

Module

Basic knowledge of IT infrastructure

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Project No. 2021-1-ES01-KA220-ADU-000033439

Learning Objectives

- Understanding the importance of IT infrastructure for businesses
- Identifying the basic components of IT infrastructure
- Understanding the functions and roles of each component in supporting business operations
- Recognizing the benefits and drawbacks of traditional and cloud IT infrastructure types

Contents

- What is IT infrastructure?
- Types of IT infrastructure
- Hardware components
- Software components
- Network components of IT Infrastructure

Let's start!



What is IT infrastructure?

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Information Technology

IT is a term that refers to the field of computers, software, networks, and related technologies.

The primary goal of IT is to facilitate the efficient management of information through the use of technology.



Primary functions of IT

These include:

- **Governance:** This refers to the implementation of operational parameters for the use of IT systems, architecture, and networks by individuals and working units.
- **Infrastructure:** This involves the hardware components, network, circuitry, and other equipment necessary to make an IT system function according to the established needs and system size of a company.
- **Functionality:** This is perhaps the most visible task performed by the IT department. It involves creating and maintaining operational applications, developing, securing, and storing electronic data that belongs to the organization, and assisting in the use of software and data management across all functional areas of the organization.

IT Infrastructure

It refers to the hardware, software, and non-personnel resources used to support, house, and run IT systems, which includes servers, routers, clouds, software, laptops, mobile devices, and other equipment.

In a nutshell,

IT infrastructure is important for all entrepreneurs, regardless of their background, because it provides the technological foundation necessary for running a business effectively and efficiently.

Types of IT infrastructure

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According to IBM, there are **two main types of IT infrastructure**:

- Traditional infrastructure, and
- Cloud infrastructure



Traditional infrastructure

Traditional IT infrastructure comprises the customary elements of hardware and software, including facilities, data centers, servers, networking equipment, desktop computers, and enterprise application software solutions.

It demands greater power, physical space, and financial resources compared to alternative infrastructure types.

Traditional infrastructure is deployed on-site exclusively for internal use within a company or organization.



Cloud infrastructure



Cloud infrastructure is accessible via the Internet, uses virtualisation* to make resources available to users.

*Virtualization enables the interconnection of physical servers operated by a service provider, which can be located at one or multiple geographical locations. Subsequently, it partitions and abstracts resources, such as storage, to enable their availability to users in nearly any location with an internet connection

Cloud infrastructure is often referred to as a **public cloud**.

Ultimately...

Cloud computing offers cost-savings, scalability, and the ability to access data from anywhere. Traditional computing requires businesses to purchase and manage hardware, software, and other related services, which can be expensive and difficult to scale.

Hardware components

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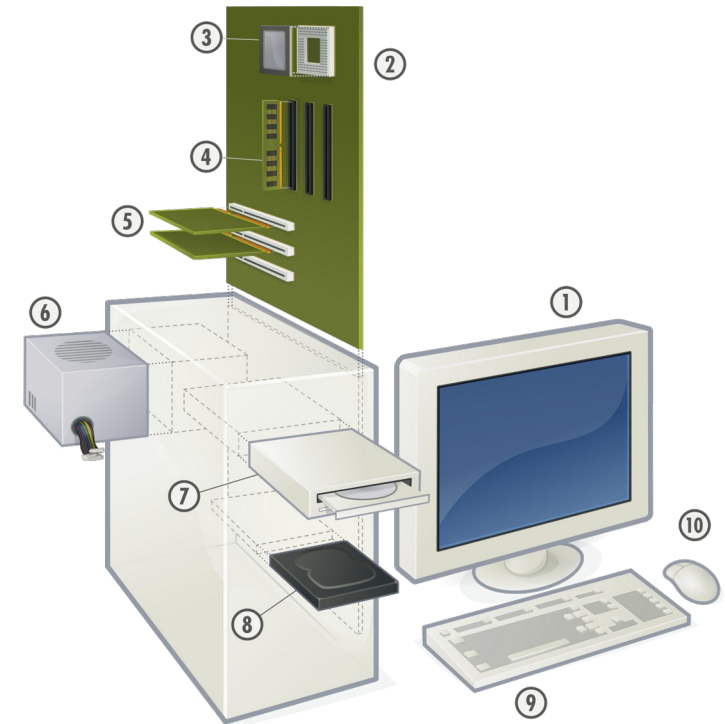
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What is the hardware?

The hardware refers to the physical and tangible parts of a computer, such as the case, central processing unit (CPU), random access memory (RAM), monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers and motherboard.

It is so-termed because it is "hard" and rigid with respect to changes

It is also dependent on the other element of the IT infrastructure, as hardware uses software to work.



5 categories of hardware

- **Processing hardware.** For the computer to perform logical operations, i.e. its calculations, resides.
- **Storage hardware.** These are units that allow information to be stored, both on internal media within the machine and on removable and portable media.
- **Input hardware.** These are devices that allow information to be entered into the system.
- **Output hardware.** These devices allow information to be extracted from the system.
- **Input and output hardware.** These are devices that combine the functions of input and output of information from the system.

Hardware components

- **User access devices**

These are the devices that users interact with to access the network, such as computers, printers, tablets, and other interfaces.

- **Servers**

Servers are powerful computers that store and manage data for your business. They can be used to run applications, host websites, and provide other services.

- **The router**

This device is responsible for connecting multiple networks and enable communication between them.

Hardware components

- **The hub or switch**

It connects multiple devices within a network and manages communication between them.

- **The modem**

It establishes a connection between the network and the internet.

- **Storage devices**

These components store data and can be accessed by authorized devices on the network.

Software Components

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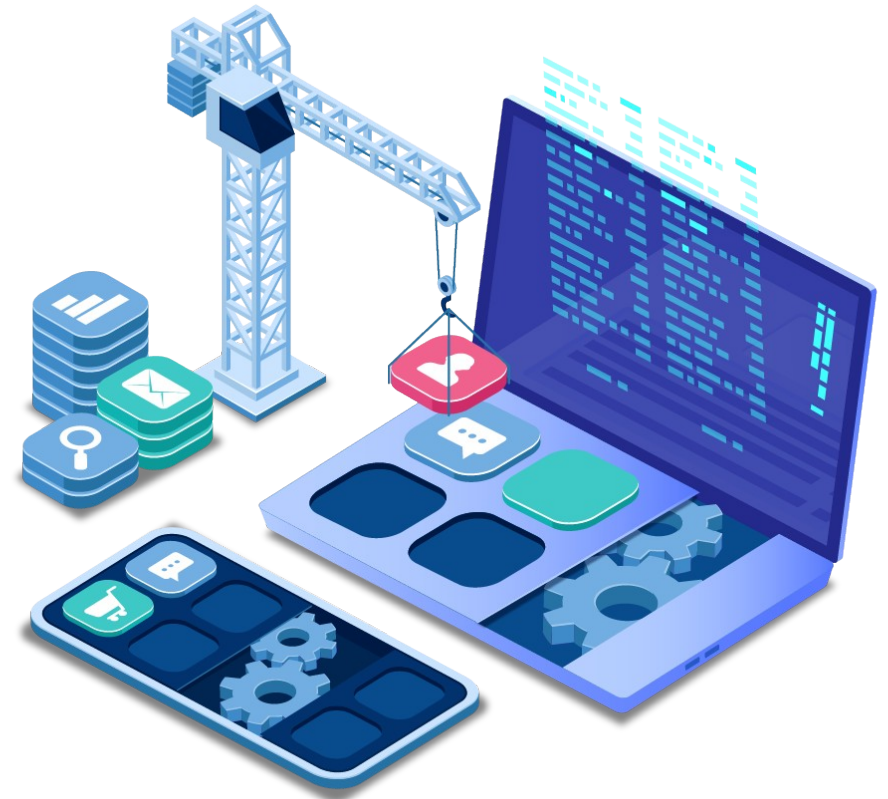
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What is the software?

The **software** is a set of instructions, data or programs used to operate computers and execute specific tasks.

Unlike hardware, it is the non-visible or tangible part of computing. But it needs hardware to make itself visible to our eyes.



Types of software

1. System software

The system software is the interface between the hardware and user applications

2. Utility software

Included within the system software category, utility software carries out specialized functions to ensure the continuous operation of a computer.

3. Application software

Any software that doesn't belong to the realm of operating systems or utilities is considered application software or apps.

Software Components

- **Content management systems (CMS)**

These are software platforms that facilitate the creation, management, and modification of digital content.

- **Customer relationship management (CRM)**

CRM software helps businesses manage and analyze interactions with customers and prospects.



Software Components

- **Enterprise resource planning (ERP)**

ERP software integrates and manages various aspects of a company's operations, including inventory management, human resources, finance, manufacturing, and customer relationship management.

- **Operating systems**

Operating systems are fundamental software that manage computer hardware resources and provide an interface for users to interact with the computer.

- **Web servers**

Web servers are software programs that handle requests and deliver web content to users over the internet.

Network components of IT Infrastructure

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What are the network components of IT Infrastructure?

These include the various connections and protocols that enable communication between devices.

Network components collectively form the foundation of an IT infrastructure's networking capabilities, facilitating communication, data transfer, and connectivity between devices within a network.

Network components

- **Local Area Networks (LANs)**

LANs are used to connect devices within a single building or location. They are commonly used in offices and other small businesses.

- **Wide Area Networks (WANs)**

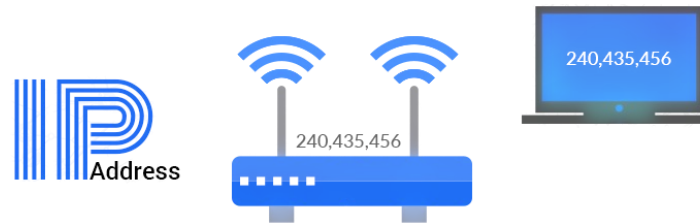
WANs are used to connect devices over long distances, such as between different buildings or locations. They are commonly used by larger businesses and organizations.



Network components

- **Internet Protocol (IP) Addresses**

IP addresses are unique identifiers that are assigned to devices on a network. They are used to enable communication between devices.



- **Domain Name System (DNS)**

DNS is used to translate domain names, such as www.google.com, into IP addresses that can be understood by computers.