IT Infrastructure Management Activities

The physical infrastructure of a country includes all of the physical structures and components necessary for maintaining its functions. There are highways that citizens use to transport goods between cities, or from rural to urban areas. There are streets and roads that commuters use to travel to work and school each day. There are bridges that help people cross rivers. Things like electrical and water utilities are also considered infrastructure, as they allow the municipality to deliver key services that residents need.

IT infrastructure is similar to building infrastructure in that it consists of physical components that support the activities and services that are required by users to support business functions. There are applications that support key functions, servers that host the applications and data centers that house the servers. There is also networking infrastructure that facilitates access to applications and servers for the business. The term IT infrastructure refers to all of the components and elements that support management and access functions for data and information, along with other services.

IT infrastructure management deals with the oversight of key IT infrastructure elements that are required to deliver business services. These can include software applications and networking components, but the primary focus of IT infrastructure management is typically on physical components such as computer and networking hardware and the facility itself.

Three Categories of IT Infrastructure Management

Our understanding of IT infrastructure management depends on knowledge of the specific components of IT infrastructure and the most important tasks associated with managing each component. IT infrastructure management is sometimes divided into three sub-categories of management:

1) Systems Management

Systems management covers a wide range of key activities within the overall context of IT infrastructure management, as it includes the administration of all IT assets normally found within a data center. A Chief Information Officer (CIO) or Chief Technical Officer (CTO) is typically responsible for overseeing the daily operations of the data center and managing the integration of new applications and third-party services into the organization's hybrid cloud environment.

Systems management activities include security-focused initiatives such as intrusion detection and prevention, or security information and event management. Log management, workload automation, configuration management and the integration of cloud-based applications and services all fall under systems management.

2) Network Management

Network management is the discipline of managing security networks. IT security and operations analysts manage and configure networks to ensure that resources are properly allocated to applications and services where they are needed, and that the quality and availability of services are maintained. Network management also includes an element of security, as IT operators must maintain visibility and transparency into the network to control the organization's security posture and protect against unauthorized access and data breaches.

3) Storage Management

Data storage space is a limited and valuable asset for IT and business organizations. Therefore, a critical aspect of IT infrastructure management is the oversight of data storage technologies and resources, such as virtualization, storage provisioning, data compression and data security. Data compression and automatic storage provisioning can reduce data processing times and improve the performance of the data center. Automation and virtualization techniques can enable businesses to quickly re-allocate storage resources where needed. Other management techniques like data replication, mirroring and security help to guard against data loss or theft.

Components of IT Infrastructure Management

In addition to the three main categories of IT infrastructure management, it can also be useful to understand the IT infrastructure as a composition of seven major components. IT infrastructure managers are responsible for the design, implementation, maintenance and retirement of each of these IT infrastructure elements:

1. **Computer Hardware Platforms** - Computer hardware includes client machines such as laptops and desktop computers along with server machines and mainframes.

2. **Operating System Platforms** - The operating systems that run on computer hardware platforms are the second component of IT infrastructure. Common operating systems include Windows, UNIX, Linux and Mac OS X.

3. **Software Applications** - IT infrastructure management is mostly focused on managing the physical components of IT infrastructure, but may exercise some oversight of the most important enterprise software applications. This typically includes applications that are critical for managing service delivery at the enterprise level, such as SAP, Oracle, Microsoft and others.

4. **Data Management and Storage** - Management and oversight of data storage components is one of the key functions of IT infrastructure management. IT organizations may be responsible for managing the physical components of data storage,

such as data servers, along with the software components used to organize databases (MySQL, IBM DB2, Oracle, and others).

5. **Networking and Telecommunications Platforms** - The IT organization's internal network falls under the purview of IT infrastructure management. It covers everything from virtual network software (Microsoft Windows server, Cisco, etc.) to the physical telecommunications infrastructure (telephones, routers, wiring, etc.)

6. **Internet** - Internet-related infrastructure is closely tied to networking and telecommunications components of IT infrastructure. Websites that are hosted on internal or external servers, cloud-based web applications, web software development tools and web hosting services are all part of the IT infrastructure.

7. **Consulting and System Integration Services** - IT organizations in businesses that use legacy systems may be engaged in implementing new IT infrastructure to update legacy systems with new applications that are more powerful and robust for the modern technological setting.