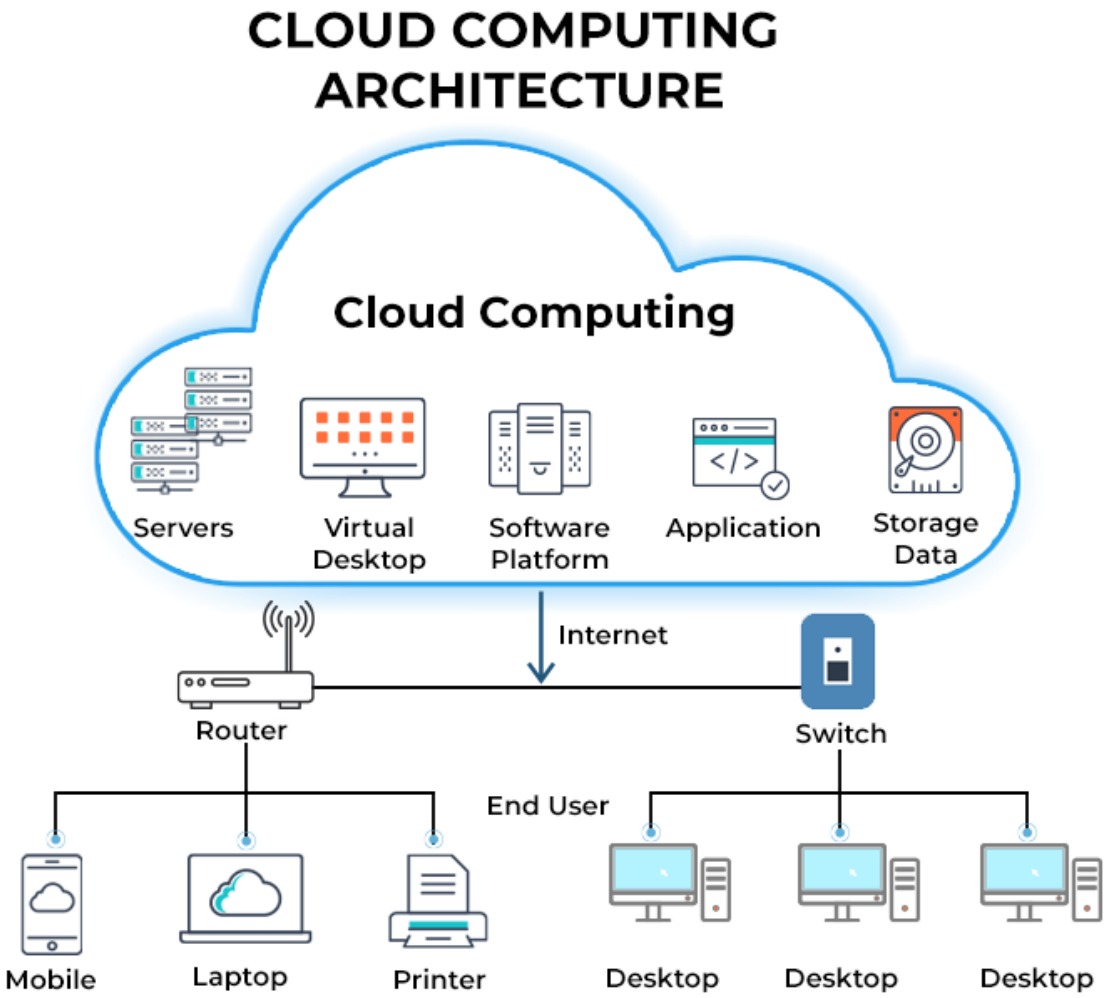
CLOUD COMPUTING

➔Cloud computing is the delivery of computing services—such as servers, storage, databases, networking, software, analytics, and intelligence—over the internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale.

➔Cloud computing allows users and companies to access and store data and applications on remote servers instead of on local hard drives or personal servers.



Key aspects of cloud computing:

1.On-demand access:

Resources are available when needed, without long setup times or significant upfront investment.

2.Pay-as-you-go:

Users typically pay only for the resources they consume, rather than owning and managing physical hardware.

3.Flexibility and scalability:

Cloud services allow users to easily scale their resources up or down as needed, adapting to changing business needs.

4.Accessibility:

Cloud services can be accessed from anywhere with an internet connection**.**

Types of Cloud Services

These are often referred to as the cloud computing stack:

1. **IaaS (Infrastructure as a Service)**
    - Example: AWS EC2, Google Compute Engine
    - Offers virtualized computing resources over the internet**.**
2. **PaaS (Platform as a Service)**
    - Example: Google App Engine, Microsoft Azure App Services
    - Provides a platform to develop, run, and manage applications**.**
3. **SaaS (Software as a Service)**
    - Example: Google Workspace, Dropbox, Salesforce
    - Delivers software applications over the internet on a subscription basis.

Benefits of Cloud Computing

- Cost efficiency (pay only for what you use)
- Scalability
- High availability & disaster recovery
- Mobility and collaboration
- Security (depends on provider and implementation)

Common Use Cases

- Hosting websites and applications
- Data backup and disaster recovery
- Big Data analytics
- Software development and testing
- Machine learning and AI platforms

Example: Netflix Using Cloud Computing

Background:
Netflix is one of the world's largest video streaming platforms, serving millions of users globally. It needs to stream massive amounts of video content quickly and reliably.

How Netflix Uses Cloud Computing

1. **Cloud Provider:**
   Netflix uses **Amazon Web Services (AWS)** as its cloud provider.
2. **Services Used:**
   - **Amazon EC2 (Elastic Compute Cloud):** For running virtual servers that handle video streaming, recommendations, etc.
   - **Amazon S3 (Simple Storage Service):** For storing and delivering terabytes of video content.
   - **Amazon RDS & DynamoDB:** For databases to store user data, subscriptions, watch history, etc.
   - **CloudFront:** A content delivery network (CDN) to deliver content quickly to users worldwide.
3. **Why Cloud?**
   - **Scalability:** Handles traffic spikes (e.g., when a new show releases) by scaling up resources automatically.
   - **Global reach:** Delivers videos efficiently across the globe using data centers close to users.
   - **Cost-effective:** No need to maintain physical servers—Netflix pays for what it uses.
   - **Disaster Recovery:** In case a server fails, the cloud automatically reroutes traffic to healthy servers.

Summary:

Netflix doesn't own massive physical data centers. Instead, it **streams video content, stores data, and scales services** using AWS cloud infrastructure. This allows it to focus on content and user experience instead of hardware and servers.