Azure API Training <> Revanture

Day 1

About me

I'm Avinash Seth

Amazon AWS & **Microsoft Azure** Certified Cloud Professional with 10+ years of experience as a Full Stack Developer and 8+ years of expertise in Cloud solutions (AWS & Azure).

Mentored & supported more than 15,000+ professionals and students

Training Overview

What we are going to learn here

[Syllabus](#)

Training Outcome

- **Cloud-Ready Developer** – Gain hands-on experience with Azure Cloud and core services such as App Service, Functions, Storage, and API Management.
- **API Specialist** – Learn to build and integrate secure, scalable RESTful APIs following industry standards.
- **Azure Integration Expert** – Connect and automate systems using Logic Apps, Functions, and API Management.
- **Deployment-Ready Engineer** – Deploy, test, and monitor APIs using DevOps pipelines and CI/CD workflows.
- **Industry-Ready Backend Professional** – Confidently handle real-world API and cloud-based backend projects.

What you need to know …

- Basic understanding of keyboard and mouse operations — navigating files, using shortcuts, and browsing the web.
- Familiarity with programming fundamentals — variables, loops, conditions, and functions.
- Working knowledge of Python basics — syntax, data types, and simple functions.
- Ability to debug simple code errors and understand error messages.
- **(optional)** Some experience with applications hosted publicly — understanding what servers, deployment, and URLs mean.

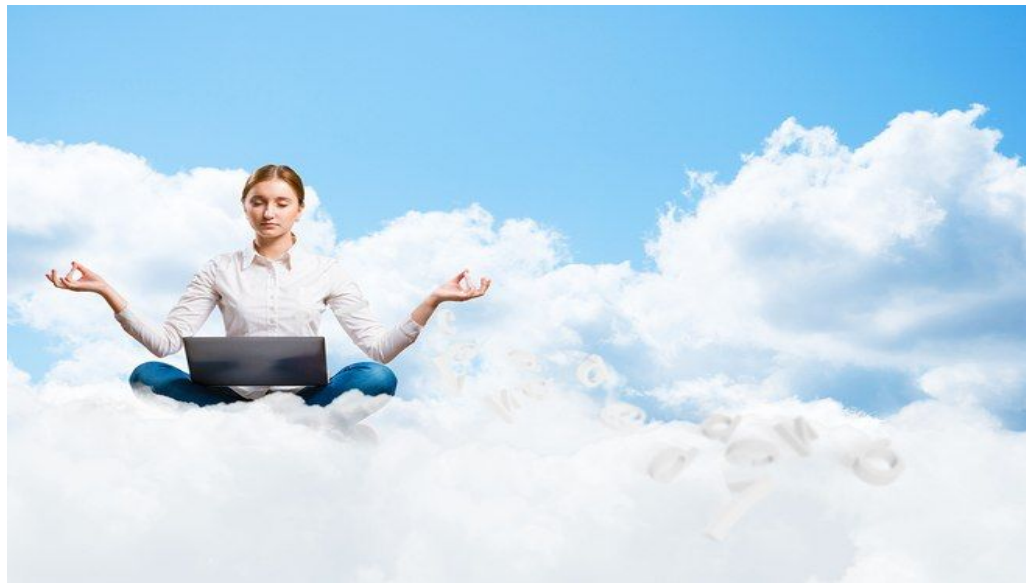# What is Cloud?

Why you need Cloud?

intentionally left blank …

Cloud is good for _business_ as well as _your career_!

Questions?

Overview of Cloud

What is Cloud computing?

What is Cloud Computing?

- ~~Cloud computing is not putting your servers on cloud~~

Problem with Traditional method

What is Traditional method?

Long time ago, when you wanted to host a website on the internet. You had to buy

- **Hardware** - ram, processor, storage
- **Bandwidth** - to serve the content
- **Infrastructure** - where you are going to keep the server
- **Security** - you have to save your data from internet world as well as physical world.

Avinash, I'm fine with traditional method, why do you need cloud computing?

More problems

New Challenges with Traditional method?

When you website get huge traffic, your limited resources would crash out and you are out of business. You must have seen unresponsive websites, crashed websites in your internet journey.

- Have you booked tatkal ticket via IRCTC?
- Did you check your university / college result?

🤔

Avinash, I can simply add more resources and I'm done!

How many resources you are going to add?

How are you going to manage all of them?

Can you do remotely or you have to Work From Data Center!

Who is going to take care of security?

🤔

Solution?

😄

Cloud Computing

How?

Buying or I should say renting everything from servers, storage, databases, software from anywhere in the world without worrying about the infrastructure and security of them (you have to secure your application)

🤔

Advantage?

Advantage with cloud

The biggest advantage you have with cloud is that you don't have to worry about useless things. Like? Power supply for your servers, Physical security of your server location and many more.

Explain me like I'm 5!

How cloud is different?

Cloud computing is like renting a ready-to-use kitchen for your fast food joint instead of building one from scratch.

In a traditional setup, you'd buy land, set up equipment, and manage everything — from electricity to cleaning — just like maintaining your own servers and infrastructure.

🙁

That means, I lose control?

No!

Cloud providers are friendly and they help you in every step of your journey.

Questions?

🤨

Benefits with cloud

Benefits of cloud

Cost - Since your are not managing non-essential things with respect to your business goals, your cost comes down drastically.

Comparing this, if you want to host a website on internet with your hardware, I would assume you have to spend at least $1000 to go live. While with cloud you can go as low as $5 per month with you only managing your application.

Benefits of cloud

<u>Ease of scaling</u> - Traditionally when you had to scale your application, you would go to market, buy new hardware, come back home, plug the hardware(if that was so easy) and then expect everything to work and congratulations you have scaled your application. But with cloud with a click of a button you can scale your application and that too in minutes.

Benefits of cloud

Your focus area - with cloud computing, you focus on building application and services for your customers, and things like security and hardware are taken care by your cloud provider

No upfront cost - You don't have to buy a huge subscription when you are starting out. You can start with lowest amount and some cloud providers also providing pay as you go plans

Benefits of cloud

Availability Traditionally when you server was down, your application was down. But with cloud, if one location is down, you can stay online from other location

Questions?

🤨

Types of Cloud?

3 basic types of cloud

Cloud computing comes in 3 basic different types

- ●   Private cloud
- ●   Public cloud
- ●   Hybrid cloud

Private Cloud

- Private cloud is nothing but a set of resources limited to the company or organisation owning them.
- Nobody from the outside world has access to them and the maintenance is handled by the organisation itself.
- When you should use Private cloud - You should use private cloud when you want to keep resources within the organisation itself.

Private Cloud

- Example - Infrastructure owned by ***Meta, Apple*** for its application.
- They have huge amount of resources but everything is owned by them and only their employees can use them only for the business goals of their organization.

Public Cloud

- Public cloud is set of resources which can be used by anyone in the world. They resources can be paid or free depending on the cloud provider. Even though the infrastructure is owned by the cloud provider and they are responsible for the maintenance but anyone in the world can use them for their requirement.
- When you should use Public cloud - When you don't want to manage anything other than your application itself.
- Example - Microsoft azure, Google Compute Engine or Amazon web services are the best examples of public cloud which are paid.

Hybrid cloud

- A Hybrid Cloud allows an organization to use both on-premises (private) infrastructure and public cloud services (like Azure, AWS, or Google Cloud) — and move data or applications between them as needed

Comparison

Feature	Private Cloud	Public Cloud	Hybrid Cloud
Ownership	Fully yours	Owned by provider	Mix of both
Cost	High upfront	Pay-as-you-go	Balanced
Control	Full control	Limited control	Selective control
Scalability	Limited	Highly scalable	Flexible
Best For	Sensitive data	Fast scalability	Balanced needs

Questions?

Cloud Deployment Model

Cloud Deployment Models

- When we talk about renting out something, we always prefer to take only what we need. In similar fashion, with cloud you only opt for things you need in comparison to all other things which you don't need.

Types of Cloud Deployment Models

- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)
- Software as a service (SaaS)

Infrastructure as a Service

- Also known as IaaS where the company or cloud service providers rents you their infrastructure for your use.
- Example of Infrastructure as a service would be Microsoft Azure, where you simply login to their website and start creating virtual machines, storage space and etc.

Infrastructure as a Service

- It's like Renting a home / house
    - You manage the cleaning
    - You buy your own furniture
    - You pay for the utilities

Platform as a service

- Also known as PaaS where the company or the cloud service providers rents you various platforms for your applications to use. Here you don't have to setup the platform, you will get pre configured platform for your use.
- Example using Lamp stack, where you don't have to setup Lamp platform. Hadoop setup, machine learning setup

Platform as a service

- It's like living with your elder brother / sister / friend in a different town or city
- They are paying the rent
- You are utilizing their home

Software as a service

- Also known as SaaS where the company or the cloud service providers rents you their software for your use. Here you don't have to buy bundled software, you simply buy what you need and only pay for time you used it.
- Example of SaaS would be, music streaming applications, you are using their software to listen to music.

Software as a service

- Living in PG / Hotel
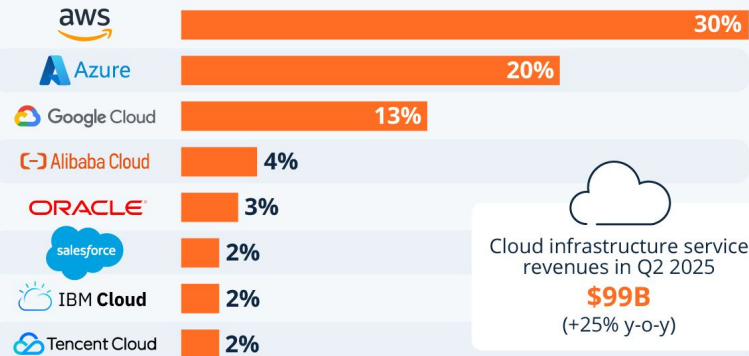
Questions?

Major Cloud Providers

Major Cloud Providers

Cloud Market Share

The Big Three Stay Ahead in Ever-Growing Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q2 2025*

Provider	Market Share
aws	30%
Azure	20%
Google Cloud	13%
Alibaba Cloud	4%
ORACLE	3%
salesforce	2%
IBM Cloud	2%
Tencent Cloud	2%

Cloud infrastructure service revenues in Q2 2025
$99B
(+25% y-o-y)

* Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: Synergy Research Group

statista

Questions?

Cost Optimization

Cost Optimization

- Cloud cost optimization means maximizing business value while minimizing cloud spending — ensuring you pay only for what you actually use, without sacrificing performance or reliability.
- Cloud cost optimization is not just about cutting expenses — it's about spending smartly.
- By using the right resources, automating scaling, monitoring usage, and leveraging discounts, organizations can reduce costs while improving performance and flexibility.

Cost Optimization Principles

Pay-As-You-Go Efficiency

- Use cloud's flexibility — scale resources up or down based on demand.
- Stop paying for idle or unused services.

Right Sizing Resources

- Choose the correct VM size, storage type, and performance tier that fits your workload — not overprovisioned or underpowered.

Visibility and Monitoring

- Continuously monitor usage and costs through dashboards, billing alerts, and analysis tools like Azure Cost Management, AWS Cost Explorer, or GCP Billing Reports.

Automation and Scheduling

- Automatically turn off non-production servers (like dev/test environments) during off-hours to save costs.

Cost Optimization Principles

Use of Reserved and Spot Instances

- For predictable workloads, use Reserved Instances (1-3 year commitments) to save up to 70%.
- For flexible workloads, use Spot/Preemptible Instances for big savings on compute power.

Cost Optimization Strategies

- Right-size infrastructure
- Auto-scaling
- Use right resources (like VM for compute not storage)
- Turn off idle resources
- Use reserved capacity
- Storage tiering
- Monitor and optimize

Questions?

Cloud Computing Economies and Pricing Model

Cloud Computing Economies

- Cloud computing economies refer to the cost advantages that cloud providers achieve and pass on to users by operating at massive scale.

Cloud Computing Economies

Economies of Scale

- Cloud providers like Azure, AWS, and Google Cloud operate huge global data centers.
- This scale allows them to buy hardware, energy, and bandwidth at lower costs — savings that benefit customers.

Reduced Upfront Investment

- No need to buy servers, network equipment, or storage — everything is available on demand.
- You replace capital expenses (CapEx) with operational expenses (OpEx).

Elastic Resource Usage

- You pay only when you consume resources — just like paying for electricity or water.
- No waste from idle or unused capacity.

Cloud Computing Economies

Global Reach at Lower Cost

- Instead of setting up physical offices worldwide, you can deploy your applications globally in minutes.

Innovation without Infrastructure Burden

- Developers and startups can experiment freely without huge financial risks.

Cloud Pricing Models

- Most cloud providers use three main pricing models depending on how you consume their services

Pricing Model	Description	Example Use Case
Pay-as-you-go (On-Demand)	Pay only for what you use — hourly or per-second billing	Testing, startups, unpredictable workloads
Reserved Instances / Savings Plans	Commit to a specific instance type for 1–3 years for large discounts	Long-term or steady workloads
Spot / Preemptible Instances	Use spare capacity at a much lower price (can be interrupted anytime)	Batch processing, data analysis, non-critical tasks

How cloud pricing is different?

Aspect	Traditional IT	Cloud Computing
Investment Type	Capital (CapEx)	Operational (OpEx)
Cost Predictability	Fixed	Variable / Usage-based
Scalability	Limited	Instant and elastic
Resource Ownership	You own	Provider owns
Efficiency	Often underused	Optimized and shared

Questions?

Cloud Security

Understanding Cloud Security

- Cloud Security means protecting data, applications, and services stored in the cloud.
- It ensures confidentiality, integrity, and availability of cloud resources.
- Just like locking your office and installing CCTV for safety — in cloud, we use security policies, encryption, and access control.
- Security is a shared responsibility between the cloud provider and the customer.

Azure provides the "building" (infrastructure security), while you secure what's inside (your data, apps, and configurations).

Shared Responsibility Model

Cloud Provider (e.g., Azure, AWS, Google Cloud):

- Secures the infrastructure – physical data centers, networking, hardware, and platform.

Customer (You):

- Secures the data, applications, and user access.

Level of responsibility changes with service type:

- IaaS: You secure OS, apps, data.
- PaaS: You secure apps and data.
- SaaS: You secure data and user access.

Shared Responsibility Model

ON-PREMISES PRIVATE CLOUD	INFRASTRUCTURE AS A SERVICE	PLATFORM AS A SERVICE	SOFTWARE AS A SERVICE
Data & access	Data & access	Data & access	Data & access
Applications	Applications	Applications	Applications
Runtime	Runtime	Runtime	Runtime
Operating system	Operating system	Operating system	Operating system
Virtual machine	Virtual machine	Virtual machine	Virtual machine
Compute	Compute	Compute	Compute
Networking	Networking	Networking	Networking
Storage	Storage	Storage	Storage

● You manage ● Cloud provider manages

Main Areas to Protect

Data Security:

- Encrypt data in transit and at rest.
- Use strong passwords and role-based access.

Identity and Access Management (IAM):

- Control who can access what using multi-factor authentication and least privilege access.

Network Security:

- Use firewalls, VPNs, and secure connections between systems.

Application Security:

- Keep applications updated, patch vulnerabilities, and use security testing tools.

Main Areas to Protect

Monitoring and Compliance:

- Continuously track activity using tools like Azure Security Center.

Recognizing and Preventing Risks

Common Threats

- Unauthorized Access / Hacking
- Data Breaches
- Misconfiguration of Cloud Resources
- Denial of Service (DoS) Attacks
- Insider Threats

Countermeasures

- Use Multi-Factor Authentication (MFA)
- Implement Encryption for all data
- Enable Security Monitoring and Alerts
- Conduct Regular Security Audits and Backups
- Follow Compliance Standards (ISO, GDPR, HIPAA)

Staying Secure in the Cloud

- Always use strong passwords and MFA.
- Apply least privilege access — give only required permissions.
- Keep systems and applications patched and updated.
- Regularly review audit logs and user activities.
- Automate backups and test disaster recovery plans.
- Educate team members about security hygiene.

Questions?

Create FREE Azure Account

Project

Azure Pricing Calculator

Project

Create First Resource in Azure

Project

Warnings

- Don't leave Virtual Machines or Databases running — stop or delete them after practice.
- Avoid using large or paid resources — stick to the free tier or smallest options.
- Don't delete default resources or system-generated items in resource groups.
- Never share or expose your access keys, passwords, or connection strings.
- Always check your region and monitor your usage and costs regularly.
- Use separate resource groups for each project — easy cleanup, no surprise charges.