9th lesson : Networks

objectives :

This lesson provides an introduction to :

- Computer networks and covers fundamental topics like data, information to the definition of communication and computer networks.
- The main objective of data communication and networking is to enable seamless exchange of data between any two points in the world.
- This exchange of data takes place over a computer network

1 . définition of networks :

A computer network comprises two or more computers that are connected—either by cables (wired) or wifi (wireless)—with the purpose of transmitting, exchanging, or sharing data and resources[1]

-A network can be also defined as a group of computers and other devices connected in some ways so as to be able to exchange data. -Each of the devices on the network can be thought of as a node; each node has a unique address. -Addresses are numeric quantities that are easy for computers to work with, but not for humans to remember. Example: 204.160.241.98 -Some networks also provide names that humans can more easily remember than numbers[2].

resources.

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Figure 1 : network

3. Computer network types:

As networking needs evolved, so did the computer network types that serve those needs. Here are the most common and widely used computer network types:

3.1. LAN (local area network): A LAN connects computers over a relatively short distance, allowing them to share data, files, and resources. For example, a LAN may connect all the computers in an office building, school, or hospital. Typically, LANs are privately owned and managed.

3.2. MAN (metropolitan area network): MANs are typically larger than LANs but smaller than WANs. Cities and government entities typically own and manage MANs.

3. 3. WAN (wide area network): As the name implies, a WAN connects computers over a wide area, such as from region to region or even continent to continent. The internet is the largest WAN, connecting billions of computers worldwide. You will typically see collective or distributed ownership models for WAN management[4].
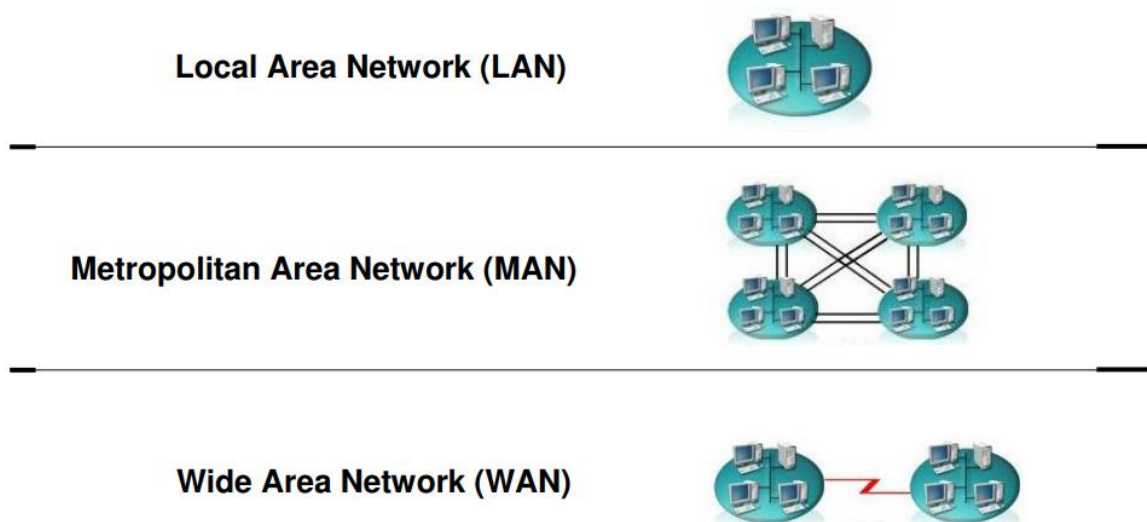
Local Area Network (LAN)

Metropolitan Area Network (MAN)

Wide Area Network (WAN)

Figure 2 : Computer network types

[5]

4. WHAT IS THE INTERNET ?

The internet is a giant computer network, linking billions of machines together by underground and underwater fibre-optic cables.These

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cables run connect continents and islands, everywhere
except Antarctica[6].

5. Computer networks and the internet

The internet is actually a network of networks that connects billions
of digital devices worldwide. Standard protocols allow
communication between these devices. Those protocols include the
hypertext transfer protocol (the 'http' in front of all website
addresses). Internet protocols (or IP addresses) are the unique
identifying numbers that are required of every device that accesses
the internet. IP addresses are comparable to your mailing address,
providing unique location information so that information can be
delivered correctly.

Internet Service Providers (ISPs) and Network Service Providers
(NSPs) provide the infrastructure that allows the transmission of
packets of data or information over the internet. Every bit of
information that is sent over the internet doesn't go to every device
connected to the internet. It's the combination of protocols and
infrastructure that tells information exactly where to go[7].

6. WHEN WAS THE INTERNET INVENTED?:

It was originally created by the U.S. government during the Cold War.
In 1958, President Eisenhower founded the Advanced Research
Projects Agency (ARPA) to give a boost to the country's military
technology, according to the Journal of Cyber Policy. Scientists and
engineers developed a network of linked computers called ARPANET.

ARPANET's original aim was to link two computers in different places,
enabling them to share data. That dream became a reality in 1969,

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according to Historian Jeremy Norman. In the years that followed, the team linked dozens of computers together and, by the end of the 1980s, the network contained more than 30,000 machines, according to the U.K.'s Science and Media Museum[8].

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