Cloud & Infrastructure

Interview Guide

AWS Cloud Club | VIT Chennai

What to expect?

We’re looking forward to strengthening the Cloud & Infrastructure department, one of the pivotal departments of our club.

Prepare to face a rigorous interview to test your understanding of the concepts of cloud computing and AWS services, right from foundational theory to real-world applications.

Focus on understanding the "why" behind each service and be ready to discuss trade-offs.

What we value:

- Curiosity and problem solving ability
- Deep conceptual understanding
- Hands-on experience
- Clear communication

The following pages summarize foundational concepts that are likely to be covered during the interview process.

The Cloud Mindset

It is the way of approaching the design of infrastructure and applications for cloud computing. Systems must be designed to be elastic, automated, and resilient by default rather than relying on manual procedures and fixed hardware. Scalability, cost effectiveness, and managed services influence decisions.

How it works

Applications and infrastructure are designed assuming resources can be provisioned, scaled, and removed programmatically at any time. Instead of predicting capacity upfront, systems rely on elasticity, automation, and managed services to handle changing demand. Monitoring, logging, and infrastructure as code are used to continuously adapt and improve the system.

Core Principles

- Elasticity: Scale up and down as needed
- Pay-as-you-go pricing
- Automation over manual operations
- Failure is expected, not exceptional
- Infrastructure as code (IaC)

Sources

• AWS Well-Architected Framework: AWS Well-Architected Tool Documentationlatest/framework/welcome.html
• Cloud-First Mindset: Cloud-First Mindset with AWS. Embracing the Cloud | by Prasad Lakshan | Towards AWS

IAM: Identity & Access Management

Access to all AWS resources is managed by AWS's centralized security and permissions system, and IAM serves as the cornerstone of security in any AWS environment by defining identities and enforcing permissions across accounts and services. IAM is used to assess each request made to AWS.

How it works

IAM evaluates every request made to AWS by authenticating the identity and checking attached policies to determine whether the action is allowed. Permissions are defined using JSON policies that explicitly allow or deny actions on resources. Temporary credentials via IAM roles are commonly used to provide secure access without long-term secrets.

Core Components

- Users: Individual identities
- Groups: Collections of users
- Roles: Temporary permissions assumed by services or users
- Policies: JSON documents defining permissions

Sources

• AWS IAM Basics (Video): UPDATED - AWS Identity and Access Management (IAM) Basics | AWS Tutorials For Beginners

• AWS IAM Crash Course: AWS IAM - Crash Course (Learn IAM in 1 hour!) | AWS Certification Tutorial

• IAM Docs: AWS Identity and Access Management Documentation

• Policy Simulator: Amazon Web Services Sign-In

VPC: Virtual Private Cloud

A VPC is a completely supervised virtual network that is logically isolated within AWS. VPCs let you define IP ranges, subnets, routing, and security boundaries, in order to make cloud resources behave like they would in a private data center, while providing scalability.

How it works

A VPC is created with a defined IP address range, which is then divided into subnets across availability zones. Routing tables and gateways control how traffic flows within the network and to the internet. Security groups and network ACLs enforce traffic rules, ensuring resources can only communicate in explicitly allowed ways.

Core Components

- CIDR blocks
- Subnets (public & private)
- Route tables
- Internet Gateway
- NAT Gateway
- Security Groups & NACLs

Sources

• AWS VPC Advanced Design: AWS re:Invent 2019: [REPEAT 1] Advanced VPC design and new capabilities for Amazon VPC (NET305-R1)

• AWS VPC Beginner to Pro: AWS VPC Beginner to Pro - Virtual Private Cloud Tutorial

• VPC Docs: Amazon Virtual Private Cloud Documentation

• CIDR Calculator: CIDR.xyz

EC2: Elastic Compute Cloud

EC2 is a computing service (IaaS) that offers virtual servers that can be resized dynamically to run workloads and applications. By taking care of the physical hardware layer, EC2 allows you to have control over operating systems, runtime environments, and instance sizing.

How it works

Users launch EC2 instances from predefined machine images with selected instance types based on compute needs. Each instance runs within a VPC and is secured using key pairs and security groups. Storage is attached via EBS volumes, and instances can be scaled, stopped, or terminated based on workload requirements.

Core Components

- AMIs (Amazon Machine Images)
- Instance types (compute, memory, storage optimized)
- EBS volumes
- Security Groups
- Key pairs

Sources

• EC2 Tutorial (Beginner to Advanced): AWS EC2 Tutorial Beginners to Advance - Full course with Hands On Labs 2023

• EC2 Full Course: AWS EC2 Full Course | From Beginner to Expert | Deploy Real-Time Projects on AWS

• EC2 Instance Types: Amazon EC2 Instance Types

S3: Simple Storage Service

S3 is a scalable, highly secure object storage solution that can store and retrieve data at any capacity. Due to its cost-effectiveness and reliability, S3 can be used for backups, data lakes, and application assets.

How it works

Data is stored as objects inside buckets and accessed using unique object keys. S3 automatically manages data distribution, replication, and durability without user intervention. Access is controlled through IAM policies and bucket policies, while storage classes optimize cost based on access patterns.

Core Components

- Buckets
- Objects
- Object keys
- Storage classes
- Bucket policies & ACLs

Sources

• S3 Tutorial for Beginners: AWS S3 Tutorial For Beginners

• S3 Full Course: AWS S3 Full Course | From Beginner to Expert | Deploy Real-Time Projects on AWS - Part 22

• S3 Docs: Amazon Simple Storage Service Documentation

• Storage Classes: Object Storage Classes – Amazon S3

Other sources

Learning Resources

- AWS Skill Builder (Free)
- AWS Free Tier
- AWS Documentation

Video Channels

- Fireship (100-second overviews)
- TechWorld with Nana
- AWS re:Invent (Deep dives)

Interview Tips

- Know Linux basics (SSH, permissions, logs)
- Understand cost implications
- Be ready to discuss trade-offs
- Reference official documentation