

## Most Popular Operating Systems

An operating system is a software component of a computer system that is responsible for the management of various activities of the computer and sharing of the computer resources. It hosts several applications that run in the computer. Users interact with operating systems through:

- Command Line Interface (CLIs): CLIs means of interacting with a computer program where the user issues commands to the program in the form of successive lines of text (command lines).
- Graphical User Interface (GUIs): GUIs allows users to interact with electronic devices through graphical icons and visual indicators. In short, operating system enable user's interaction with computer systems by acting as an interface between users or application programs and computer hardware.

**Here is an overview of the most popular Operating Systems:**

### **1. MS-DOS (Microsoft -Disk Operating System ):**

DOS was the first operating system used by IBM-compatible computers. It was originally available in two versions that were essentially the same, but marketed under two different names. "PC- DOS" was the version developed by IBM and sold to the first IBM-compatible manufacturers.

The command interpreter is integrated in the file command.com with the internal commands for MS-DOS. Together with the file OS for simple device routines like the access to the monitor, keyboard, fixed storage, disks and interfaces as well as then booting code these from the base operating system. DOS works very hardware near.

Almost every software company offered standard applications like word processing, calculation or also special solutions like measurement tools, CAD (Computer Aided Design) or image processing for MS-DOS.

**MS-DOS Command Examples:**

**dir Command:** The dir command is a Command Prompt command used to display a list of the files and subfolders contained in a folder.

**cls command :** The cls command allows users to clear all the contents on the screen.

**cd command:** The cd command also known as chdir (change directory), is a command-line shell command used to change the current working directory in various operating systems.

**2. Windows:**

Window is separate viewing area on a computer display screen in a system that allows multiple viewing areas as part of a graphical user interface (GUI). Windows are managed by a windows manager as part of a windowing system. A window can usually be resized by the user. For example, it can be stretched on any side, minimized, maximized and closed.

On today's multitasking operating systems, you can have a number of windows on your screen at the same time, interacting with each whenever you choose.

**Microsoft Windows version history include:**

All Versions of MS-DOS, Windows 95, Windows 98, Windows ME, Windows NT, Windows 2000, Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10 and Windows 11.

**3. UNIX Operating Systems**

UNIX operating systems are widely used in both servers and workstations. The UNIX environment and the client-server program model were essential elements in the development of the Internet and the reshaping of computing as centered in networks rather than in individual computers.

UNIX was designed to be portable, multi-tasking and multi-user in a timesharing configuration. UNIX systems are characterized by various concepts:

the use of plain text for storing data; a hierarchical file system; treating devices and certain types of inter-process communication (IPC) as files; and the use of a large number of software tools, small programs that can be strung together through a command line interpreter using pipes.

The master control program is kernel. The kernel provides services to start and stop programs, handles the file system and other common "low level" tasks that most programs share.

Perhaps most importantly, schedules access to hardware to avoid conflicts if two programs try to access the same resource or device simultaneously. To mediate such access, the kernel was given special rights on the system, leading to the division between user-space and kernel-space.

The UNIX operating system's development started in 1969, and its code was rewritten in C in 1972. The C language was actually created to move the UNIX kernel code from assembly to a higher level language. The UNIX provided the TCP/IP networking protocol on relatively inexpensive computers, which contributed to the Internet explosion of worldwide real-time connectivity.

## ***Computer Networks and types of networks***

### **✓ *Computer Network***

A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users. The connections between nodes are established using either cable media or wireless media.

Networks are used to:

- ❖ Simplify communication via email, video conferencing, instant messaging, etc.
- ❖ Enable multiple users to share a single hardware device like a printer or scanner
- ❖ Enable file sharing across the network
- ❖ Allow for the sharing of software or operating programs on remote systems
- ❖ Make information easier to access and maintain among network users
- ❖ Provides centralized security and back up management.

✓ ***Some important types of networks***

1. Personal Area Network (PAN).
2. Local Area Network (LAN).
3. Wireless Local Area Network (WLAN).
4. Metropolitan Area Network (MAN).
5. Wide Area Network (WAN).
6. Virtual Private Network (VPN).

***1. Personal Area Network (PAN):***

PAN is the most basic type of computer network. This network is restrained to a single person, that is, communication between the computer devices is centered only to an individual's work space. PAN offers a network range of 10 meters from a person to the device providing communication. Examples of PAN are USB, computer, phone, tablet, printer, PDA, etc. as shown in Fig. (1).

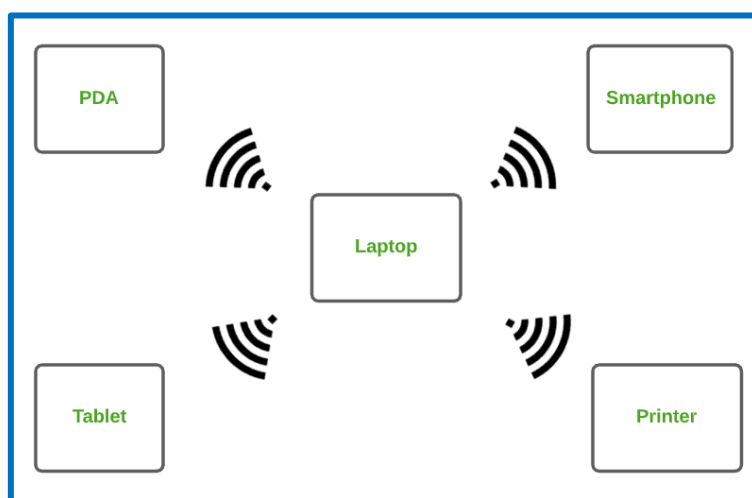


Figure (1) Personal Area Network (PAN).

***2. Local Area Network (LAN):***

LAN is the most frequently used network. A LAN is a computer network that connects computers together through a common communication path, contained within a limited area, that is, locally. A LAN encompasses two or more computers connected over a server. The two important technologies involved in this network are Ethernet and Wi-Fi. Examples of LAN are networking in a home, school, library, laboratory, college, office, etc.

### 3. *Wireless Local Area Network (WLAN):*

WLAN is a type of computer network that acts as a local area network but makes use of wireless network technology like Wi-Fi, as shown in Fig. (2). This network doesn't allow devices to communicate over physical cables like in LAN but allows devices to communicate wirelessly. The most common example of WLAN is Wi-Fi.

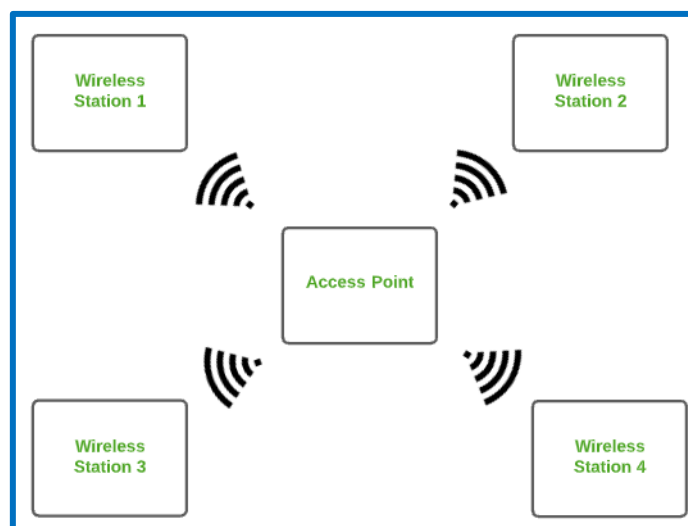


Figure (2) Wireless Local Area Network (WLAN).

### 4. *Metropolitan Area Network (MAN):*

A MAN is larger than a LAN but smaller than a WAN. This is the type of computer network that connects computers over a geographical distance through a shared communication path over a city, town or metropolitan area. Examples of MAN are networking in towns, cities, a single large city, large area within multiple buildings, etc.

### 5. *Wide Area Network (WAN):*

WAN is a type of computer network that connects computers over a large geographical distance through a shared communication path, as shown in Fig. (3). It is not restrained to a single location but extends over many locations. WAN can also be defined as a group of local area networks that communicate with each other. The most common example of WAN is the Internet.

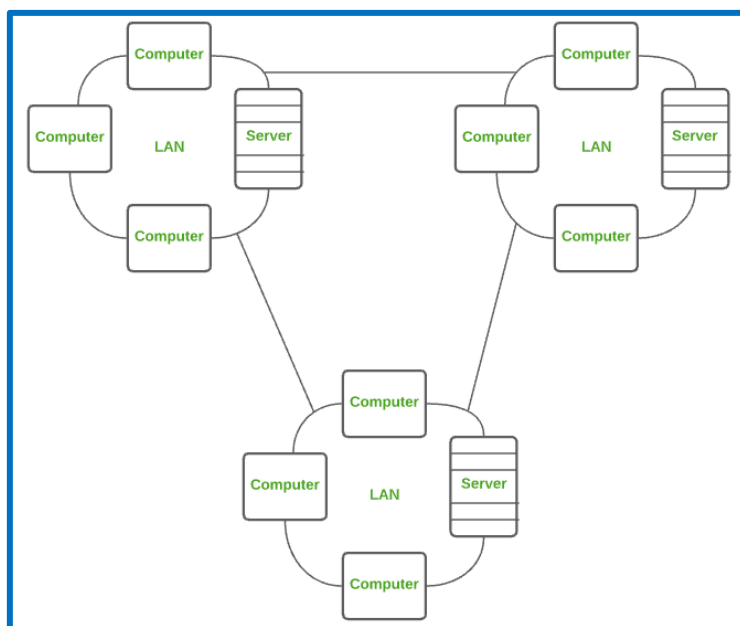


Figure (3) Wide Area Network (WAN).

### 6. *Virtual Private Network (VPN):*

A VPN is a type of computer network that extends a private network across the internet and lets the user send and receive data as if they were connected to a private network even though they are not, as shown in Fig. (4). Through a virtual point-to-point connection users can access a private network remotely. VPN protects you from malicious sources by operating as a medium that gives you a protected network connection.

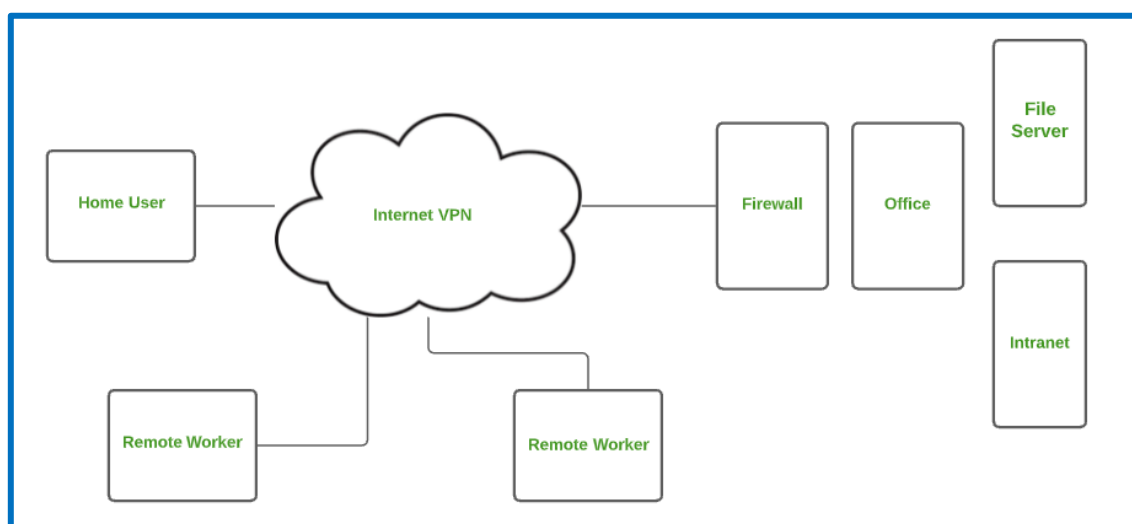


Figure (4) Virtual Private Network (VPN).