IT Infrastructure

IT infrastructure refers to the composite hardware, software, network resources and services required for the existence, operation and management of an enterprise IT environment. It allows an organization to deliver IT solutions and services to its employees, partners and/or customers and is usually internal to an organization and deployed within owned facilities.

IT infrastructure consists of all components that somehow play a role in overall IT and IT-enabled operations. It can be used for internal business operations or developing customer IT or business solutions.

Typically, a standard IT infrastructure consists of the following components:

- **Hardware:** Servers, computers, data centers, switches, hubs and routers, and other equipment
- **Software:** Enterprise resource planning (ERP), customer relationship management (CRM), productivity applications and more
- **Network:** Network enablement, internet connectivity, firewall and security
- **Meatware:** Human users, such as network administrators (NA), developers, designers and end users with access to any IT appliance or service are also part of an IT infrastructure, specifically with the advent of user-centric IT service development.

Information technology infrastructure is defined broadly as a set of information technology (IT) components that are the foundation of an IT service; typically physical components (computer and networking hardware and facilities), but also various software and network components.

According to the **Information Technology Infrastructure Library's (ITIL) Foundation Course Glossary**, IT Infrastructure can also be termed as "All of the hardware, software, networks, facilities, etc., that are required to develop, test, deliver, monitor, control or support IT services. The term IT infrastructure includes all of the Information Technology but not the associated People, Processes and documentation."

Infrastructure is the foundation or framework that supports a system or organization. In computing, information technology infrastructure is composed of physical and virtual resources that support the flow, storage, processing and analysis of data. Infrastructure may be centralized within a data center, or it may be decentralized and spread across several data centers that are either controlled by the organization or by a third party, such as a collocation facility or cloud provider.

Components of IT Infrastructure

Switching: A network switch is the device that provides connectivity between network devices on a Local Area Network (LAN). A switch contains several ports that physically connect to other network devices – including other switches, routers and servers. Early networks used bridges, in which each device "saw" the traffic of all other devices on the network. Switches allow two devices on the network to talk to each other without having to forward that traffic to all devices on the network.

Routers: Routers move packets between networks. Routing allows devices separated on different LANs to talk to each other by determining the next "hop" that will allow the network packet eventually get to its destination.

Firewalls: Firewalls are security devices at the edge of the network. The firewall can be thought of as the guardian or gatekeeper.

Servers: A network server is simply another computer, but usually larger in terms of resources than what most people think of. A server allows multiple users to access and share its resources. There are several types of servers.

Physical Plant: The physical plant is the entire network cabling in your office buildings and server room/data center. This all too often neglected part of your infrastructure usually is the weakest link and is the cause of most system outages when not managed properly. There are two main types of cabling in the infrastructure: CAT 5/6/7 and fiber optic. Each type of cabling has several different subtypes, depending on the speed and distance required to connect devices.

People: By the strict ITIL definition, people are not considered part of the network infrastructure. However, without competent, well-qualified people in charge of running and maintaining your infrastructure, you will artificially limit the capabilities of your organization. In larger organizations, there are specialty positions for each of the areas mentioned in this article. In smaller organizations, you will find that the general systems administrator handles many of the roles.

Server Rooms / Data Center: The server room, or data center (in large organizations), can be thought of as the central core of your network. It is the location in which you place all of your servers, and it usually acts as the center of most networks. The data center hardware infrastructure often includes the power, cooling and building elements necessary to support data center hardware.

Infrastructure Software: This is perhaps the most "gray" of all infrastructure components. However, I consider server operating systems and directory services (like MS Active Directory) to be part of the infrastructure. Without multi-user operating systems, the hardware can't perform its infrastructure functions.

LAYERS OF IT INFRASTRUCTURE