

COMPUTER NETWORKS



Standalone vs. Network



A Stand Alone PC

- ❖ Standalone are convenient and versatile to use
- ❖ But, information cannot be shared easily
- ❖ Software are expensive to install
- ❖ Peripherals (printers, scanners) are not fully utilized

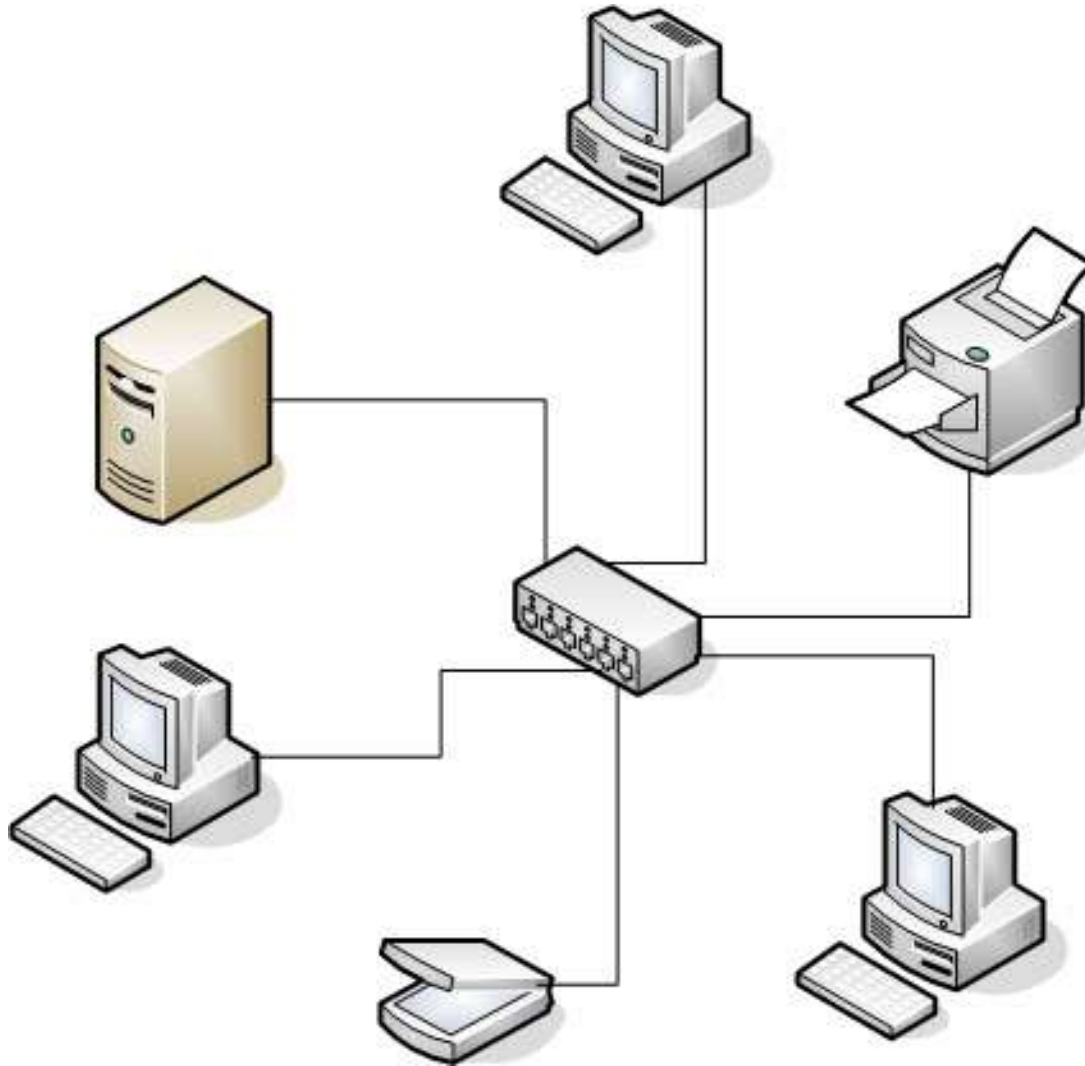
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Standalone vs. Network



- ❖ A computer network consists of more than two computers.
- ❖ The primary purpose of a computer network is to share resources.

A Typical Network



Advantages of Network

- Share information
- Share hardware and software resources
- Communication

Disadvantages of Network

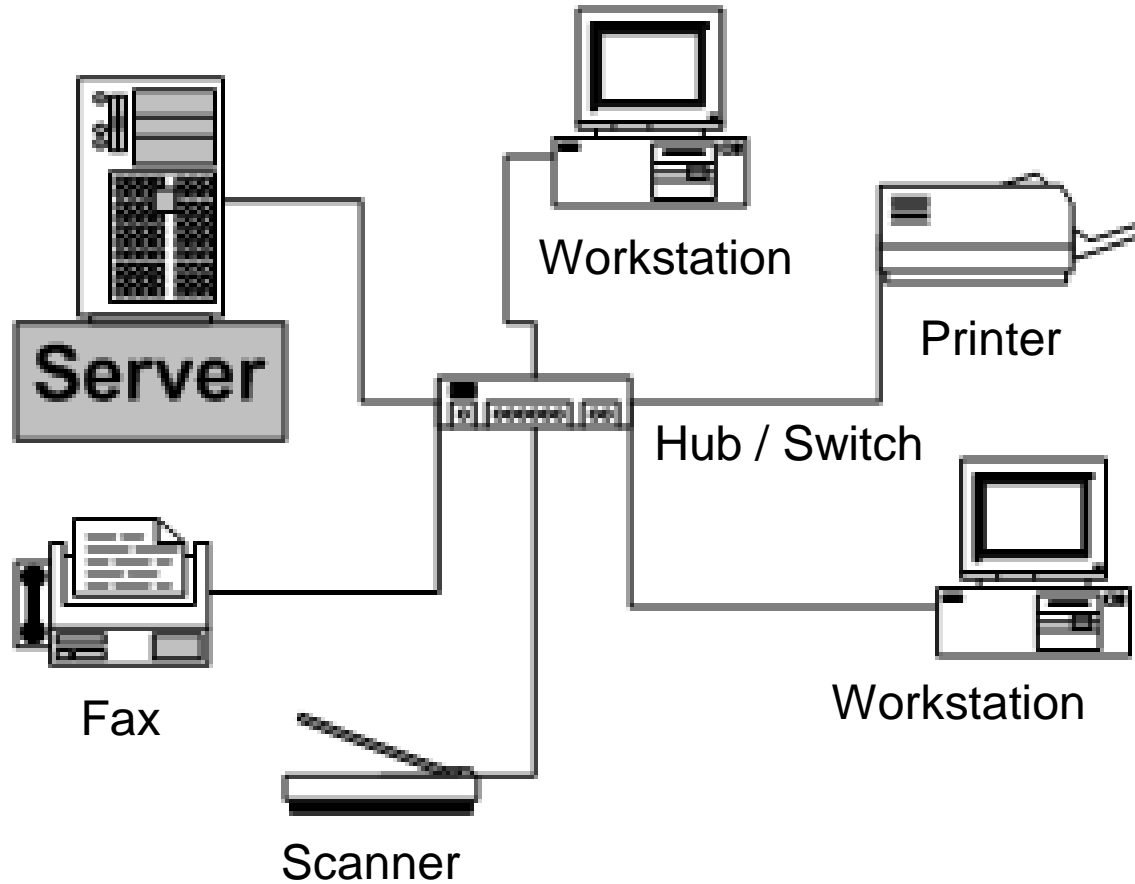
- Security concerns (hacking)
- Virus
- Expensive setup
- Lack of independence

Typical computer network consist of

- **File Server** (main computer which stores all programs and data files).
- One or more **workstations** (can be desktop or laptops).
- **Peripherals** (printers, fax, scanner).
- They are all connected through a device called **hub or switch**.

Network Components

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Network Components

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Workstations



Connecting
Cables



Hub / Switch



Network Interface Card



File Servers

Network Cable

Cables are still used in network because they can carry more data per second and more secure.

HUB

- Connects computers in LAN
- It is the central device in Star Network

SWITCH

- Connects computers in LAN
- Switch is an intelligent device than Hub

ROUTER

- Router connects two or more networks
- It is used to connect home or office network (LAN) to internet (WAN)
- It can be wireless too

PROXY SERVER

- A proxy server is used to share a resource, usually an internet connection
- Proxy servers are often used instead of router

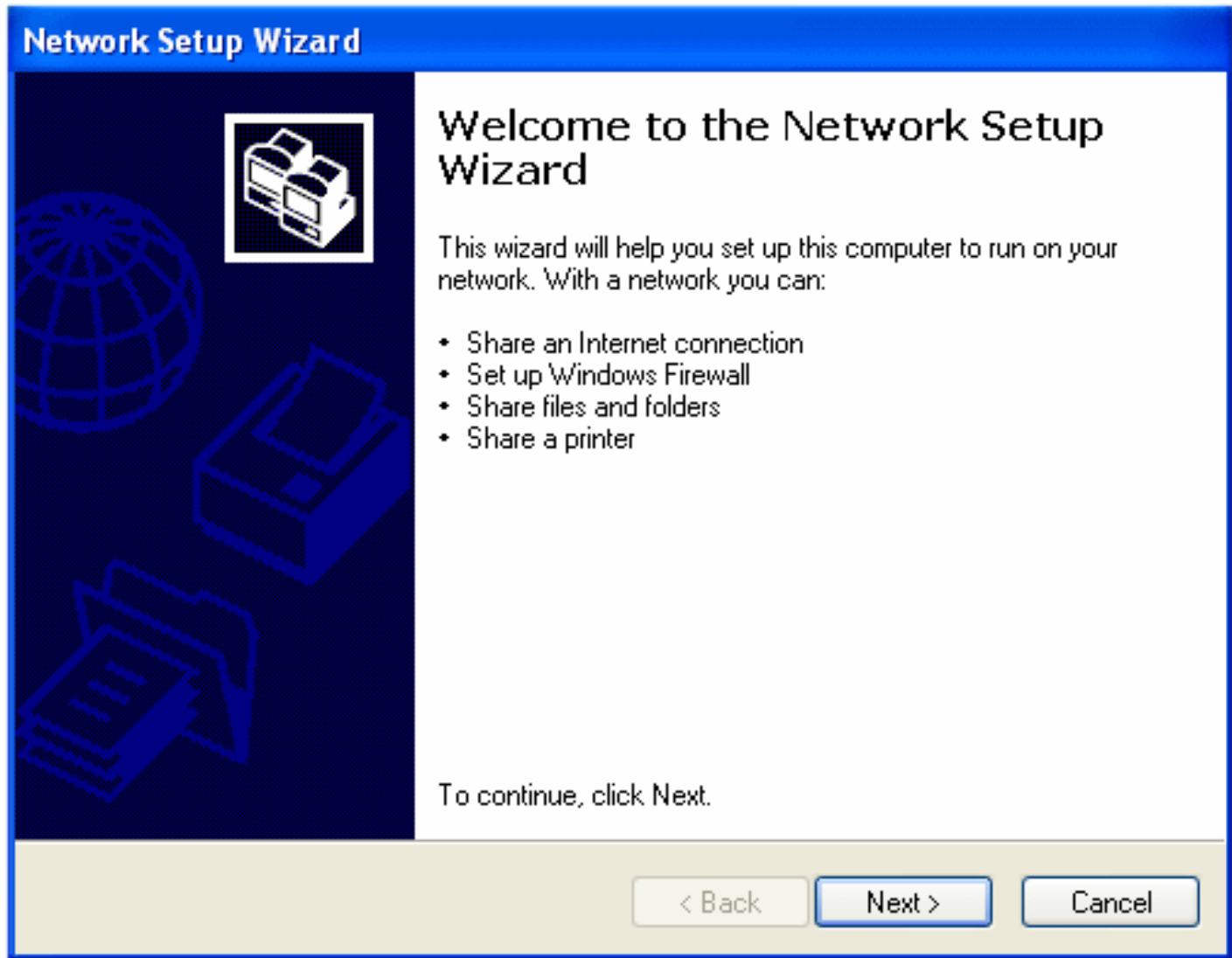
BRIDGE

- A bridge is a device that links two different parts of a LAN
- (Router connects LAN and WAN)

Network Components

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Network Setup Wizard



The image shows a screenshot of the Windows Network Setup Wizard. The window has a blue title bar with the text "Network Setup Wizard". The main area is split into two panels. The left panel has a dark blue background with a globe and a computer icon. The right panel is white and contains the following text: "Welcome to the Network Setup Wizard", "This wizard will help you set up this computer to run on your network. With a network you can:", a bulleted list of features, and "To continue, click Next." At the bottom of the window, there are three buttons: "< Back", "Next >" (highlighted in blue), and "Cancel".

Welcome to the Network Setup Wizard

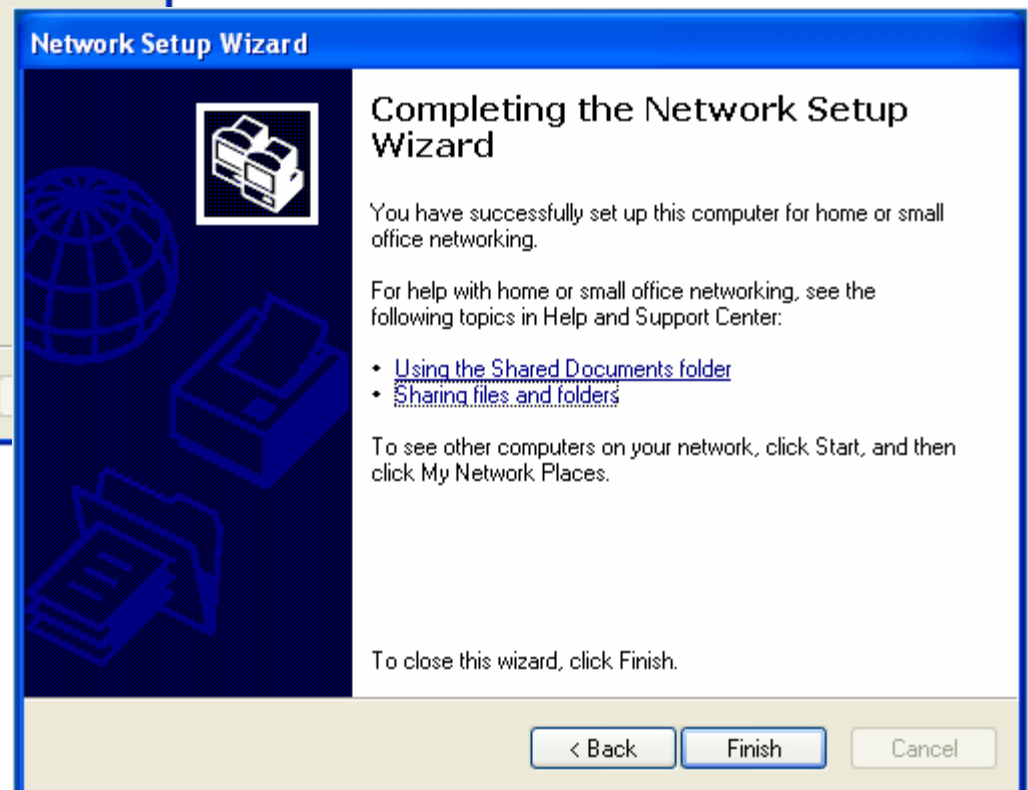
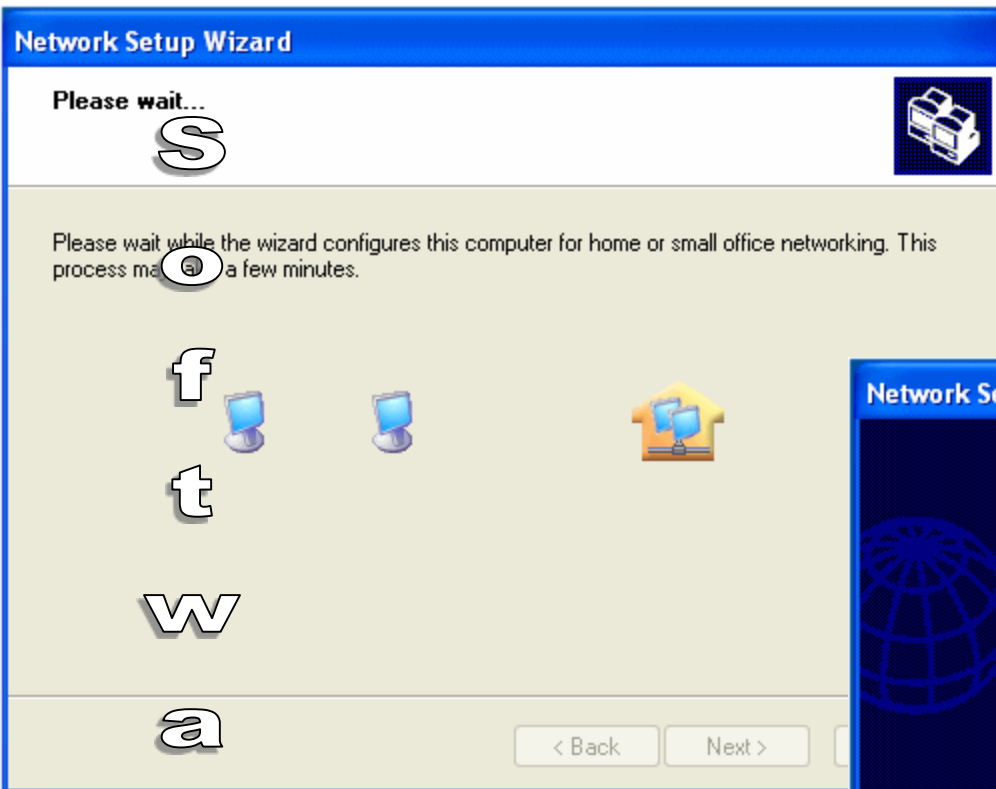
This wizard will help you set up this computer to run on your network. With a network you can:

- Share an Internet connection
- Set up Windows Firewall
- Share files and folders
- Share a printer

To continue, click Next.

< Back **Next >** Cancel

Network Components



Network Components

F Firewall is a **security measure** that
i consists of protecting your network from
r **intruders/hackers.**

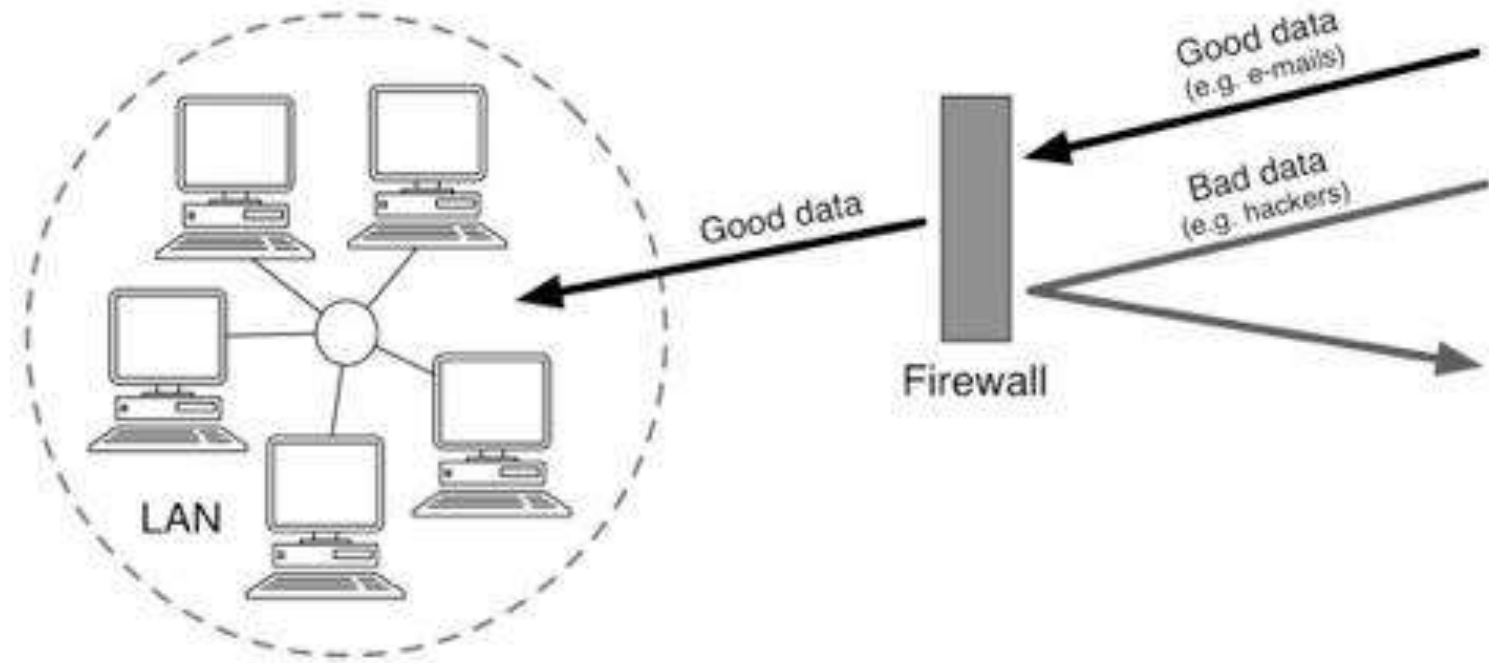
e This is primarily important if you plan to
w connect your network to the Internet.
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Network Components

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Network Components

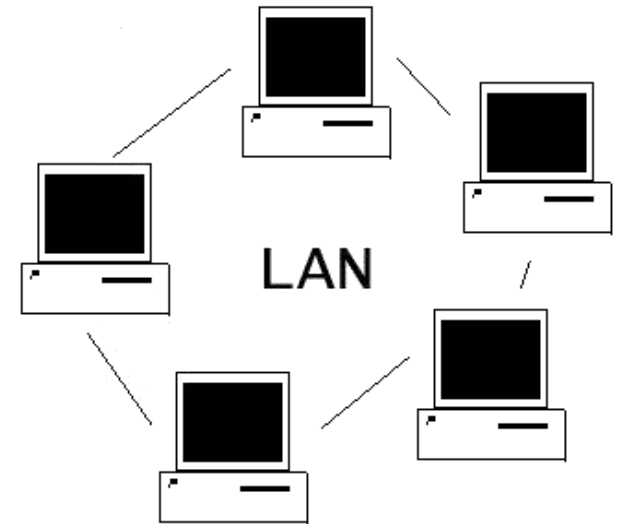
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Types of Networks

- Local Area Network (LAN)
- Wireless Local Area Network (WLAN)
- Wide Area Network (WAN)

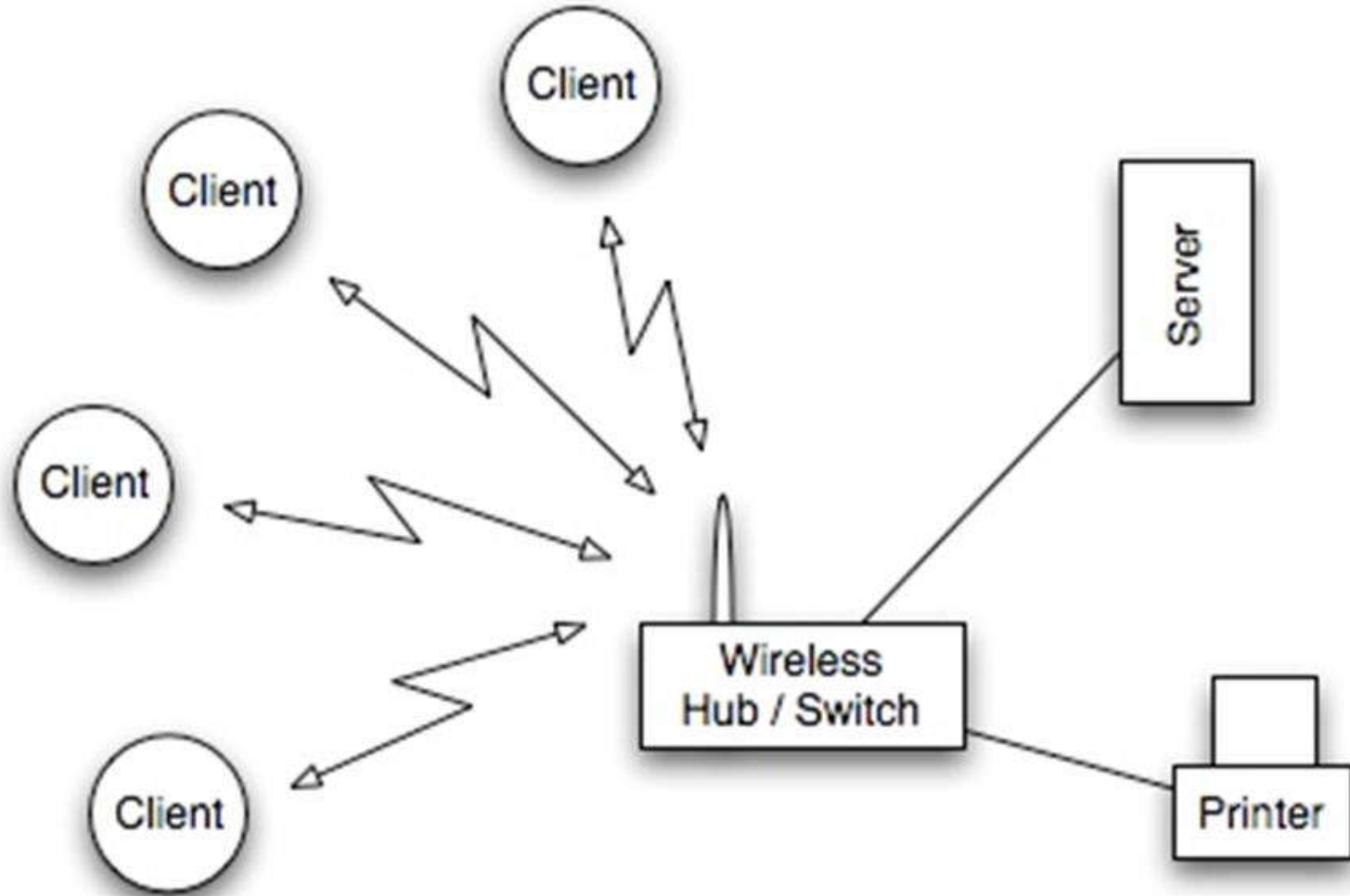
Local Area Network (LAN)



Local Area Network (LAN)

- When PCs close to one another in a **single office or building** are joined by a cable, a network is formed and it is known as a Local Area Network (LAN).
- They are geographically small and uses **cables or low power radio** (wireless) for the connection.

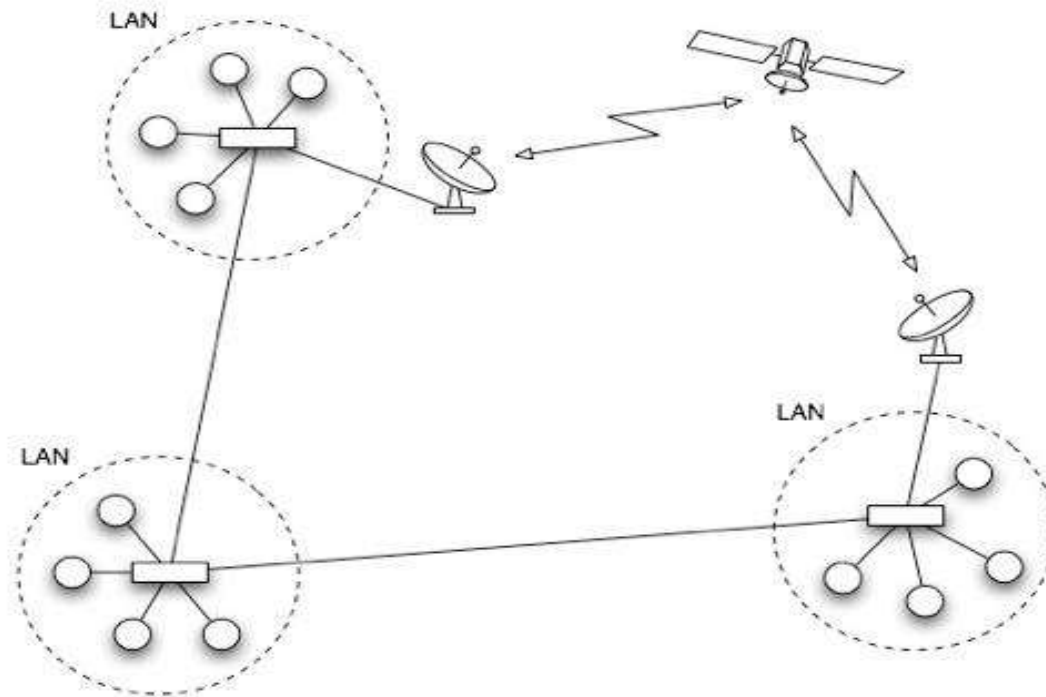
Wireless Local Area Network (WLAN)



Wireless Local Area Network (WLAN)

- A WLAN is a LAN that uses **radio signals** to connect the computers instead of cables
- It is convenient to use wireless network because it **doesn't use long cables** all over the building
- More **difficult to secure**, other people can also try to connect. Need to use hard-to-guess password

Wide Area Network (WAN)

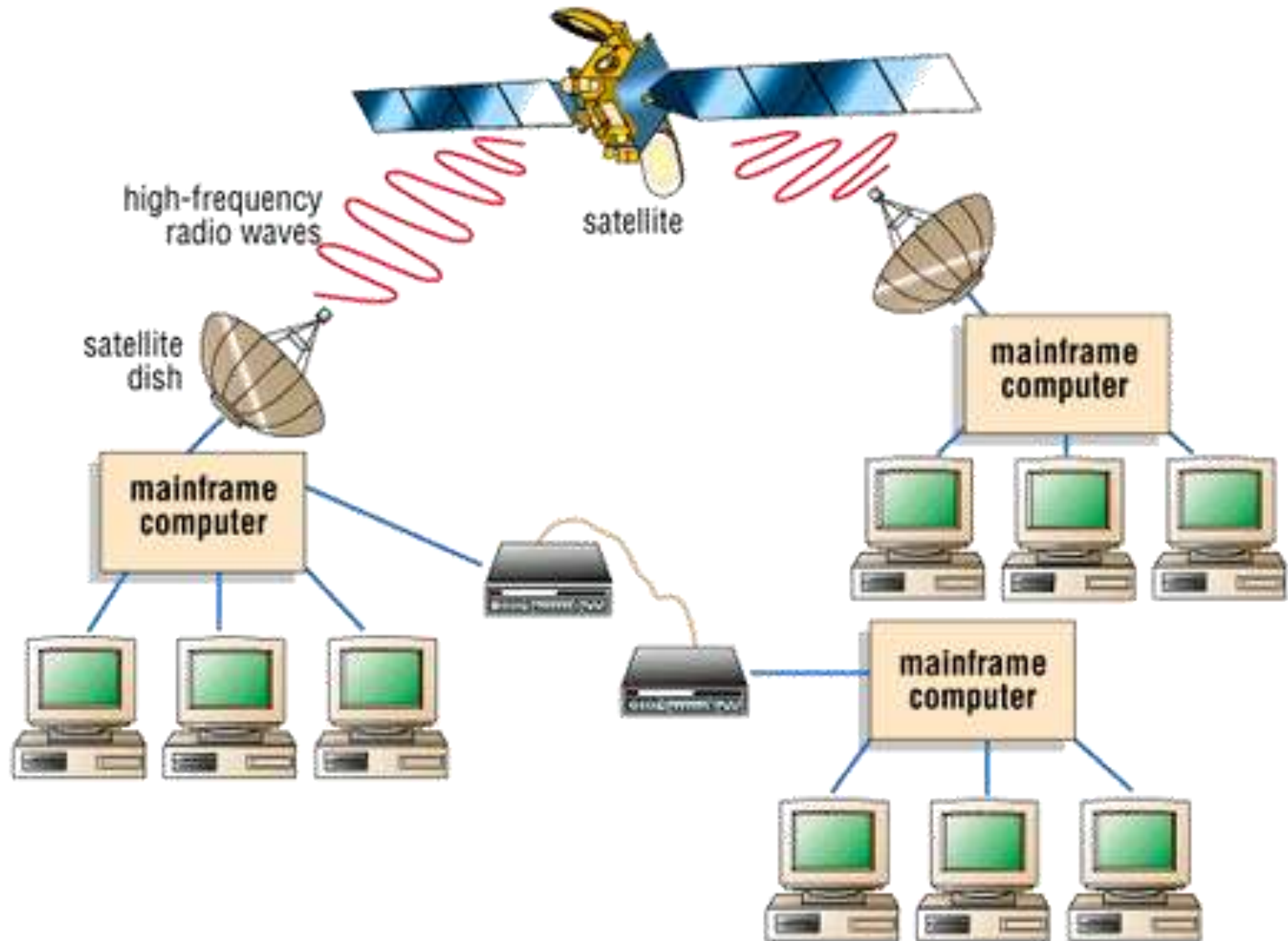


By linking LANs together, the network no longer remains local, it spreads over a wide area and is known as a Wide Area Network (WAN)

Wide Area Network (WAN)

- It is a network that extend over a continent or the entire globe.
- A WAN is often created by **many LANS**.
- Constituent computers in a WAN are **far apart**
- They often use technologies: **Optical fiber, satellite radio links, microwave radio links, etc.**

Wide Area Network (WAN)



THANK YOU