



# SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution)

Re-accredited by NAAC with A+ grade, Accredited by NBA(CSE, IT, ECE, EEE & Mechanical)  
Approved by AICTE, New Delhi, Recognized by UGC, Affiliated to Anna University, Chennai

## DEPARTMENT OF COMPUTER APPLICATIONS

**COURSE**

23CAE717  
Cloud Computing

**UNIT I**

Cloud Architecture  
and Model

**TOPIC**

Introduction

**Semester**

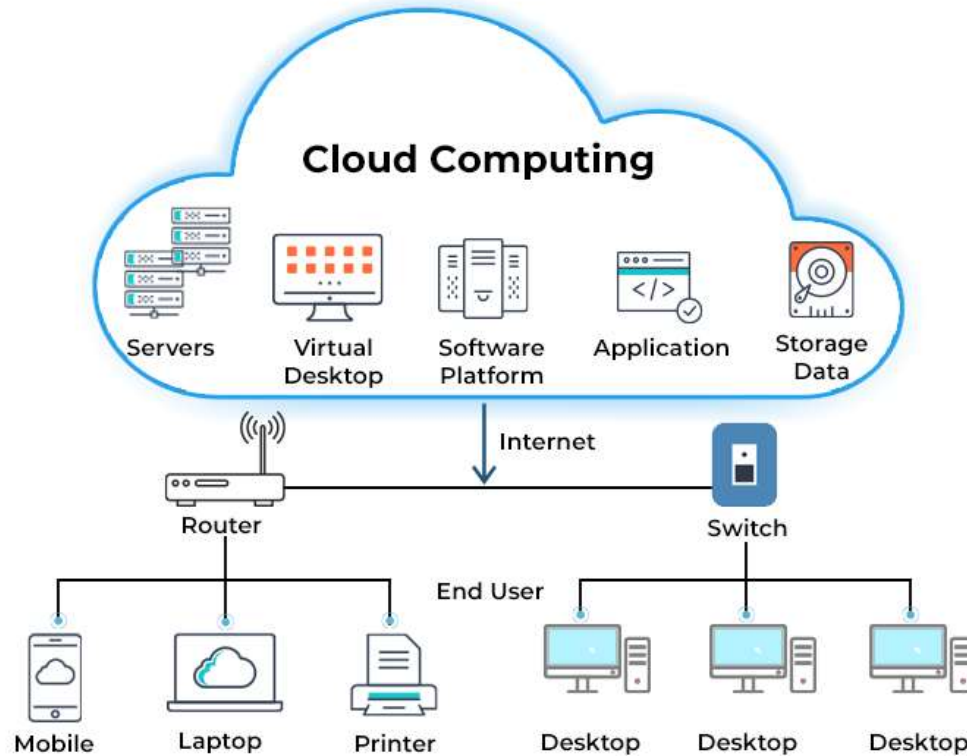
II Semester /  
I MCA



# Cloud computing



## CLOUD COMPUTING ARCHITECTURE



Cloud computing refers to the use of hosted services:

1. Data storage
2. Servers
3. Databases
4. Networking
5. Software over the internet.

The data is stored on physical servers, which are maintained by a cloud service provider.



# Before Cloud computing



**Buy a stack of servers/computers**



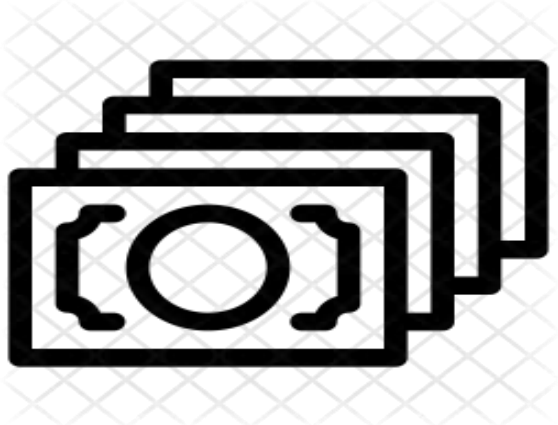
**Managing network traffic**



**Monitoring and Maintenance of servers**



# Difficulties...

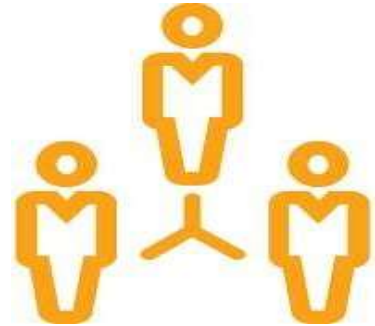


**Setup is expensive**



**Under utilization of hardware resources**

**Managing network/  
troubleshooting is tedious**

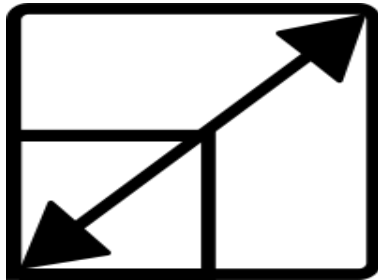




# Now....



**Put your data on cloud server**



**Server capacity will vary depends on traffic (Scalability)**



**Cloud provider manage servers**



# Why move to Cloud ?

Disaster  
recovery

Flexibility

Environment friendly

Automatic software updates

Document  
control

Capital expenditure free

Work from anywhere

Security

Increased collaboration



# Characteristics of Cloud

## On Demand Computing





# Characteristics of Cloud

## Secondary Characteristics

- Strong fault tolerance
- Virtualization
- Service oriented
- Low cost
- Business model
- Advanced security







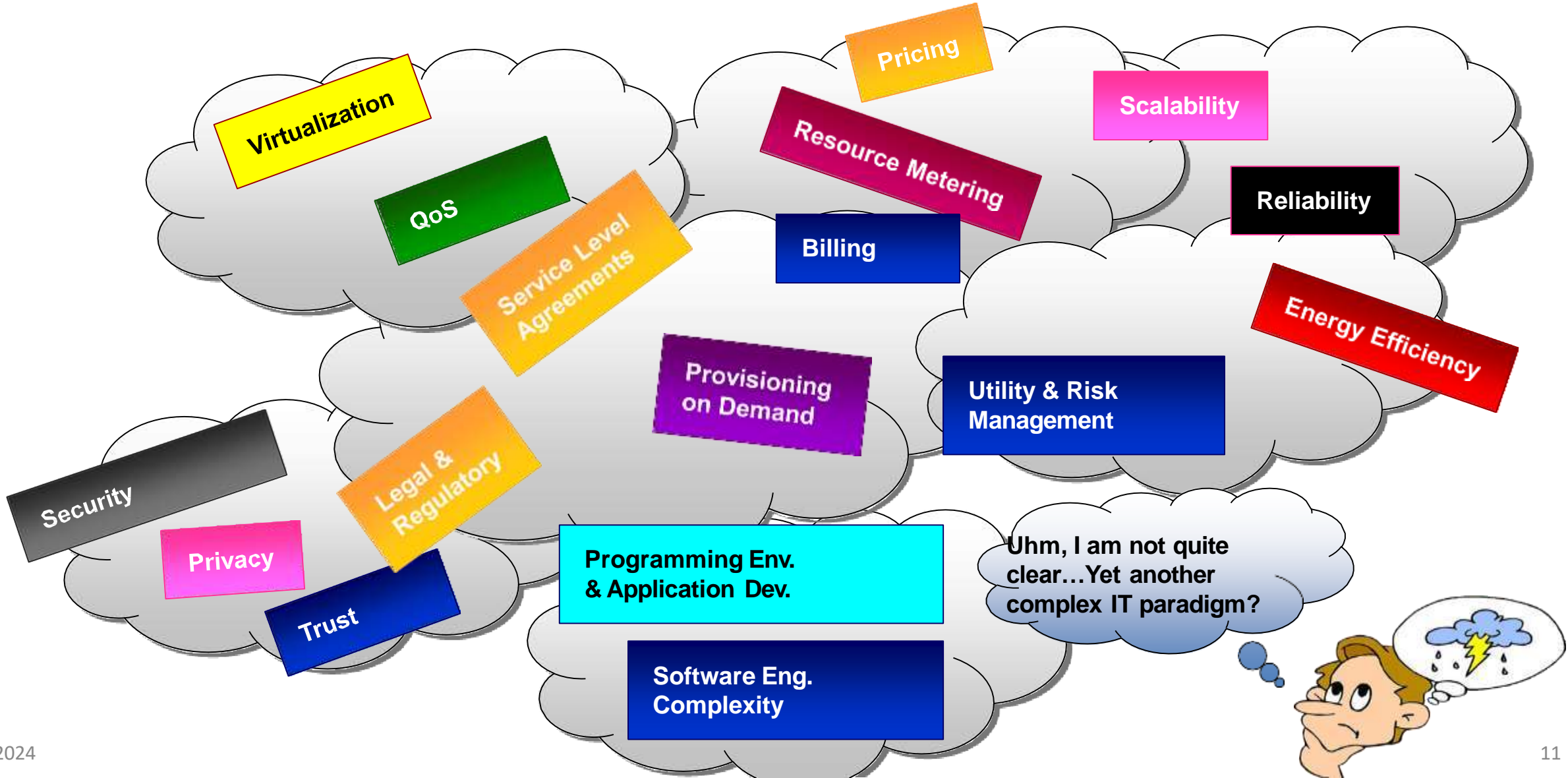
# Advantages

- ❑ Lower computer costs
- ❑ Improved performance
- ❑ Reduced software costs
- ❑ Instant software updates
- ❑ Unlimited storage capacity
- ❑ Increased data reliability
- ❑ Availability
- ❑ Device independence





# Challenges



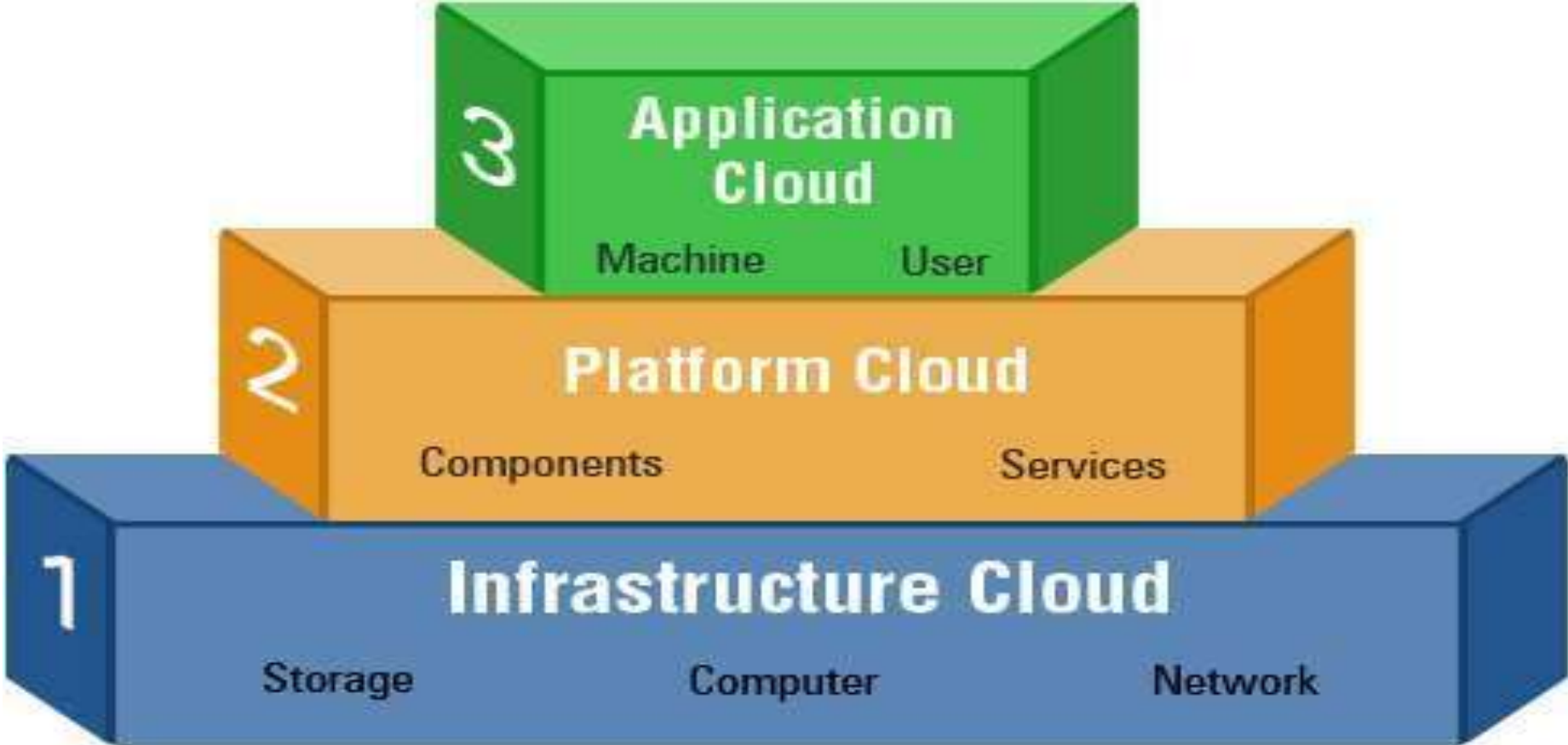


# Service Layers in Cloud

	Services	Description
<b>Application Focused</b>	<b>Services</b>	<b>Services</b> - Complete business services such as PayPal, Google Maps, Alexa
	<b>Application</b>	<b>Application</b> - Cloud based software that eliminates the need for local installation such as Google Apps, Microsoft Online
	<b>Development</b>	<b>Development</b> - Software development platforms used to build custom cloud based applications (PAAS & SAAS) such as SalesForce
<b>Infrastructure Focused</b>	<b>Platform</b>	<b>Platform</b> - Cloud based platforms, typically provided using virtualization, such as Amazon, Sun Grid
	<b>Storage</b>	<b>Storage</b> - Data storage or cloud based CloudNAS
	<b>Hosting</b>	<b>Hosting</b> - Physical data centers such as those run by IBM, HP, etc.

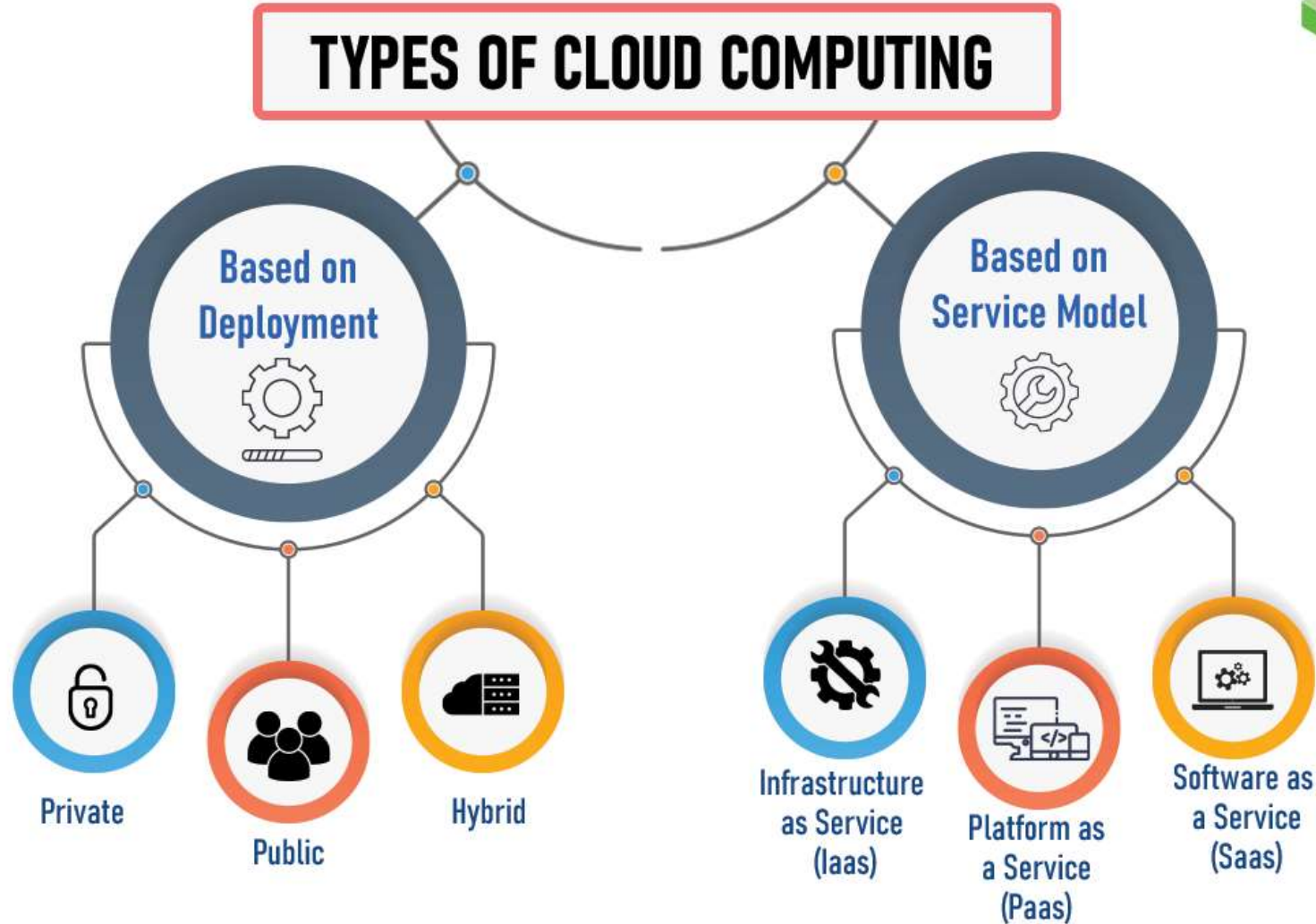


# Service Models



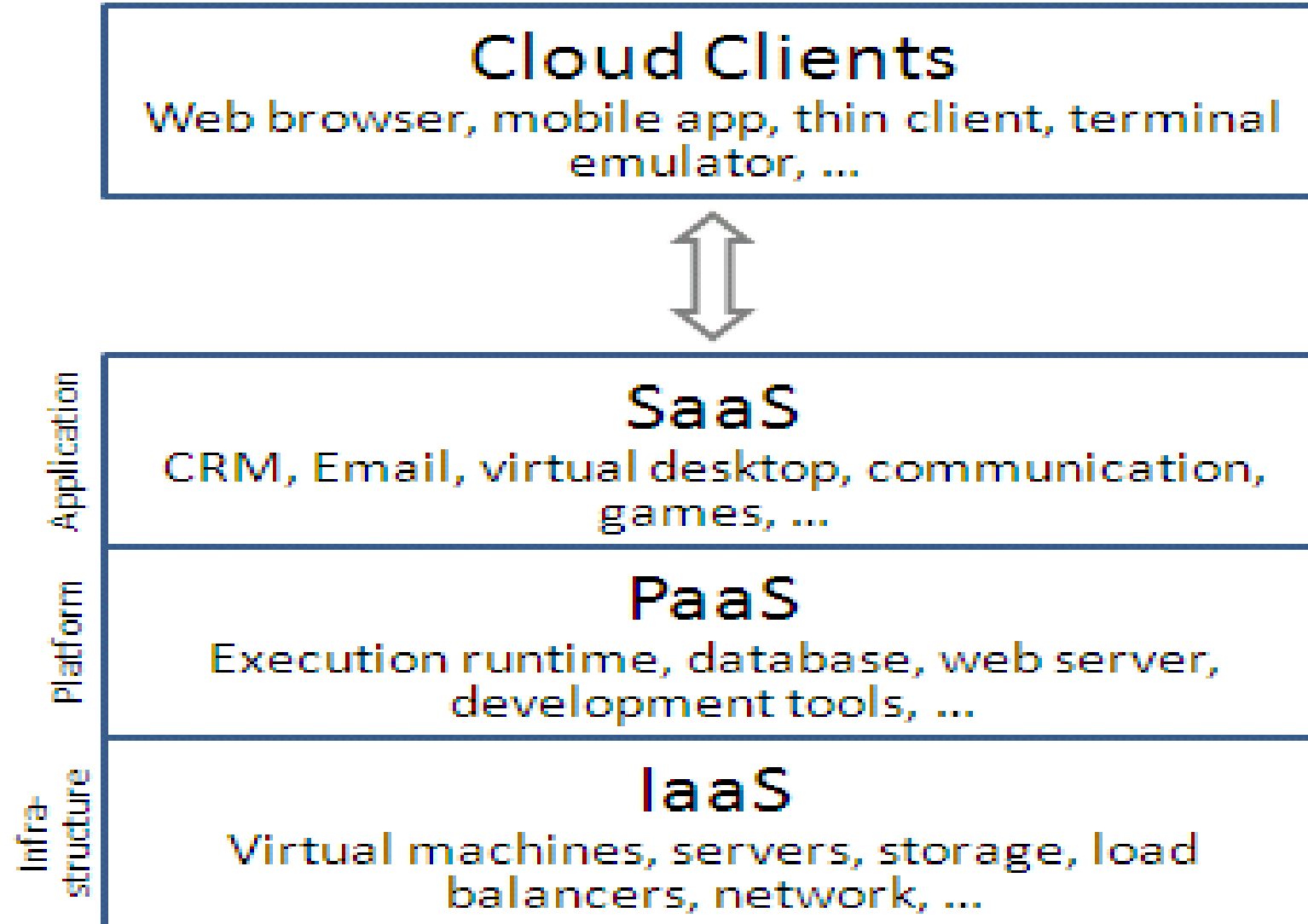


# Services





# Cloud Service Models





# Infrastructure as a Service

- ❑ Provides storage and compute resources as a service
- ❑ used by developers and IT organizations to deliver business solutions
- ❑ Consumers can customize the entire infrastructure package by selecting CPU hours, storage space, bandwidth etc.

## Characteristics

- Resources distributed as a service
- Dynamic, on-demand scaling of resources
- Utility based pricing model
- Concurrent users on a single piece of hardware



# Platform as a Service



- ❑ Delivers development/OS environments as a service
- ❑ Includes set of tools and services designed to make coding and deploying the applications quickly and efficiently

## Characteristics

- Develop, test, deploy, host and maintain applications
- Multi-tenant architecture facilitating concurrent users
- Load balancing, security and failover capabilities for application to be deployed
- OS and Cloud programming APIs to create new apps for cloud or to cloudify the current apps
- Tools to handle billing and subscription





# Software as a Service

- ❑ Delivers a single application through the browser to multiple users using a multitenant architecture
- ❑ Provider sells an application to customers on license basis, in a “pay-as-you-go” model
- ❑ provider side, with just one app tons quickly and efficiently

## Characteristics

- Centralized web based access to company and commercial software
- Entire business process shifting to cloud giving superior services to client
- No hassle of software upgrades / patches as they are managed by Service provider
- APIs allow integration with different applications



# Forms of Cloud Computing

## Deployment mode

- Public cloud
- Private cloud
- Hybrid cloud



### PUBLIC CLOUD

- Offered by third-party providers
- Available to anyone over the public internet
- Scales quickly and convenient



### HYBRID CLOUD

- Combination of both public and private cloud
- Shared security responsibility
- Helps maintain tighter controls over sensitive data and processes



### PRIVATE CLOUD

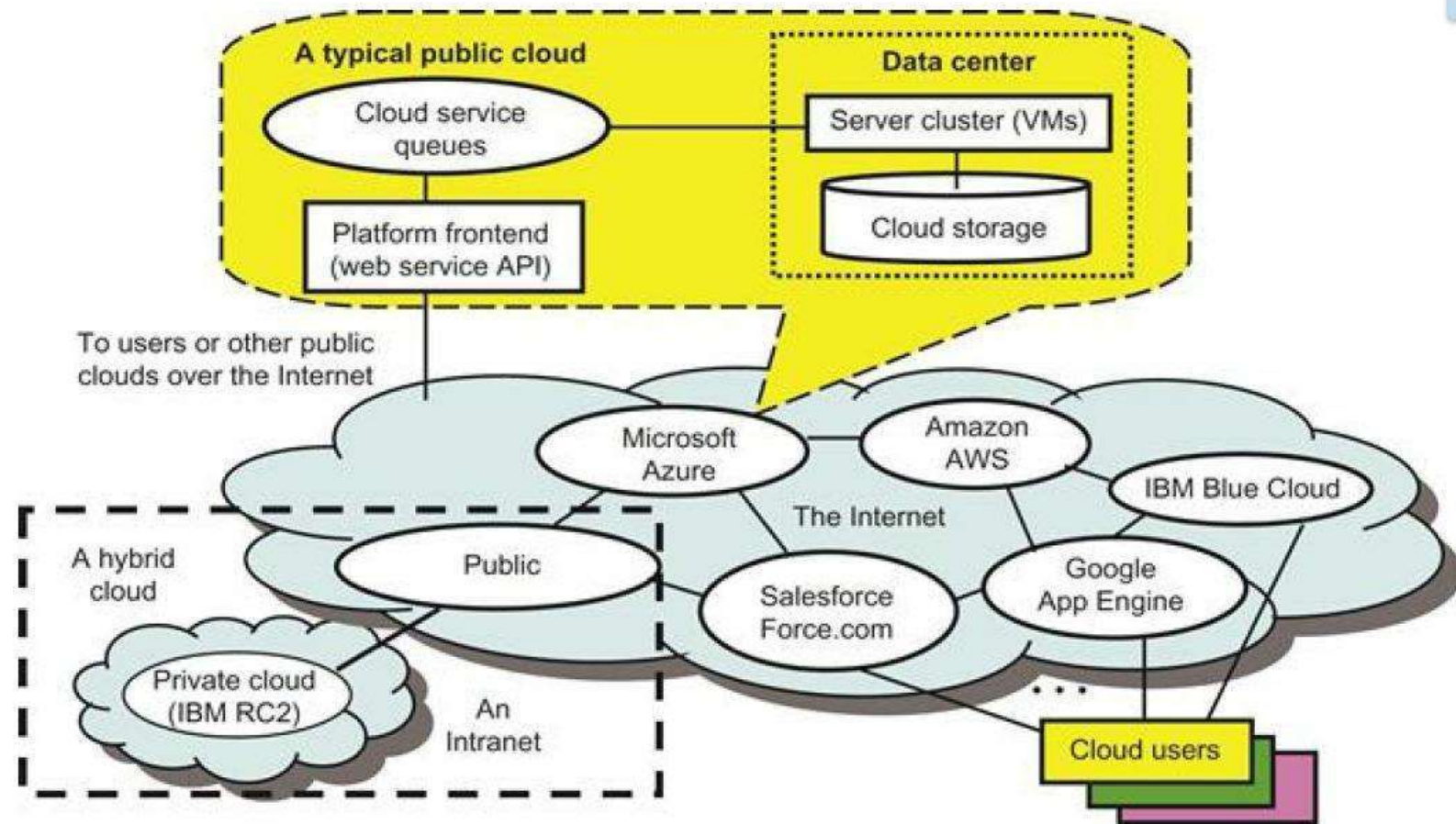
- Offered to select users over the internet or a private internal network
- Provides greater security controls
- Requires traditional datacenter staffing and maintenance



# Forms of Cloud Computing

## Deployment models

- Public cloud
- Private cloud
- Hybrid cloud





# Cloud Players

IaaS



Google Compute Engine



PaaS



SaaS





ANY  
QUERIES ?