# Cloud Computing

## Key Features of Cloud Computing

- On-Demand Self-Service: Users can provision computing capabilities as needed automatically without requiring human interaction with each service provider. Wikipedia

- Broad Network Access: Services are available over the network and accessed through standard mechanisms, promoting use by various client platforms (e.g., mobile phones, tablets, laptops). Wikipedia

- Resource Pooling: Computing resources are pooled to serve multiple consumers, with different physical and virtual resources dynamically assigned according to demand. Wikipedia

- Rapid Elasticity: Capabilities can be elastically provisioned and released to scale rapidly outward and inward commensurate with demand.

- Measured Service: Cloud systems automatically control and optimize resource use by leveraging a metering capability, providing transparency for both the provider and consumer.

☁️ Cloud Service Models

1. Infrastructure as a Service (IaaS): Provides virtualized computing resources over the internet, such as virtual machines, storage, and networks. Users manage operating

systems and applications.

2. Platform as a Service (PaaS): Offers hardware and software tools over the internet, typically for application development. Users manage applications and data, while providers manage the underlying infrastructure. Cisco

3. Software as a Service (SaaS): Delivers software applications over the internet, on a subscription basis. Providers manage the infrastructure, platforms, and applications.

### 🏢 Deployment Models

- Public Cloud: Services are delivered over the public internet and shared across organizations.
- Private Cloud: Services are maintained on a private network, offering greater control and security.
- Hybrid Cloud: Combines public and private clouds, allowing data and applications to be shared between them. Cisco

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## ✅ Benefits of Cloud Computing

- Cost Efficiency: Reduces capital expenditure by eliminating the need for physical hardware and maintenance.
- Scalability: Resources can be scaled up or down based on demand.Google Cloud+1IBM+1
- Accessibility: Services and data can be accessed from anywhere with an internet connection.
- Performance: Offers high-performance computing resources and infrastructure.Wikipedia
- Security: Many providers offer advanced security features to protect data and applications.

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Cloud computing has become integral to modern IT infrastructure, enabling businesses to innovate, scale, and respond to market demands efficiently.