

***Cloud service  
models  
&  
Deployment  
models***

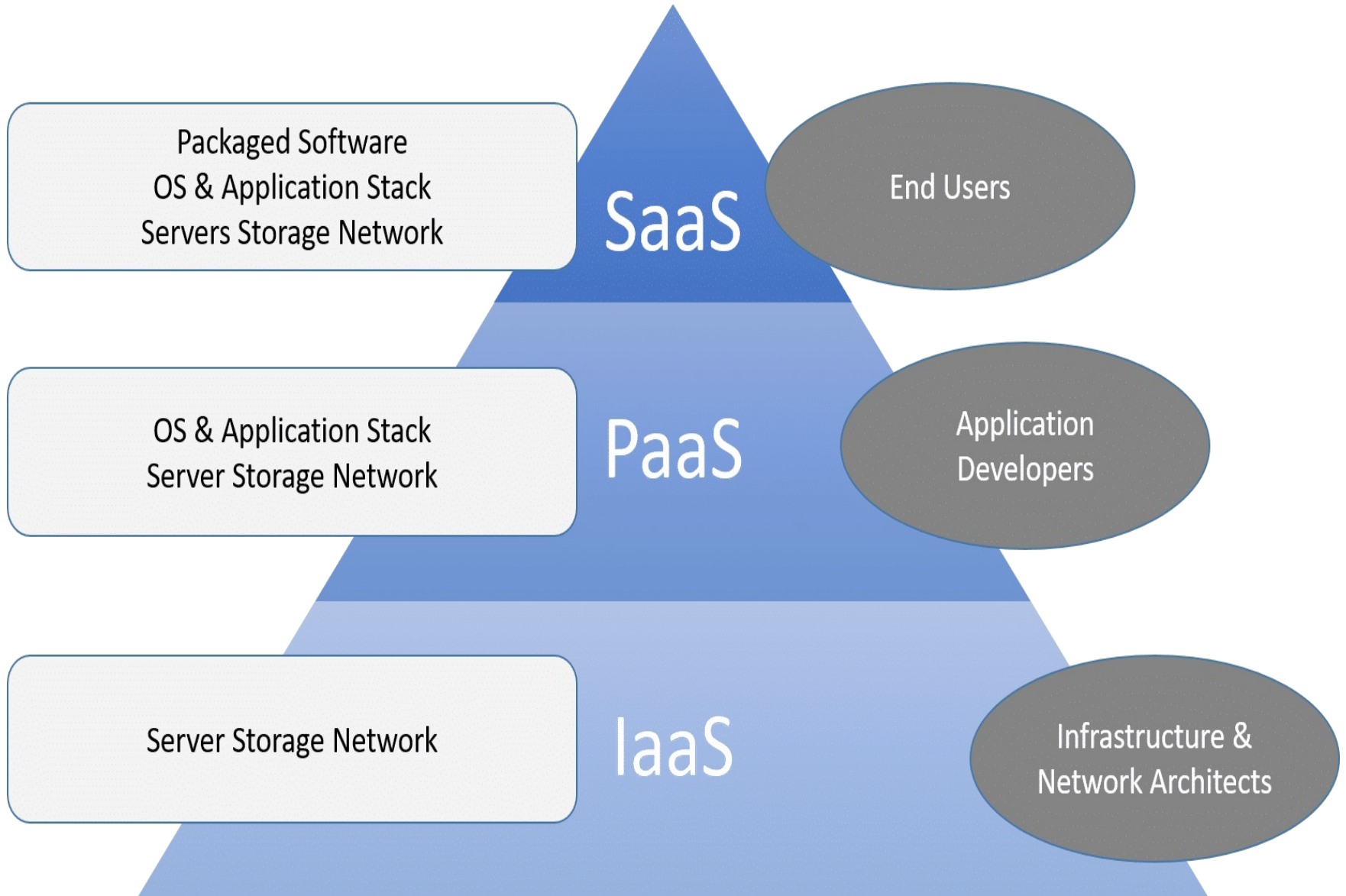
# Basic Concept

- There are certain services and models working behind the scene making the cloud computing feasible and accessible to end users.
- This cloud model is composed of essential characteristics:
  - Three service models
  - Four deployment models

# SERVICE MODELS

- Service Models are the reference models on which the Cloud Computing is based. These can be categorized into three basic service models as listed below:
  1. Software as a Service(SaaS)
  2. Platform as a Service(PaaS)
  3. Infrastructure as a Service(IaaS)

# Cloud Service Models



# SaaS



Highly scalable internet based applications are hosted on the cloud & offered as services to the end user.

Google Docs, acrobat.com, salesforce.com

# PaaS



Here, the platforms used to design, develop, build & test applications are provided by the cloud infrastructure.

Azure Service Platform, force.com, Google App Engine.

# IaaS



In this pay per use model, services like storage, database management & compute capabilities are offered on demand.

Amazon Web Services, GoGrid, 3 Tera

# Infrastructure as a service (IaaS)

- This services offers the computing architecture & infrastructure, all computing resources but in a virtual environment so that multiple users can access them.
- Resources include; Data Storage, Virtualization, Servers & Networking.
- Most vendors are responsible for managing the above four resources.
- User will be responsible for handling other resources such as Applications, Data, Runtime & Middleware.

# Key features of IaaS

- Instead of purchasing hardware outright, users pay for IaaS on demand.
- Infrastructure is scalable depending on processing and storage needs.
- Saves enterprises the costs of buying and maintaining their own hardware.
- Because data is on the cloud, there can be no single point of failure.
- Enables the virtualization of administrative tasks, freeing up time for other work.

# ADVANTAGES

- The cloud provides the infrastructure
- Enhanced Scalability – Dynamic workloads are supported
- IaaS is flexible



# DISADVANTAGES

- Security Issues
- Network & Service Delays

# IaaS Examples



# PLATFORM AS A SERVICE(PaaS)

- PaaS provides the runtime environment for applications, development & deployment tools, etc.
- Encapsulate the environment where users can build, compile and run their programs.
- In this model, you manage data & the application resources; all other resources are managed by the vendor.

# Key features of PaaS

- PaaS provides a platform with tools to test, develop and host applications in the same environment.
- Enables organizations to focus on development without having to worry about underlying infrastructure.
- Providers manage security, operating systems, server software and backups.
- Facilitates collaborative work even if teams work remotely.

# ADVANTAGES

- Lower cost of ownership
- Faster market for developers
- Easy deployment of web applications
- Private or Public deployment is possible

# DISADVANTAGES

- Developers are limited to the providers languages & tools
- Migration issues – Such as the risk of vendor lock-in

## PaaS Examples



# SOFTWARE AS A SERVICE(SaaS)

- *SaaS model allows to use software applications as a service to end users.*
- *Independent Platform*
  - Don't need to install the software on your PC.
  - Instead, the applications reside on a remote cloud network accessed through the web or an API.
- *Runs a Single Instance of the Software*  
Available for multiple end users.
- *Cloud Computing Cheap*  
Computing Resources Managed by Vendor.



# Key features of SaaS

- SaaS vendors provide users with software and applications via a subscription model.
- Users do not have to manage, install or upgrade software; SaaS providers manage this.
- Data is secure in the cloud; equipment failure does not result in loss of data.
- Use of resources can be scaled depending on service needs.

# ADVANTAGES

- Universally accessible from any platform
- No need to commute, you can work from any place
- Excellent for collaborative working
- Vendors provide modest software tools
- Allows for Multi-Tenancy(i.e. when the same software is accessed by several simultaneously connected users over the Internet)

# DISADVANTAGES

- Portability & Browser issues
- Internet performance may dictate overall performance
- Compliance Restrictions

# SaaS Examples



Microsoft Online Services: Business Productivity Online Suite

SharePoint Online



Office Communications Online

Exchange Online



Office Live Meeting

facebook.

# DEPLOYMENT MODELS:

- Also known as cloud types.
- Defined by the users.
- Not by technology, cost, or location
- Storing Data and Computing

# Cloud Deployment Models

A cloud icon with a blue outline and a purple glow.

**PRIVATE**

**Manufacturing organization has its own private cloud**

A cloud icon with a blue outline and a light blue glow.

**PUBLIC**

**Manufacturing organization shares cloud with general public**

A cloud icon with a blue outline and an orange glow.

**HYBRID**

**Combination of cloud deployment models**

A cloud icon with a blue outline and a light green glow.

**COMMUNITY**

**Manufacturing organization shares cloud with other organizations with similar interests**

# PRIVATE CLOUD

- Private or dedicated resources
  - Computing and/or storage
- Not defined by location
  - Does not need to be local/internal
- Concerns
  - Reliability (uptime)
  - Management (greater skillset)
- Examples: R&D, Analytics, Supply chain, etc.

# PUBLIC CLOUD

- Used by the public – anyone & everyone
- Open use for individuals and companies
- Providers offer
  - Free and paid models
  - Storage and Computing/Processing
- Example: Dropbox, Email, web, etc.
- Security is the top concern



# HYBRID CLOUD

- Combination of two or more distinct cloud infrastructures (private, community, or public).
- Clouds are bound together by standardized technology that enables data and application portability.
- Example:
  - Cloud bursting for load balancing between clouds.
  - A Cloud provider
    - Offers shared storage(public)
    - Provides dedicated computing(private)

# COMMUNITY CLOUD

- For exclusive use by a group of users
- Users share mission or regulation
- e.g. security requirements, policy, healthcare, financial, law , education, energy, etc.

## Type

## Properties

1.

Private cloud

- Outsource or own
- Lease or buy
- Separate or virtual data center

2.

Community cloud

- Private cloud for a set of users with specific demands
- Several stakeholders

3.

Public cloud

- Mega scaleable infrastructure
- Available for all

4.

Hybrid cloud

- Combination of two clouds
- Usually private for sensitive data and strategic applications