# V20PCA107 - IT INFRASTRUCTURE MANAGEMENT
# UNIT-I_WEEK -2

**Design Factors for IT**

- The success of any IT organization depends on how well its design aligns with business needs and the availability of effective and efficient IT infrastructure support.
- To support an operating environment smoothly, it is necessary to have good organisational design which matches with the **business requirements, necessary infrastructure, good strategy** for the deployment and technology, and clearly defined accountability plan for the use and application of technology.

**Design Issues of IT Organizations and Infrastructure**

The major Design issues of IT organizations and IT infrastructure is discussed.

- The factors to be considered for the Worthy organizational Design
- Role of an IT Leader
- Designing IT organization (4 Assessments)

**Factors to be considered for the Good Organizational Design**

i. Business Requirements.
ii. Necessary Infrastructure to support business operations.
iii. Good Strategy and Technology for the Necessary Deployment.
iv. Clearly Defined Accountability Plan.

**Determining Customer's Requirements**

It is the process which identifies the customer's requirements to include **voice of the customer, data, and expectations of the customer in designing a process strategy**. To incorporate customer's expectations effectively, they are usually converted into a measurable expression and then are used to ensure process compliance with the customers' needs. Determination of customer's requirements is not static and is an ongoing matter and needs to be updated as the customer's requirements are changed. Data in requirement determination is collected using customer surveys and

the like **Six sigma program** is a business management strategy used to improve the quality of process outputs by recognising and removing the causes of imperfection and variation in manufacturing and business processes. It emphasises the importance of customers and considers them as a separate department.

**Organization**

- An IT organization (information technology organization) is the department within a company that is establishing, monitoring and maintaining information technology systems and services.
- In a large organization, the IT organization may also be charged with strategic planning to ensure that all IT initiatives support business goals.
- The organizational structures vary and can be centralized or decentralized depending upon the needs of the company.

**Impact of IT on Organization:**

- The use of computers and information technology has brought many changes to organizations like.,
- Manager's job, Organizational structure, authority and power, Job content (Value and supply Chain), Employee career paths.

**Impact of IT on Organization:**

- The most important task of managers is making decisions.
- IT changes the way many decisions are made.
- Less expertise is required for many decisions.
- More rapid identification of problems and opportunities.

**Advantages of IT on Organization:**

- Reduces office space
- Improves job satisfaction
- Increase the productivity (efficiency)
- Decreases the number of employees
- Provide the security to organization
- To manage the data and time schedule

**Challenges**

- High Skilled management required
- Negotiation of each level

- Availability of resources
- Need more financial support
- Decisions deliver is required to be fast

**IT INFRASTRUCTURE**

- **IT infrastructure management is the coordination of IT resources, systems, platforms, people, and environments. Here are some of the most common technology infrastructure management types:**

❖ OS Management: Oversees environments running the same OS by providing content, patch, provisioning, and subscription management.

❖ Cloud Management: Gives cloud admins control over everything running in a cloud — end users, data, applications, and services — by managing resource deployments, use, integration, and disaster recovery.

❖ Virtualization Management: Interfaces with virtual environments and the underlying physical hardware to simplify resource administration, enhance data analyses, and streamline operations.

❖ IT Operations Management: Also known as business process management, this is the practice of modeling, analyzing, and optimizing business processes that are often repeated, ongoing, or predictable.

❖ IT Automation: Creates repeatable instructions and processes to replace or reduce human interaction with IT systems. Also known as infrastructure automation.

❖ Container Orchestration: Automates the deployment, management, scaling and networking of containers, It can help you to deploy the same application across different environments without needing to redesign it.

❖ Configuration Management: Maintains computer systems, servers, and software in a desired, consistent state.

- ❖ API Management: Distributes, controls, and analyzes the application programming interfaces (APIs) that connect apps and data across enterprises and clouds.

- ❖ Risk Management: Identifies and assesses risks and creates plans to minimize or control those risks and their potential impacts.

**Types of IT Infrastructure**

- Traditional Infrastructure
- Cloud Infrastructure
- Hyperconverged Infrastructure
- **Traditional Infrastructure:**

With a traditional infrastructure, the components — like datacenters, data storage, and other equipment — are all managed and owned by the business within their own facilities.

Traditional infrastructure is often thought of as expensive to run and requires large amounts of hardware, like servers, as well as power and physical space.

- **Cloud Infrastructure:**

It describes the components and resources needed for cloud computing. You can create a private cloud by building it yourself using resources dedicated solely to you. (Or)
You can use a public cloud by renting cloud infrastructure from a cloud provider like Alibaba, Amazon, Google, IBM, or Microsoft.

• And by incorporating some degree of workload portability, orchestration (helps IT to more easily manage complex tasks and workflows), and management across multiple clouds, you can create a hybrid cloud (solution that combines a private cloud with one or more public cloud services)

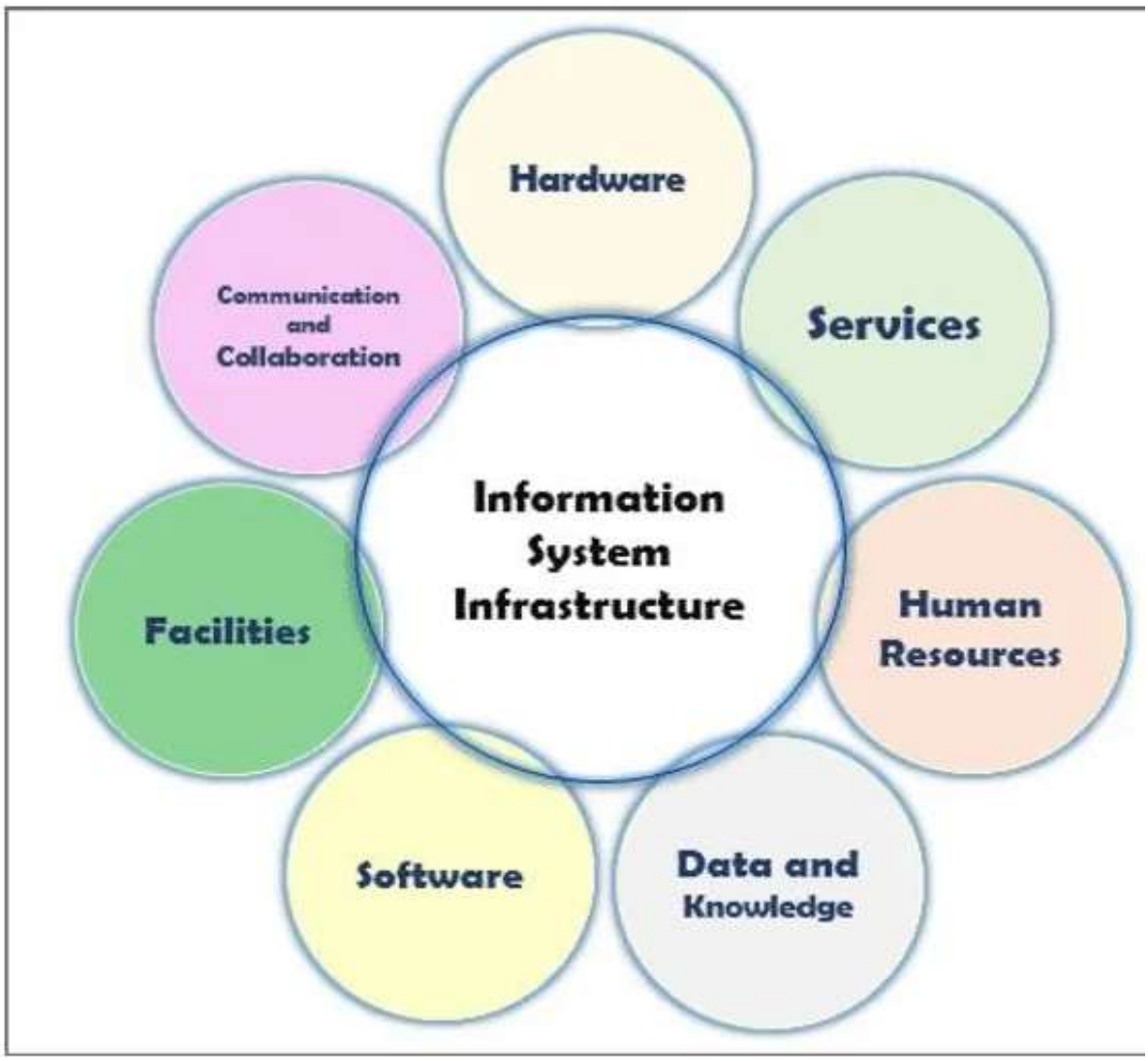
- **Hyperconverged Infrastructure:**

It allows you to manage your computer, network and data storage resources from a single interface. With software-defined compute and data storage bundled together, support more scalable architectures on industry-standard hardware.

- Simplify Deployments
- Lower Costs
- Increase Flexibility
- Raise Reliability...

**IT Systems**

- Information systems infrastructure has seen increasing change in technology; it has gone through a rapid rate of evolution.



- In the 1960s evolution started from mainframes to today's world of variety of laptops, computers, and phones with individual identity recognition, voice commands, and so on.

- It has completely changed the face of systems infrastructure in terms of size, features, processing, and speed, systems around have become completely depended on the computer these days.

- **Definition:** IT Systems means the hardware, Software, data, databases, data communication lines, network and telecommunications equipment, Internet-related information technology infrastructure, wide area network and other information technology equipment, owned, leased or licensed by the Company or any of its Subsidiaries.

- It means all computer systems, servers, network equipment and other computer hardware owned, and otherwise used in the conduct of Company Business.

- The IT Systems material describes the conduct of the Business as currently conducted is adequate and suitable for the conduct of the Business as currently conducted.

- Since 2018 January onwards there has been no

(i) Failure, breakdown or other adverse event that caused a material disruption to or the unavailability of the IT Systems or

(ii) Security Incident.

**IT SYSTEMS MANAGEMENT (ITSM)**

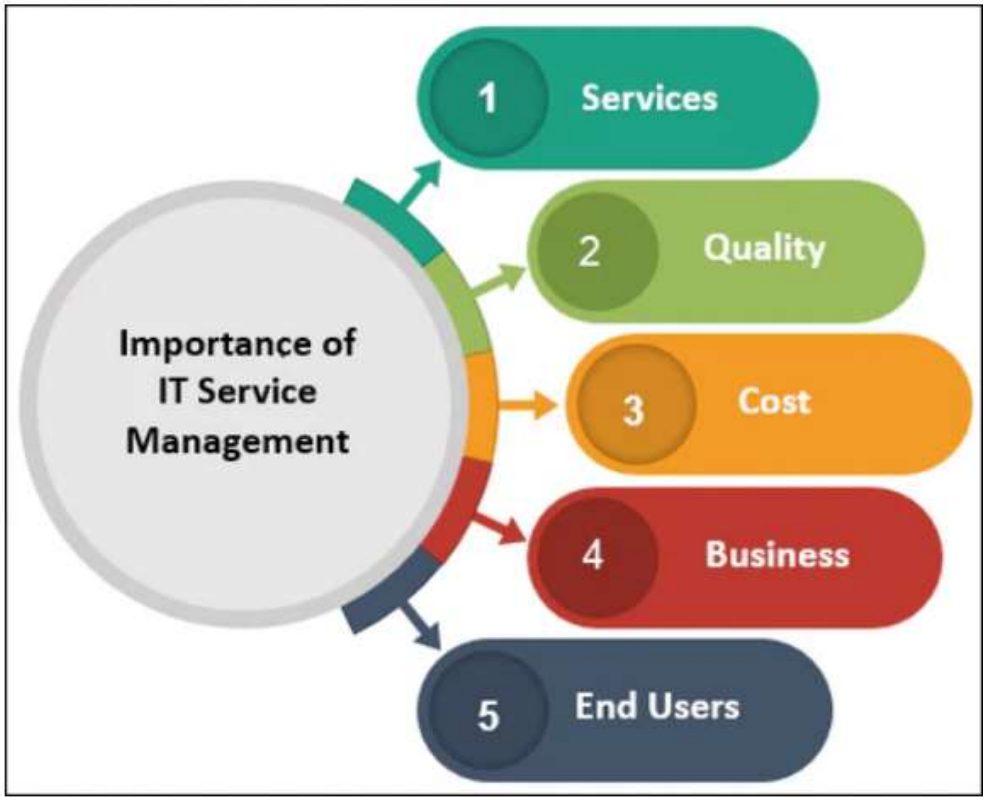
- The full form of ITSM is IT Service Management. ITSM aims to align the delivery of IT services with the needs of the enterprise.

- The focus of ITSM tools is to deliver satisfactory service to the end-user.

- ITSM is a combination of a set of defined policies, process, and methods for delivering IT products and services.
- It improves and supports customer-centric IT services.
- **Definition of Processes:** IT service management—often referred to as ITSM—is simply how IT teams manage the end-to-end delivery of IT services to customers.
- This includes all the processes and activities to design, create, deliver, and support IT services. The core concept of ITSM is the belief that IT should work as a service.

**ISTM PROCESSES**

- ITSM process helps you to manage IT services. Organizations need to manage the service's capabilities, how it performs, changes to it, and what happens when it experiences problems.



**ISTM Frameworks**

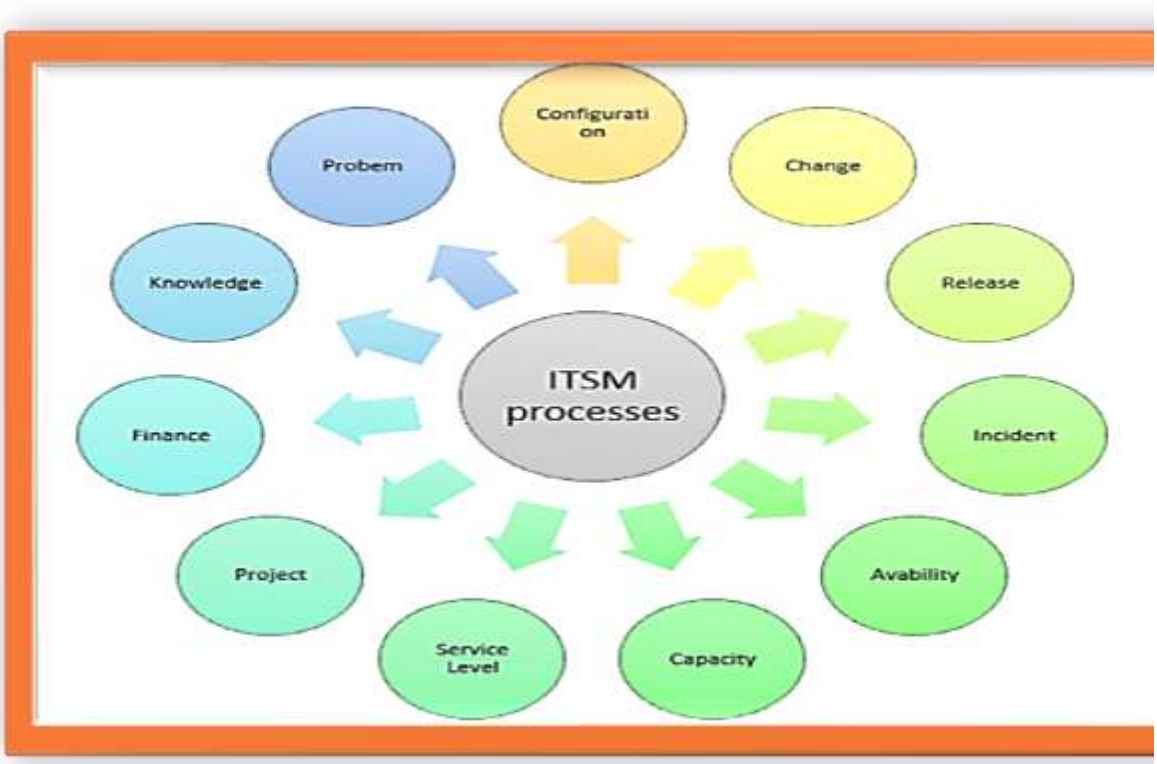
- There are many different ITSM processes which appear in various forms in the other ITSM frameworks. Here are some vital ITSM processes:

**Configuration Management**

- It includes the physical and logical perspective of the IT infrastructure and services

**Change Management**

- It is standard methods and procedures to manage all the changes made in ITSM services




**Release Management**

- Testing, release, and verification of changes to the IT environment.

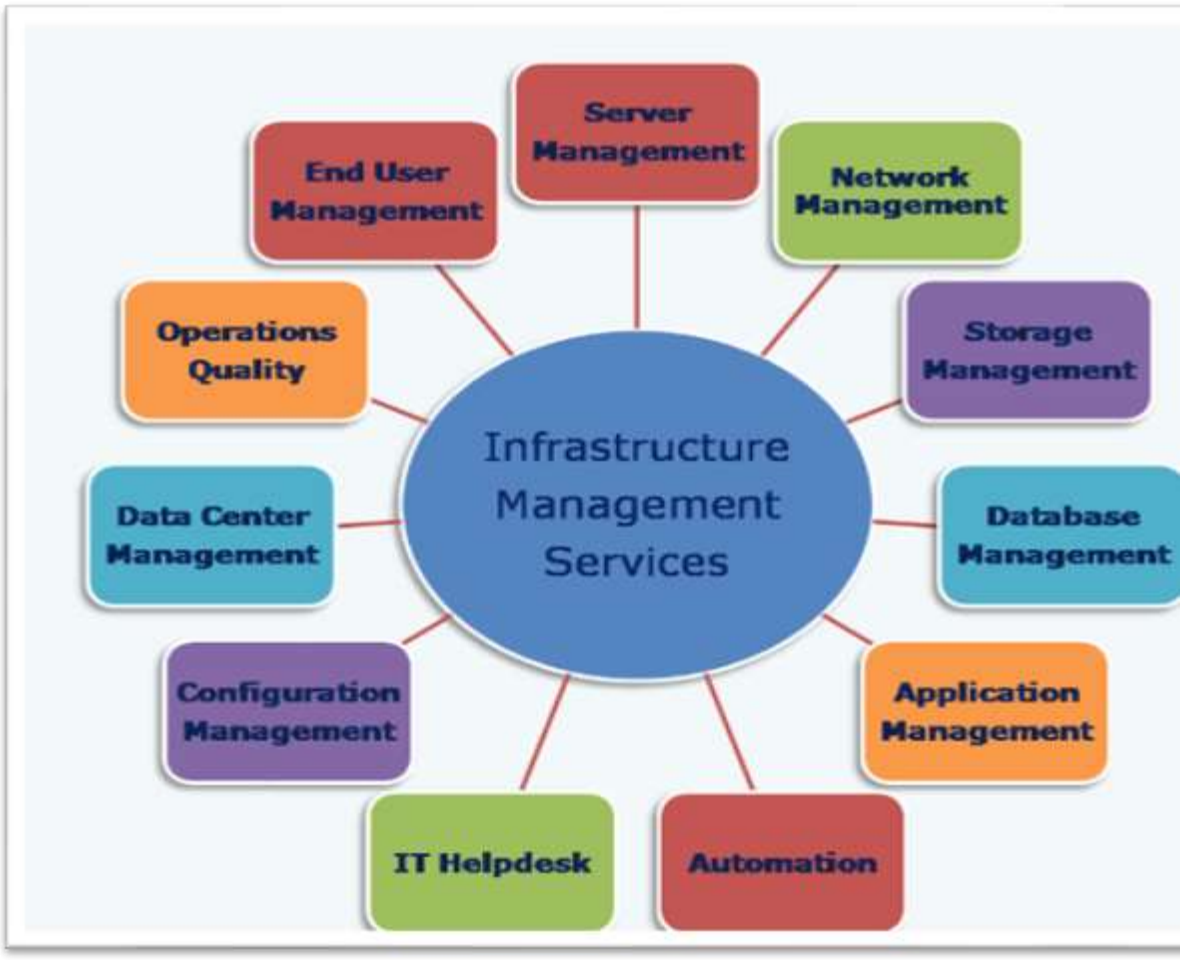
**Incident Management**

- It is a day-to-day process, which restores normal, acceptable service with a minimal impact on business.

**Availability Management**

- It optimizes IT infrastructure services, capabilities, and support to minimize service outages. It also offers sustained levels of service to suit the business requirements.

**ISTM COMPONENTS OF FRAMEWORKS**




**Capacity Management**

- Helps the organization to manage resources and allows them to plan for future resource requirements.

**Service Level Management**

- It helps you to improve and maintain the level of service to your clients. It helps to meet the SLA (Service Level Agreements).

**Project Management**

- Project management allows IT firms to maintain orderly services to avoid issues like outdated systems.

**Financial Management**

- This IT service helps you to manage the costs required by the company to meet its financial obligations. These services also include the resources needed to meet requirements.

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**Knowledge Management**

- Knowledge management helps you to avoid duplicated work by organizing and making available information about various types of IT products and services.

**Problem management**

- A problem is the root cause of any incident.

- An IT organization might temporarily solve the issue but can't fix the problem.

- This may lead to incidents, so problem management is a method to fix issues to improve service delivery and performance.

**Implement ITSM Process and Workflows**

Here, are five simple steps to implement ITSM process and workflows


Step 1) Audit

Audit your current ITSM operation and find out the gaps.

Step 2) Educate

Educate, communicate, and involve stakeholders while implementing ITSM processes.

Step 3) Outline

Outline the critical success factors and keep a tab on KPI and metrics.

Step 4) Use ITSM tools

Use relevant ITSM tools to automate the process.

Step 5) Feedback

Develop feedback loop and other stack holders.

An ITSM tool is a software service that is widely used to deliver.

**Popular ITSM Frameworks**

Here, are some most popular ITSM services frameworks: It also helps you to perform various functions like incident management, managing service requests, etc.

- Business Process Framework (eTOM)
- Six Sigma
- COBIT
- FitSM
- TOGAF (The Open Group Architecture Framework)
- MOF (Microsoft Operations Framework)

**Challenges of ITSM**

Here are important challenges while working with the ITSM process:

- ✓ Difficult to adapt to the team
- ✓ Maintaining regulatory compliance
- ✓ Risk and security concerns
- ✓ It does not offer visibility across teams
- ✓ Not offers any coordination with developers
- ✓ Avoiding unplanned downtime

- IT systems management helps in designing, implementing, and managing IT infrastructures.
- It commonly refers to enterprise-wide administration of distributed computer systems, etc.
- It assists in managing any IT infrastructure to achieve optimum efficiency, stability, reliability, availability and support.
- It also helps in running any IT organisation in a great way by understanding and utilising proven systems management techniques.
- IT system management includes complete details of how to implement each key discipline in the places such as mainframe data centres, midrange shops, client-server environments Web-enabled systems.

**Common Tasks of IT System Management**

IT systems are interconnected into complex supply chains and extended onto the desktops of home and business users who are not known to the managers of the systems. In such environment, IT professionals are expected to have responsibility for maintaining the stability and responsiveness of IT production environments. IT systems management is designed to help them in designing, implementing and managing any part of an IT environment or the entire IT infrastructure. Some of the common tasks of IT systems management are listed below:

- Maintaining hardware inventories
- Server availability monitoring and metrics
- Software inventory and installation task

- Anti-virus and anti-malware management
- User's activities monitoring
- Capacity monitoring
- Security management
- Network capacity and utilization monitoring.

**Organisational Management Approaches**

There are many approaches which are followed for organisational management. The popular ones are-People-Process-Technology and Strategy-Tactics-Operations approaches.

**People-Process-Technology Approach**

This approach considers that an IT systems management is based on the fundamental belief that People, Process, and Technology (commonly known as acronym 'PPT') are the three key components of any successful IT organisation. The model given below defines the core focus areas in managing organisational improvement. There is a need for these three areas to be addressed while considering organisational improvement. These three components are greatly related to each other management and development of IT infrastructure. Few important challenges are listed below:

**Suitability to the Organisation**: IT infrastructure management needs to develop and deploy management activities in such a way that they support operational and strategic goals of the organisation. The management activity consists of two parts: maintenance of existing systems and development of new infrastructure. Usually, information system development relies on existing hardware and software resources. However, vision is required in both business and IT in order to achieve what technology can do and how to make its best possible use.

**Low Cost and High-Quality:** Management activities should achieve low cost with high quality. Sometimes, interactions and partnership with outside IT service providers may provide solutions to this challenge.

**Adaptability in Changeable Environment:** IT infrastructure should not only be reliable in operations today and but it should also be open for changes in the future, to

incorporate future business requirements. All choices that are made in developing the infrastructure are important because the infrastructure is an organisational asset and meant to be used for an extended period.

Decrease Business Risk Infrastructure provides the foundation upon which business applications are built. Therefore, it is required to be managed in such a way that it does not fail under any circumstances. Since these challenges are related to IT management problems, IT managers should develop management procedures to match the current and future requirements.

| Aspect | Traditional IT | Cloud IT |
|---|---|---|
| **Cost** | High initial investment for hardware and software | Pay for what you use, potential long-term savings |
| **Scalability** | Requires new hardware, possibly more physical space | Easily scales up or down, flexible options |
| **Security** | Controlled in-house, could be an advantage or limitation | Managed by provider, often with strong protocols |
| **Performance** | Can slow as hardware ages | Generally high uptime, robust computing power |
| **Management** | In-house team for updates and troubleshooting | Most maintenance handled by provider |