SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

CLOUD COMPUTING OVERVIEW

Essential characteristics

Essential characteristics

"Consider a photography business. With cloud computing, photographers can store and access their high-resolution images from anywhere using different devices (broad network access). The cloud's resource pooling ensures efficient storage usage and seamless scaling to handle varying client demands (location-independent resource pooling, rapid elasticity). The photographers are billed based on their actual storage usage (measured service), and they can instantly set up new online galleries without manual intervention (on-demand self-service)."

Essential characteristics

✓ On-demand self-service empowers users to independently manage resources.

✓ Broad network access allows connections from diverse devices and locations.

✓ Dynamic resource pooling optimizes utilization and allocation.

✓ Rapid elasticity facilitates quick resource scaling for changing demands.

✓ Measured usage promotes transparency and cost control.

✓ Automated monitoring and precise measurement ensure accurate billing.

On demand Self-Service

Broad network access

Location independent resource pooling

Rapid elasticity

Measured service

On-Demand Self-Service:

✓ Users can provision resources independently.

✓ No need for manual intervention from the provider.

✓ Rapid resource acquisition to meet specific needs.

✓ Enhances agility and reduces wait times.

Examples:

Creating virtual machines, storage allocation, app deployment.

Broad Network Access:

✓ Users can connect from various devices, including laptops, smartphones, and tablets.

✓ Location independence allows remote work and collaboration.

✓ Accessible from different geographical locations.

✓ Facilitates real-time data sharing and communication.

Example: Remote Team Collaboration

Situation: A team of designers spread across different cities needs to collaborate on a project.

Cloud Solution: Cloud computing provides a shared platform where designers can access project files and tools from their laptops or tablets over the internet.

Location-Independent Resource Pooling:

✓ Resources are shared among multiple users.

✓ Resources dynamically allocated based on demand.

✓ Users benefit from economies of scale and efficient utilization.

Example:

Imagine a cloud-based video streaming service.

✓ Users globally access videos without knowing their physical location.

✓ Videos are stored on various servers across different data centers.

✓ Users experience seamless playback, and providers optimize resource usage.

Rapid Elasticity in Cloud Computing:

✓ Rapid Elasticity is a key cloud characteristic.

✓ It enables resources to quickly scale up or down based on demand.

Example:

Scenario: An e-commerce website experiences a sudden surge in traffic due to a flash sale.

Rapid Elasticity: With cloud computing, the website can instantly scale up its server capacity to handle the increased traffic load.

This prevents slow loading times or crashes, ensuring a smooth shopping experience for customers.

Once the sale ends and traffic decreases, the website can scale down its resources, saving costs.

Measured Service:

✓ Resource usage is continuously monitored and measured.

✓ Usage data is transparently reported to users and providers.

✓ Billing is based on actual resource consumption.

✓ Promotes cost control and efficient resource allocation.

Example:

Scenario: A video streaming service on the cloud.

Measured Usage: The service provider monitors data bandwidth used by each subscriber in real-time.

Billing: Subscribers are charged based on the amount of data they stream.