

Cloud Essentials



On-Premises



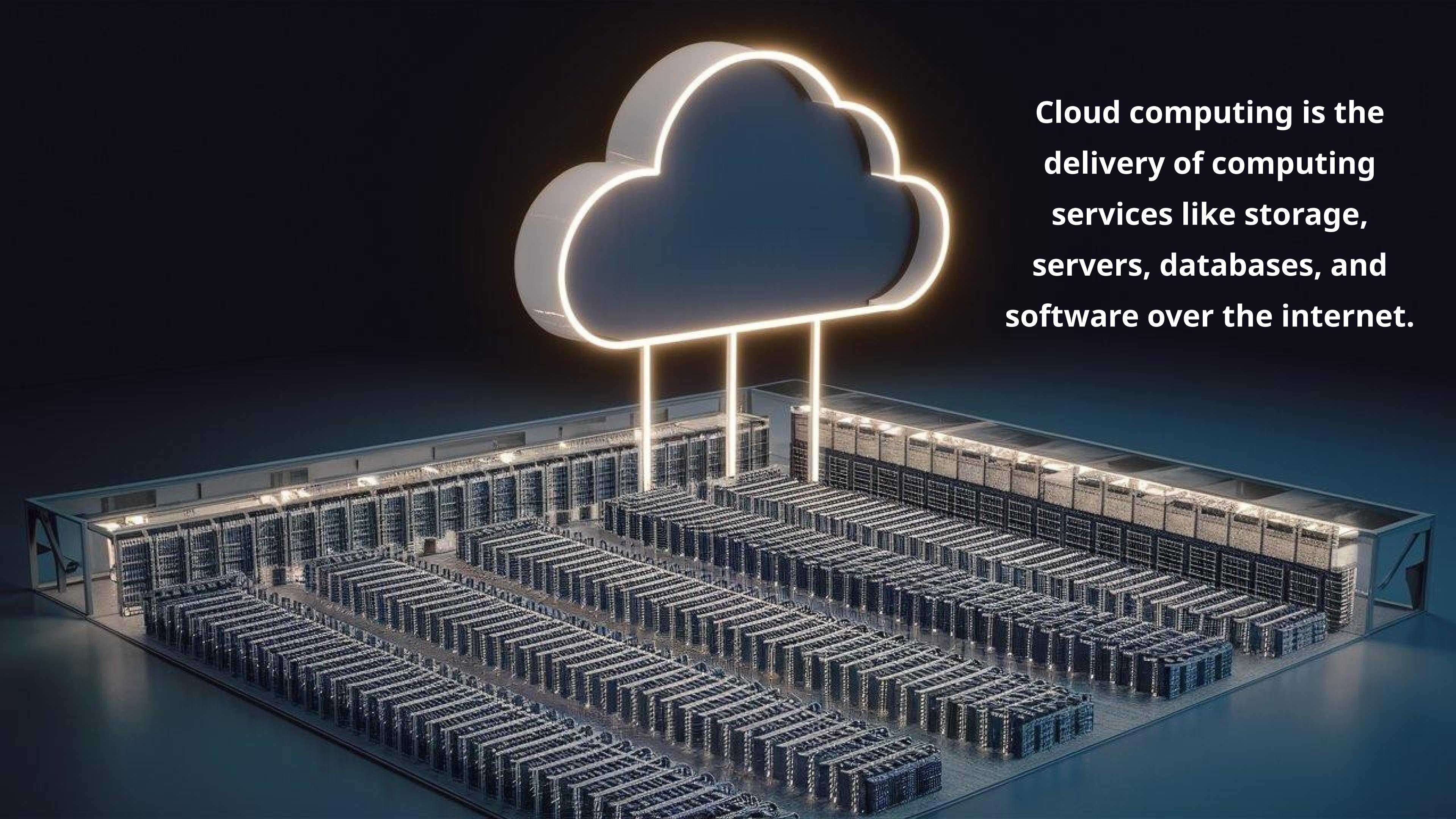


On-Premises

- Everything (servers, storage, etc.) is physically set up at your location.
- Offers full control but can be expensive and hard to scale.
- Example: Companies managing their own data centers.

Cloud



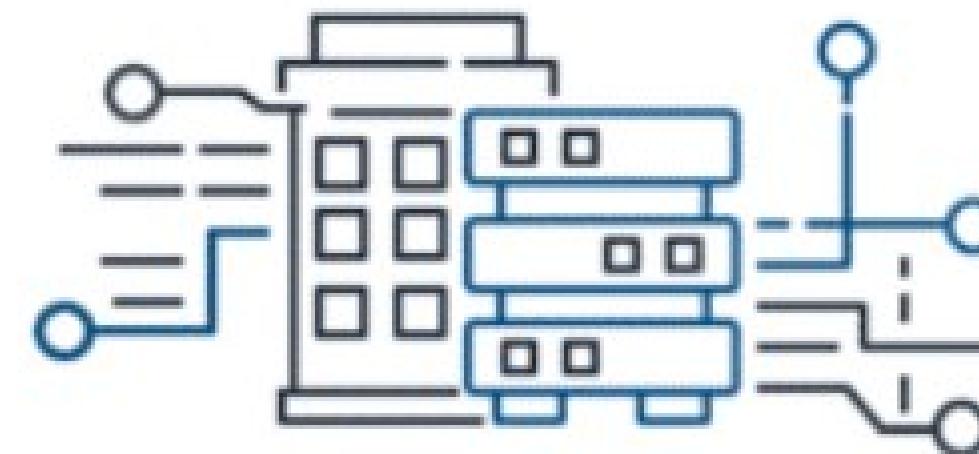


Cloud computing is the delivery of computing services like storage, servers, databases, and software over the internet.



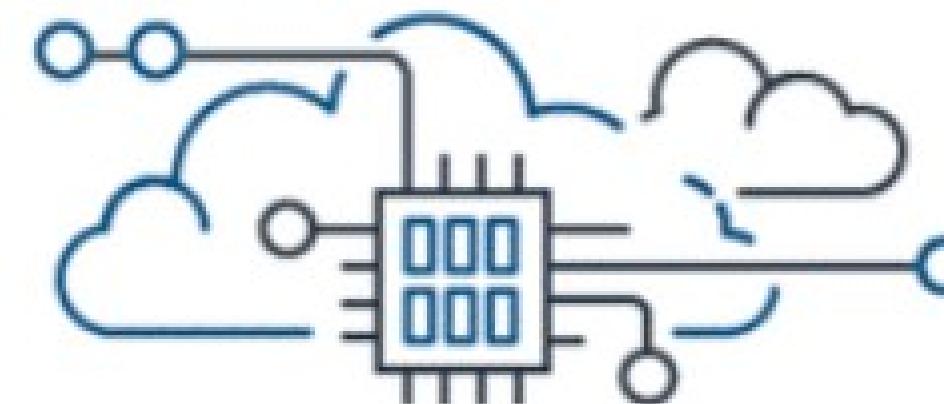
Cloud

- Everything runs online, hosted by a cloud provider (e.g., AWS).
- No need to manage hardware; pay only for what you use.
- Example: Streaming services like Netflix run on the cloud.



On-premises

vs.



Cloud

Can anyone share their thoughts on this?

Types of Cloud Computing



Public Cloud





Public Cloud

Services are delivered over the internet and shared among multiple users.

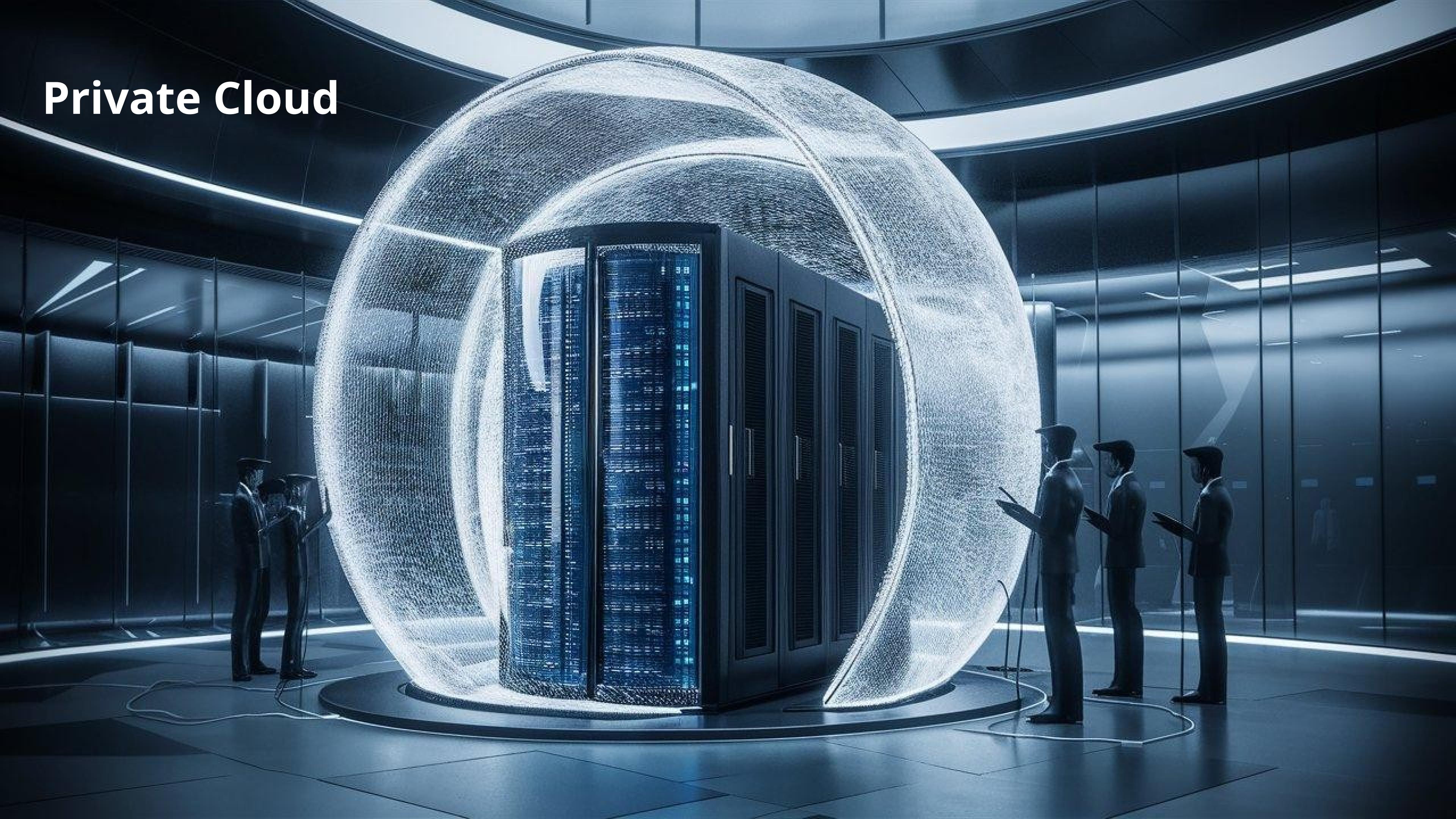
Key Characteristics:

- Operated by third-party providers.
- Cost-effective with pay-as-you-go pricing.
- Scalable and easily accessible from anywhere.

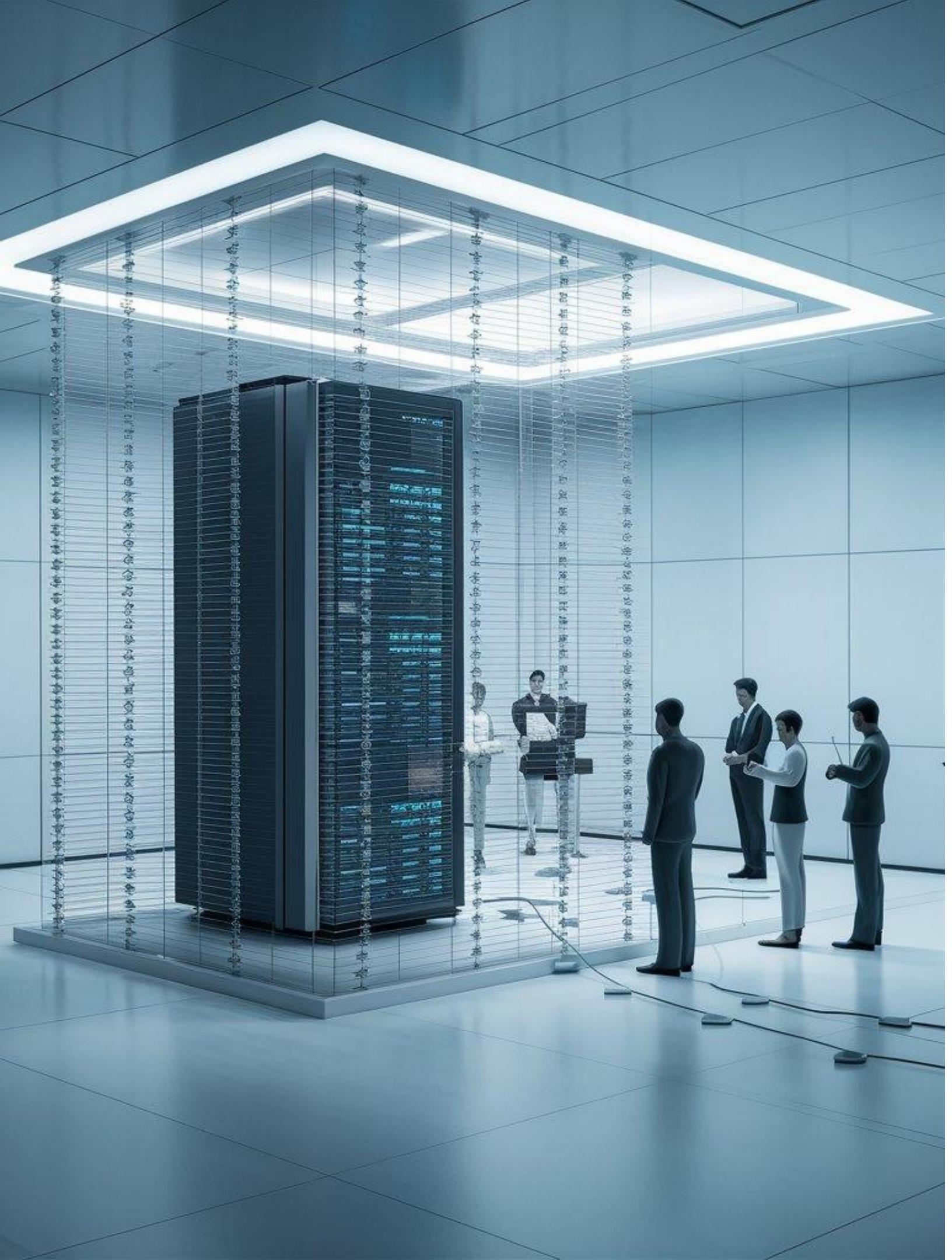
Examples: AWS, Google Cloud, Microsoft Azure.

Use Cases: Web hosting, development, and

Private Cloud



Private Cloud



Cloud infrastructure dedicated exclusively to one organization, either on-premises or hosted by a provider.

Key Characteristics:

- Offers enhanced control and security.
- Customizable to meet regulatory or compliance needs.
- Higher cost compared to public cloud.

Examples: VMware, OpenStack.

Use Cases: Banking, healthcare, government organizations.

Hybrid





Hybrid Cloud

A combination of public and private clouds, allowing data and applications to be shared between them.

Key Characteristics:

- Combines public cloud scalability with private infrastructure security.
- Allows smooth workload transitions.

Examples: Microsoft Azure Hybrid, IBM Hybrid Cloud.

Use Cases: Businesses with fluctuating workloads or regulatory needs.



Community Cloud



Community Cloud

A shared cloud infrastructure for a specific community of users with common goals or compliance requirements.

Key Characteristics:

- Shared ownership and resources.
- Customized for community-specific needs.

Examples: Government agencies sharing infrastructure for compliance.

Use Cases: Collaborative projects in research, healthcare, or education.

Service Models: Offerings in Cloud Computing



Infrastructure

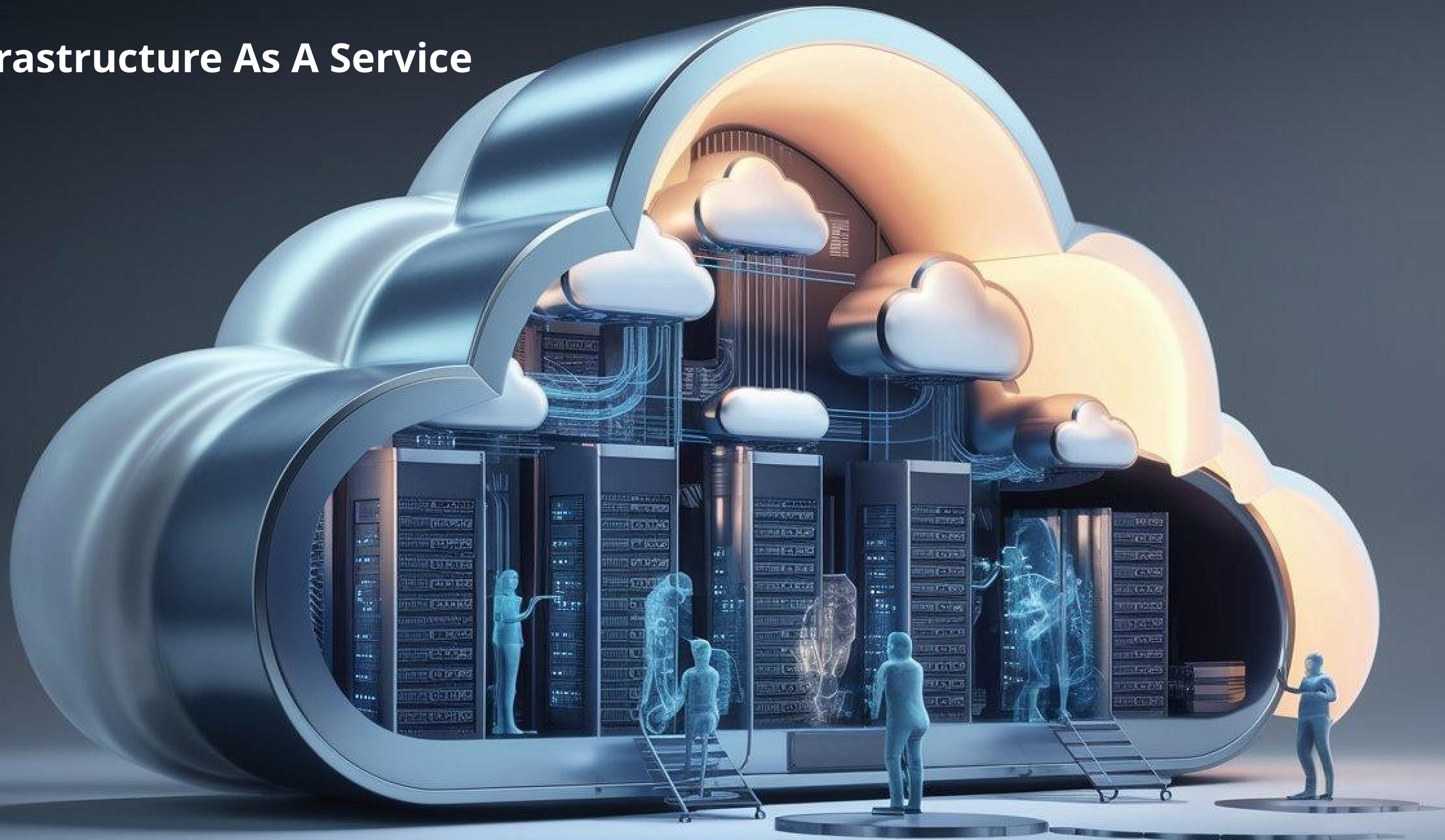


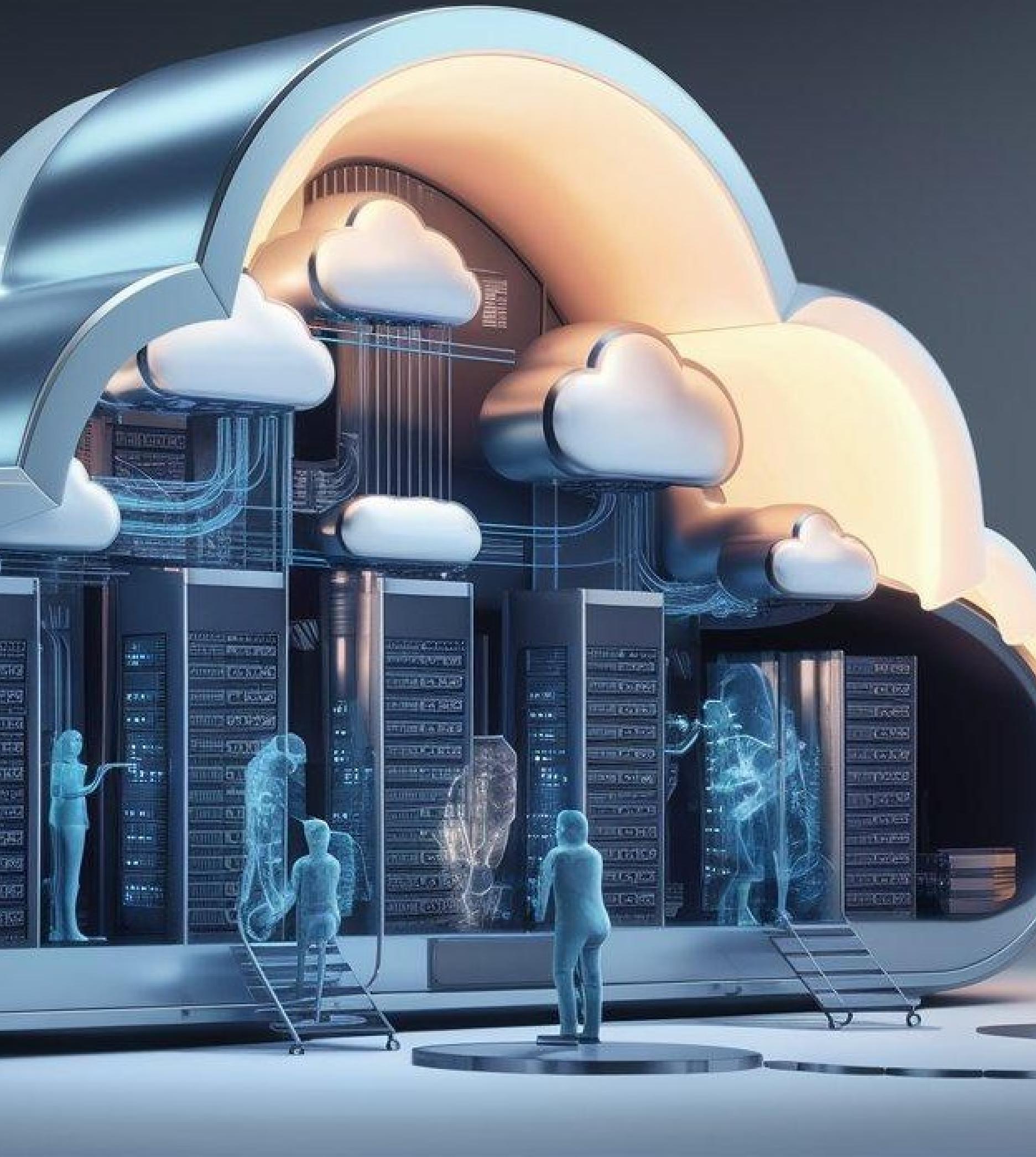


Infrastructure

- **On-Premises Setup:** Entirely hosted on physical servers within the organization's premises.
- **High Initial Cost:** Requires significant investment in hardware, maintenance, and skilled IT staff.
- **Limited Scalability:** Expanding capacity demands purchasing and setting up additional physical hardware.

Infrastructure As A Service





IaaS (Infrastructure as a Service)

- Provides virtual servers, storage, and networking—like renting IT infrastructure.
- You manage the apps and data; the provider handles hardware.
- Example: Amazon EC2, Microsoft Azure VM.

Platform

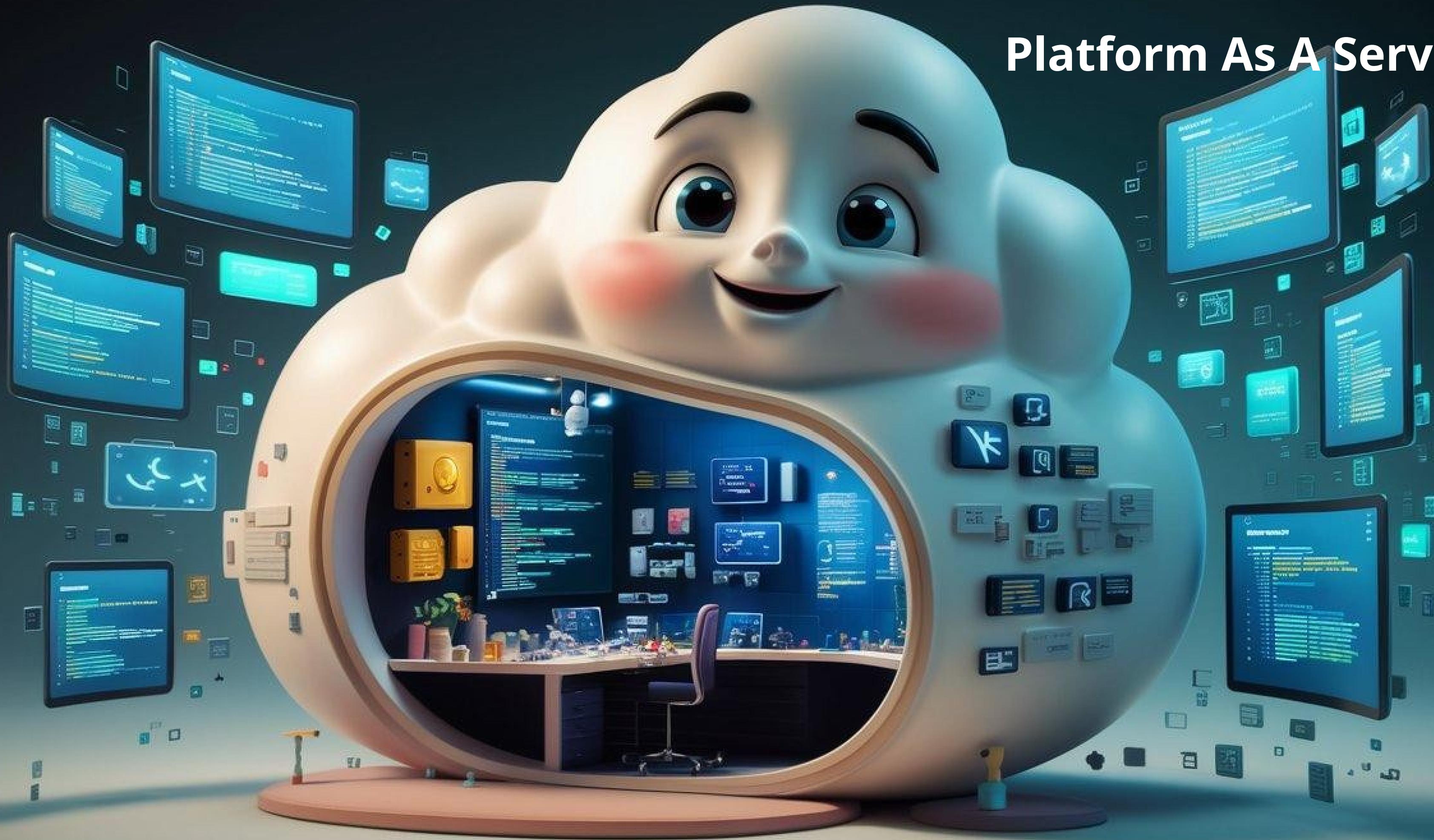




Platform

- **Centralized Environment:** Provides a unified base for hosting, running, and managing applications.
- **Development Tools:** Offers frameworks, libraries, and APIs to streamline application creation.
- **Scalability:** Enables scaling resources up or down based on demand.

Platform As A Service





PaaS (Platform as a Service)

- Offers a platform to build, test, and deploy apps without worrying about the infrastructure.
- Focus on your code; the provider handles the backend.
- Example: Google App Engine, Heroku.

Software



Software

- **User-Focused Tools:** Provides specific functionalities to meet user or business needs.
- **Runs on Platforms:** Operates within a platform or operating system environment.
- **Regular Updates:** Requires updates and maintenance to enhance performance and security.





Software As A Service



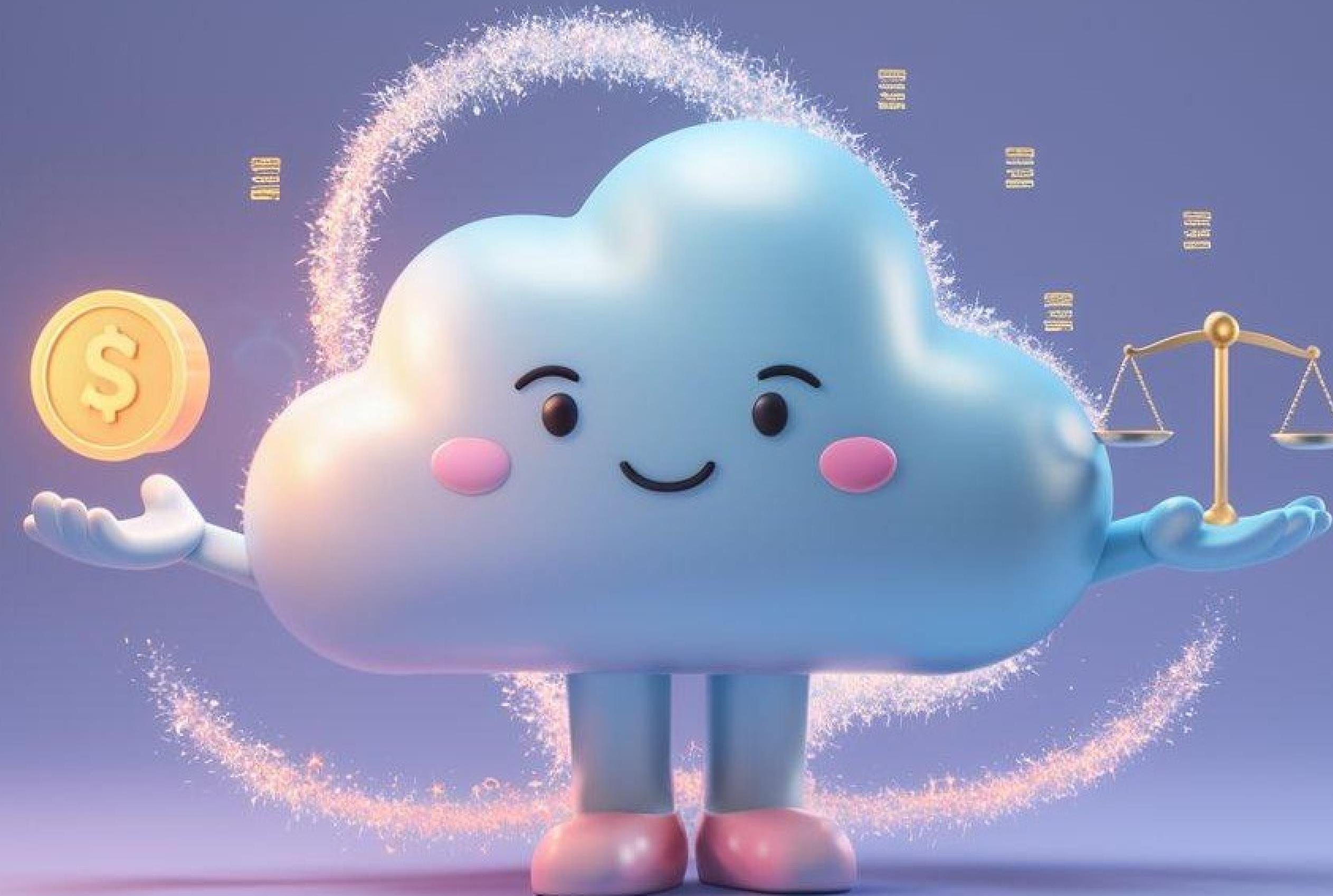
SaaS (Software as a Service)

- Ready-to-use software hosted online—just log in and use.
- No installation or maintenance needed; pay as you go.
- Example: Gmail, Dropbox, Zoom.

6 Advantages of Cloud Computing



1. Pay-as-you-go



2. Benefit from massive economies of scale



3. Stop guessing capacity



4. Increased speed and agility



5. Realize cost savings



6. Go global in minutes



Who's ready to shout out six awesome benefits of cloud computing?



Cloud Computing with AWS







What is AWS?

Amazon Web Services (AWS) is a cloud platform offering over 200 services like storage, databases, and AI tools.

Why AWS?

It's scalable, cost-effective, and used globally for hosting websites, apps, and even machine learning.



Global Reach

AWS operates in multiple regions worldwide, ensuring low latency and high availability for users everywhere.

Widely Adopted

Trusted by startups, enterprises, and governments for hosting websites, apps, AI models, and disaster recovery.



The AWS Well-Architected Framework

- The AWS Well-Architected Framework is built on five key pillars to guide cloud architecture best practices.
- These pillars ensure secure, resilient, efficient, and cost-effective systems.
- Focus: Aligning cloud solutions with organizational goals.



- 1. Operational Excellence:** Automate tasks and refine processes for consistent improvement.
- 2. Security:** Protect systems and data with IAM, encryption, and regular assessments.
- 3. Reliability:** Ensure fault tolerance, quick recovery, and scalability.
- 4. Performance Efficiency:** Optimize resources, adopt new tech, and monitor performance.
- 5. Cost Optimization:** Use cost-effective resources and monitor usage to reduce waste.



Common AWS Services

1. EC2 (Elastic Compute Cloud)
2. S3 (Simple Storage Service)
3. RDS (Relational Database Service)
4. Lambda
5. CloudFront
6. VPC (Virtual Private Cloud)
7. IAM (Identity and Access Management)
8. SageMaker
9. Route 53
10. CloudWatch



Conclusion

Cloud computing offers on-demand resources with types (public, private, hybrid), advantages like scalability and cost-efficiency, **AWS** as a leading provider offering services like EC2, S3, and RDS.