half of an address is a device identifier).

What is IP Address?

An Internet Protocol (IP) address is an address that helps you to identify a network connection. IP Address is named the 'Logical Address,' provided to a connection in a present network.

IP address helps control devices and how to communicate on the Internet and defines the behavior of internet routers. There are two types of IP addresses one is IPv4 Address, and the second is IPv6 Address.

The IPv4 uses 32-bit addresses in dotted notations, while the IPv6 uses 128-bit addresses in hexadecimal notations.

Examples of Internet Protocol (IP) address

IPv4 192.168.1.1 and IPv6 FFFF:F200:3204:0B00