Could Computing

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**ITNT 404**

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Introduction

- Cloud Computing can be defined as the practice of using a network of remote servers hosted on the internet to store, manage, and process data, rather than a local server or a personal computer.

- It can also be defined as the delivery of different services through the internet which includes tools and applications like data storage, servers, database, networking and software.

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Introduction

- Cloud computing is a paradigm shift following the shift from **mainframe** to **client–server** in the **early1980s**.

- The advantage of using cloud computing services is that **organizations** can **avoid** the **upfront cost** and **difficulty** of managing their own **IT infrastructure** and pay for when they use it.

- Users can access all digitized services available on the **"Internet cloud"** without having any previous know-how on managing the resources involved.
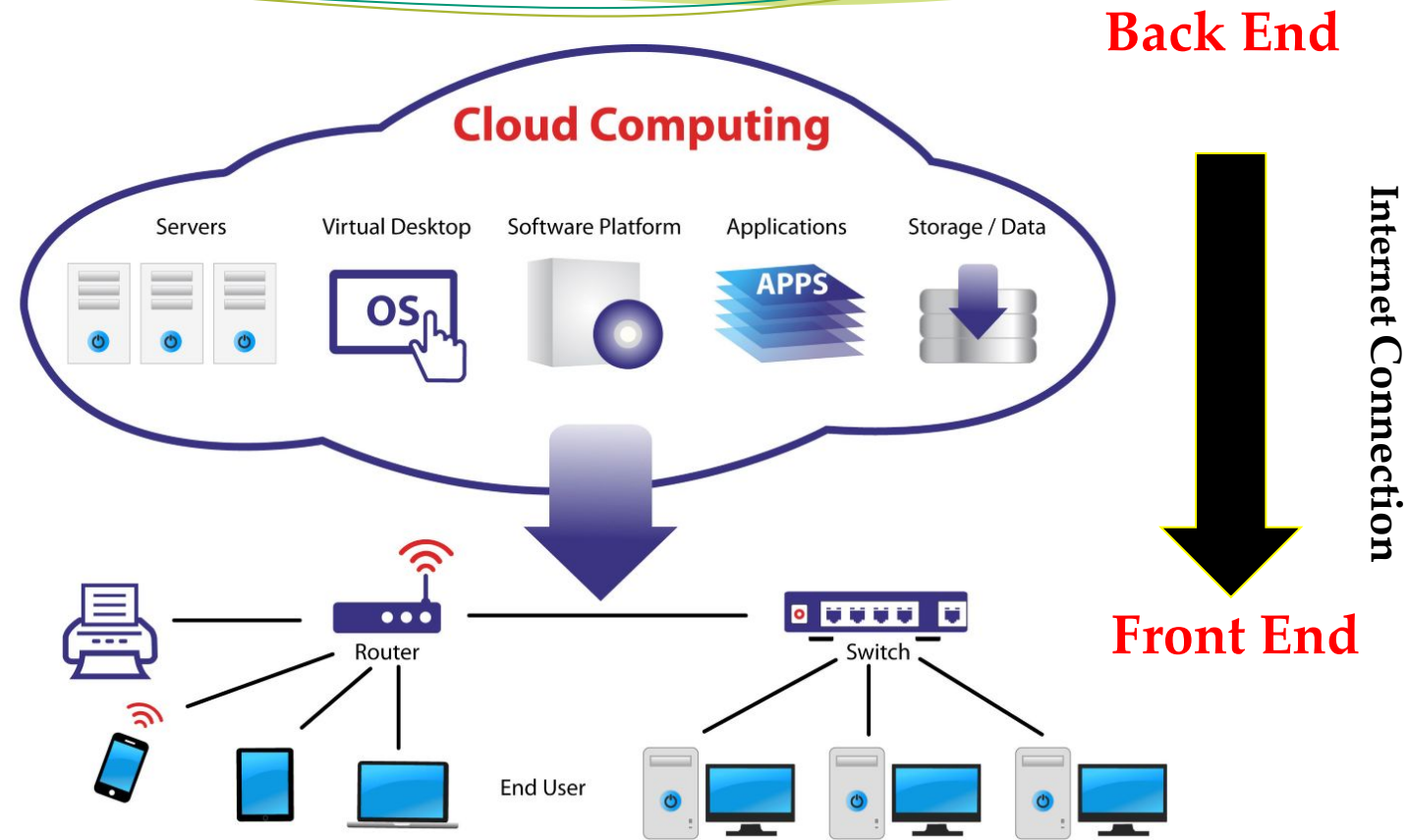
Cloud infrastructure
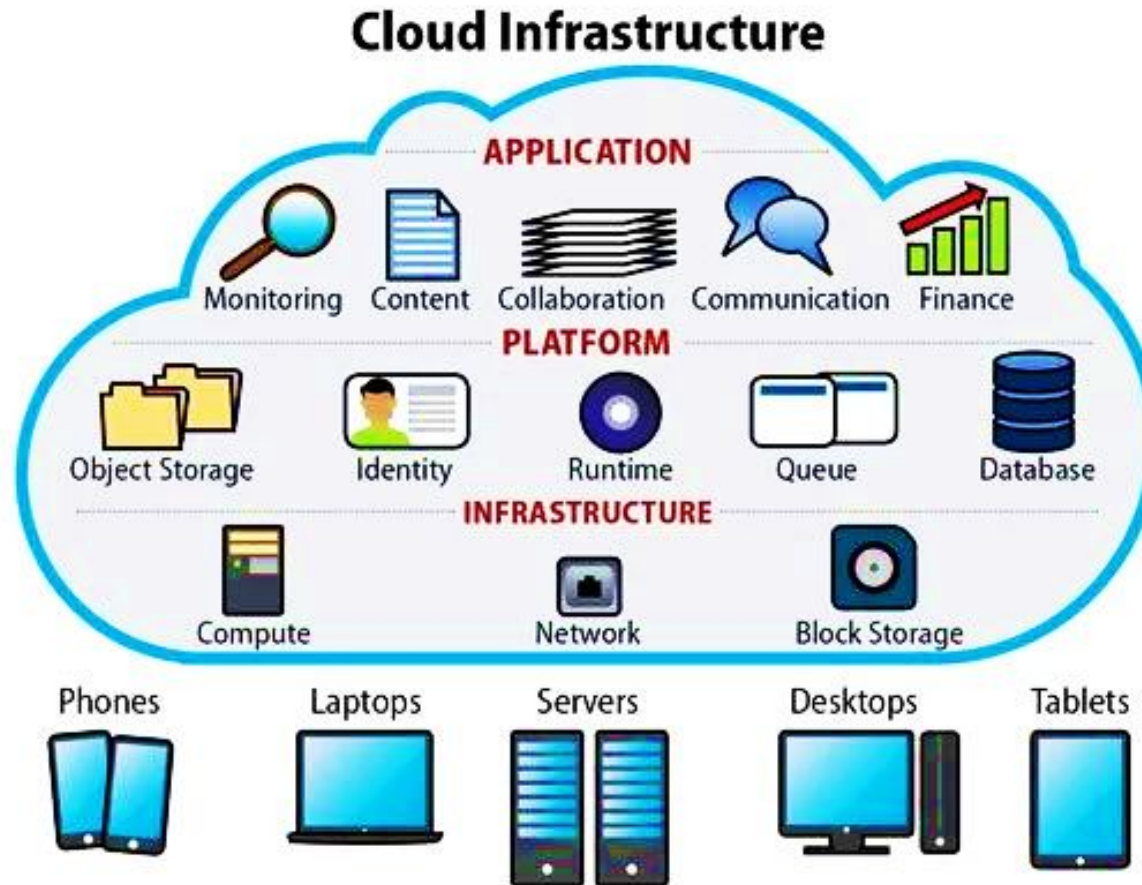
History

- Concept originated from telecommunication companies changing to VPN.

- In 1997 , the concept of "Cloud Computing " was introduced in Dallas.

- 1999 Salesforce Salesforce.com started the whole concept of enterprise applications through the medium of simple websites. Along with that, the services firm also covered the way to help experts deliver applications via the Internet.

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History

- In 2003 The **Virtual Machine Monitor, (VMM),** that allows running of multiple virtual guest operating systems on single device, was introduced.

- 2006 Amazon also started expanding in cloud services From **EC2** to Simple Storage Service **S3**,

- They introduced **pay-as-you-go** model, which has become a standard practice even today.

- 2013 With **IaaS, (Infrastructure-as-a-Service),** the **Worldwide Public Cloud Services Market** was totalled at **£78 bn**, which turned out to be the fastest growing market services of that year.

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Architecture

- The systems architecture of the software systems involved in the delivery of cloud computing, typically involves multiple cloud components communicating with each other over application programming, interfaces, usually web services.

Cloud Computing

Servers   Virtual Desktop   Software Platform   Applications   Storage / Data

Router

Switch

End User

Back End

Internet Connection

Front End

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Cloud Computing Sample Architecture

- This looks like the UNIX philosophy of having multiple programs each doing one thing well and working together over universal interfaces.

- The two most significant components of cloud computing architecture are known as the **front end and the back end**.

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Cloud Computing Sample Architecture

- The front end is the part seen by the client, i.e. the computer user .This includes the client's network (or computer) and the applications used to access the cloud via a user interface such as a web browser .

- The back end of the cloud computing architecture is the cloud itself, comprising various computers servers and data storage devices .

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Advantages of Cloud Computing

- **Flexibility:** There is high rate of flexibility.

- **Low Cost:** Companies can save big by employing cloud computing as it eliminates cost for hardware and software.

- **Speed & Scales:** Traditional methods to buy and configure hardware and software are time consuming.

- **Easier Management of Data and Information:** Since all data are located on a centralized location, data are more organized making it easy to manage.

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Advantages of Cloud Computing

- **Device Diversity:** We can access our applications and data anywhere in the world, , on any system.

- **Increased Storage Capacity**: Increased Storage Capacity is another benefit of the cloud computing, as it can store more data as compared to personal computer.

- **Easy to Learn and Understand:** Since people are quiet used to cloud applications like Gmail Google Docs so anything related to the same is most likely to be understood by the users.

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Advantages of Cloud Computing

- **Automatic Updating:** It saves companies time and effort to update

  multiples server.

- **Customize Setting:** Cloud computing also allows you to customize
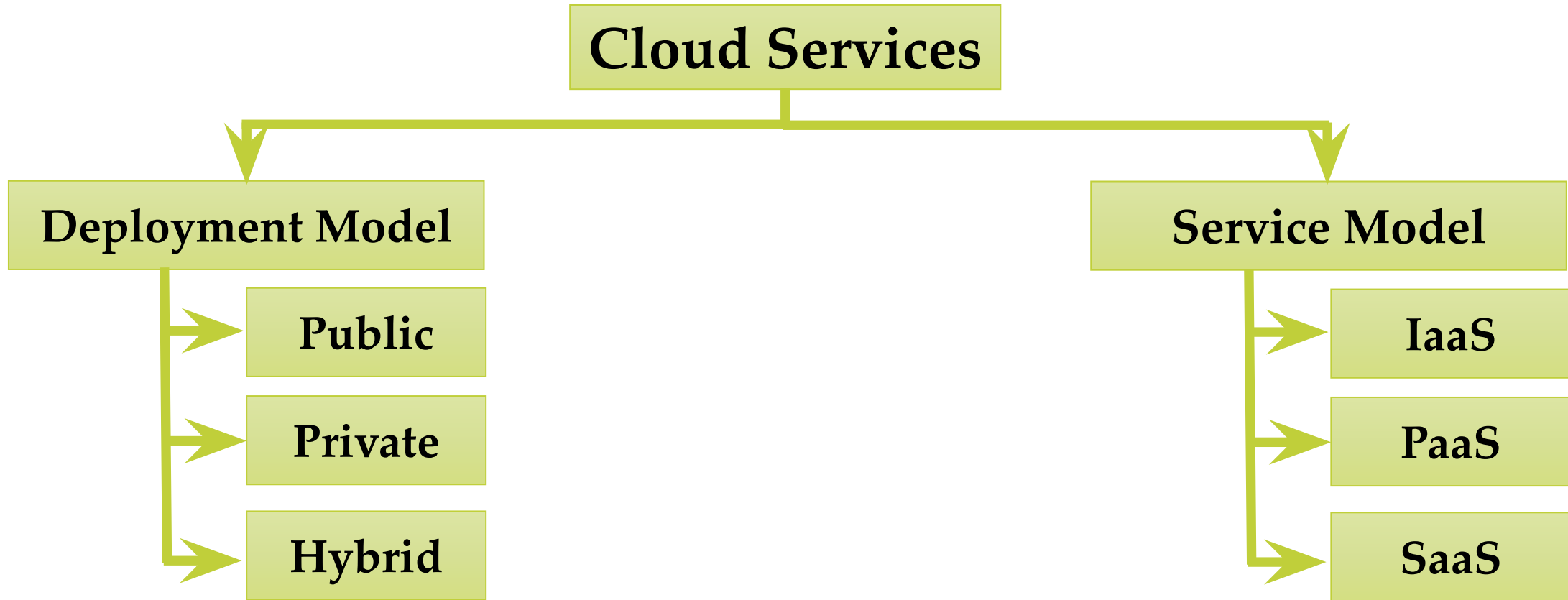
  your business applications.

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Disadvantages of Cloud Computing

- **Dependency :**One major disadvantages of cloud computing is user's dependency on the provider.

- **Risk:** Cloud computing services means taking services from remote servers.

- **Requires a Constant internet connection:** The most obvious disadvantage is that Cloud computing completely relies on network connections.

- **Security:** Security and privacy are the biggest concerns about cloud computing.

- **Migration Issue:** Relocation problem is also a big concern about cloud computing.
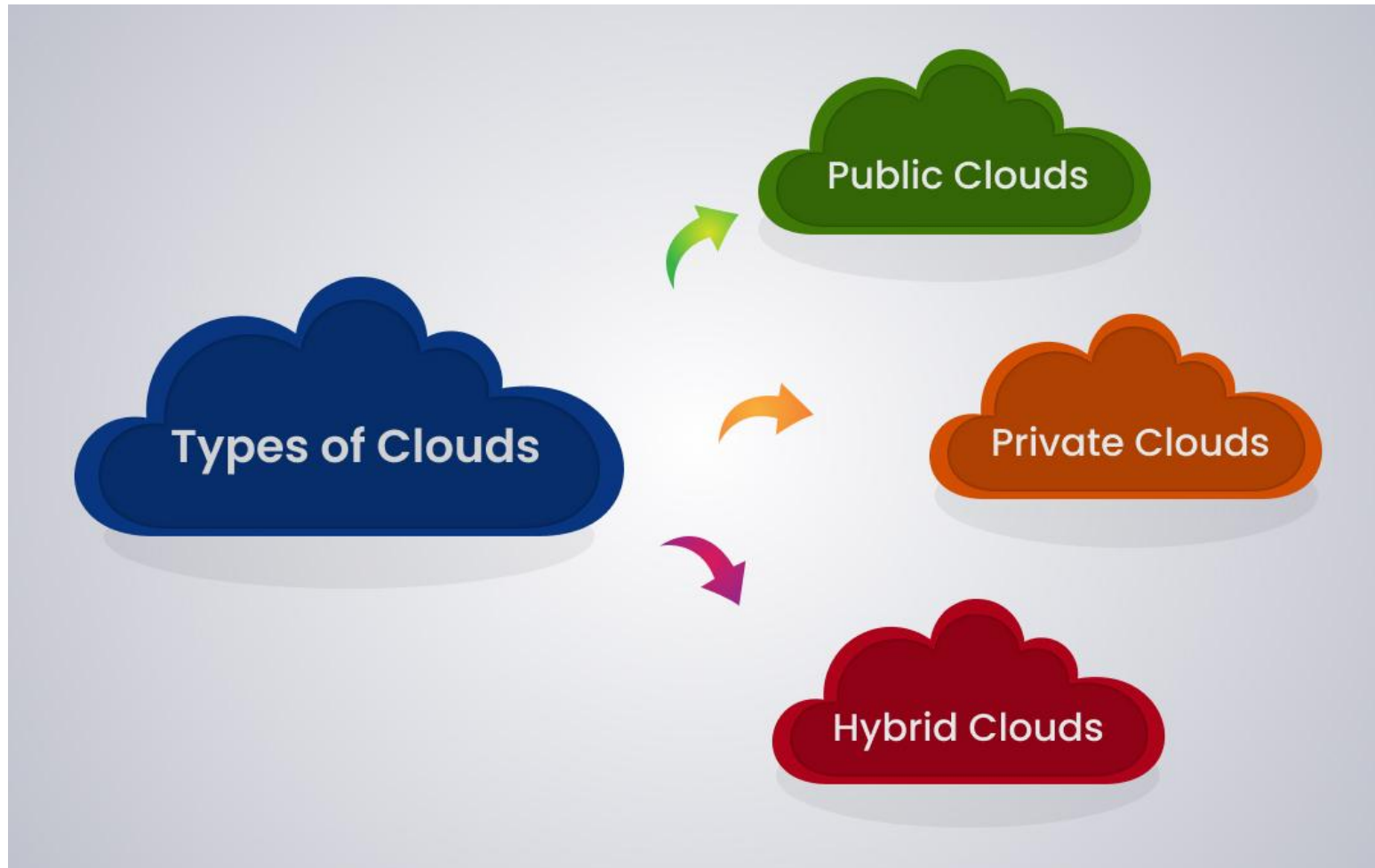
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Examples on Cloud Services

- **E-mail Services:** Gmail, Yahoo and Hotmail.

- **Cloud Storage Services:** Google Drive, Dropbox and SkyDrive.

- **Cloud Music Services:** Google Music & Amazon Cloud Player.

- **Cloud Application Services:** Google Docs, Photoshop Express.
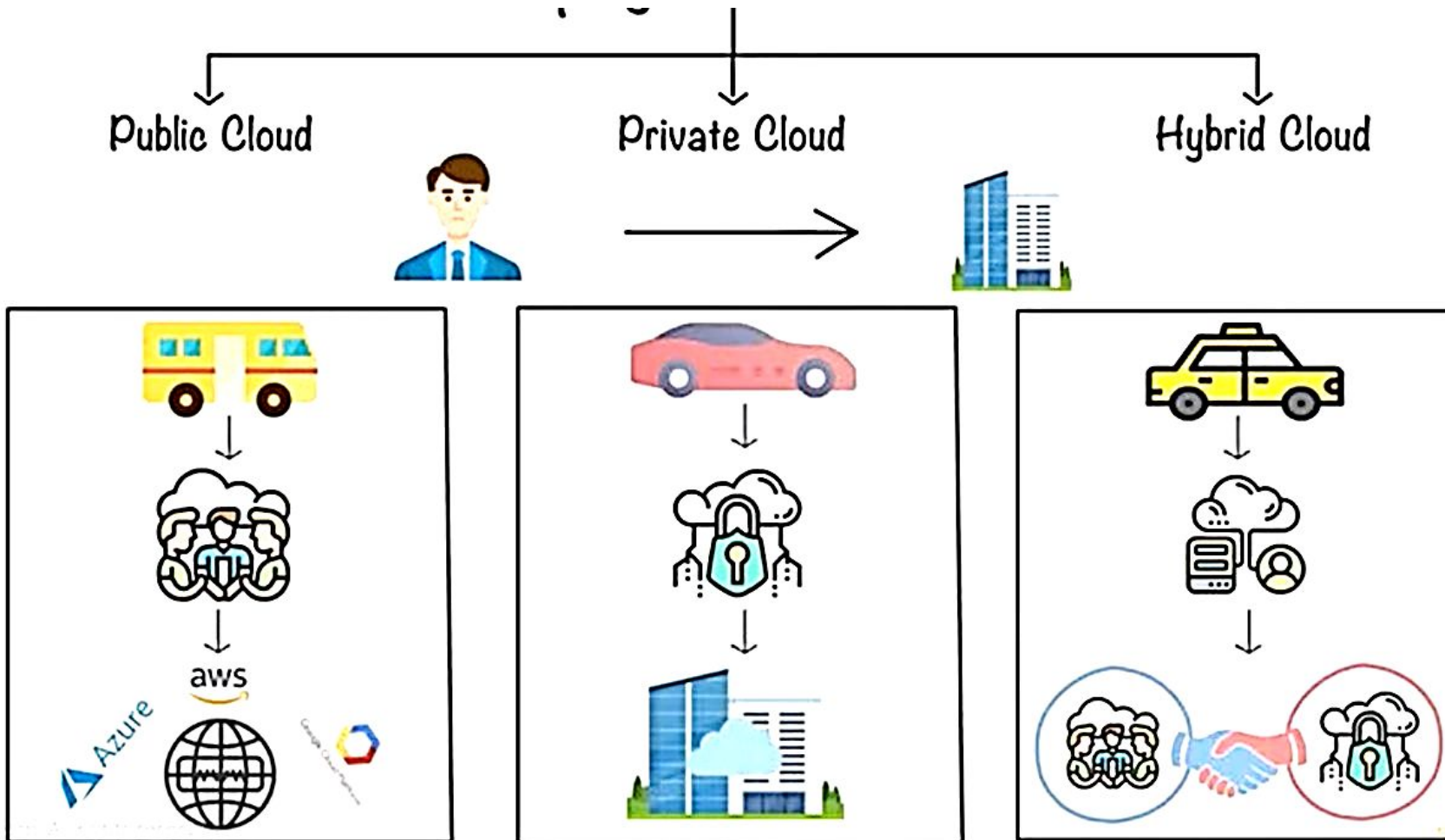
- **Cloud OS:** Google Chrome OS & Joli-Cloud.

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Types of Cloud Computing Models

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                         │  Cloud Services  │
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            ▼                                           ▼
   ┌──────────────────┐                        ┌──────────────────┐
   │ Deployment Model │                        │  Service Model   │
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            │                                           │
            ├──►  ┌──────────┐                           ├──►  ┌──────────┐
            │     │  Public  │                           │     │   IaaS   │
            │     └──────────┘                           │     └──────────┘
            │                                           │
            ├──►  ┌──────────┐                           ├──►  ┌──────────┐
            │     │  Private │                           │     │   PaaS   │
            │     └──────────┘                           │     └──────────┘
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                  │  Hybrid  │                                 │   SaaS   │
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Deployment Model

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Deployment Model

Public Cloud

- Public clouds are made available to the general public by a service provider who hosts the cloud infrastructure.

- Generally, public cloud providers like **Amazon AWS**, **Microsoft** and **Google** own and operate the infrastructure and offer access over the Internet.

- With this model, customers have no visibility or control over where the infrastructure is located.

- **It is important to note that all customers on public clouds share the same infrastructure pool with limited configuration, security protections and availability variances**.

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Public Cloud

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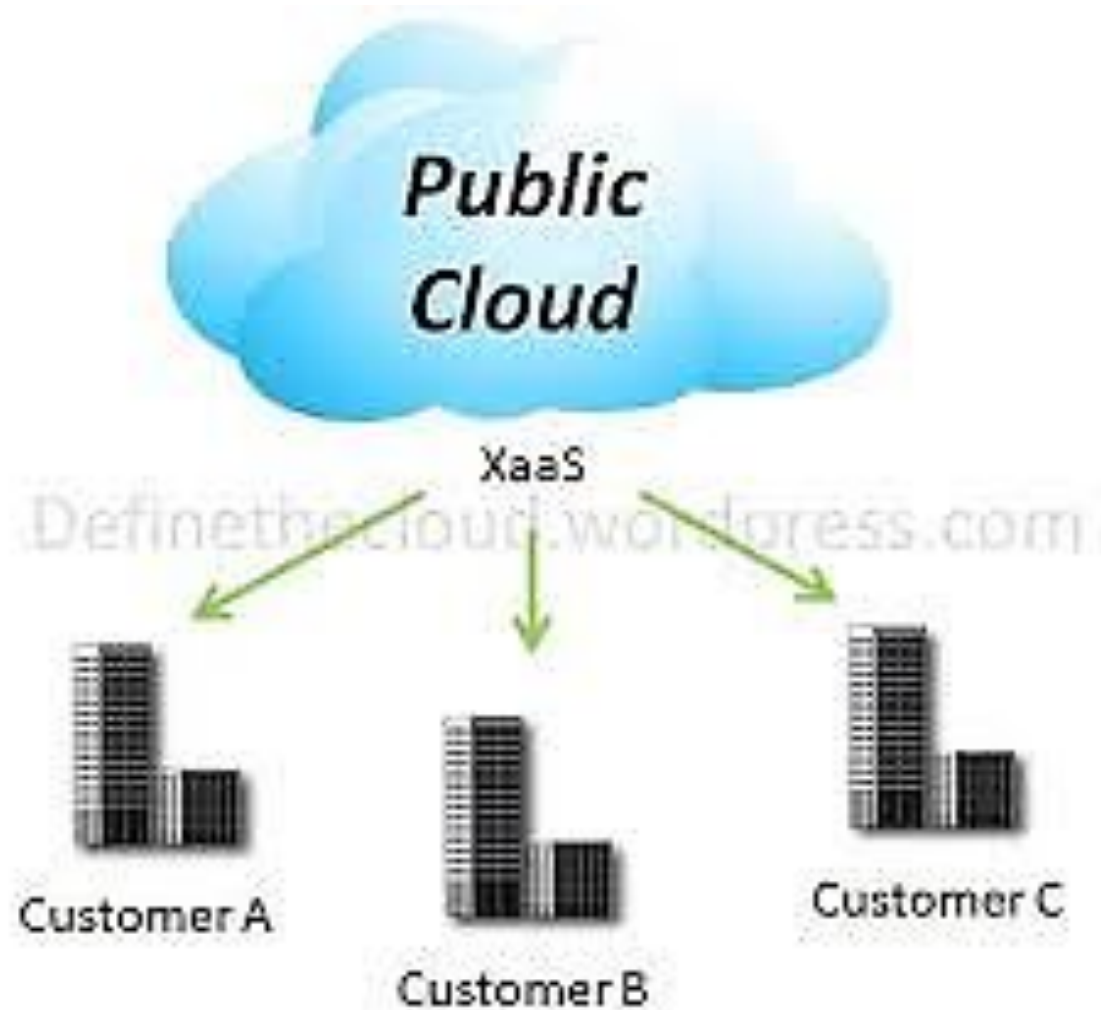
Private Cloud

- Private cloud is cloud infrastructure dedicated to particular organization.

- Private clouds allow businesses to host applications in the cloud while addressing concerns regarding data security and control is often **lacking in public cloud environment**.

- **It is not shared with other organizations**.

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Private Cloud

PRIVATE CLOUD

- Boundary perimeter
- Databases
- Legacy systems
- Hardware
- Applications
- New & third party users
- Access control
- Owner's datacenter
- Public users
- Blocked access
- Users who access the cloud from within the perimeter

TOOLBOX™

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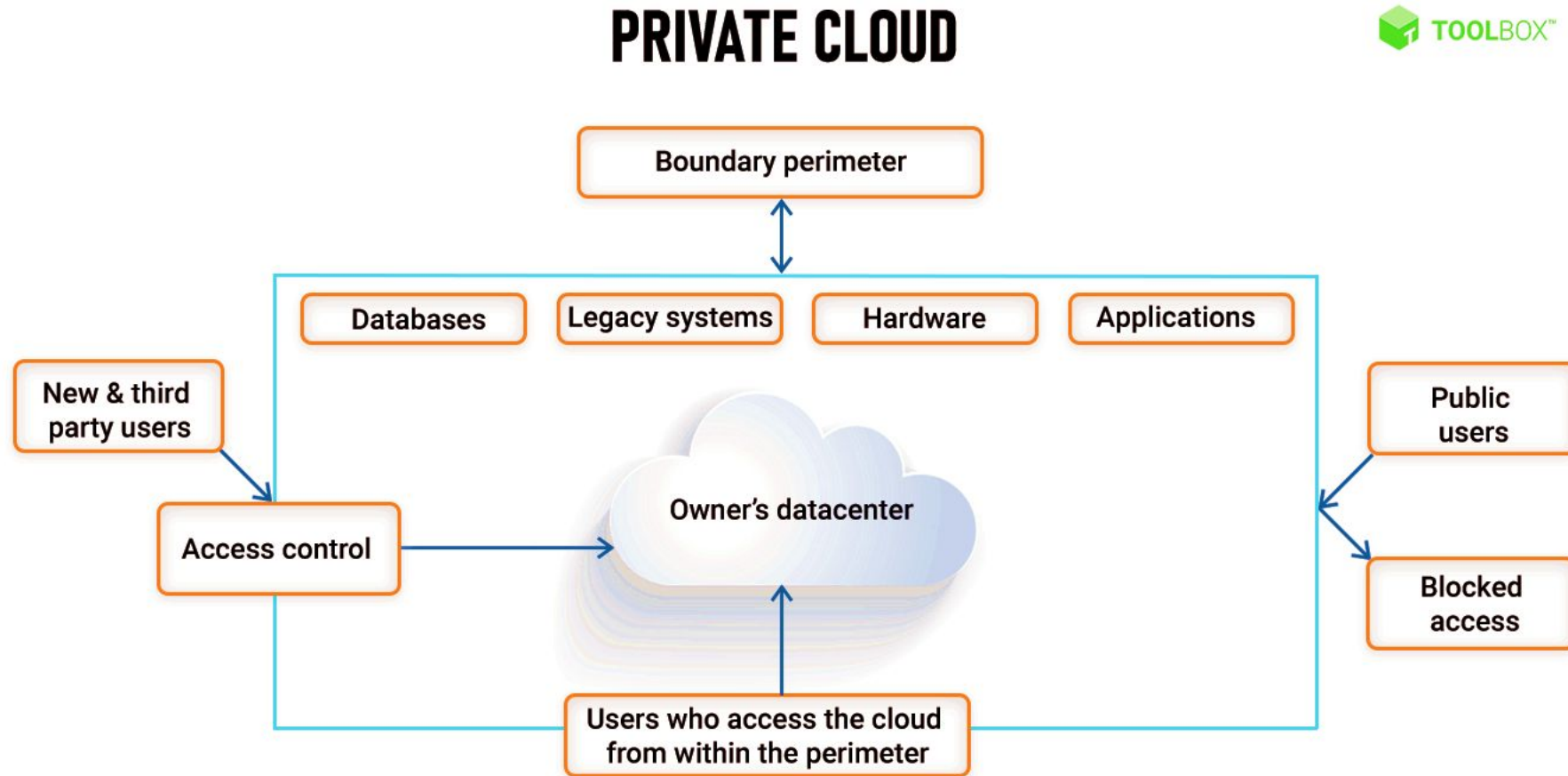
Public Cloud VS Private Cloud

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Hybrid Cloud

- Hybrid Clouds are a composition of two or more clouds (private, community or public) that remain unique entities but are bound together offering the advantages of multiple deployment models.

- In a hybrid cloud, you can control third party cloud providers in either a full or partial manner; increasing the flexibility of computing. Augmenting a traditional private cloud with the resources of a public cloud can be used to manage any unexpected flows in workload.

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Hybrid Cloud

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