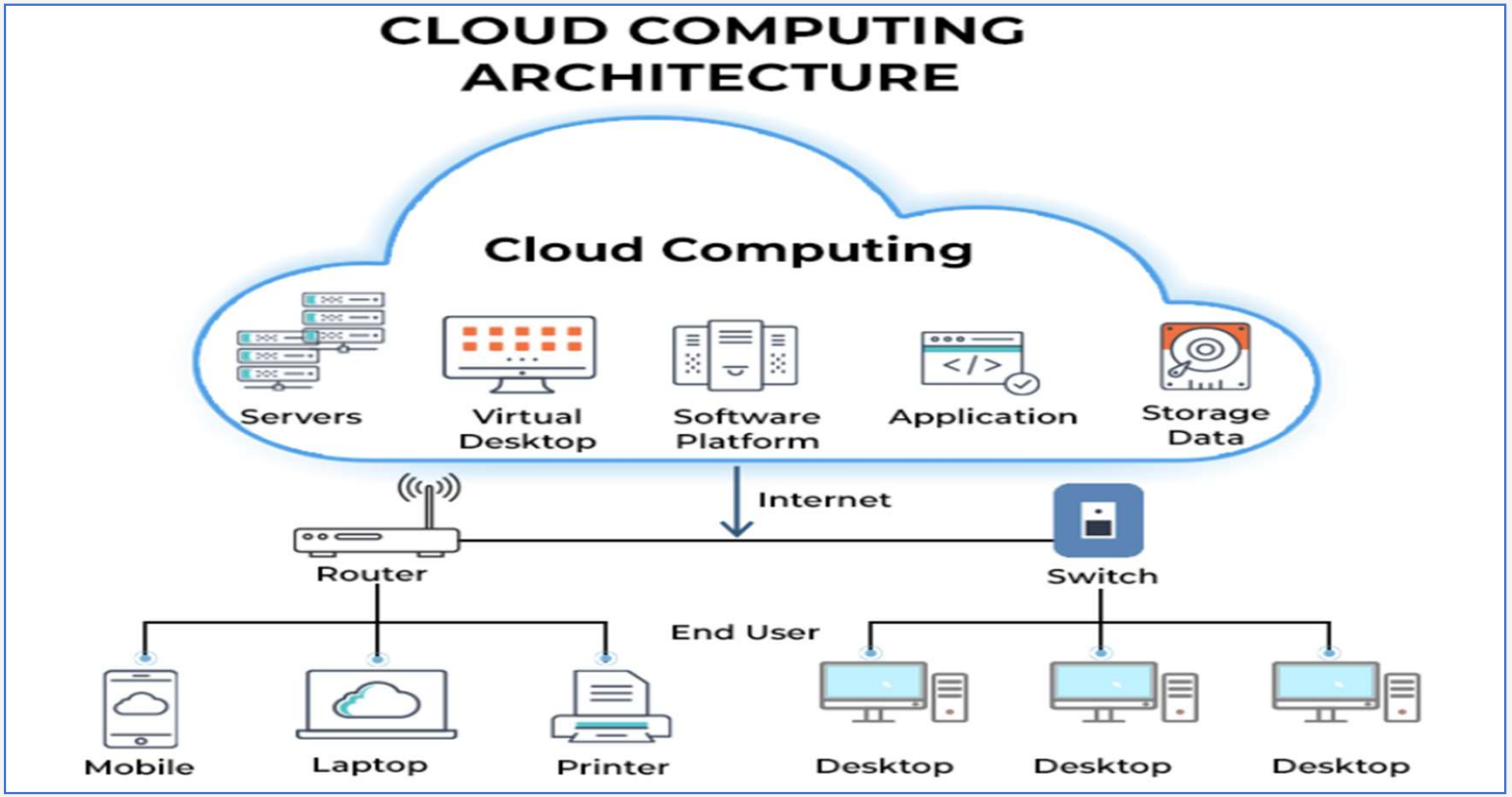
What is Cloud Computing?

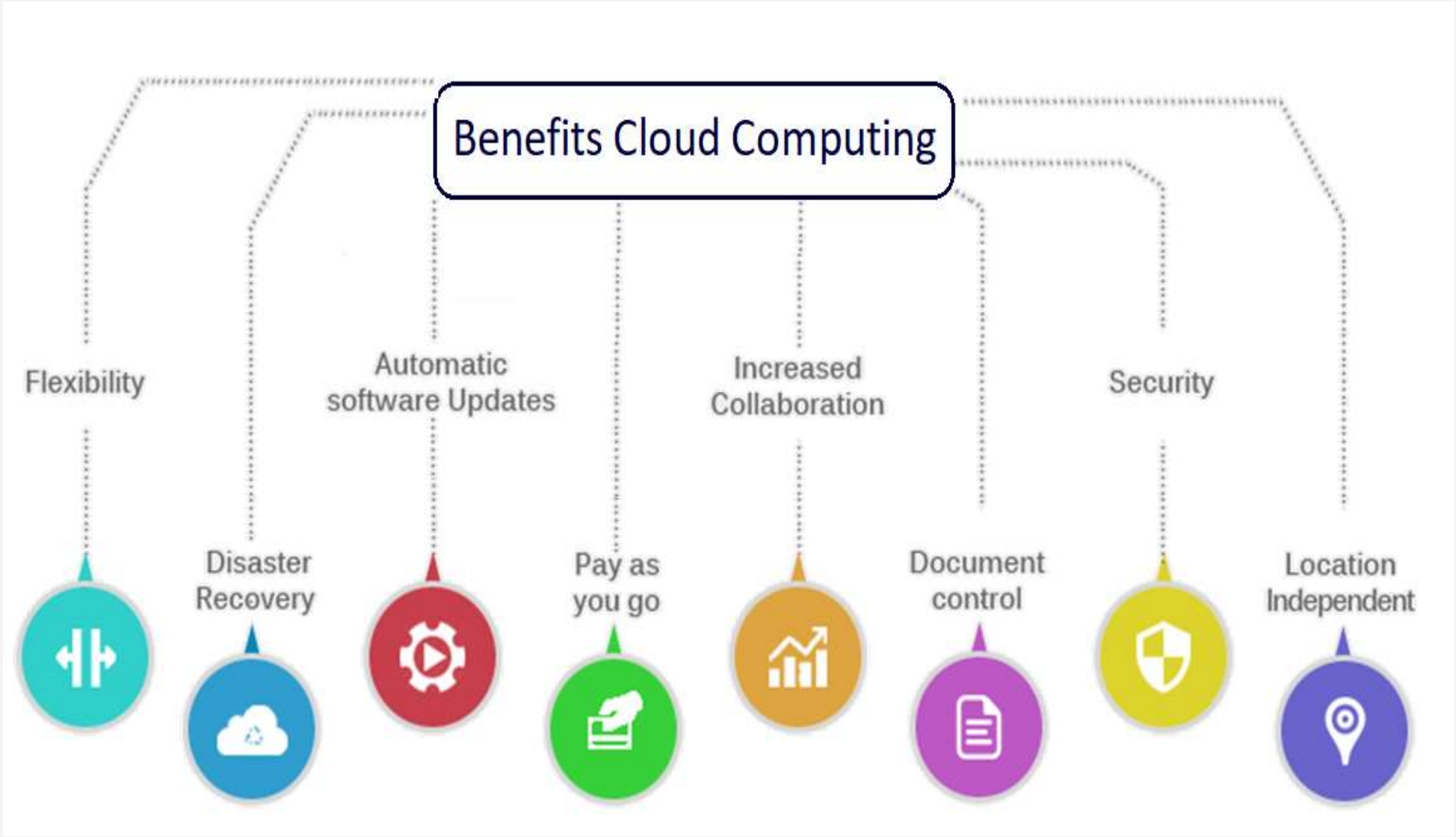


What Is Cloud Computing?

- Simply put, cloud computing is the delivery of computing services—including
- ❑ Servers,
- ❑ Storage,
- ❑ Databases
- ❑ Networking
- ❑ Software
- ❑ Analytics and
- ❑ Intelligence
- ❑ Over the Internet (“the cloud”)
- to offer faster innovation, flexible resources, and economies of scale. You typically pay only for cloud services you use, helping lower your operating costs, run your infrastructure more efficiently and scale as your business needs change.
- Link : https://azure.microsoft.com/en-in/overview/what-is-cloud-computing/#benefits

Cloud Computing Advantages?

- **Cost :** Cloud computing eliminates the capital expense of buying hardware and software and setting up and running on-site datacenters—the racks of servers, the round-the-clock electricity for power and cooling, the IT experts for managing the infrastructure. It adds up fast.
- **Speed :** Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes, typically with just a few mouse clicks, giving businesses a lot of flexibility and taking the pressure off capacity planning.
- **Global scale :** The benefits of cloud computing services include the ability to scale elastically. In cloud speak, that means delivering the right amount of IT resources—for example, more or less computing power, storage, bandwidth—right when it is needed and from the right geographic location.
- **Productivity :** On-site datacenters typically require a lot of "racking and stacking"—hardware setup, software patching, and other time-consuming IT management chores. Cloud computing removes the need for many of these tasks, so IT teams can spend time on achieving more important business goals.
- **Performance :** The biggest cloud computing services run on a worldwide network of secure datacenters, which are regularly upgraded to the latest generation of fast and efficient computing hardware. This offers several benefits over a single corporate datacenter, including reduced network latency for applications and greater economies of scale.
- **Reliability :** Cloud computing makes data backup, disaster recovery and business continuity easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.
- **Security :** Many cloud providers offer a broad set of policies, technologies and controls that strengthen your security posture overall, helping protect your data, apps and infrastructure from potential threats.


Benefits Cloud Computing
Flexibility
Disaster Recovery
Automatic software Updates
Pay as you go
Increased Collaboration
Document control
Security
Location Independent

Why is cloud computing typically cheaper to use?

- Cloud computing is the delivery of computing services over the internet by using a pay-as-you-go pricing model. You typically pay only for the cloud services you use, which helps you:

- **Lower your operating costs.**
- **Run your infrastructure more efficiently.**
- **Scale as your business needs change.**

- To put it another way, cloud computing is a way to rent compute power and storage from someone else's datacenter. You can treat cloud resources like you would resources in your own datacenter. When you're done using them, you give them back. You're billed only for what you use.
- Instead of maintaining CPUs and storage in your datacenter, you rent them for the time that you need them. The cloud provider takes care of maintaining the underlying infrastructure for you. The cloud enables you to quickly solve your toughest business challenges, and bring cutting-edge solutions to your users.

Why should I move to the cloud?

- The cloud helps you move faster and innovate in ways that were once nearly impossible.
- In our ever-changing digital world, two trends emerge:
  - **Teams deliver new features to their users at record speeds.**
  - **Users expect an increasingly rich and immersive experience with their devices and with software.**
- Software releases were once scheduled in terms of months or even years. Today, teams release features in smaller batches that are often scheduled in days or weeks. Some teams even deliver software updates continuously--sometimes with multiple releases within the same day.
- Think of all the ways you interact with devices that you couldn't do a few years ago. Many devices can recognize your face and respond to voice commands. Augmented reality changes the way you interact with the physical world. Household appliances are even beginning to act intelligently. These technologies are only a few examples, and many of them are powered by the cloud.
- To power your services and deliver innovative and novel user experiences more quickly, the cloud provides on-demand access to:
  - **A nearly limitless pool of raw compute, storage, and networking components.**
  - **Speech recognition and other cognitive services that help make your application stand out from the crowd.**
  - **Analytics services that deliver telemetry data from your software and devices.**

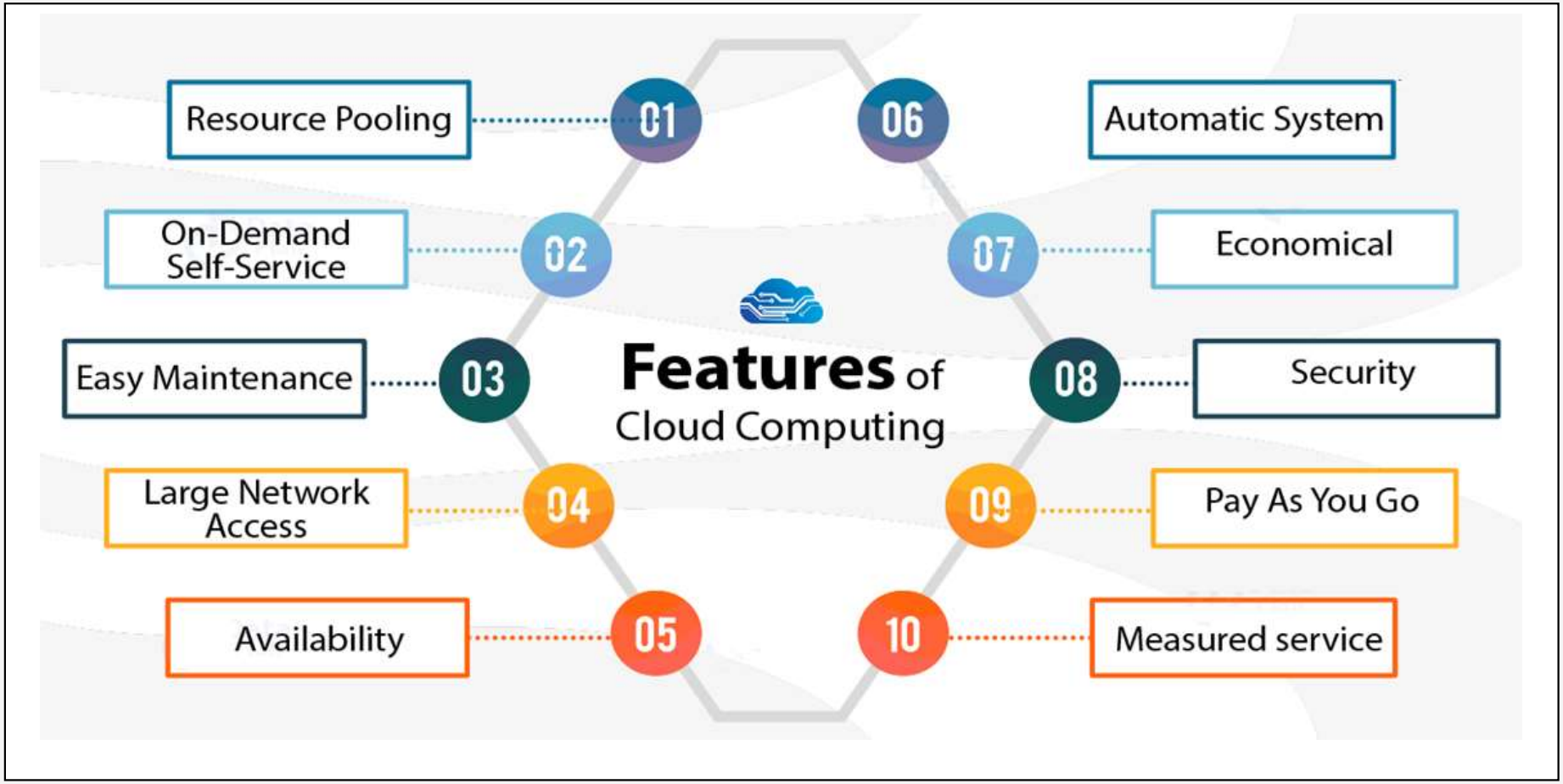
Types of cloud computing

- **Public cloud :** Public clouds are owned and operated by a third-party cloud service providers, which deliver their computing resources like servers and storage over the Internet. Microsoft Azure is an example of a public cloud. With a public cloud, all hardware, software and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser. Learn more about the public cloud.

- **Private cloud :** A private cloud refers to cloud computing resources used exclusively by a single business or organisation. A private cloud can be physically located on the company's on-site datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network. Learn more about the private cloud.

- **Hybrid cloud :** Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, a hybrid cloud gives your business greater flexibility, more deployment options and helps optimise your existing infrastructure, security and compliance. Learn more about the hybrid cloud.

Public Cloud Providers


Features of
Cloud Computing
01
Resource Pooling
02
On-Demand
Self-Service
03
Easy Maintenance
04
Large Network
Access
05
Availability
06
Automatic System
07
Economical
08
Security
09
Pay As You Go
10
Measured service

Types of cloud services: IaaS, PaaS, serverless and SaaS

- **Infrastructure as a service (IaaS) :** The most basic category of cloud computing services. With IaaS, you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis.

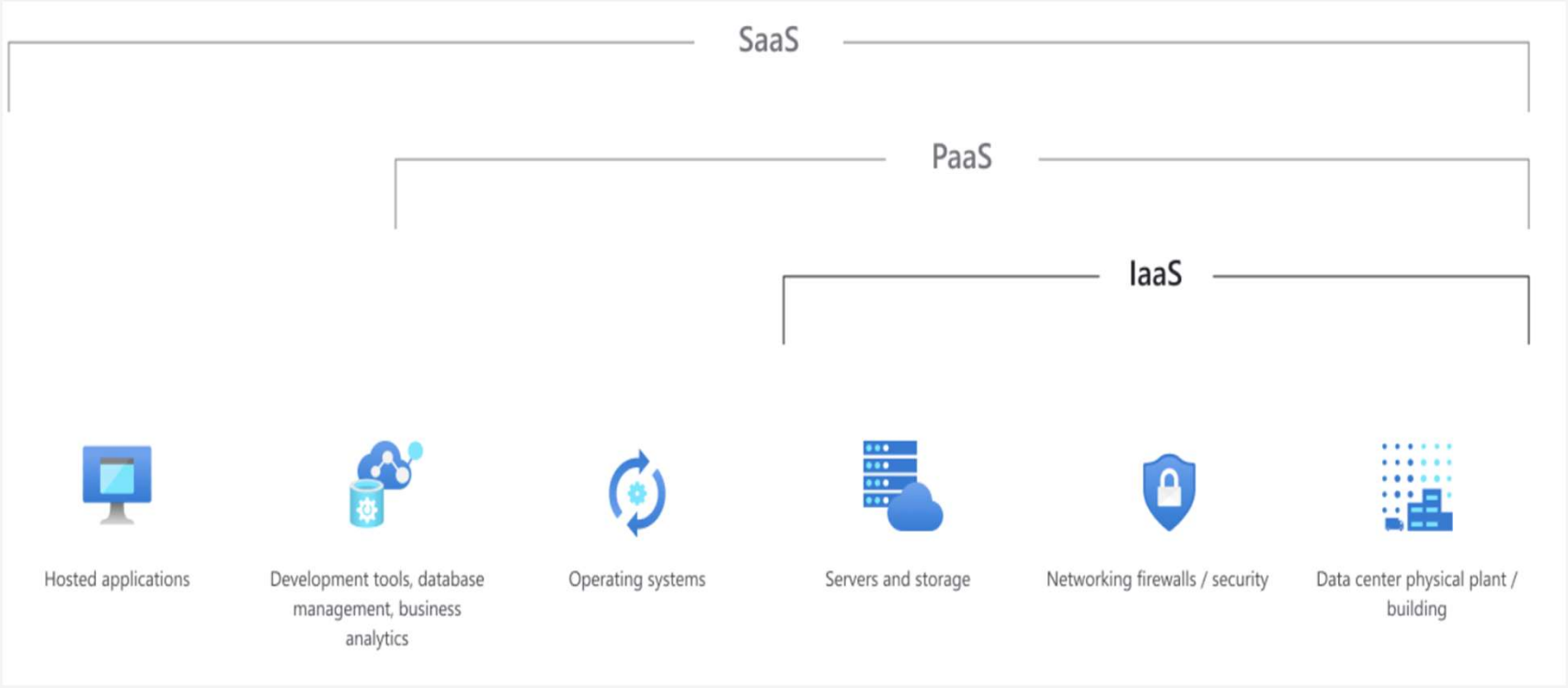
- **Platform as a service (PaaS) :** Platform as a service refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.

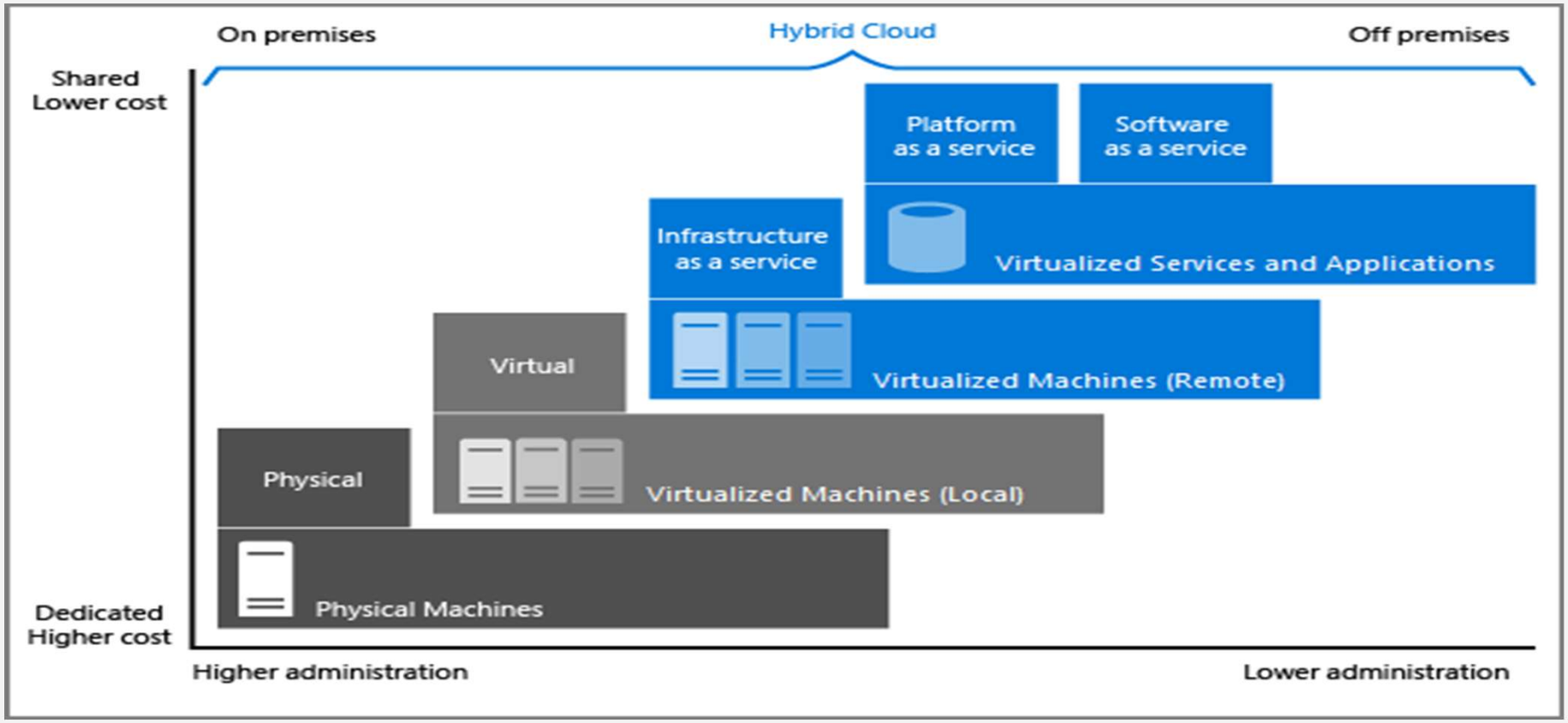
- **Serverless computing :** Overlapping with PaaS, serverless computing focuses on building app functionality without spending time continually managing the servers and infrastructure required to do so. The cloud provider handles the setup, capacity planning and server management for you. Serverless architectures are highly scalable and event-driven, only using resources when a specific function or trigger occurs.

- **Software as a service (SaaS) :** Software as a service is a method for delivering software applications over the Internet, on demand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC.

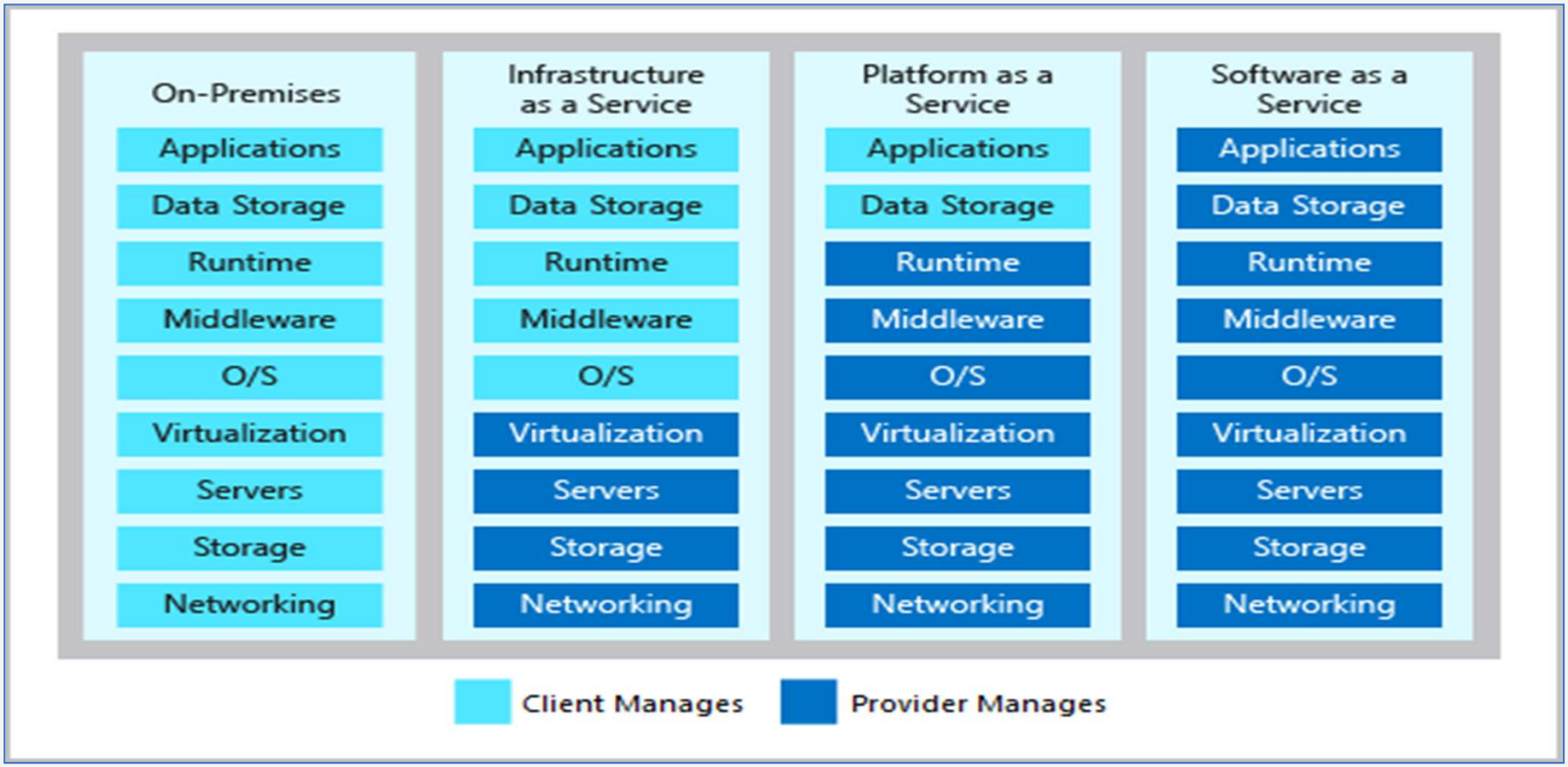
- Link : https://azure.microsoft.com/en-in/overview/what-is-iaas/#overview

Service Model




On premises
Hybrid Cloud
Off premises
Shared
Lower cost
Platform
as a service
Software
as a service
Infrastructure
as a service
Virtualized Services and Applications
Virtual
Virtualized Machines (Remote)
Physical
Virtualized Machines (Local)
Physical Machines
Dedicated
Higher cost
Higher administration
Lower administration

Shared Responsibility



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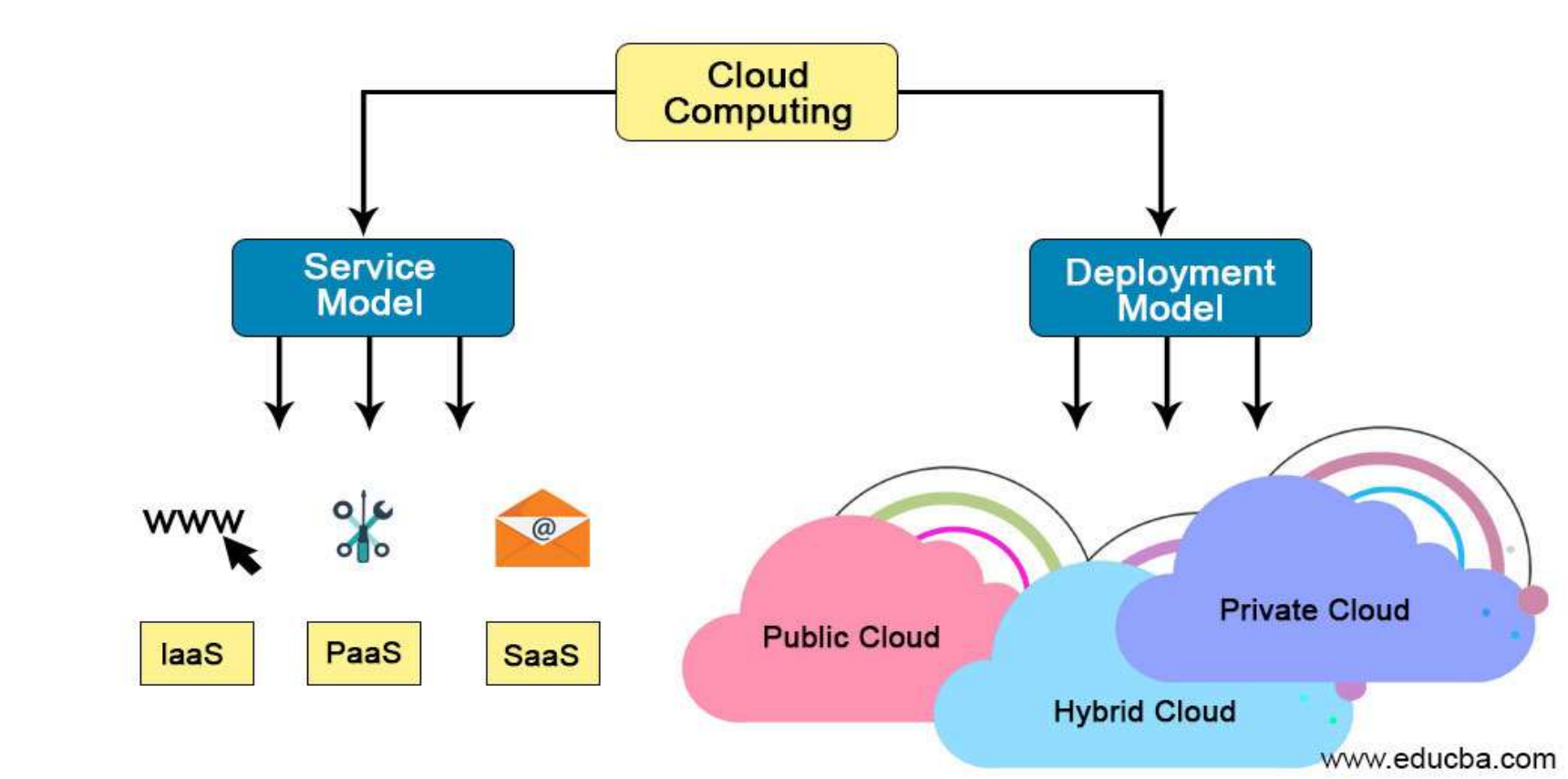

Difference between Private, Public and Hybrid Cloud

Difference	Private	Public	Hybrid
Tenancy	Single tenancy	Multi-tenancy	Multi-tenant, shared environment. Private cloud is keep private data at the organization.
Exposed to the Public	No	Yes	Private cloud can be accessed only the organization's users Public cloud can be accessed by anyone.
Data Center Location	Inside the organization's network.	Internet at cloud service provider's data center	Inside the organization's network for private cloud services as well as anywhere on the Internet for public cloud services.
Cloud Service Management	The organization must have their own administrators managing their private cloud services.	The cloud service provider manages the services, where the organization merely uses them.	The organization itself must manage the private cloud, while the public cloud is managed by the CSP.
Hardware Components	Must be provided by the organization itself, which has to buy physical servers to build the private cloud on.	The CSP provides all the hardware and ensures it's working at all times.	The organization must provide hardware for the private cloud, while the hardware of CSP is used for public cloud services.
Expenses	Expensive (H/W not shared)	The CSP hardware, set-up the application and network as per the SLA.	Cost shared among private and public services.

Virtual Machine on Cloud