PRESENTATION ON

LAN, WAN & MAN

LAN: Local Area Network

WAN: Wide Area Network
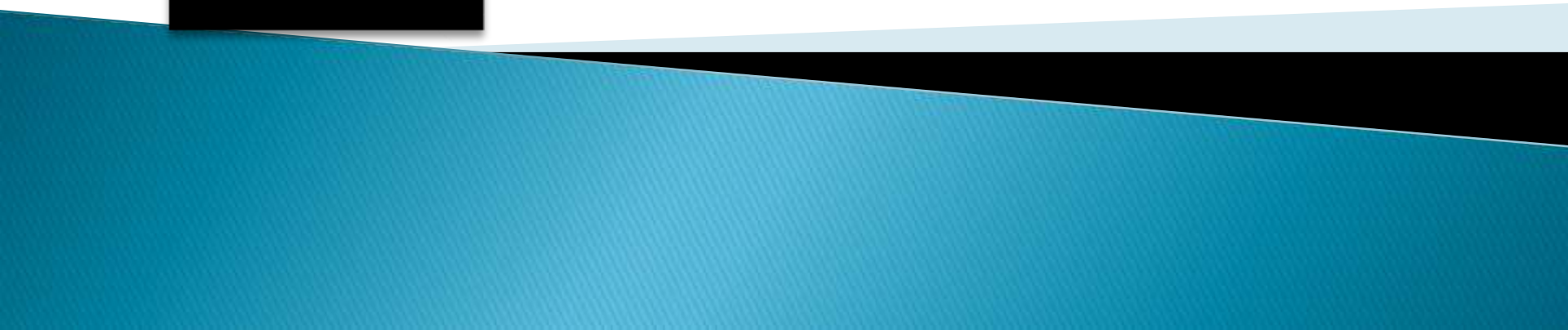
MAN: Metropolitan Area Network

Samit Singh
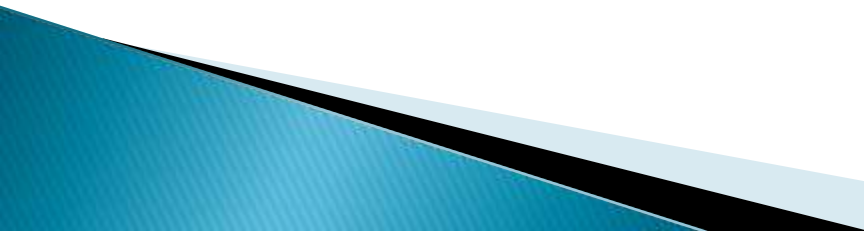
LAN: LOCAL AREA NETWORK

- A **Local Area Network (LAN)** is a **collection of networking equipment** located geographically **close together. E.g.** Single room, campus etc.

- **Data transferred** in High speed which **ranges** from **100 Mbps to gigabit** for **system development** and have a **low implementation cost.**

- Upper limit: **10 km** ; Lower limit: **1 km**

- **Twisted pair cable or Co-axial cable** connects the **plug in cards** to form a network.

- Designed to **share resources** between **PCs and workstation** such as **hardware or data.**
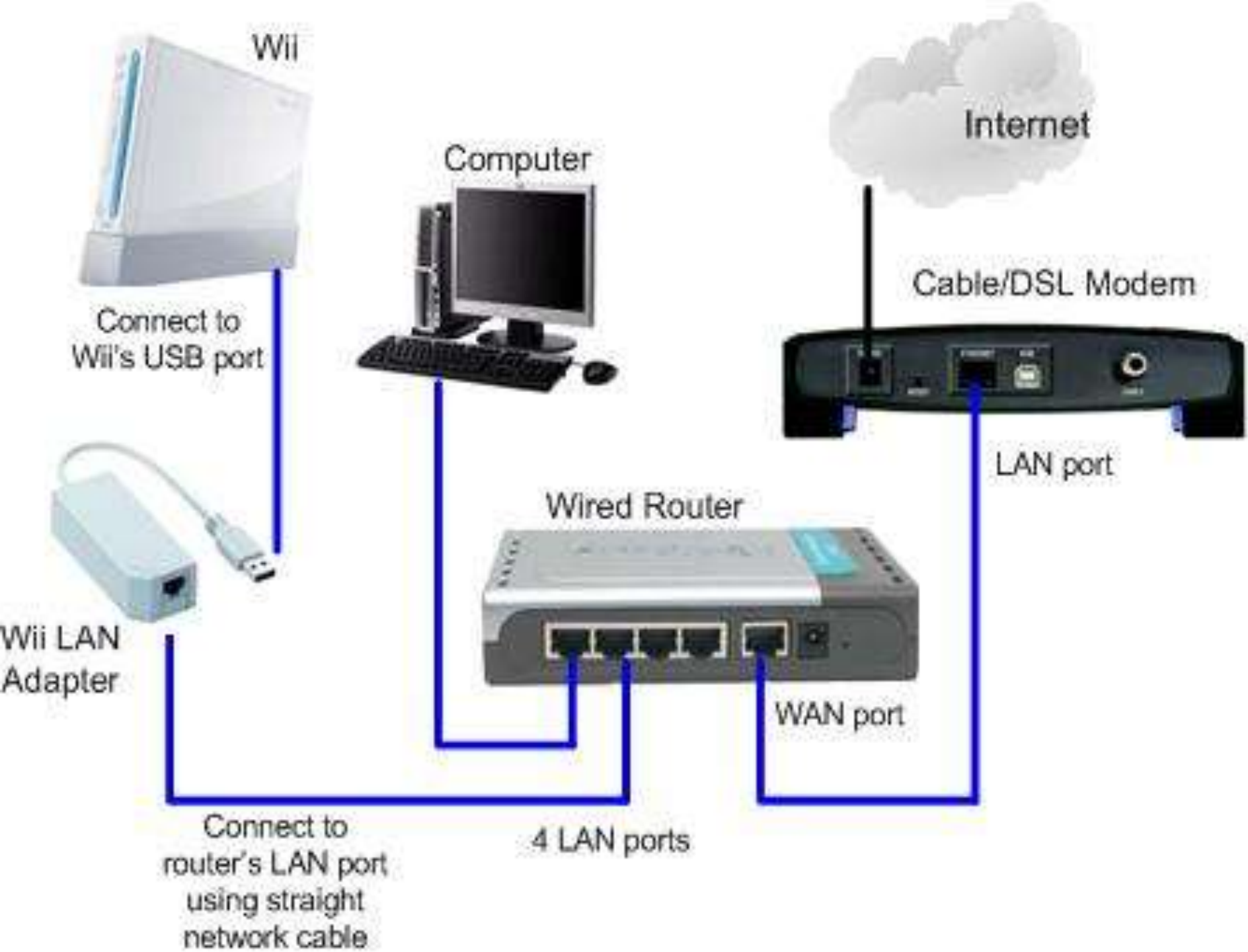
USAGE OF LAN

Figure 9-16
User at work using a local area network to access the Internet
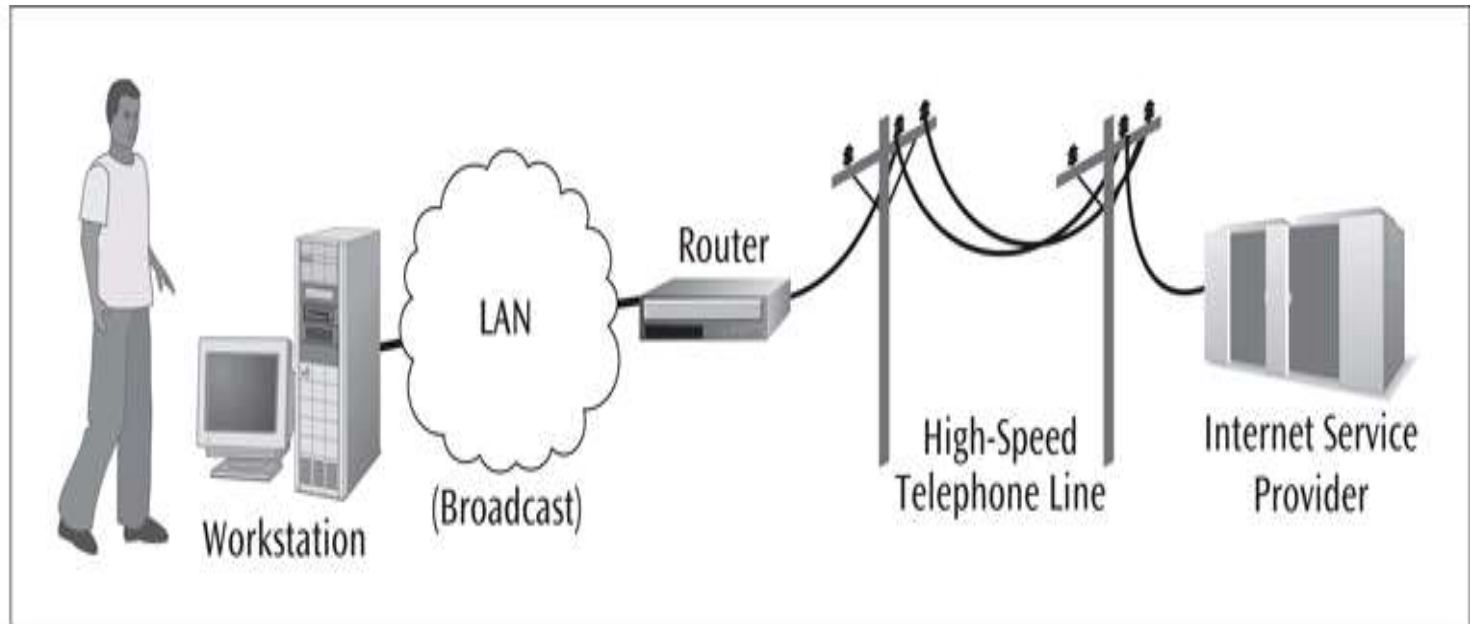
A **work to internet** connections would most likely **require broadcast network (LAN) with a connection** to the **internet (packet switched network)**

Wii

Computer

Internet

Cable/DSL Modem

Connect to
Wii's USB port

LAN port

Wired Router

Wii LAN
Adapter

WAN port

Connect to
router's LAN port
using straight
network cable

4 LAN ports

MERITS

- **Cost reductions** through **sharing** of **information and databases, resources and network services.**
- Increased **information exchange** between different **departments in** an **organization**, or between **individuals.**
- The trend to **automate communication and manufacturing process.**

DEMERITS

- **Special security measures** are needed **to stop** users from **using programs and data that they should not have access to**;
- **Networks** are **difficult to set up** and need to be **maintained** by **skilled technicians.**
- **If the file server develops a serious fault, all the users are affected**, rather than just one user in the case of a stand-alone machine.
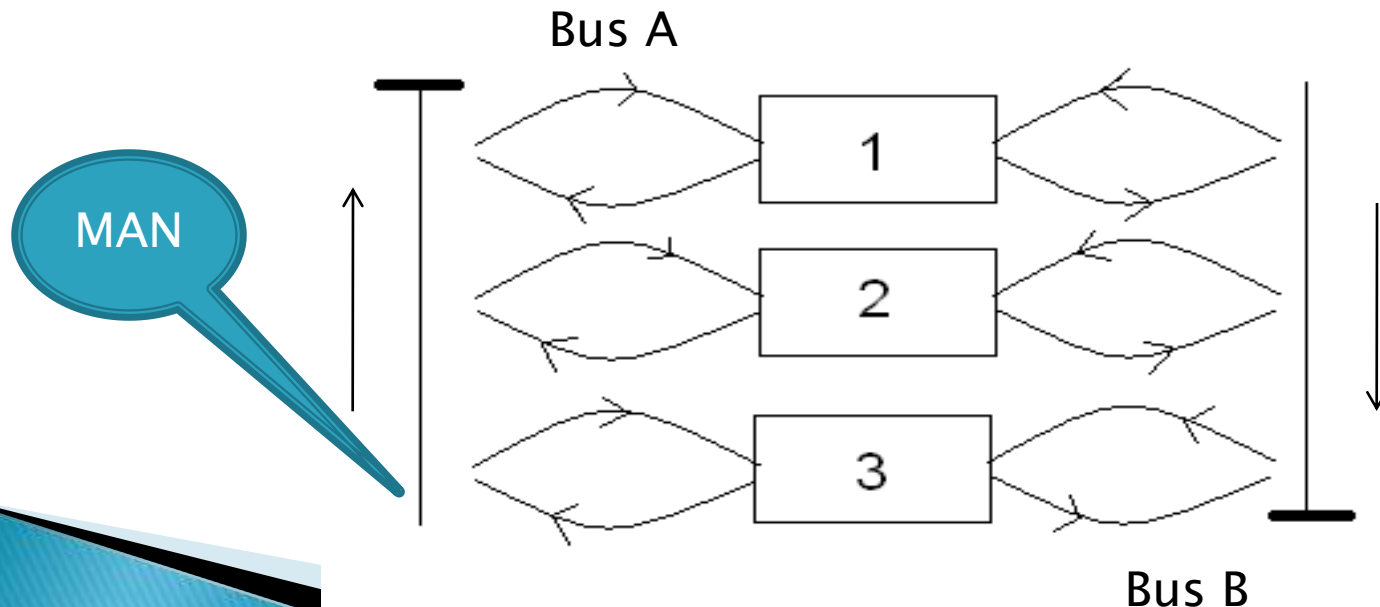
MAN: MERTROPOLITAN AREA NETWORK
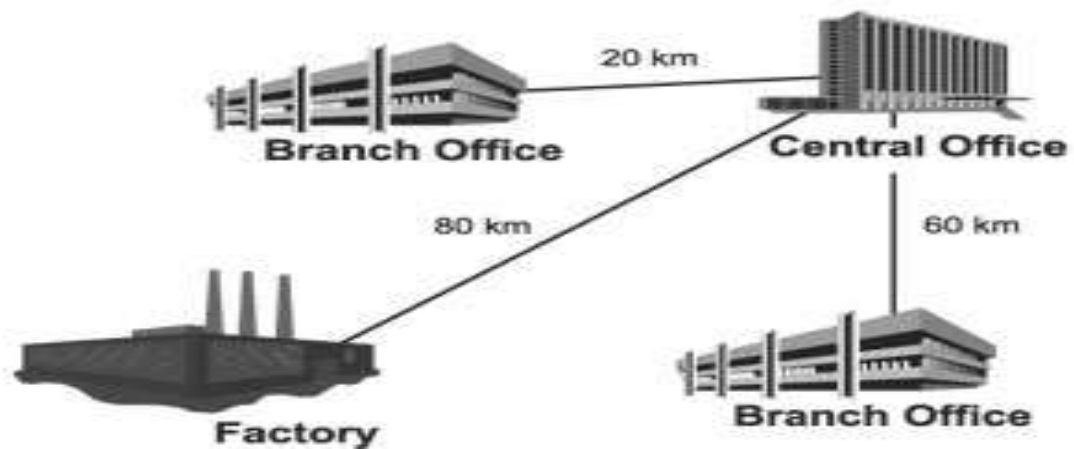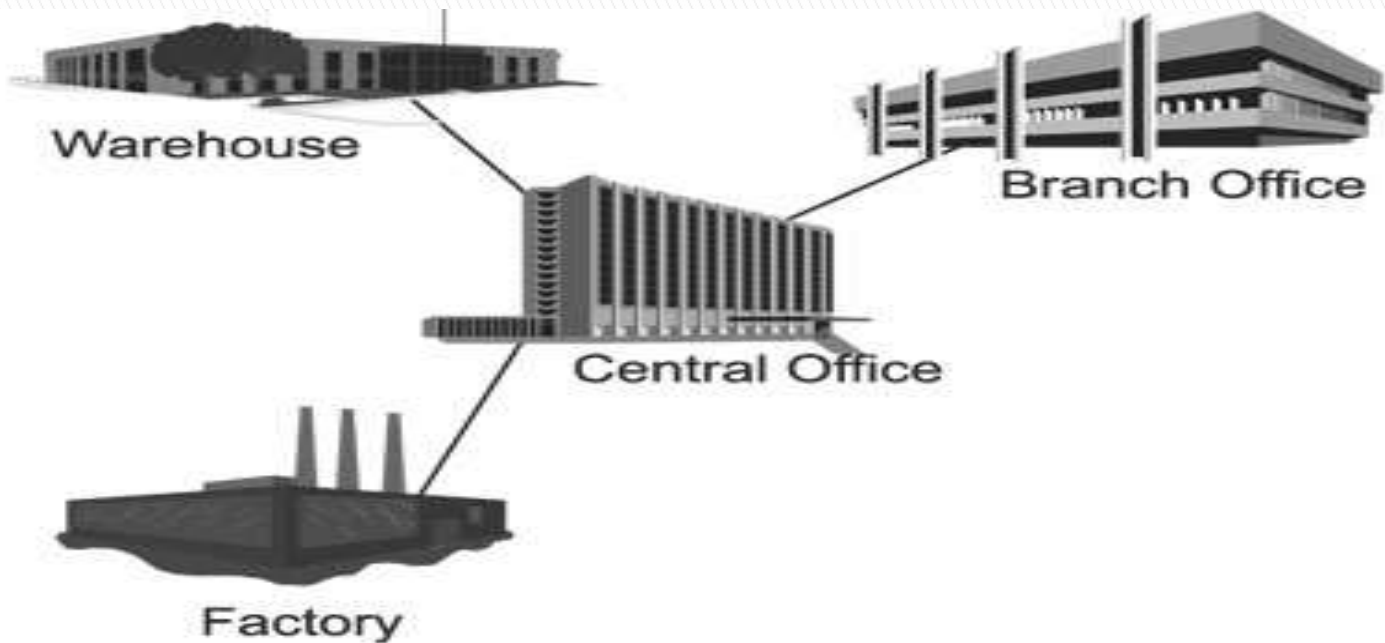
MAN

- The **metropolitan area network (MAN)** is **designed to extend over** an entire **city.**
- It may be a **single network such as cable television network** available in many cities.
- A MAN uses distributed queue **dual bus.**
- Range: Within **100 km** (a city).

Bus A

MAN

1

2

3

Bus B

ADVANTAGES OF MAN

- It provides a **good back bone for a large network** and provides greater **access** to **WANs.**
- The **dual bus** used in MAN **helps** the **transmission of data in both direction** simultaneously.
- A Man usually **encompasses** several blocks of a city or an **entire city**.

DISADVANTAGES OF MAN

- **More cable required** for a MAN connection **from one place to another.**
- It is **difficult to make** the **system secure from hackers and industrial espionage (spying) graphical regions.**

WAN: WIDE AREA NETWORK

- Network that provides long distance transmission of data, voice, image and video information over large geographical areas that may comprise a country, a continent.

- Range: Beyond 100 km.

ADVANTAGES OF WAN

• Covers a large geographical area so **long distance businesses can connect** on the one **network**.

• **Shares software** and **resources with** connecting workstations.

• **Messages** can be **sent** very **quickly to anyone** else **on the network.** These **messages** can have **pictures, sounds, or data included with them** (called attachments).

• **Expensive things (such as printers or phone lines to the internet)** can be **shared by all the computers** on the **network** without having to buy a different peripheral for each computer.

• **Everyone on** the **network** can **use** the **same data.** This **avoids problems** where some users may have **older information** than others.

DISADVANTAGES OF WAN

• **Need a good firewall to restrict outsiders** from entering and disrupting the network

• Setting up a **network** can be an **expensive, slow and complicated.** The **bigger the network** the **more expensive** it is.

• Once set up, **maintaining a network** is a **full-time job** which **requires network supervisors** and **technicians** to be employed.

• **Security** is a real **issue** when many different **people have the ability to use information from other computers. Protection** against **hackers and viruses** adds **more complexity** and **expense.**
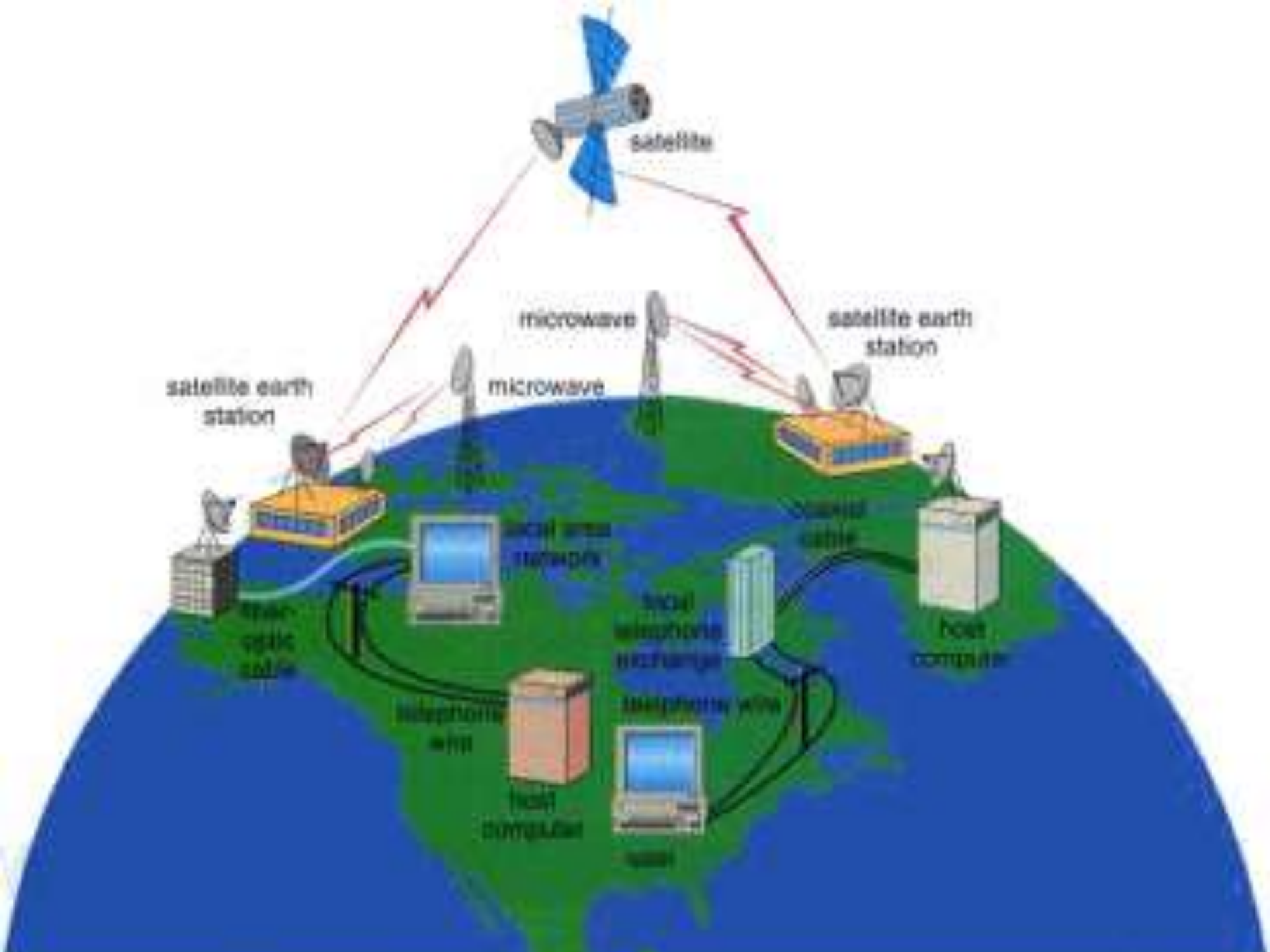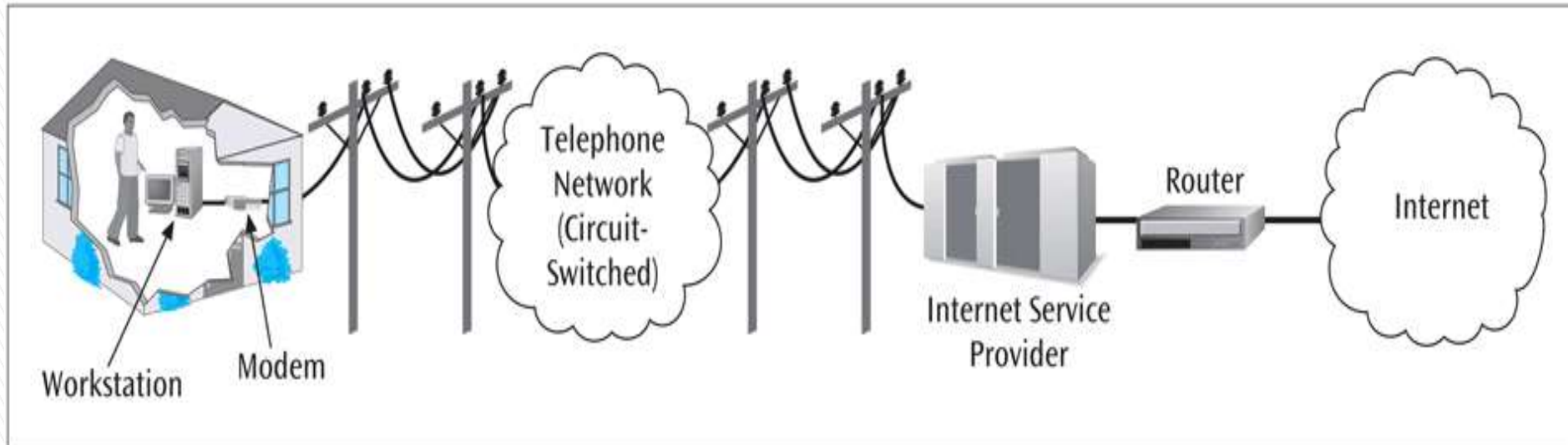
WANS IN ACTION: MAKING INTERNET CONNECTIONS

Figure 9-15

User at home using a dial-up telephone line (circuit-switched network) to run a connection-oriented application (Web browser)

DIFFERENCE BETWEEN LAN, WAN AND MAN

BASIS	LAN	MAN	WAN
Full Form	Local Area Network	Metropolitan Area Network	Wide Area Network
Range	A communication network linking a number of stations in same local area. **Range is 1 to 10 km**	This network shares the characteristics of packet broadcasting networks. **Range is100 km**	A communication network distinguished from a Local Area Network. **Range is Beyond 100 km**
Media Used	Uses **guided media**	Uses **guided** as well as **unguided media**	Uses **unguided media**
Speed	A high speed i.e. **100kbps to 100mbps**	Optimized for a **large geographical area than** LAN.	**Long distance** communications, which may or may not be provided by public packet network.
Cost	cheaper	costly	expensive
Equipment needed	NIC, switch and hub	Modem and router	Microwave, radio, infra-red laser
protocols	Attached Resource computer network (ARCNET), Token ring	**Frame relay** and **asynchronous transfer mode(ATM)**	ATM, FDDI, SMDS

Thank you!