

Network Interface Card

What is a Network Interface Card?

Network Interface Card is a hardware device that is installed on the computer so that it can be connected to the internet. It is also called Ethernet Card or Network Adapter. Every NIC has a 48-bit unique serial number called a MAC address which is stored in ROM carried on the card. Every computer must have at least one NIC if it wants to connect to the internet.

Purpose

- NIC allows both wired and wireless communications.
- NIC allows communications between computers connected via local area network (LAN) as well as communications over large-scale network through Internet Protocol (IP).
- NIC is both a physical layer and a data link layer device, i.e. it provides the necessary hardware circuitry so that the physical layer processes and some data link layer processes can run on it.

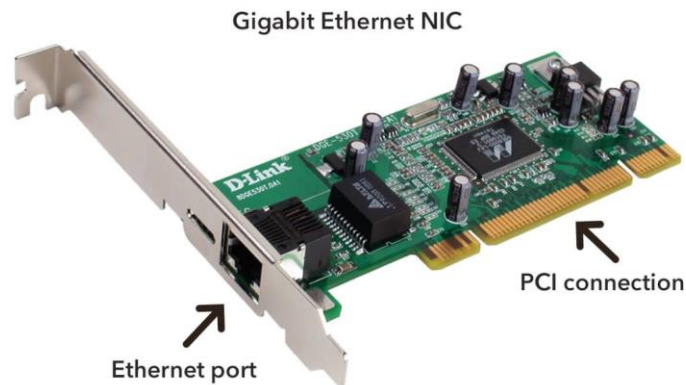


Image 38: NIC

Reference: <https://techterms.com/definition/nic>

Components of NIC

The main components of the Network Interface Card are as follows

- An external Memory is used to store the data temporarily and uses the stored data whenever required while processing the communication.

- Connectors are used to make the physical link between cables and plugin with the board, this type of connection is especially seen in Ethernet type of NIC cables.
- A Processor converts the data message into a signal format for communication to take place easily.
- Different types of standard Buses are plugged into Buses Connector slots, based on the compatibility of the operation process buses are chosen.
- Jumpers or Dual in package switches are used to control the communication operation, which is either by turning on or turning off the switch.
- MAC address which is a unique identity address is given to network interface cards where ethernet packets are communicated with the computer. MAC address is also known as a physical network address.
- A router is an NIC device that is used to connect wirelessly to the internet.

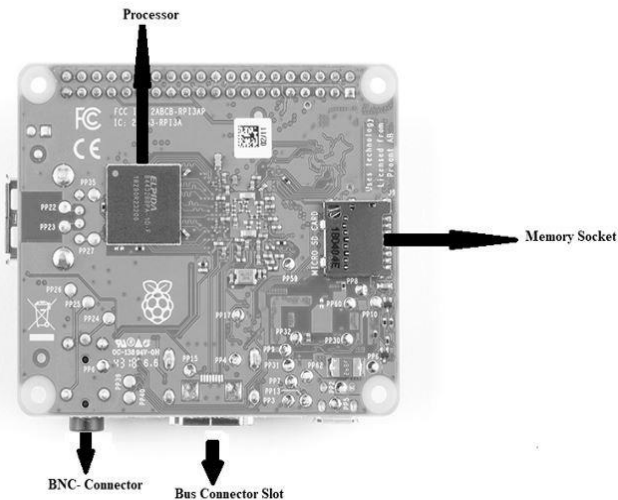


Image391:Components of NIC

Reference: <https://www.elprocus.com/network-interface-card-nic/>

Types of NIC Cards

- Wired
- Wireless
- USB

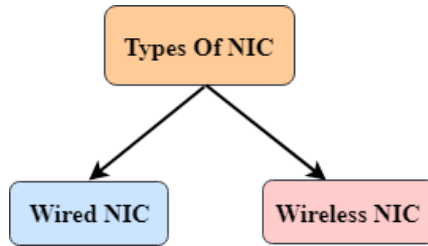


Image 40: Types of NIC

Reference: <https://www.javatpoint.com/computer-network-components>

Wired:

These NIC have input jacks made of cables(Ethernet Cable). The motherboard has a slot for the network cards where they are inserted. The most widely used LAN technology is Ethernet. Ethernet-based NIC is available in hardware shops. The speed of Ethernet-based NIC can be 10/100/1000 Mbps.

Example: TP-LINK TG-3468 Gigabit PCI Express Network Adapter



Image 41: Wired

Reference: <https://afteracademy.com/blog/what-is-a-network-interface-card>

Wireless:

Wireless network cards are inserted into the motherboard but no network cables are required to connect the computer to the internet. These NICs are designed for Wi-Fi connections.

Example: Intel 3160 Dual-Band Wireless Adapter



Image 42: Wireless

Reference: <https://afteracademy.com/blog/what-is-a-network-interface-card>

USB:

These are NICs that provide network connection over the device plugged in the USB port. For Example, if you are a gamer and you are tired of watching helplessly that your gaming character dies due to Wi-Fi-induced lags. So the USB-ethernet adapter can be a solution to your problem.

Example: TP-Link TL-UE300 USB 3.0 to RJ45 Gigabit Ethernet Network Adapter



Image 43: USB

Reference: <https://afteracademy.com/blog/what-is-a-network-interface-card>

Advantages of NIC

- The communication speed using the Internet is high usually in Gigabytes
- Highly reliable connection
- Many peripheral devices can be connected using many ports of NIC cards.
- Bulk data can be shared among many users.