Common Network Devices

Network Interface Cards (NICs)

- **Network Interface Cards (NIC)** allow an electronic device to be connected to a network
- **Network Interface Cards** are connected to the motherboard but in most modern systems are usually **integrated**
- Each network interface card has a **unique identifier** which is known as a **media access control address** or **MAC address** which is created during the manufacturing process
- **Wireless Network Interface Cards (WNIC)** are the same as a NIC but use wireless connectivity to connect devices to networks

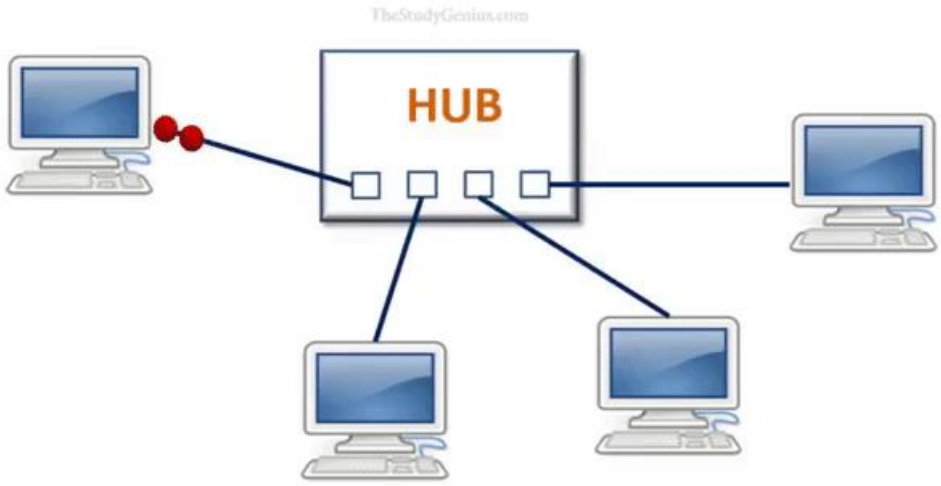
- A **MAC address** is a 48 bit **hexadecimal** code where 12 **hexadecimal** characters are grouped in pairs

4F	27	4B	2C	9E	1A
ORGANISATIONAL UNIQUES IDENTIFIER (OUI)			NETWORK INTERFACE IDENTIFIER (NIC)		

- The general format for a **MAC address** is that each pair of **hexadecimal** digits are separated by a "-"
- An example of a **MAC address**:
  - Microsoft has an OUI of 00-15-5D,
  - a new laptop straight out of a Microsoft production line could have a MAC address of "00-15-5D-45-1B-3F"

Hubs

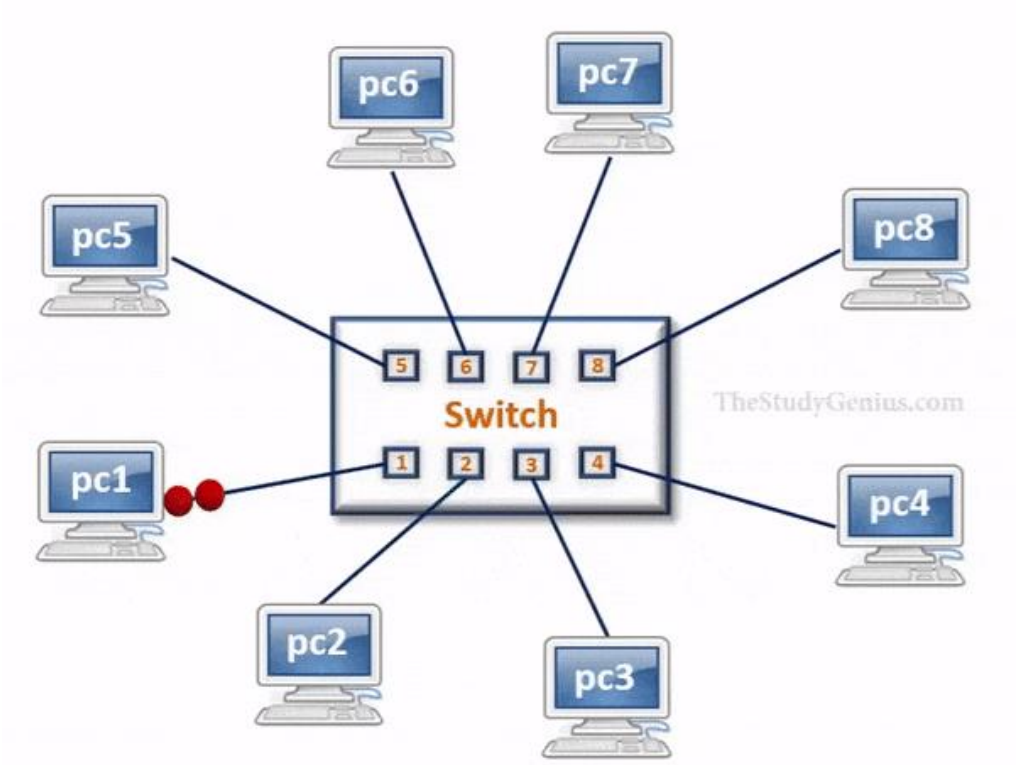
- **Hubs** are devices that allow several other devices to be connected to them



- **Hubs** are generally much cheaper than switches but:
    - When a **hub** receives a **data packet** it will broadcast it to every device on the network
- This creates two potential issues:
    - As the information is being broadcast to every device it will make unnecessary traffic especially if there are a large number of devices
    - As every device will receive the **data packet,** security may be a concern

Switches

- **Switches** are also used to connect several devices together just like a hub; however, rather than sending **data packets** to all devices on the network, the **switch** will only send the data to its intended device



- This is done by each **switch** having a **lookup table**

Port	Mac address
1	DF-42-B2-11-4D-E3
2	11-14-F2-1D-C3-C6
3	00-4B-17-7C-A2-C9

- When a **switch** receives a **data packet**, it examines the destination **MAC address** of the box and looks up that address in its l**ookup table**
- Once it has found the matching **MAC address** it will then forward the **data packet** to the corresponding port

Bridges

- **Bridges** are used to connect two networks or network segments to create a single larger network
- An important note is that a **bridge** cannot communicate with external networks such as the internet like a **router** can