Network Interface Card (NIC)

Network Interface Card (NIC) is a **hardware component** that is present on the computer. It is used to **connect different networking devices** such as computers and servers to share data over the connected network. It provides functionality such as support for I/O interrupt, Direct Memory Access (DMA) interfaces, partitioning, and data transmission.

NIC is important for us to establish a wired or wireless connection over the network.

Network Interface Card is also known as **Network Interface Controller, Network Adapter, Ethernet card, Connection card**, and **LAN (Local Area Network) Adapter.**

Functions of the Network Interface Card

A list of functions of the Network Interface Card is given below -

1. NIC is used to convert data into a digital signal.
2. In the OSI model, NIC uses the physical layer to transmit signals and the network layer to transmit data packets.
3. NIC offers both wired (using cables) and wireless (using Wi-Fi) data communication techniques.
4. NIC is a middleware between a computer/server and a data network.
5. NIC operates on both physical as well as the data link layer of the OSI model.

Components of Network Interface Card

Network Interface Card contains the following essential components -

1. Memory

Memory is one of the most important components of the NIC. It is used to store the data during communication.

2. Connectors

connectors are used to connect the cables to the Ethernet port.

3. Processor

Processor is used for converting the data message into a suitable form of communication.

4. Jumpers

Jumpers are the small device that is used to control the communication operations without the need of any software. It is also used to determine settings for the interrupt request line, I/O address, upper memory block, and type of transceiver.

5. Routers

To provide wireless connectivity, routers are used.

6. MAC address

MAC address is also referred to as a **physical network address**. It is a unique address that is present to the network interface card where ethernet packets are communicated with the computer.

Types of Network Interface Cards

There are the following two types of NICs -

1. Ethernet NIC

Ethernet NIC was developed by **Robert Metcalf in 1980**. It is made by ethernet cables. This type of NIC is most widely used in the LAN, MAN, and WAN networks.

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

2. Wireless Networks NIC

It is a wireless network that allows us to connect the devices without using the cables. These types of NICs are used to design a Wi-Fi connection.

Example: Intel 3160 Dual-Band Wireless Adapter

Advantages of NIC

A list of advantages of NIC is given below -

1. As compared to the wireless network card, NIC provides a secure, faster, and more reliable connection.
2. NIC allows us to share bulk data among many users.
3. It helps us to connect peripheral devices using many ports of NIC.
4. Communication speed is high.
5. Network Interface cards are not expensive.
6. NICs are easy to troubleshoot.

Disadvantages of NIC

A list of disadvantages of NIC is given below -

1. NIC is inconvenient as compared to the wireless card.

2. For wired NIC, a hard-wired connection is required.
3. NIC needs a proper configuration to work efficiently.
4. NIC cards are not secure, so the data inside NIC is not safe.