Machireddy Dhamini

CLOUD COMPUTING

Cloud Computing is the delivery of computing services (like storage, servers, databases, networking, software) over the internet ("the cloud") instead of using local servers or personal devices.

In simple,

Cloud computing means using the internet to store and use files, games, apps, and more — instead of keeping everything on your own computer or phone.

Imagine the "cloud" as a giant **online locker** where you can keep your things (like photos, videos, or homework), and you can open it from **any device** — computer, tablet, or phone — **anywhere**!

Why is it useful?

You don't lose files if your computer breaks.
You can work on the same project from home, school, or a friend's house.
You don't need a super powerful computer — the cloud does the hard work!

Examples:

- Google Drive (for saving documents)
- YouTube (videos stored in the cloud)
- Online games like Minecraft servers

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Advantages of Cloud Computing:

Cost Savings: No upfront investment in hardware.

Flexibility & Scalability: Quickly adjust resources.

Accessibility: Work from anywhere.

Disaster Recovery: Automated backup and recovery.

Maintenance-Free: Provider handles updates and hardware.

Scalability

- **Definition:**
  Scalability is the ability of a system to **handle increasing workloads by adding resources** (like CPU, memory, storage) in a planned way.
- **Types:**
  - **Vertical Scaling (Scale Up):** Adding more power (CPU, RAM) to an existing server or VM. ○ **Horizontal Scaling (Scale Out):** Adding more servers or VMs to spread the load.
- **Example:**
  If your website gets more visitors, you can add more servers (horizontal) or upgrade existing ones (vertical) to handle traffic.

Elasticity

- **Definition:**
  Elasticity is the ability to **automatically and quickly add or remove resources based on current demand**.
- **Key Point:**
  Elastic systems **scale up and down dynamically** to optimize resource usage and cost.
- **Example:**
  During a sale, an e-commerce site automatically spins up extra servers to handle traffic spikes and then reduces them when traffic goes down.

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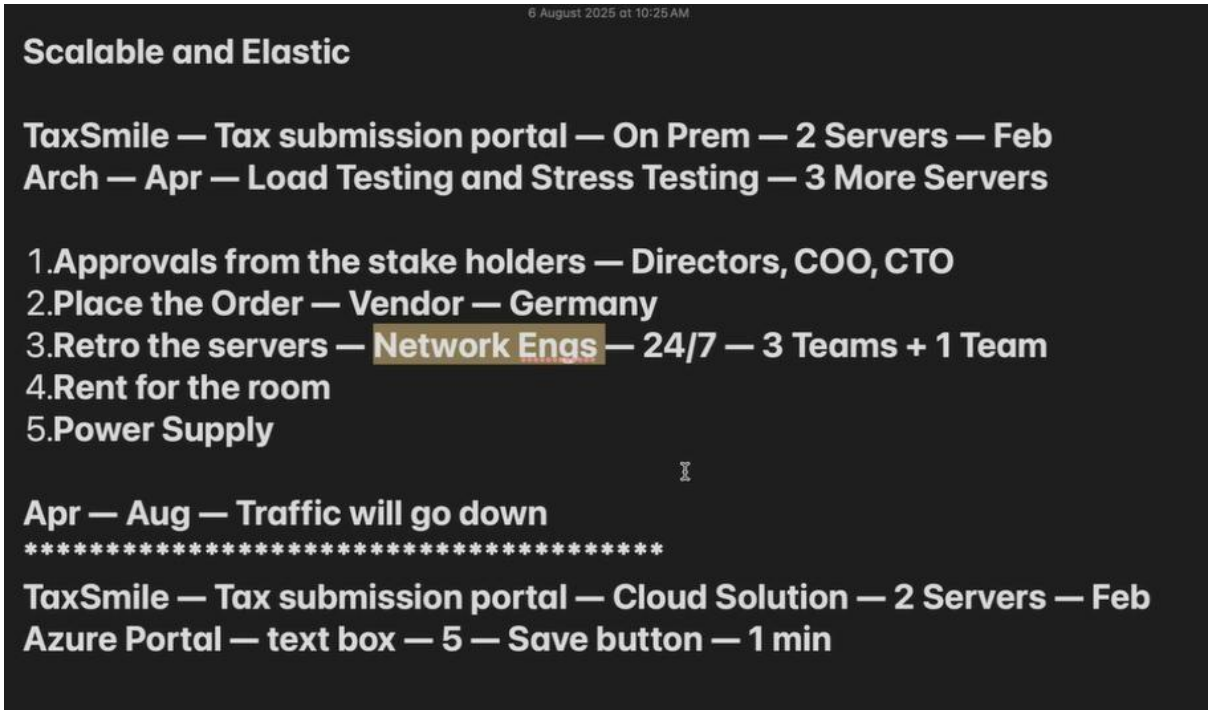

This above example shows how effectively cloud solution work

Instead of buying 3 new servers for spike in the month of April - July and leaving the server as ideal servers in other times

Using cloud makes work easier – no rent, no power supply cost, no network engineers, etc…

Just by editing the no of server in azure portal we can handle the spike.

Key Differences: On-Prem vs Azure Cloud

Aspect	**On-Premise**	**Azure Cloud**
Server Provisioning	Manual (weeks/months)	Instant (minutes)
Approvals	Required from multiple stakeholders	Not required for elastic scaling
Hardware Setup	Manual by Engineers	Not needed
Resource Usage	Fixed, often underutilized	Pay-as-you-use (auto scale down)
Scalability	Static	Dynamic & Elastic

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HOSTING TECHNIQUE